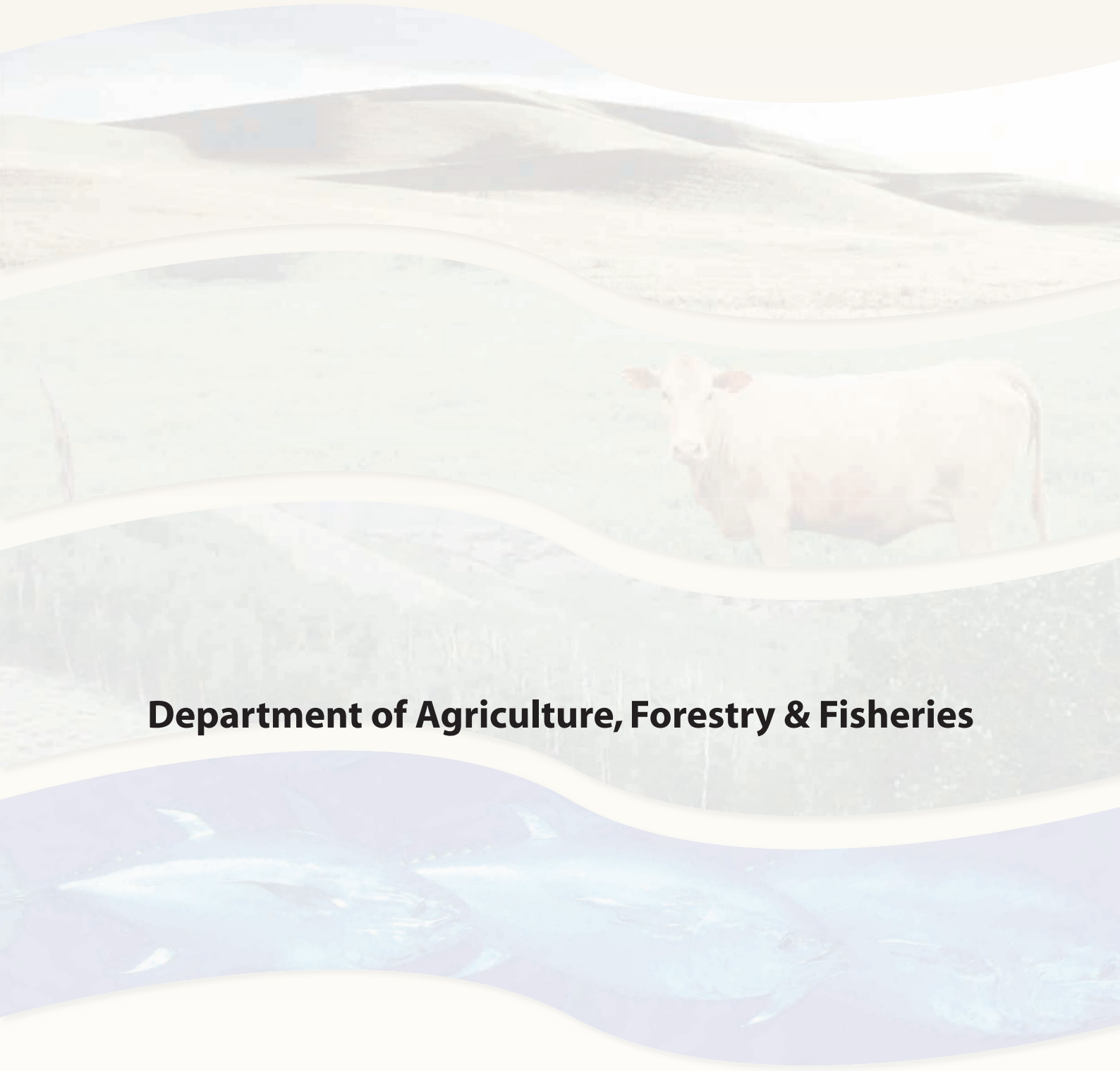
ANNUAL REPORT ON AGRICULTURAL EDUCATION AND TRAINING PROGRAMMES, ENROLMENTS AND GRADUATE OUTPUTS AT HIGHER EDUCATION INSTITUTIONS DURING THE 2009 ACADEMIC YEAR

agriculture,
forestry & fisheries

Department:
Agriculture Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

ANNUAL REPORT ON AGRICULTURAL EDUCATION AND TRAINING PROGRAMMES, ENROLMENTS AND GRADUATE OUTPUTS AT HIGHER EDUCATION INSTITUTIONS DURING THE 2009 ACADEMIC YEAR



Department of Agriculture, Forestry & Fisheries

Design, Printed and Published by
Department of Agriculture, Forestry and Fisheries

Obtainable from
Resourses Centre

Department of Agriculture, Forestry and Fisheries
Private Bag X250
Pretoria
0001

ISBN: 978-1-86871-335-6

CONTENTS

CHAPTER 3:

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2009 ACADEMIC YEAR

CHAPTER 4:

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES DURING 2009 ACADEMIC YEAR

CHAPTER 5:

ENROLMENTS AND GRADUATES OUTPUTS FOR SCARCE SKILLS PROGRAMMES IN AGRICULTURE

CHAPTER 6:

ANALYSIS AND RECOMMENDATIONS

FOREWORD BY THE DIRECTOR GENERAL

I am pleased to present the 2009 Annual Report on Agricultural Programmes, Graduate Outputs and Enrolments in Public Higher Education Institutions and Colleges of Agriculture. The 2009 report is the forth of a series of annual reports on agricultural enrolments and graduate outputs in public higher education institutions and agricultural colleges as well as the type of programmes offered by these institutions on an annual basis.

The 2009 Annual Report on Agricultural Graduate Outputs and Enrolments originates from a data collection process by the Department of Agriculture on the supply of intermediate and high level skills for the agricultural sector. Stipulated in the 2005 Department of Agriculture strategic plan as a deliverable, the 2009 report endeavours to present the sector with a picture on the supply of intermediate and high level skills for the agriculture sector by public higher education institutions and colleges of agriculture as the major role players in agricultural graduates provision. Apart from that the study was aimed at investigating and identifying agricultural skills which are in shortfall and those that are in oversupply. The preceding 2004, 2005, 2006, 2007, 2008 and 2009 reports portrayed an unbecoming picture of the skills provision in the agricultural education and training sector. Like the studies conducted before, the study was focused on the types of agricultural education and training programmes offered by various higher education institutions, agricultural enrolments and graduate outputs in the various fields of study during the 2009 academic year.

The study outlines trends in terms of skills supply for the agriculture sector by the public institutions of higher learning and agricultural colleges on yearly basis in order to inform planning for AET provisioning and interventions for skills development for the sector.

In the previous reports, findings indicated a severe undersupply of particular critical skills in certain fields of agriculture particularly amongst the African, Coloured and Asian graduates; such skills include BSc Agricultural Engineering and BVSc Veterinary Science. African graduates were on the other hand overly represented on skills such as Animal Science, Agricultural Science and Agricultural Management. This is the reason for the high unemployment rate amongst African agricultural graduates as these skills are deemed to be in lower demand compared to the supply.

I am certain that this report will make a valuable contribution in addressing the above problem, the implementation of the new AET Strategy and in addressing the skills gap in the sector as well as establishing a cadre of agricultural graduates that will benefit not only the agricultural sector but also the South African economy in general. It is therefore my conviction that this report like the ones before shall provide a very strong and informed basis for decision making in agricultural education and training.

I truly trust that the findings of this report will assist to inform the efforts of transforming agricultural education towards a well coordinated, effective and responsive approach.

Langa Zitha (Mr)
DIRECTOR-GENERAL

EXECUTIVE SUMMARY

1. INTRODUCTION

This report is based on a study conducted on the agricultural enrolments, graduate outputs and Agricultural Education and Training (AET) programmes offered by various agricultural colleges and Higher Education institutions for the 2009 academic year. The Department of Agriculture (DoA) collects data on the types of programmes offered in the colleges of agriculture and Higher Education (HE) institutions, agricultural enrolment figures and graduate output figures in all the agricultural programmes offered by these institutions on an annual basis. The 2009 report is the sixth of a series of annual reports on AET enrolments, graduate outputs and programmes offered by colleges of agriculture as well as HE institutions produced by the DoA.

2. OBJECTIVES OF THE PROJECT

The primary objective of the study is to observe the trends in terms of skills supply for the agricultural sector by HE institutions and colleges of agriculture. The secondary objective of the study is to observe trends with regard to AET enrolments, graduate outputs and the types of AET programmes offered by the various institutions, in order to inform policy decisions and planning regarding AET provisioning in public colleges of agriculture and Higher Education institutions for purposes of skills supply for the sector. The findings would further assist in the development of strategies for addressing the skills demand in the agriculture sector.

3. METHODOLOGY FOR THE STUDY

The research study was more quantitative in nature and its aim was to yield quantitative descriptive data. The Education, Training and Extension Services (ETES) Directorate conducted a questionnaire-based survey with all the colleges of agriculture, universities of technology and universities offering AET programmes.

Data collection for the study focused on the number of AET enrolments and graduates from Undergraduate to post-graduate levels in all the agricultural disciplines. It also focused on the types of programmes and short courses offered in these institutions. Questionnaires requesting information on the number of enrolments and graduates in all the agricultural programmes offered by each institution were distributed electronically to all public HE institutions offering agricultural programmes and to the 12 colleges of agriculture. The questionnaires were completed and returned to the Directorate in the same way. The study focused on only those public institutions offering higher education and training programmes in agriculture.

For ease of interpretation, the qualifications were categorised using the Categorisation of Education Subject Matter (CESM) of the Department of Education. However, in some cases, the CESM was further broken down into sub-categories to obtain a better understanding of the enrolments and supply of AET graduates. The report indicates how the qualifications were classified per CESM.

4. LIMITATIONS

The study is mostly quantitative in nature and therefore does not provide an in-depth analysis of the factors influencing the trends in agricultural enrolments and graduate outputs in various programmes.

The study could not report on each qualification and used the CESM, which resulted into the various scarce skills within the CESM not being clearly indicated, e.g. entomology, which is a scarce skill, is included under plant health. This was due to the fact that institutions do not provide the information per field of specialisation within the CESM.

Furthermore, the study could not clearly indicate the various specialisation fields within each CESM, due to the fact that institutions did not provide the information on specialisation.

5. FINDINGS

5.1. Agricultural Education and Training at colleges of agriculture

There are twelve public colleges of agriculture that offer qualifications in the Higher Education and Training (HET) band up to the Undergraduate Degree level and the programmes are offered at colleges on an annual basis.

5.1.1 AET programmes offered by colleges of agriculture in 2009

All the colleges of agriculture have their qualifications registered in the National Qualifications Framework (NQF). In the 2009 academic year, not all the colleges offered programmes ranging from NQF level 1 to NQF level 6. The general qualifications offered in all colleges are a Higher Education Certificate in Agriculture at NQF level 5 and a Diploma in Agriculture at NQF level 6. A Diploma in Agriculture is pursued after completion of the Higher Certificate in Agriculture. All the Higher Certificates are offered on a two-year programme, after which the third year will be the Diploma in Agriculture.

The Higher Education Certificate and the Diploma programmes are accredited by the Higher Education Quality Committee of the Council on Higher Education, while the programmes from NQF level 1 to 4 (including short courses) are accredited by Umalusi and AgriSETA. However, some of the short courses from NQF level 1 to 4 are not yet accredited.

All the colleges of agriculture offered NQF level 5 qualifications, i.e. Higher education programmes. Nine (75%) of the 12 colleges offered NQF level 6 programmes in 2009. Madzivhandila, Tompi Seleka and Tsolo have phased out the NQF level 5 programmes and are presently concentrating on learnerships and short courses.

5.1.2 Agricultural Education and Training enrolment figures at colleges of agriculture in 2009

A breakdown of enrolments by gender and race at colleges of agriculture is presented in the table below.

Breakdown of enrolments by gender and race at colleges of agriculture for 2009

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Cedara	19	19	**38**	0	0	**0**	5	0	**5**	3	1	**4**	**47**	**6**
CIAT: Elsenburg	9	9	**18**	22	19	**41**	79	21	**100**	0	0	**0**	**159**	**19**
Fort Cox	55	49	**104**	0	0	**0**	0	0	**0**	0	0	**0**	**104**	**13**
Glen	11	6	**17**	0	0	**0**	0	0	**0**	0	0	**0**	**17**	**2**
Grootfontein	22	8	**30**	7	4	**11**	69	13	**82**	0	0	**0**	**123**	**15**

Breakdown of enrolments by gender and race at colleges of agriculture for 2009														
Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Owen Sitole	54	98	**152**	0	0	**0**	0	0	**0**	0	0	**0**	**152**	19
Potchefstroom	34	23	**57**	1	0	**1**	40	2	**42**	0	0	**0**	**100**	12
Taung	10	16	**26**	0	0	**0**	0	0	**0**	0	0	**0**	**26**	3
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0
Total	**279**	**255**	**534**	**30**	**23**	**53**	**193**	**36**	**229**	**3**	**1**	**4**	**820**	**100**

A total number of 820 students were enrolled in 2009 at all the colleges of agriculture. Like in the other previous academic years, 2009 enrolments figures at colleges of agriculture combined are still less than 2000, which is a required norm for an institution to operate at higher education level.

CIAT: Elsenburg had a high number of enrolments with 159 students, followed by Owen Sitole with 152 students and Grootfontein with 123 students. The lowest enrolments were registered at Glen, Taung and Cedara with 17, 26 and 47 students respectively.

African students dominated the enrolments with 65% followed by White students with 28%. The other population groups enrolled less than 8% of the total enrolments at colleges during the 2009. Male enrolments constituted 62% of the total number of enrolled students in 2009 and female enrolments constituted 38%.

5.1.3 Number of people registering and completing short courses at colleges of agriculture during 2009

A breakdown of people registering and completing short courses by gender and race at colleges of agriculture is presented in the table below.

Breakdown by gender and race of people registered in and completing short courses															
Name of the college	African			Coloured			White			Asian			Other	Total	%
	M	F	T	M	F	T	M	F	T	M	F	T			
Cedara*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
CIAT: Elsenburg	32	35	**67**	50	48	**98**	2	0	**2**	0	0	**0**	**0**	**167**	**17**
Fort Cox*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Glen	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Grootfontein*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Lowveld	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Madzivhandila	141	174	**315**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**315**	**32**
Owen Sitole	29	53	**82**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**82**	**8**
Potchefstroom*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Taung	80	70	**150**	2	3	**5**	0	0	**0**	0	0	**0**	**0**	**155**	**16**
Tompi Seleka	62	102	**164**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**164**	**17**
Tsolo	42	52	**94**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**94**	**10**
Total	**386**	**486**	**871**	**52**	**51**	**103**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**977**	**100**

*Information not available

Madzivhandila, CIAT: Elsenburg, Tompi Seleka and Taung enrolled more students in short courses than any college, with 32%, 17% and 16% respectively. African students enrolled in short courses constituted 90% followed by Coloured students with 10%. Very few White and Asian students enrolled at these institutions.

5.1.4 Agricultural Education and Training graduate figures at colleges of agriculture in 2009

A breakdown of graduates by gender and race at colleges of agriculture is presented in the table below.

Breakdown of graduates by gender and race

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Cedara	17	19	**36**	0	0	**0**	25	03	**28**	1	2	**3**	**67**	**9**
CIAT: Elsenburg	5	3	**8**	6	3	**9**	89	31	**120**	0	0	**0**	**137**	**18**
Fort Cox	59	32	**91**	0	0	**0**	0	0	**0**	0	0	**0**	**91**	**12**
Glen	24	22	**46**	0	0	**0**	0	0	**0**	0	0	**0**	**46**	**6**
Grootfontein	7	2	**9**	6	0	**6**	54	5	**59**	0	0	**0**	**74**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**10**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	102	101	**203**	0	0	**0**	0	0	**0**	0	0	**0**	**203**	**27**
Potchefstroom	8	2	**10**	1	0	**1**	25	3	**28**	0	0	**0**	**39**	**5**
Taung	3	7	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**	**1**
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Total	**263**	**221**	**484**	**13**	**3**	**16**	**199**	**42**	**241**	**1**	**2**	**3**	**744**	**100**

In 2009, 744 graduates were produced at colleges of agriculture. Owen Sitole had a high number of graduates with 27%, followed by CIAT: Elsenburg with 18% and Fort Cox with 12%. African graduates were the largest group of graduates with 65%, followed by Whites with 32% and Coloureds with 2%. Only 3 Asian graduates were produced during the 2009 academic year.

Male graduates dominated with 64% of the total number of graduates and female graduates constituted 36%. Africans dominated the female graduates at colleges of agriculture with 82%, followed by Whites with 16%. Coloured and Asian female graduates constituted 1% each. Africans dominated the male graduates with 55%, followed by Whites with 42% and Coloureds with 3%.

5.2. Agricultural Education and Training at universities of technology in 2009

There are five universities of technology offering AET programmes in South Africa namely; Cape Peninsula University of Technology (CPUT), Central University of Technology Free State (CUT), Mangosuthu University of Technology (MUT), Durban University of Technology (DUT) and Tshwane University of Technology (TUT). The agricultural programmes offered at these institutions range through the HET Band from NQF level 5 to NQF level 8. i.e. from Certificate to a Doctor of Technology (DTech).

All the universities of technology offer few agricultural programmes such as Agricultural Management from Diploma level to BTech level, with the exception of TUT which offers programmes until DTech level. Most of the historically disadvantaged institutions do not offer programmes in the scarce skills category like Viticulture, BVSc and Agricultural Engineering. TUT offers a wide range of agricultural programmes on a broad curriculum that is divided into four main streams namely Horticulture, Crop Sciences, Nature Conservation and Animal Sciences.

5.2.1 Agricultural Education and Training enrolment figures at universities of technology in 2009

The table below presents a demographic of AET enrolments at universities of technology during the 2009 academic year.

Demographic breakdown of AET enrolments at universities of technology during the 2009 academic year

University of Technology	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	66	91	**157**	24	17	**41**	72	23	**95**	0	0	**0**	**293**
CUT,FS	45	31	**76**	3	2	**5**	22	2	**24**	1	0	**1**	**106**
MUT	106	134	**240**	2	0	**2**	0	0	**0**	0	0	**0**	**242**
DUT	102	134	**236**	1	1	**2**	3	2	**5**	10	42	**52**	**295**
TUT	255	230	**485**	0	1	**1**	51	42	**93**	2	3	**5**	**584**
Total	**574**	**620**	**1 194**	**30**	**21**	**51**	**148**	**69**	**217**	**13**	**45**	**58**	**1 520**

A total number of 1 520 students were enrolled during the 2009 academic year at universities of technology. TUT enrolled 38% of the total enrolments followed by DUT and CPUT with 20% each. MUT and CUT enrolled the lowest with 16% and 6% respectively.

African students dominated the universities of technology enrolments with 79%, followed by White students with 15%. Coloured and Asian students constituted very low enrolments during the 2009 academic year with 3% each. Both male and female students constituted 50% of the total enrolments at universities of technology.

5.2.2 Agricultural Education and Training enrolments at universities of technology by level of qualifications & CESM in 2009

The table below presents agricultural enrolments at universities of technology by CESM and levels of qualifications.

Agricultural enrolments at universities of technology by CESM & levels of qualification during the 2009 academic year

CESM	N.H.CER.	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Animal Science	0	224	2	0	0	**226**	**15**
Horticulture	0	96	0	0	0	**96**	**6**
Plant Science	0	108	29	0	0	**137**	**9**
Agricultural Management	0	98	89	0	0	**187**	**12**
Wildlife Management	0	317	32	2	1	**352**	**23**
Agricultural Science - General	0	85	0	13	4	**102**	**7**
Agricultural Extension	0	74	15	0	0	**89**	**6**
Veterinary Technology	0	20	12	4	0	**36**	**2**
Agricultural Biotechnology	0	43	5	4	0	**52**	**3**
Food Science and Technology	0	186	0	2	0	**188**	**12**
Land Reclamation	0	34	0	0	0	**34**	**2**
Renewable Natural Resources	0	21	0	0	0	**21**	**1**
Total	**0**	**1306**	**184**	**25**	**5**	**1 520**	
Percentage (%)	**0**	**86**	**12**	**2**	**0**		**100**

Wildlife Management, Animal Science, Food Science and Technology and Agricultural Management have the highest enrolment figures with 23%, 15% and 12% respectively. Each of the other CESMs registered less than 10% of the total number of enrolments. Diploma enrolments constituted 86% of the total enrolments at universities of technology in 2009, followed by BTech enrolments with 12%. Post-graduate (MTech and DTech) enrolments constituted 2% of the total enrolments at universities of technology in 2009.

5.2.3 Agricultural Education and Training graduate figures at universities of technology in 2009

The table below presents a demographic breakdown of universities of technology graduates by gender and race for 2009.

Breakdown of graduates by gender and race per university of technology during the 2009 academic year

University of Technology	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	4	4	**8**	8	2	**10**	73	13	**86**	0	0	**0**	**104**
CUT	13	6	**19**	0	0	**0**	31	2	**33**	0	0	**0**	**52**
DUT	28	68	**96**	1	2	**3**	4	8	**12**	10	67	**77**	**188**
MUT	104	84	**188**	0	0	**0**	1	0	**1**	0	0	**0**	**189**
TUT	124	86	**210**	1	0	**1**	46	25	**71**	1	0	**1**	**283**
Total	**273**	**248**	**521**	**10**	**4**	**14**	**155**	**48**	**203**	**11**	**67**	**78**	**816**

A total of 816 graduates were produced in 2009 at universities of technology. TUT has produced 35% of the overall graduates at universities of technology in 2009, followed by MUT and DUT with 23% each. CPUT and CUT produced 13% and 6% of the overall graduates in 2009 respectively.

African graduates constituted 64% of all the AET graduates at universities of technology in 2009, followed by White graduates with 25%. Asian and Coloured graduates together comprised 12% of the total graduates produced by universities of technology in 2009. Male graduates constituted 55% of the overall AET graduates at universities of technology in 2009 and female graduates accounted for 45%.

5.2.4 Agricultural Education and Training graduate figures at universities of technology by level of qualification and CESM in 2009

The table below presents a breakdown of graduates at universities of technology by CESM and level of qualification.

Agricultural graduates at universities of technology by CESM & levels of qualification during the 2009 academic year

CESM	N.H. CER.	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Agricultural Management	0	48	33	0	0	**81**	**10**
Animal Science	1	160	21	1	0	**183**	**22**
Horticulture	0	16	0	0	0	**16**	**2**
Plant Science	0	102	35	2	0	**139**	**17**
Renewable Natural Resources	0	62	39	3	0	**104**	**13**
Wildlife Management	0	46	0	0	0	**46**	**6**
Agricultural Science - General	0	28	8	3	0	**39**	**5**

Agricultural graduates at universities of technology by CESM & levels of qualification during the 2009 academic year							
CESM	**N.H. CER.**	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**Total**	**%**
Agricultural Extension	0	34	0	0	0	**34**	**4**
Veterinary Technology	0	11	6	0	0	**17**	**2**
Biotechnology	0	52	21	4	0	**77**	**9**
Food Science	0	54	15	0	0	**69**	**8**
Rural Development	0	11	0	0	0	**11**	**1**
Land Reclamation	1	0	0	0	0	**1**	**0**
Total	**2**	**624**	**177**	**13**	**0**	**816**	
Percentage (%)	**0**	**76**	**22**	**2**	**0**		**100**

Animal Science, Plant Science and Renewable Natural Resources have high graduate figures with 22%, 17% and 13% respectively. Each of the other CESM categories has produced less than 11% of the overall graduates.

Diploma dominated the AET graduates at universities of technology produced in 2009 with 76%, followed by BTech with 22%, MTech with 2% and Certificates with less than 1%. No DTech were awarded during the 2009 academic year.

5.3 Agricultural Education and Training at universities in 2009

There are thirteen universities in South Africa that offer AET programmes. These institutions offer agricultural qualifications from NQF level 5 up to level 8, i.e. from University Diploma to Doctor of Philosophy (PhD) programmes. All these universities offer various agricultural programmes that vary in terms of scope. For instance the Universities of Stellenbosch, Pretoria, KwaZulu-Natal, Free State, Fort Hare and South Africa, all offer a variety of programmes in their agricultural curricula.

5.3.1 Agricultural Education and Training enrolment figures at universities in 2009

A demographic breakdown of AET enrolments by gender and race at universities is presented in the table below.

Demographic breakdown of AET enrolments by gender and race at universities in 2009													
Name of the university	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
University of Fort Hare	134	87	**221**	0	0	**0**	0	1	**1**	0	0	**0**	**222**
University of North West	99	80	**179**	0	0	**0**	0	0	**0**	0	0	**0**	**179**
Nelson Mandela Metropolitan University	139	82	**221**	11	4	**15**	122	37	**159**	0	1	**1**	**396**
University of Free State	95	67	**162**	2	3	**5**	157	18	**175**	1	1	**2**	**344**
University of KwaZulu-Natal	52	82	**134**	1	1	**2**	19	46	**65**	4	25	**29**	**230**
University of Limpopo	168	178	**346**	0	0	**0**	1	0	**1**	0	0	**0**	**347**
University of Pretoria	112	192	**304**	4	20	**24**	281	746	**1027**	19	49	**68**	**1423**
University of South Africa	302	366	**668**	11	6	**17**	52	88	**140**	2	13	**15**	**840**
University of Stellenbosch	26	15	**41**	17	9	**26**	156	108	**264**	1	3	**4**	**335**
University of Venda	70	63	**133**	0	0	**0**	0	0	**0**	0	0	**0**	**133**

Demographic breakdown of AET enrolments by gender and race at universities in 2009													
Name of the university	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
University of the Western Cape	8	7	**15**	3	3	**6**	1	1	**2**	0	0	**0**	**23**
University of Zululand	1	4	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Total	**1206**	**1223**	**2429**	**49**	**46**	**95**	**789**	**1045**	**1834**	**27**	**92**	**119**	**4477**

A total number of 4 477 students were enrolled in 2009 at universities. UNISA and University of Pretoria accounted for 32% and 19% of the total enrolments for the 2009 academic year respectively, followed by Nelson Mandela Metropolitan with 9% and Limpopo with 8%. The remaining institutions each attracted less than 8% of the total enrolments in agricultural education and training at universities for the 2009 academic year.

As depicted in the table above, Africans constituted 54% of the total enrolments at universities during the 2009 academic year, followed by Whites with 41%. Asian and Coloured students accounted for 3% and 2% respectively. Female and male students respectively constituted 54% and 46% of total enrolments during the 2009 academic year.

5.3.2 Agricultural Education and Training enrolments at universities by level of qualifications & CESM in 2009

The table below presents agricultural enrolments at universities by CESM and levels of qualification.

Agricultural enrolments in universities in 2009 by CESM and academic level						
CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total
Agricultural Economics (Science Stream)	168	0	12	10	1	**191**
Agricultural Economics (Art Stream)	3	0	0	11	0	**14**
Agricultural Economics (BCom Stream)	0	0	8	0	0	**8**
Agricultural Economics (Agribusiness)	33	0	23	0	0	**56**
Agricultural Science (Art Stream)	98	0	12	8	13	**131**
Agricultural Science (Science Stream)	632	0	30	90	10	**762**
Agricultural Extension	72	3	0	7	2	**84**
Agricultural Extension (Inst. Agrar. Stream)	0	0	3	0	0	**3**
Agricultural Food Science	107	35	11	25	2	**180**
Animal Science	392	0	53	50	6	**501**
Horticulture	103	0	18	4	0	**125**
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**
Plant Science	77	0	39	26	5	**147**
Plant Science (Inst. Agrar. Stream)	0	0	6	1	0	**7**
Soil Science	62	0	4	16	0	**82**
Forestry	200	0	1	4	1	**206**
Renewable Natural Resources	285	0	0	11	0	**296**
Agricultural Management	452	0	9	135	0	**596**
Other Agricultural and Renewable Resources	9	1	0	0	0	**10**
Rural Development	0	0	8	13	0	**21**
Rural Development (Inst. Agrar. Stream)	0	0	1	0	0	**1**
Agricultural Economics (Inst. Agrar. Stream)	0	0	1	4	0	**5**

Agricultural enrolments in universities in 2009 by CESM and academic level						
CESM	**Undergraduate**	**Post-graduate Diploma**	**Honours**	**Master's**	**PhD**	**Total**
Environmental Management	49	0	67	19	1	**136**
Environmental Management (Inst. Agrar. Stream)	0	0	0	5	0	**5**
Agribusiness (Inst. Agrar. Stream)	0	0	1	0	0	**1**
Land Reclamation (Land Use)	0	53	1	0	0	**54**
Agronomy	9	0	8	4	1	**22**
Agronomy (Inst. Agrar. Stream)	0	0	0	1		**1**
Wildlife	62	0	20	9	2	**93**
BSc Veterinary Biology	329	0	0	0	0	**329**
Veterinary Nursing	44	0	0	0	0	**44**
Microbiology	5	0	16	9	2	**32**
Consumer Science	213	0	4	9	1	**227**
Biotechnology	48	0	24	21	13	**106**
Total	**3452**	**92**	**380**	**493**	**60**	**4477**
Percentage (%)	**77**	**2**	**8**	**11**	**1**	**100**

As shown in the table above Undergraduate Degree dominated the overall AET enrolments at universities with 77%, followed by Master's enrolments with 11%. Honours and Post-graduate Diploma enrolments accounted for 8% and 2% respectively. PhD registered the least number of students with 1% of the overall enrolments; this can logically be attributed to the fact that relatively few institutions offer Post-graduate programmes.

Agricultural Science (Science Stream), Agricultural Management and Animal Science enrolled the highest number of students at universities with 17%, 13% and 11% respectively.

5.3.3 Agricultural Education and Training graduate figures at universities in 2009

A demographic breakdown of AET graduates by gender and race at universities is presented in the table below.

AET graduates figures at universities in 2009		
Name of the university	**Number of AET graduates**	**Percentage (%)**
University of Fort Hare	64	3
University of North West	100	5
Nelson Mandela Metropolitan University	190	9
University of Free State	207	10
University of KwaZulu-Natal	140	7
University of Limpopo	118	6
University of Pretoria	729	36
University of South Africa	75	4
University of Stellenbosch	329	16
University of Venda	67	3
University of the Western Cape *	0	0
University of Zululand	20	1
Total	**2039**	**100**

*Information not available

Two thousand and thirty nine (2 039) graduates were produced in 2009 at universities. University of Pretoria produced 36% of the total graduates during the 2009 academic year, followed by University of Stellenbosch with 16%. University of Free State accounted for 10% of the total graduates in universities during the 2009 academic year. Each of the other universities contributed less than 10% of the total graduates figure.

5.3.4 Agricultural Education and Training graduate figures at universities of technology in 2009

The table below presents a demographic breakdown of universities of technology graduates by gender and race for 2009.

Demographic breakdown of AET graduates at universities in 2009

Name of the university	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
University of Fort Hare	39	25	**64**	0	0	**0**	0	0	**0**	0	0	**0**	**64**
University of North West	46	54	**100**	0	0	**0**	0	0	**0**	0	0	**0**	**100**
Nelson Mandela Metropolitan University	50	21	**71**	3	0	**3**	86	29	**115**	1	0	**1**	**190**
University of KwaZulu-Natal	26	34	**60**	1	1	**2**	16	49	**65**	4	9	**13**	**140**
University of Limpopo	72	46	**118**	0	0	**0**	0	0	**0**	0	0	**0**	**118**
University of Pretoria	55	61	**116**	2	7	**9**	181	397	**578**	8	18	**26**	**729**
University of South Africa	33	26	**59**	0	0	**0**	5	6	**11**	1	4	**5**	**75**
University of Stellenbosch	29	12	**41**	8	6	**14**	152	122	**274**	0	0	**0**	**329**
University of Venda	32	35	**67**	0	0	**0**	0	0	**0**	0	0	**0**	**67**
University of the Western Cape	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Zululand	10	10	**20**	0	0	**0**	0	0	**0**	0	0	**0**	**20**
Total	**422**	**384**	**806**	**17**	**15**	**32**	**459**	**696**	**1 155**	**15**	**31**	**46**	**2 039**

White and African graduates constituted the most significant figures overall. Whites accounted for 57% and Africans constituted 40% of the total university graduates during the 2009 academic year, while Coloured and Asian graduates constituted 3% each. Female graduates dominated the university graduates with 55% and male graduates constituted 45% of the total graduates at universities during the 2009 academic year.

5.3.5 AET graduates at universities by level of qualifications & CESM in 2009

The table below presents a breakdown of university graduates by level of qualification and CESM categories.

Agricultural graduates in universities in 2009 by CESM and academic level

CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total	%
Agricultural Economics (Science Stream)	42	0	17	8	0	**67**	**3**
Agricultural Economics (Art Stream)	12	0	5	0	2	**19**	**1**
Agricultural Economics (BCom Stream	0	0	3	0	0	**3**	**0**
Agricultural Economics (Agribusiness)	20	0	0	0	0	**20**	**1**
Agricultural Science (Art Stream)	142	0	4	40	10	**196**	**10**

Agricultural graduates in universities in 2009 by CESM and academic level							
CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total	%
Agricultural Science (Science Stream)	113	0	14	64	6	**197**	**10**
Agricultural Extension	6	4	0	4	0	**14**	**1**
Agricultural Food Science	82	32	13	18	4	**149**	**7**
Agricultural Food Science (Inst. Agrar. Stream)	5	0	0	0	0	**5**	**0**
Animal Science	234	0	53	29	5	**321**	**16**
Horticulture	3	0	5	3	0	**11**	**1**
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Plant Science	26	0	33	18	5	**82**	**4**
Plant Science (Inst. Agrar. Stream)	2	0	6	3	0	**11**	**1**
Soil Science	23	0	3	6	2	**34**	**2**
Forestry	64	0	11	4	1	**80**	**4**
Renewable Natural Resources	39	0	0	0	0	**39**	**2**
Agricultural Management	149	0	3	16	0	**168**	**8**
Other Agricultural & Renewable Resources	0	23	0	2	0	**25**	**1**
Rural Development	0	0	2	3	1	**6**	**0**
Agricultural Economics (Inst. Agrar. Stream)	0	0	1	1	0	**2**	**0**
Environmental Management	29	0	17	6	1	**53**	**3**
Environmental Management (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Agribusiness (Inst. Agrar. Stream	0	0	1	0	0	**1**	**0**
Land Reclamation (Land Use) (Inst. Agrar. Stream)	0	0	0	2	0	**2**	**0**
Agronomy	21	0	5	4	3	**33**	**2**
Agronomy (Inst. Agrar. Stream)	0	0	0	2	0	**2**	**0**
Wildlife	95	0	1	14	0	**110**	**5**
BSc Veterinary Biology	113	0	0	0	0	**113**	**5**
Microbiology	31	0	18	14	6	**69**	**3**
Consumer Science	116	0	2	5	1	**124**	**6**
Biotechnology	44	0	25	7	5	**81**	**4**
Total	**1 411**	**59**	**242**	**275**	**52**	**2 039**	
Percentage (%)	**69**	**3**	**12**	**13**	**3**		**100**

Animal Science, Agricultural Science (Art Stream), Agricultural Science (Science Stream) and Agricultural Management produced 16%, 10%, 10% and 8% respectively. Other CESM constituted less than 8% of the total AET graduates produced at universities during the 2009 academic year.

Graduates at Undergraduate level accounted for 69% of the total graduates produced at universities in 2009, followed by Master's graduates with 13% and Honours with 12%. The PhD and Post-graduate Diploma levels each contributed 3% of the total graduates at universities in 2009.

5.4. Enrolments and graduate outputs for scarce skills in agriculture

Veterinary Science, Agricultural Engineering, BSc Viticulture and Oenology, Food Science and Technology, B.Agric Viticulture and Biotechnology are regarded by the Department of Agriculture as scarce skills; hence they are discussed separately from other CESM.

5.4.1 Enrolments for scarce skills in agriculture

Breakdown of scarce skills enrolments by gender and race during 2009

The table below presents a demographic breakdown of scarce skills enrolments at universities.

Demographic breakdown of scarce skills enrolments by gender and race

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	10	8	**18**	0	0	**0**	9	0	**9**	4	2	**6**	**33**	**7**
BSc Biotechnology	8	7	**15**	3	3	**6**	1	1	**2**	0	0	**0**	**23**	**5**
Food Science and Technology	6	26	**32**	0	1	**1**	0	2	**2**	0	3	**3**	**38**	**9**
BSc Viticulture and Oenology	1	2	**3**	12	11	**23**	66	24	**90**	0	0	**0**	**116**	**26**
Veterinary Science	14	14	**28**	2	5	**7**	57	123	**180**	2	18	**20**	**235**	**53**
Total	**39**	**57**	**96**	**17**	**20**	**37**	**133**	**150**	**283**	**6**	**23**	**29**	**445**	**100**

Veterinary Science, BSc Viticulture and Oenology and Food Science and Technology enrolled the highest number of students at scarce skills programmes with 53%, 26% and 9% respectively.

The table above depicts that White students and African students had higher enrolment figures constituting 64% and 22% of the total enrolments respectively. Coloured and Asian students constituted 8% and 6% of the total number of scarce skills enrolments respectively.
It also indicates that female students constituted 56% of the total number of scarce skills enrolments and male students accounted for 44%. It should be noted, however, that it is only since 2004 that the Department of Agriculture started to offer bursaries to redress issues of inequity in the sector.

5.4.1.1 Breakdown of scarce skills enrolments by levels of qualification during the 2009 academic year

Breakdown of scarce skills enrolments during the 2009 academic year

CESM	Undergraduate	Honours	Master's	PhD	Total	%
BSc Agricultural Engineering	33	0	0	0	**33**	**7**
B.Agric Viticulture	0	0	0	0	**0**	**0**
Veterinary Science	185	11	32	7	**235**	**53**
BSc Biotechnology	0	7	4	12	**23**	**5**
BSc Viticulture and Oenology	109	2	4	1	**116**	**26**
Food Science and Technology	38	0	0	0	**38**	**9**
Total	**365**	**20**	**40**	**20**	**445**	
Percentage (%)	**82**	**4**	**9**	**4**		**100**

The table above indicates that Undergraduate dominated the scarce skills enrolments during the 2009 academic year with 82%, followed by Master's enrolments with 9%. Honours and PhD enrolments each constituted 4% of the overall scarce skills enrolments during the 2009 academic year.

5.4.2 Graduates for scarce skills in agriculture

5.4.2.1 Breakdown of scarce skills graduates by gender and race during 2009

The table below presents a demographic breakdown of scarce skills graduates at institutions of higher learning.

Demographic breakdown of scarce skills graduates by gender and race

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	2	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**	**2**
B.Agric Viticulture	2	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**	**27**
Food Science and Technology	15	35	**50**	3	1	**4**	5	32	**37**	0	1	**1**	**92**	**24**
BSc Viticulture and Oenology	2	1	**3**	1	0	**1**	18	18	**36**	0	0	**0**	**40**	**11**
Veterinary Science	11	9	**20**	0	0	**0**	42	75	**117**	0	3	**3**	**140**	**37**
Total	**32**	**51**	**83**	**9**	**2**	**11**	**130**	**151**	**281**	**1**	**4**	**5**	**380**	**100**

Veterinary Science and B.Agric Viticulture produced the highest number of graduate figures in scarce skills programmes with 37% and 27% respectively. Food Science and Technology and BSc Viticulture and Oenology accounted for 24% and 11% respectively of the total number of graduates produced in scarce skills programmes during the 2009 academic year. The lowest number of graduates was recorded in Agricultural Engineering at 2%.

Whites dominated the total number of graduates produced in the scarce skills programmes with 74%, followed by Africans with 22%. Coloureds constituted 3% of the total number of scarce skills graduates during the 2009 academic year, while Asians constituted 1%.

Gender breakdown indicates that female graduates dominated the scarce skills graduates with 55% and male graduates constituted 45% of the total number of graduates produced during the 2009 academic year.

5.4.2.2 Breakdown of scarce skills graduates by levels of qualification during the 2009 academic year

Scarce skills graduates during the 2009 academic year

CESM	Undergraduate	Honours	Master's	PhD	Total
Agricultural Engineering	7	0	0	0	**7**
B Agric Viticulture	101	0	0	0	**101**
BSc Viticulture and Oenology	34	6	0	0	**40**
Veterinary Science	97	8	33	2	**140**
Food Science and Technology	78	0	13	1	**92**
Total	**317**	**14**	**46**	**3**	**380**

Undergraduate Degree graduates dominated the scarce skills graduates produced in 2009 with 83%, followed by Master's graduates with 12% and Honours graduates with 4%. PhD graduates constituted 1% of the total number of scarce skills produced during the 2009 academic year.

5.5 Total AET provision in 2009

A total of 6 817 students enrolled for AET programmes in 2009. Eight hundred and twenty (820) were from colleges, 1 520 were from universities of technology and 4 477 were from the traditional universities. Africans were in the majority with 4 157, followed by Whites with 2 280. As was the case in previous academic years, Coloureds and Asians were very minimal throughout the enrolments. A general gender classification shows that females were slightly dominant with 3 476 and males accounted for 3 341. A total number of 977 enrolled for short courses offered by colleges of agriculture. Gender and racial classification cannot be made, however, due to poor information records.

The findings depict that graduate output amounted to 3 439 graduates. Africans were in majority with 1 731, followed by Whites with 1 534. Males slightly dominated with 1 781, while females accounted for 1 658. Generally, there were relatively very few Coloured and Asian graduates.

Within the scarce skills categories, 445 students were registered. Whites were dominant with 283, followed by Africans with 96, as in previous academic years. Females dominated the scarce skills enrolments at 250, while males accounted for 195 students.

Total scarce skills graduates produced were 380. Whites were dominant with 281 followed by Africans, Coloureds and Asians with 83, 11 and 5 graduates respectively.

6. RECOMMENDATIONS

6.1 Reducing overproduction of graduates in programmes that are not in demand in the agricultural sector

From the findings it is evident that some institutions produce many graduates and enroll more students in fields of study that are not in demand in the agricultural sector. This overproduction and over enrolment in certain programmes is attributed to the fact that institutions do not have information about market demands and the rate of employment for their graduates. It is also a fact that graduates in certain programmes and from certain institutions have higher employment rates than others. It is essential, therefore, to investigate the reasons for these trends. To curb this problem, it is crucial that all institutions should develop systems that will track the employability of their graduates in the various programmes in order to decrease overproduction of skills that are not in demand in the agricultural sector. Funding for universities should also be done in terms of the relevance and type of programmes offered, as well as the employment rate of graduates in those programmes.

There are challenges in agriculture and the curricula need to be responsive and aligned to the needs of the agricultural sector, to increase the supply of graduates in fields of demand and to decrease the overproduction of graduates in programmes that are not in demand in the agricultural sector. HET institutes need to involve themselves in studies to determine the employability of their graduates and to adapt the programmes accordingly.

Career guidance, awareness at school levels and the marketing of Higher Education and Training Institutes must include the scarce skills and the programmes that are in demand in the agricultural sector. Senior lecturers of Higher Education and Training institutes can be involved at school levels to assist in the training of Agricultural Science subjects, in order to promote agriculture as a career.

6.2 Effective participation of the agricultural sector in agricultural curriculum reviews and development of higher and further education institutions

The National Agricultural Education and Training Forum established in terms of the Agricultural Education and Training Strategy (2005) should play a major role in curriculum review meetings of higher education institutions, as well as during the development and reviews of agricultural curricula for General Education and Training and Further Education and Training and by the Department of Education. This will ensure that agricultural curricula at all levels of the education system address the needs of the agriculture sector.

This study also recommends that DoA Directorates should play a major role in determining the agricultural curricula, i.e. they should directly influence the curricula for respective departments at universities, e.g. the Directorate of Animal Health should liaise with Animal Health departments at various universities in order to be aware of what the labour market requires in terms of skills needed, e.g. Animal Health Technicians.

6.3 Quality benchmarking of same agricultural programmes in all the higher education institutions

The perception that the quality of programmes varies from one institution to the other in terms of content is a cause for concern. For instance, BSc Agriculture does not offer the same content in all institutions offering the programme and admission requirements vary for the same programme. It is therefore necessary that the Department of Agriculture, in collaboration with the Department of Education, investigate the quality of programmes in each institution and establish quality benchmarks for similar programmes in higher education institutions.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonized, mobile and articulated AET curriculum.

6.4 Encouraging undergraduates to pursue post-graduate studies in specialised fields in agriculture to increase a pool of agricultural scientists

From the findings the general trend is that there is an increasing number of entrants into agriculture at Undergraduate level, for instance high number of Africans are enrolling for agricultural programmes at Undergraduate level. However, this is not addressing the needs of the rapidly changing landscape as well as the skills demands in the sector. It is also evident from the findings that there are a limited number of agricultural enrolments and graduates at post-graduate level, particularly at Master's and PhD level. It is recommended, therefore, that graduates with Undergraduate qualifications outside of the identified scarce skills programmes, including those with Undergraduate qualifications in agricultural economics, should pursue higher education programmes and become specialists in certification fields of agriculture. This will establish a strong scientific research base for the sector.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels, to support the development of an effective, harmonized, mobile and articulated AET curriculum.

Regular studies should investigate the challenges and needs of the agricultural sector, to adapt the curricula and to encourage research into the needs identified.

6.5 Marketing agricultural careers to Indians and Coloureds

From the findings it appears that there is an insignificant number of Indians and Coloureds graduating in and enrolling in agricultural programmes. It is necessary to target Indian and Coloured dominated schools to market agriculture as a career to Indian and Coloured youth.

6.6 Recruiting female learners to register for scarce skills programmes in agriculture

The general trend is that there are a lower number of Black (Coloured, Indian and African) female enrolments and graduates in scarce skills categories. To recruit females into the agricultural scarce skills professions, it is important to work in collaboration with the Provincial Departments of Education and to liaise with Female-Learner coordinators to market agricultural scarce skills careers to female learners. Female–Learner Coordinators in the various PDEs can also provide a platform for providing guidance to females in terms of the correct subject combinations at the General Education and Training levels, in order to pursue scarce skills in agriculture.

6.7 Increasing the number of African students enrolling and graduating in scarce skills programmes in agriculture

Massive career awareness campaigns should be launched in schools targeting learners before entry into FET (Grade 10) phase so that, early in the FET phase, they can choose the correct subject combinations required to pursue studies in agricultural scarce skills. The target group will be learners from the African, Coloured and Indian communities. White females should also be targeted for agricultural engineering and other scarce skills. This will be a collaborative venture with Public Relations Departments of the Universities and managers of girl learner educational programmes.

It is necessary that agricultural engineering courses are offered in the agricultural colleges and produce agricultural engineering technicians. This will provide basic skills and knowledge of agricultural engineering for those with Mathematics and Science at Senior Certificate level, but do not meet the admission requirements for a degree in agricultural engineering. The engineering technician qualification obtained from agricultural colleges might provide skills and knowledge required to pursue an Agricultural Engineering Degree at University level and might also encourage students to pursue an Agricultural Engineering Degree at University level. This will then require systems that will allow easy progression and mobility from the agricultural college sector to the University or University of Technology, as well as effective Recognition of Prior Learning (RPL) systems.

6.8 Introduction of Veterinary Science studies by another University

Given the failure of University of Pretoria to produce African, Coloured and Asian veterinarians meeting the labour market demand, this study highly recommends that another university should introduce in its agricultural curricula the veterinary science studies. Secondly, a variety in this field of study is highly envisaged as it is impossible for one institution to successfully and sustainable provide the whole country's labour market with enough veterinarians. Moreover, this veterinarian's shortage is further aggravated by the fact that a significant number of veterinarians leave the country though brain drain, preferring overseas countries such as the United Kingdom.

6.9 Partnership between the Department of Agriculture, Faculties of Agriculture at HET and Colleges of Agriculture

The Department of Agriculture should develop relations with all the faculties of agriculture in Higher Education Institutions whereby the DoA officials will obtain a platform to communicate the skilled people the agricultural labour market is looking for in terms of relevant skills, knowledge and behaviour. Secondly, elites in the agricultural business such as CEOs and other senior managers of private companies should be invited by institutions for lectures on an ongoing basis.

An indication will be given as to what exactly should be the focus of the curricula in the institutions of higher learning with regards to AET. This will not only provide confidence to the students completing their qualifications, but will also ensure that by the time graduates enter the labour market, they will be ready to take on tasks assigned to them and will be in understanding of the skills that are currently required in the labour market.

6.10 Task team formulation to look at the progression of Non-White individuals in scarce skills programmes, particularly the Veterinary Science

Factors contributing to Africans not progressing in the scarce skills need to be investigated, especially in the wake of the fact that for 2004, to 2009 there has not been significant representation of Africans in these programmes. The skills shortage impact is twofold: first, it cripples the economic growth due to poor contribution to the GDP by the agricultural sector, secondly, politically, efforts towards fair distribution of opportunities in the agricultural economic division, such as employment equity, take a setback, as there are relatively very few professionals in these fields of study.

CHAPTER 1

CHAPTER 1

1.1. Introduction

The 2009 annual report is based upon a study conducted on the agricultural enrolments, graduate outputs and AET programmes offered by various accredited agricultural colleges and higher education institutions for the 2009 academic year. Since 2004, DoA has been collecting data on the types of programmes offered by various colleges of agriculture and Higher Education (HE) institutions, numbers of enrolments and numbers of graduates in all agricultural programmes offered by these institutions on an annual basis. The 2009 report is the fifth of a series of annual reports on AET enrolments, graduate outputs and programmes offered by colleges of agriculture as well as HE institutions to be produced by the DoA.

1.2. Objectives of the project

The primary objective of the study was to observe the trends in terms of skills supply for the agriculture sector by the HE institutions and agricultural colleges. The other objective of the study is to observe trends with regard to AET enrolments, graduate outputs and the types of AET programmes offered by the various institutions, in order to inform about policy and planning regarding AET provisioning in the public colleges of agriculture and higher education institutions for purposes of skills supply priorities for the sector. The findings would further assist in the development of strategies for addressing the skills demand in the agricultural sector. Secondarily, the project will assist in the development of a trend analysis report in agricultural education and training in colleges of agriculture and Higher Education (HE) institutions.

1.3. Methodology for the study

Quantitative research techniques were utilized to produce this report and its aim was to yield quantitative descriptive data. The Education, Training and Extension Services (ETES) Directorate conducted a questionnaire-based survey with all the colleges of agriculture, universities of technology and universities offering AET programmes.

Data collection for the study focused on a number of AET enrolments and graduates from Undergraduate to post-graduate levels, focusing on all the various agricultural disciplines. Furthermore, it focused on the types of programmes offered by these institutions. Questionnaires requesting information on the number of enrolments and graduates in all the agricultural programmes offered by each institution were distributed electronically to all public HE institutions offering agricultural programmes and to the 12 colleges of agriculture. The questionnaires were completed and returned to the Directorate in the same way.

For ease of interpretation, the qualifications were categorized using the Categorisation of Education Subject Matter (CESM) of the Department of Education. However, in some cases, the CESM was further broken down into sub-categories to obtain a better understanding of the enrolments and supply of AET graduates. The following table indicates how the qualifications were classified in the report, as well as the sub-categories.

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Animal Science	Diploma Animal Health, BTech Animal Heath, MTech Animal Health, DTech Animal Health. National Certificate Animal Production, Higher Certificate Animal Production, Diploma Animal Production, BTech Animal Production, MTech Animal Production, DTech Animal Production Diploma Pig Production Management, BTech Pig Production Management, MTech Pig Production Management, DTech Pig Production Management Diploma Equine Science, BTech Equine Science, MTech Equine Science, DTech Equine Science Diploma Nutrition, BTech Nutrition, MTech Nutrition, DTech Nutrition Diploma Production Physiology, BTech Production Physiology, MTech Production Physiology, DTech Production Physiology Diploma Animal Production Management, BTech Animal Production Management, MTech Animal Production Management BA Animal Production, BA (Hons) Animal Production, MA Animal Production, PhD Animal Production BSc Animal Production, BSc (Hons) Animal Production, MSc Animal Production, PhD Animal Production BSc Animal Health, BSc (Hons) Animal Health MSc Animal Health, PhD Animal Health BSc Animal Science and Animal Genetics, BSc (Hons) Animal Science and Animal Genetics, MSc Animal Science and Animal Genetics, PhD Animal Science and Animal Genetics

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Horticulture	National Certificate Horticulture, Diploma Horticulture, BTech Horticulture, MTech Horticulture, DTech Horticulture BSc Horticulture, BSc (Hons) Horticulture, MSc Horticulture, PhD Horticulture National Certificate Turf grass Management, National Diploma Turf grass Management, BTech Turf grass Management
Plant Science	Diploma Crop Production, BTech Crop Production, MTech Crop Production, DTech Crop Production Higher Certificate Plant Production, Diploma Plant Production, BTech Plant Production, MTech Plant Production, DTech Plant Production BSc Pasture Science, BSc (Hons) Pasture Science, MSc Pasture Science, PhD Pasture Science BA Crop Production Management, BA (Hons) Crop Production Management, MA Crop Production Management, PhD Crop Production Management National Certificate Crop Science, National Higher Certificate Crop Science, Diploma Crop Science, BSc Crop Science, BSc (Hons) Crop Science, MSc Crop Science, PhD Crop Science BSc Plant Pathology, BSc (Hons) Plant Pathology, MSc Plant Pathology, PhD Plant Pathology BSc Plant Pathology and Entomology, BSc (Hons) Plant Pathology and Entomology, MSc Plant Pathology and Entomology, PhD Plant Pathology and Entomology BSc Plant Breeding and Genetics, BSc (Hons) Plant Breeding and Genetics, MSc Plant Breeding and Genetics, PhD Plant Breeding and Genetics BSc Plant Protection, BSc (Hons) Plant Protection, MSc Plant Protection, PhD Plant Protection BSc Plant Production, BSc (Hons) Plant Production, MSc Plant Production, PhD Plant Production

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Land Reclamation	National Certificate Landscape Technology, Diploma Landscape Technology, BTech Landscape Technology, MTech Landscape Technology, DTech Landscape Technology
Renewable Natural Resources	Diploma Nature Conservation, BTech Nature Conservation, MTech Nature Conservation, DTech Nature Conservation
Agriculture Management	National Certificate Agricultural Management, National Higher Certificate Agricultural Management, Diploma Agricultural Management, BTech Agricultural Management, MTech Agricultural Management, DTech Agricultural Management
Other Agriculture and Renewable Resources	Diploma Agriculture Mixed Farming, BTech Agriculture Mixed Farming, MTech Agriculture Mixed Farming, DTech Agriculture Mixed Farming Diploma Disaster Management B. Disaster Management B (H) Disaster Management MA Disaster Management
Wildlife Management	National Certificate Game Ranch Management, National Higher Certificate Game Ranch Management, Diploma Game Ranch Management, BTech Game Ranch Management, MTech Game Ranch Management, DTech Game Ranch Management National Certificate Nature Conservation, National Higher Certificate Nature Conservation, Diploma Nature Conservation, BTech Nature Conservation, MTech Nature Conservation, DTech Nature Conservation Diploma Ecotourism, BTech Ecotourism, MTech Ecotourism, DTech Ecotourism
Agricultural Science (in Universities of Technology)	Diploma Agriculture, BTech Agriculture, MTech Agriculture, DTech Agriculture Diploma Agricultural Science, BTech Agricultural Science, MTech Agricultural Science, DTech Agricultural Science
Agricultural Science (B.Agric Stream)	B.Agric Science, BA (Hons) Agricultural Science, MA Agricultural Science, PhD Agricultural Science

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Agricultural Science (Science Stream)	BSc Agricultural Science, BSc (Hons) Agricultural Science, MSc Agricultural. Science, PhD Agricultural Science
Agriculture Extension	Diploma Agricultural Rural Development, BTech Agricultural Rural Development, MTech Agricultural Rural Development, DTech Agricultural Rural Development BAgric Extension, B (Hons) Agricultural Extension, M Agricultural Extension, PhD Agricultural Extension
Agricultural Economics	B Agricultural Economics, B (Hons) Agricultural Economics, MA Agricultural Economics, PhD Agricultural Economics BSc Agricultural Economics, BSc (Hons) Agricultural Economics, MSc Agricultural Economics, PhD Agricultural Economics B Com Agricultural Economics, B Com (Hons) Agricultural Economics, M Com Agricultural Economics, D Com Agricultural Economics
Agricultural Economics (Agribusiness)	B Com. Agricultural Economics (Agribusiness), B Com (Hons) Agricultural Economics (Agribusiness), M Com Agricultural Economics (Agribusiness), PhD Agricultural Economics (Agribusiness)
Agricultural Extension (Inst. Agrar. Stream)	B Inst. Agrar Agricultural Extension, B (Hons) Inst. Agrar Agricultural Extension, M.Inst. Agrar Agricultural Extension,
Agricultural Food Technology	BSc Food Science and Technology, BSc (Hons) Food Science and Technology, MSc Food Science and Technology, PhD Food Science and Technology BSc Food Science and Chemistry, BSc (Hons) Food Science and Chemistry, MSc Food Science and Chemistry, PhD Food Science and Chemistry BSc Food Science and Biochemistry, BSc (Hons) Food Science and Biochemistry, MSc Food Science and Biochemistry, PhD Food Science and Biochemistry, BSc Food Science and Microbiology, BSc (Hons) Food Science and Microbiology, MSc Food Science and Microbiology, PhD Food Science and Microbiology

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Soil Science	BSc Agric. Soil Science. , BSc (Hons) Agric. Soil Science. , MSc Agric. Soil Science. , PhD Agric. Soil Science. B Agric Irrigation Management B (Hons) Irrigation Management M Agric Irrigation Management PhD Irrigation Management BSc Remote Sensing BSc (Hons): Remote Sensing MSc Remote Sensing PhD Remote Sensing BSc Water Resource Management BSc (Hons) Water Resource Management MSc Water Resource Management PhD Water Resource Management
Forestry	BSc Forestry, BSc (Hons) Forestry, MSc Forestry, PhD Forestry
Consumer Science	B Family Ecology B (Hons)Family Ecology MA Family Ecology PhD Family Ecology B Human Ecology B (Hons) Human Ecology MA Human Ecology PhD Human Ecology BSc Consumer Science Educations, BSc (Hons) Consumer Science Educations MSc Consumer Science Educations PhD Consumer Science Educations
Agricultural Food Technology (Inst. Agrar. Stream)	B Inst. Agrar. Food Technology, B (Hons) Inst. Agrar. Food Technology, M Inst. Agrar. Food Technology,
Agricultural Management (Inst. Agrar. Stream)	B Inst. Agrar. Agricultural Management, B Inst. Agrar. (Hons) Agricultural Management, M Inst. Agrar. Agricultural Management
Animal Science (Inst. Agrar. Stream)	B Inst. Agrar. Animal Science. B (Hons) Inst. Agrar. Animal Science M Inst. Agrar. Animal Science,
Horticulture (Inst. Agrar. Stream)	B Inst. Agrar. Horticulture, B (Hons) Inst. Agrar. Horticulture, M Inst. Agrar. Horticulture,
Land Reclamation (Inst. Agrar. Stream)	B Inst. Agrar. Land Reclamation, B (Hons) Inst. Agrar. Land Reclamation, M Inst. Agrar. Land Reclamation,
Rural Development (Inst. Agrar. Stream)	B Inst. Agrar. Rural Development, B (Hons) Inst. Agrar. Rural Development, M Inst. Agrar. Rural Development,

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Agricultural Economics (Inst. Agrar. Stream)	B Inst. Agrar. Agricultural Economics, B Inst. Agrar. (Hons) Agricultural Economics, M Inst. Agrar. Agricultural Economics,
Environmental Management (Inst. Agrar. Stream)	B Inst. Agrar. Environmental Management, B Inst. Agrar. (Hons) Environmental Management, M Inst. Agrar. Environmental Management,
Agronomy (Inst. Agrar. Stream)	B Inst. Agrar. Agronomy, B Inst. Agrar. (Hons) Agronomy, M Inst. Agrar. Agronomy

The Agricultural Science CESM and Agricultural Extension were sub-categorised into the B.Agric Stream, Inst. Agrar Stream and the BSc. Stream. The Agricultural Economics Stream was also further sub-categorized into the Science Stream (BSc Agricultural Economics, BSc Hons and MSc Agricultural Economics), the B Agric Stream (B Agricultural Economics, BA Honours Agricultural Economics and MA Agricultural Economics / MPhil Agricultural Economics) and BCom Stream (BCom Agricultural Economics, BCom Hons Agricultural Economics, MCom Agricultural Economics and DCom Agricultural Economics).

BSc Agricultural Engineering, BSc Agricultural Economics, Veterinary Science, Oenology and Viticulture, BSc Food Science and Technology and Agricultural Biotechnology were identified as scarce skills in the agriculture sector; these programmes were therefore discussed separately from the other programmes.

The data presents a demographic breakdown of the number of enrolments and graduate outputs for all AET programmes in the report.

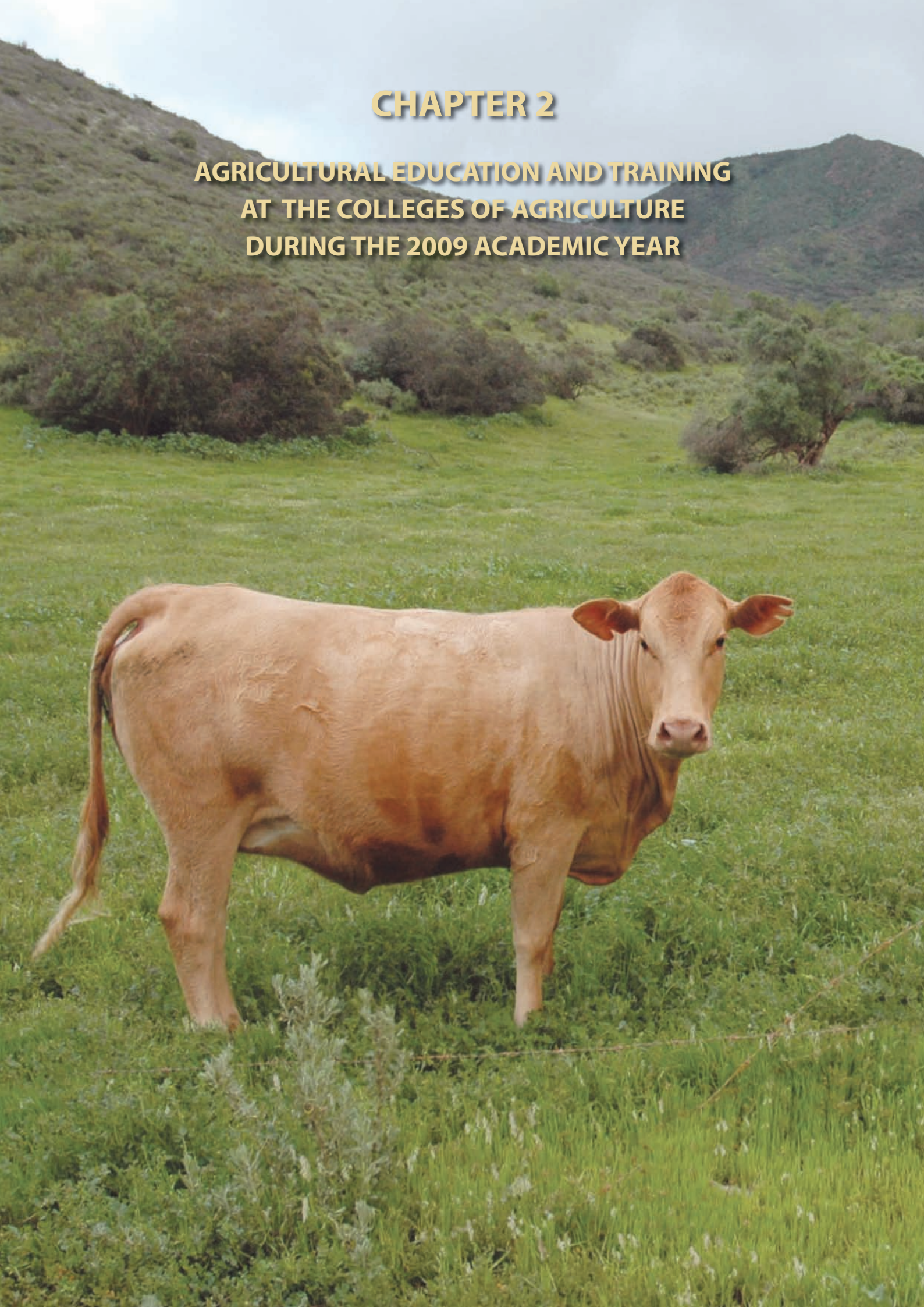
Chapter 1 presents the introduction to this study. Chapter 2 provides a picture of findings on number of enrolments, graduate outputs and programmes offered in colleges of agriculture. Chapter 3 and Chapter 4 present the same information from the universities of technology and universities respectively. Chapter 5 presents the agricultural scarce skills at universities and colleges of agriculture.

1.4. Limitations

Due to the largely quantitative nature of this study, it does not go into depth with regards to factors influencing the trends in agricultural enrolments and graduate outputs in various programmes.

The study could not report on each qualification and used the CESM that resulted into the various scarce skills within a CESM not being clearly indicated, e.g. entomology is included under plant health and each academic year's enrolments. This was due to the fact that institutions could not provide the information per field of specialisation within the CESM and information was not submitted as per academic year registration.

Furthermore, the study could not clearly indicate the different specialisations within each CESM, due to the fact that some institutions did not provide the information on specialisation.



CHAPTER 2

AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2009 ACADEMIC YEAR

CHAPTER 2

AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2009 ACADEMIC YEAR

2.1 Introduction

There are twelve public colleges of agriculture in the country, namely: Cedara College of Agriculture, Cape Institute of Agriculture Training: Elsenburg (CIAT: Elsenburg), Fort Cox College of Agriculture and Forestry, Glen College of Agriculture, Grootfontein Agricultural Development Institute (GADI), Lowveld College of Agriculture, Madzivhandila College of Agriculture, Owen Sitole College of Agriculture, Potchefstroom College of Agriculture, Taung College of Agriculture, Tompi Seleka College of Agriculture and Tsolo Agriculture and Rural Development Institute. These colleges are distributed throughout the country. The Northern Cape and Gauteng are the only provinces without a college of agriculture. Nine (9) of the 12 colleges offer programmes in the HET band, as well as programmes in the FET band which are usually offered in a form of short courses. Madzivhandila, Tompi Seleka and Tsolo phased out programmes in the HET band, i.e. the Diploma and Higher Certificate in Agriculture and focused their curricula on short courses and learnerships at GET and FET levels. Though Taung phased out Diploma programmes, the college continues to offer eighteen month experiential training to their former students in order for them to obtain their Diplomas.

The colleges are working hard to provide support for small and emerging farmers in the provinces and even outside the provincial borders within which they are located. These factors have brought about marked differentiation between the colleges in their programme presentation and in the introduction of short courses to address the needs of the farmers.

This chapter presents the various types of programme; NQF levels, accrediting bodies and duration of programmes offered at the colleges of agriculture. The chapter also presents the number of graduates and enrolments in the various programmes offered at these colleges.

2.2 Curriculum and Programme offerings at the colleges of agriculture

As was the case since DoA's first annual report on agricultural enrolments and graduate outputs for 2004 academic year, there have been no significant changes in terms of the programmes offered in the colleges in 2009. The colleges still offer programmes ranging from NQF level 1-6. The common qualifications offered by the colleges are a Higher Education Certificate in Agriculture at NQF level 5 and a Diploma in Agriculture at NQF level 6. A Diploma in Agriculture is pursued after completion of the two-year Higher Certificate in Agriculture. Higher Certificates are offered as a two-year programme of which the third year will be awarded as a diploma. If a student successfully completes the year of experiential training or practical training after the higher certificate, a diploma is awarded.

Colleges have attempted to design their programmes to suit the skills requirements of the particular agricultural industry in their respective locality (e.g. wine farming in the Western Cape, or subtropical crop production in the Lowveld).

The types of partnerships that existed between some of the colleges and local higher education institutions still exist. For example, CIAT: Elsenburg is linked with the University of Stellenbosch in providing a degree programme related to local industrial needs in the Western Cape. Furthermore, the colleges are working hard to provide support for small and emerging farmers in the provinces in

which they are located. These factors have brought about marked differentiation between the colleges in their programme presentation as well as in the introduction of short courses to address the needs of the farmers.

The colleges of agriculture do not provide highly standardsed programmes. There is flexibility because the colleges of agriculture orient their courses towards supporting the agricultural activities practiced in their region. For example Cedara focuses on crop, animal production and on horticulture; Lowveld focuses on sub-tropical agronomy and horticulture under irrigation, to attract students from other regions; Potchefstroom focuses on mixed farming as carried out in the Highveld and adjacent regions; and CIAT: Elsenburg has set itself the aim of specialising in agribusiness.

Even though the curriculum in the colleges of agriculture is not highly standardised as in the FET Colleges, the survey reveals that the agricultural colleges present programmes that cover the same broad fields of knowledge as those offered by the FET college curriculum: plant production, animal production, agricultural management and agricultural engineering.

Table 2 below indicates the knowledge fields and courses within which agricultural subject matter offered by the colleges of agriculture, with general course, specific sub field, specialised courses and commodity courses.

Table 2: Knowledge fields and courses within which agricultural subject matter is offered by the colleges of agriculture

General courses	Courses covering specific sub-fields	More specialised courses within sub-fields	Commodity courses include:
Plant Production	Agronomy (Field crops)	Crop protection	E.g.: Vegetable production, fruit production, viticulture, sugarcane, etc. Also: greenhouse management, Forestry
	Crop production	Pasture Management	
	Horticulture		
	Soil science Water management Plant propagation		
Animal production	Animal breeding	Artificial insemination	E.g.: Beef cattle, dairy cattle, fish, mutton, pigs, poultry, wool, goats, milk goats, broilers, Angora goats, etc.
	Animal nutrition	Animal husbandry	
		Feedlot management	
	Animal production	Small stock production	
		Large stock production	
	Animal health		
Agricultural Engineering	Hydraulics/Hydraulic systems	Irrigation and drainage systems	
	Agricultural implements		
	Mechanisation planning		
	Electrical apparatus/motors		
	Surveying		

Table 2: Knowledge fields and courses within which agricultural subject matter is offered by the colleges of agriculture			
General courses	**Courses covering specific sub-fields**	**More specialised courses within sub-fields**	**Commodity courses include:**
Agricultural Management	Marketing		
	Farm management	Office administration	
		Land use planning	
	Community development		
	Financial management	Farm accounting	
	Economics	Production factors	
		IT applications	
		Entrepreneurial skills	
Environmental management	Game ranching		
	Veld management	Problem animal control	
	Botany, Agricultural Calculations	Agriculture Organization	
Other		Farm safety	

Agricultural colleges offer courses at a more advanced level than the FET colleges. For example, within the knowledge field of animal production, more advanced courses such as 'Artificial Insemination' are offered. Likewise, in crop production more advanced courses such as 'Greenhouse Management' are offered. Furthermore, what is called the "Farm Mechanics" of the FET College Curriculum is taken to a more advanced level in the form of "Agricultural Engineering" at the agricultural colleges. Also, agricultural management at colleges includes higher-level courses in Agricultural Economics that are not offered at the FET Colleges. Finally, a knowledge domain not found in the FET College curriculum deals with Environmental Management, Conservation and Game Farming.

The balance between theoretical and practical within the college programmes is considered important. Broadly, across the curriculum there is a 55-60% theoretical component with the rest given to practical application. This is not necessarily the case for universities and universities of technology. Colleges of agriculture therefore provide more hands-on-training in comparison to other FET and HE institutions. Some colleges also offer non-formal training programmes, typically short courses for further education in the training sector.

The agricultural colleges are the only institutional type that exclusively offers agricultural programmes. This means that student choice of courses is strictly bound by what is offered by the institution. Colleges of agriculture are therefore similar to FET colleges, because student choice is defined by the boundaries of the institution or by the limits of the programme, unlike universities and universities of technology (HE institutions) which offer a variety of programmes within a single qualification and students can select from a wide range of options even outside of the faculty of agriculture.

There is a further similarity between FET colleges and colleges of agriculture, because their programmes are based on a relatively straightforward progression of students between curriculum levels. In the case of the FET colleges, a student enters at N1 and progresses over three years to N3 and in the agricultural colleges, a student progresses from the two-year National Higher Certificate to the one year National Diploma. In each case, the completion of a strictly defined three-year programme leads to a single qualification.

Colleges of agriculture, like FET colleges, offer relatively 'closed' programmes, whereas the universities and increasingly the universities of technology present more open programmes which offer a wide variety. This means that it is possible for programmes in universities and universities of technology to support higher levels of specialisation than in the colleges of agriculture.

Agricultural programmes at the colleges of agriculture have a clearly defined shape and are relatively standardised and they are almost similar with regard to content in all the colleges. These factors make it highly possible to describe the actual curriculum within each programme/ qualification and for student progression from one college to the other, which is not necessarily the case with universities and universities of technology.

The Higher Education Certificate and the Diploma programmes are accredited by the Higher Education Qualifications Committee of the Council on Higher Education, whereas the programmes from NQF level 1 to 4 (including short courses) are accredited by Umalusi and AgriSETA.

Though Tsolo College ceased offering HE programmes in the year 2001, a one-year post matric certificate, a two-year Diploma and three-year Degree is presented by them to students enrolled at Walter Sisulu University.

Table 3 below indicates the types of programmes offered in the individual colleges, the NQF levels, duration of the programme, accrediting bodies for the different programmes, as well as short courses.

Table 3: Programmes offered by the colleges of agriculture during 2009

College	Programme	NQF level	Duration	Accrediting body
1. Cedara	1. Higher Certificate in Agriculture.	5	2 years Full Time	HEQC
	2. Diploma in Agriculture.	6	3 years Full Time	HEQC
	3. Short Courses	*	(1 day-1week)	*
2. CIAT: Elsenburg	1.National Certificate	1 & 4	Variable (Short courses)	Umalusi
	2. Higher Certificate in Agriculture.	5	2 years Full Time	HEQC
	3. Diploma in Plant Production (Viticulture)	6	1 year Full Time	HEQC
	4. Diploma in Agriculture.	6	1 year Full Time	HEQC
	5. B Agric Viticulture	6	3 years Full Time	HEQC
	6. Short courses	1-4	1 – 10 days	Umalusi
	7. Learnerships	1-4	1 year	Umalusi
	8. Higher Certificate in Animal Production	5	2 years Full Time	HEQC
	9. Diploma in Animal Production	6	2 years Full Time	HEQC
3. Fort Cox	1. Diploma in Social Forestry.	6	3 years Full Time	HEQC
	2. Diploma in Agriculture: Animal Production.	6	3 years Full Time	HEQC
	3. Diploma in Agriculture: Crop Production.	6	3 years Full Time	HEQC
	4. Diploma in Agriculture: Agribusiness	6	3 years Full Time	HEQC

Table 3: Programmes offered by the colleges of agriculture during 2009

College	Programme	NQF level	Duration	Accrediting body
4. Glen	1. National Certificate	5	2 years Full Time	HEQC
	2. National Diploma in Agriculture.	6	1 year (Post Certificate)	HEQC
	3. Various Short courses	*	1– 3 days	*
5. Grootfontein	1. Higher Certificate in Agriculture.	5	2 years Full Time	HEQC
	2. Diploma in Agriculture.	6	3 years Full Time	HEQC
	3. Various Short Courses	2	(1-3 weeks)	*
6. Lowveld	1. Higher Certificate Plant Production	5	2 years Full Time	HEQC
	2. Diploma Plant Production	6	1 year Full Time (post Certificate)	HEQC
7. Madzivhandila	1. Learnership programme:			
	(i) Animal Production	4	8 months	AgriSETA
	(ii) Plant Production	4	8 months	AgriSETA
	2. Various short courses	1	2 days – 3 months	*
8. Owen Sitole	1. Higher Certificate in Agriculture.	5	2 years Full-Time	HEQC
	2. Diploma in Agriculture	6	3 years	HEQC
	3.Higher Certificate in Home Economics	5	2 years	HEQC
	4. Diploma in Agriculture: Home Economics.	6	3 years	HEQC
9. Potchefstroom	1. Higher Certificate in Agriculture.	5	2 years	HEQC
	2. Diploma in Agriculture.	6	3 years	HEQC
	3. Various short courses	1	(1-4 days)	AgriSETA
10. Taung	1. N4 Certificate in Farm Management.	4	1 year	Umalusi
	2. N5 Certificate in Farm Management.	4	2 years	Umalusi
	3. N6 Certificate in Farm Management.	5	3 years	Umalusi
	4. Diploma in Farm Management	(after the N6 Certificate in Farming)	after completion of 18 months experiential training	
11. Tompi Seleka	Various short courses	*	*	*
12. Tsolo	4. Various short courses	*	*	*

* Not accredited

From Table 3 above, all the colleges of agriculture in accordance with their programme offering fit well into the FET sector. Taung College of Agriculture is still pursuing the N-stream that is used by technical colleges. After the completion of N6 Certificate, the students in this college may enrol for the national diploma in Farm Management at any university of technology. In order to qualify for this diploma, candidates need to complete 18 months of practical training in an agriculture-related workplace. CIAT: Elsenburg has a partnership with University of Stellenbosch to offer Bachelor of Agriculture in Viticulture.

The challenge in most colleges is accreditation of short courses which are offered either at GET or FET levels and in most of the colleges these programmes are not accredited and are therefore more like information-sharing programmes rather than training programmes.

2.3 Enrolment figures at colleges of agriculture

A total number of 820 students were enrolled during the 2009 academic year.

Table 4 below presents the enrolment figures per college of agriculture during the 2009 academic year.

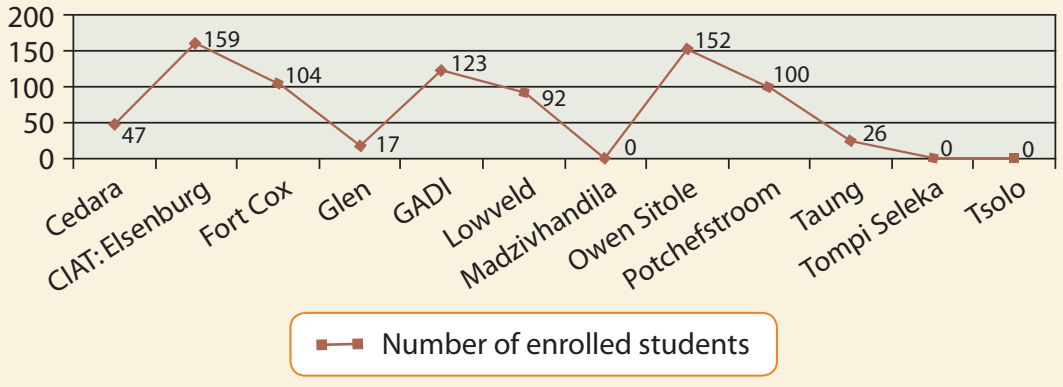
Table 4: Enrolments per college of agriculture

Name of the college	Number of enrolled students in 2009	Percentage (%)
Cedara College of Agriculture	47	6
CIAT: Elsenburg	159	19
Fort Cox College of Agriculture & Forestry	104	13
Glen College of Agriculture	17	2
Grootfontein Agricultural Development Institute	123	15
Lowveld College of Agriculture	92	11
Madzivhandila College of Agriculture*	0	0
Owen Sitole College of Agriculture	152	19
Potchefstroom College of Agriculture	100	12
Taung College of Agriculture	26	3
Tompi Seleka College of Agriculture*	0	0
Tsolo Agriculture and Rural Development Institute*	0	0
Total	**820**	**100**

* Note that Madzivhandila, Tompi Seleka and Tsolo are offering short courses and learnerships only

In 2009, CIAT: Elsenburg and Owen Sitole registered the highest number of students with 19% each, followed by GADI with 15%, Fort Cox and Potchefstroom with 13% and 12% respectively. Lowveld constituted 11% of the population of students registered at colleges of agriculture during the 2009 academic year, followed by Cedara with 6%, Taung with 3% and Glen with 2%.

Figure 1: Enrolment figures at colleges of agriculture during the 2009 academic year



Four(4) out of nine colleges namely; Cedara, Glen, Lowveld and Taung registered less than one hundred students during the 2009 academic year.

Table 5 below presents a demographic breakdown of enrolments per college of agriculture.

Table 5: Breakdown of enrolments by gender and race at colleges of agriculture for 2009

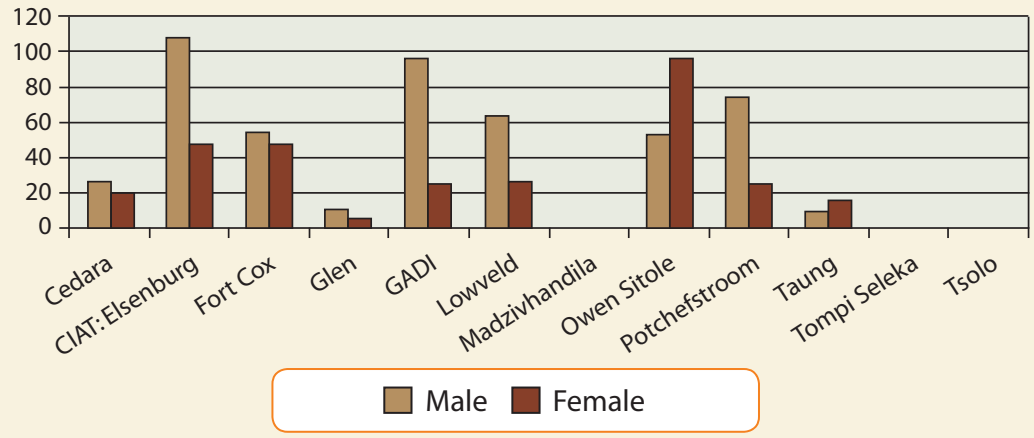
Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Cedara	19	19	**38**	0	0	**0**	5	0	**5**	3	1	**4**	**47**	6
CIAT: Elsenburg	9	9	**18**	22	19	**41**	79	21	**100**	0	0	**0**	**159**	19
Fort Cox	55	49	**104**	0	0	**0**	0	0	**0**	0	0	**0**	**104**	13
Glen	11	6	**17**	0	0	**0**	0	0	**0**	0	0	**0**	**17**	2
Grootfontein	22	8	**30**	7	4	**11**	69	13	**82**	0	0	**0**	**123**	15
Lowveld	65	27	**92**	0	0	**0**	0	0	**0**	0	0	**0**	**92**	11
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0
Owen Sitole	54	98	**152**	0	0	**0**	0	0	**0**	0	0	**0**	**152**	19
Potchefstroom	34	23	**57**	1	0	**1**	40	2	**42**	0	0	**0**	**100**	12
Taung	10	16	**26**	0	0	**0**	0	0	**0**	0	0	**0**	**26**	3
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	0
Total	**279**	**255**	**534**	**30**	**23**	**53**	**193**	**36**	**229**	**3**	**1**	**4**	**820**	**100**

Table 5 above indicates that 56% of the nine colleges enrolled students which are predominantly African with no Coloured, White or Asian students at all. These colleges are Fort Cox, Glen, Owen Sitole, Lowveld and Taung. The table above also depicts that the colleges regarded as historically African colleges in terms of their student attraction have so far failed to attract other racial groups in their student list. This is a continuing trend from the 2004 to 2009 academic years.

The data in Table 5 above depicts that in 2009, African students dominated the enrolments at colleges of agriculture with 65%, followed by Whites with 28%, Coloureds with 6% and Asians with 1%. Male enrolments accounted for 62% of the total number of enrolled students and female enrolments constituted 38%.

African males dominated the male students at colleges of agriculture during the 2009 academic year with 55%, followed by Whites with 38% and Coloureds with 6%. Asian males enrolled at colleges during the 2009 academic year accounted for 1%. Female students were dominated by Africans with 81%, followed by Whites with 11%. Coloureds accounted for 7% of the female students and Asians were almost non-existent with 1 student enrolled.

Figure 2: Breakdown of enrolments by gender per College



The trend in Figure 2 above indicates that the number of male enrolments in the agricultural colleges was generally higher than that of female enrolments in the 2009 academic year. For instance, there is a significant difference between male and female students in Grootfontein, Potchefstroom, Lowveld and CIAT: Elsenburg. It was only in the case of Owen Sitole where female students outnumbered the male students.

Data in Table 6 below shows that Higher Education Certificate level constituted 82% of the total number of enrolled students per programme in 2009, followed by Degree level at 11% mainly from CIAT: Elsenburg and Diploma level at 7%. No students enrolled in the N1, N2 and N3 streams in 2009.

Table 6 below gives a breakdown on enrolments per programme.

Table 6: Breakdown of enrolments per programme at colleges of agriculture for the 2009 academic year

Colleges	Number of enrolments per programme						
	NQF 1-4 (Including N1-N2)	Certificate (Including N3)	HEC (Including N4-N5)	Diploma	Degree	Total	%
Cedara	0	0	47	0	0	**47**	**6**
CIAT: Elsenburg	0	0	40	29	90	**159**	**19**
Fort Cox	0	0	104	0	0	**104**	**13**
Glen	0	0	17	0	0	**17**	**2**
Grootfontein	0	0	123	0	0	**123**	**15**
Lowveld	0	0	92	0	0	**92**	**11**
Madzivhandila	0	0	0	0	0	**0**	**0**
Owen Sitole	0	0	152	0	0	**152**	**19**
Potchefstroom	0	0	100	0	0	**100**	**12**
Taung	0	0	0	26	0	**26**	**3**
Tompi Seleka	0	0	0	0	0	**0**	**0**
Tsolo	0	0	0	0	0	**0**	**0**
Total	**0**	**0**	**675**	**55**	**90**	**820**	
Percentage (%)	**0**	**0**	**82**	**7**	**11**		**100**

2.4 Short Courses offered at colleges of agriculture

Colleges such as Cedara, CIAT: Elsenburg, Glen, Grootfontein, Madzivhandila, Owen Sitole, Taung, Tompi Seleka and Tsolo have engaged in short-course programmes during 2009. CIAT: Elsenburg is the only college offering accredited short courses. The accreditation of their short courses ranges between NQF levels 1 and 4 and they are accredited by AgriSETA. The duration of short courses varies from 1 day and 3 months.

Table 7 presents the types of short courses offered by the colleges of agriculture in the 2009 academic year.

Table 7: Various short courses offered at colleges of agriculture in 2009

Technical Agricultural Skills	Cedara	CIAT: Elsenburg	Fort Cox	Glen	Grootfontein	Lowveld	Madzivhandila	Owen Sitole	Potchefstroom	Taung	Tompi Seleka	Tsolo
Administration of livestock husbandry practices										X		
Administration of livestock processing treatments										X		
Agricultural Engineering		X										
Manual fertilizer application												X
Bee farming							X					
Beef production												X
Biltong making							X					
Broiler production							X					
Poultry house & equipment cleaning on site												X
Dairy production	X						X					X
Farm business management								X				
Farm mechanization								X				
Financial management							X					
Food processing										X		
Fruit production		X										X
General agriculture		X										
Human and social science		X										
Land care							X					
Layer production							X					
Garment making												X
Plant manipulation										X		
Organic farming							X					
Planting of crops under supervision										X		
Potato production							X					
Project management							X					
Recognition of pests,												
Diseases & weeds on crops										X		
Recognition and identificationof the basic functions of the ecological environment										X		
Small stock production							X					
Soil sampling							X					
Sweetpotato production							X					
Tractor operator & maintenance							X					
Vegetable production		X					X	X				
Veld management	X				X							

Table 7: Various short courses offered at colleges of agriculture in 2009

Technical Agricultural Skills	Cedara	CIAT: Elsenburg	Fort Cox	Glen	Grootfontein	Lowveld	Madzivhandila	Owen Sitole	Potchefstroom	Taung	Tompi Seleka	Tsolo
Viticulture		X										
Veld Management							X					
Learnership Programmes												
National Certificate: Animal Production NQF 1		X									X	
National Certificate: Plant Production NQF 1		X										
National Certificate: Plant Production NQF 4		X										
National Certificate: Farming NQF 4		X										
National Certificate: Poultry Production NQF 3		X										
Management skills												
Assessor Training												X
Computer Literacy							X					
Other Skills												
Facilitator Course												X

2.5 Number of people registering and completing Short Courses in 2009

Table 8 below presents the number people registered and completed short courses per college. CIAT: Elsenburg and Madzivhandila have learnership programmes that are offered according to demand and that are accredited by AgriSETA. The programmes consist of Animal Production and Plant Production and run for a period of 8 months (32 weeks).

Table 8: Breakdown of people registered in and completing short courses by gender and race

Name of the college	African			Coloured			White			Asian			Other	Total	%
	M	F	T	M	F	T	M	F	T	M	F	T			
Cedara*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
CIAT: Elsenburg	32	35	**67**	50	48	**98**	2	0	**2**	0	0	**0**	**0**	**167**	**17**
Fort Cox*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Glen	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Grootfontein*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Lowveld	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Madzivhandila	141	174	**315**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**315**	**32**
Owen Sitole	29	53	**82**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**82**	**8**
Potchefstroom*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**	**0**
Taung	80	70	**150**	2	3	**5**	0	0	**0**	0	0	**0**	**0**	**155**	**16**
Tompi Seleka	62	102	**164**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**164**	**17**
Tsolo	42	52	**94**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**94**	**10**
Total	**386**	**486**	**871**	**52**	**51**	**103**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**977**	**100**

*Information not available

Madzivhandila had more people registering and completing short courses than any college at 32%. CIAT: Elsenburg and Tompi Seleka contributed 17% each of the total number of people completing short courses at colleges of agriculture during the 2009 academic year. The data in Table 8 above depicts that, in 2009, Africans dominated the number of people attending short courses at colleges of agriculture with 90%, followed by Coloureds with 10%. Whites were almost non-existent and no Asians attended short courses during the 2009 academic year. Female enrolments in 2009 accounted for 55% of the total number of enrolled students and male enrolments constituted 45%.

African females dominated the number of female people attending short courses at colleges of agriculture during the 2009 academic year with 91%, followed by Coloured females with 9%. African males dominated the males attending short courses at colleges of agriculture during the 2009 academic year with 87%, followed by Coloured males with 12%. White males were almost non-existent with only 2 people attending short courses in 2009.

2.6 Graduate outputs at colleges of agriculture

Seven hundred and forty four (744) graduates were produced at colleges of agriculture during the 2009 academic year. Table 9 below presents a number of graduates per college of agriculture during the 2009 academic year.

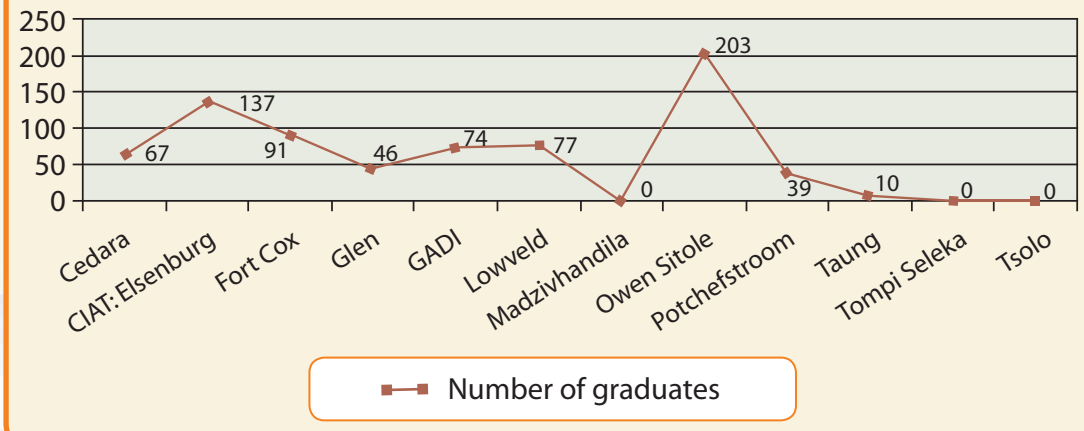
Table: 9 Graduates per college of agriculture during the 2009 academic year

Name of the college	Number of graduates in 2009	%
Cedara College of Agriculture	67	9
CIAT: Elsenburg*	137	18
Fort Cox College of Agriculture & Forestry	91	12
Glen College of Agriculture	46	6
Grootfontein Agricultural Development Institute	74	10
Lowveld College of Agriculture	77	10
Madzivhandila College of Agriculture	0	0
Owen Sitole College of Agriculture	203	27
Potchefstroom College of Agriculture	39	5
Taung College of Agriculture	10	1
Tompi Seleka College of Agriculture	0	0
Tsolo	0	0
Total	**744**	**100**

*Information on B Agric: Viticulture is discussed under Chapter 5

Owen Sitole produced more graduates than any other college with 27%, followed by CIAT: Elsenburg with 18% and Fox Cox with 12%. Grootfontein and Lowveld each accounted for 10% of the overall graduates at colleges of agriculture during the 2009 academic year, followed by Cedara with 9%. The other colleges produced less than 9% of the overall college graduates during the 2009 academic year.

Figure 3: Graduates per college of agriculture in 2009



As depicted in Figure 3 above, out of the nine colleges that enrolled students during the 2009 academic year, only two colleges managed to produce more than 100 graduates. The lowest graduate numbers were recorded at Taung, with only 10 graduates.

Table 10: Breakdown of graduates by gender and race

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Cedara	17	19	**36**	0	0	**0**	25	03	**28**	1	2	**3**	**67**	**9**
CIAT: Elsenburg	5	3	**8**	6	3	**9**	89	31	**120**	0	0	**0**	**137**	**18**
Fort Cox	59	32	**91**	0	0	**0**	0	0	**0**	0	0	**0**	**91**	**12**
Glen	24	22	**46**	0	0	**0**	0	0	**0**	0	0	**0**	**46**	**6**
Grootfontein	7	2	**9**	6	0	**6**	54	5	**59**	0	0	**0**	**74**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**10**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	102	101	**203**	0	0	**0**	0	0	**0**	0	0	**0**	**203**	**27**
Potchefstroom	8	2	**10**	1	0	**1**	25	3	**28**	0	0	**0**	**39**	**5**
Taung	3	7	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**	**1**
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Total	**263**	**221**	**484**	**13**	**3**	**16**	**199**	**42**	**241**	**1**	**2**	**3**	**744**	**100**

Table 10 above shows that Africans were the largest group of graduates and comprised 65%, followed by Whites with 32% and Coloureds with 3%. Asians were almost non-existent.

Male graduates dominated the total number of graduates at colleges of agriculture during the 2009 academic year with 64% and females constituted 36%. African males dominated the male graduates at colleges with 55%, followed by Whites with 42% and Coloureds with 3%. No Asian males graduated at colleges of agriculture during the 2009 academic year. African females dominated the female graduates with 83%, followed by Whites with 16% and Coloureds with 1%. Asian females graduated at colleges of agriculture in 2009 were almost non-existent.

Figure 4: Breakdown of graduates by gender

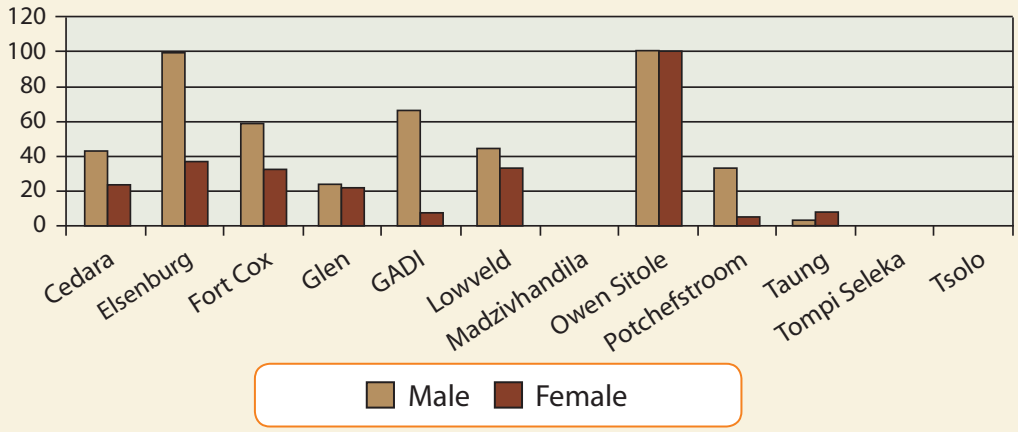


Figure 4 above indicates that the difference in numbers between male graduates and female graduates in colleges such as Grootfontein, CIAT: Elsenburg, Cedara, Fort Cox and Potchefstroom has been very high. Nonetheless, the situation was different at Taung, where female graduates outnumbered the male graduates.

The data in Table 11 below depicts that Higher Education Certificates dominated the total number of graduates produced at colleges of agriculture during the 2009 with 46%, followed by Diploma graduates with 40%. The least graduates at colleges of agriculture were Degrees, which accounted for 14% of the total graduates in 2009.

Table 11: Breakdown of graduates per programme at colleges of agriculture for 2009

College	Number of graduates					
	NQF 1-4 Including N1-N2)	Certificate (Including N3)	HEC (Including N4-N5)	Diploma (Including N6)	Degree	Total
Cedara	0	0	42	25	0	**87**
CIAT: Elsenburg	0	0	18	18	101	**137**
Fort Cox	0	0	40	51	0	**91**
Glen	0	0	26	20	0	**46**
Grootfontein	0	0	35	39	0	**74**
Lowveld	0	0	40	37	0	**77**
Madzivhandila	0	0	0	0	0	**0**
Owen Sitole	0	0	113	90	0	**203**
Potchefstroom	0	0	23	16	0	**39**
Taung	0	0	7	3	0	**10**
Tompi Seleka	0	0	0	0	0	**0**
Tsolo	0	0	0	0	0	**0**
Total	**0**	**0**	**344**	**299**	**101**	**744**
Percentage (%)	**0**	**0**	**46**	**40**	**14**	**100**

2.7 Conclusion

In 2009 academic year, both African and White students dominated enrolments and graduates at the colleges of agriculture. Eight hundred and twenty (820) students enrolled and 744 graduated in the colleges of agriculture. Out of 820 students enrolled in these programmes for the 2009 academic year, 66% were Africans, 28% were Whites and 6% were Coloured students and Asian students were less than 1%. Cedara, CIAT: Elsenburg, Grootfontein and Potchefstroom continued to attract students from more than one racial group while other colleges continued to enrol students from one racial group only. Glen recorded a great drop of enrolments during this academic year and factors influencing this should be investigated in order to remedy the situation.

Out of 744 graduates produced in these programmes during the 2009 academic year, 65% were Africans, 32% were Whites, 3% were Coloured and Asians were almost non-existent. Generally males dominated females in enrolments and graduates during the 2009 academic year.

In addition to the Diploma and Higher Education Certificate Programmes offered by the colleges of agriculture, many agricultural colleges have introduced short courses at General Education and Training (GET) and Further Education and Training (FET) levels; these were introduced in the 2005 academic year. The short courses offered by the colleges are more demand-driven and are aimed at addressing the needs of the farming community and LRAD beneficiaries in their respective locations. Some of the short courses are accredited and others are not. The non-accredited programmes are offered in the form of short courses which are based on information sharing rather than on competency, and as such the participants receive Certificates of attendance only.

Most of the beneficiaries and participants in the short courses are Africans and very few participants are from the other racial groups. African enrolments constituted 90%, followed by Coloureds with 10%. Some colleges reported that they did not keep statistics of the trainees who participated in these programmes and others have statistics, but no demographic breakdown of the participants in the short courses has been recorded. This figure might be far greater considering that some of the colleges do not keep statistics of the number of participants in short courses and this makes it impossible to arrive to any conclusion in this matter. It therefore is crucial that all colleges keep a database of the beneficiaries and participants in order to be able at a later stage to evaluate the impact of the programmes on the socio-economic situation of the beneficiaries.

CHAPTER 3

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2009 ACADEMIC YEAR

CHAPTER 3

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2009 ACADEMIC YEAR

3.1 Introduction

There are five universities of technology offering the AET programmes in South Africa. The agricultural programmes offered at these institutions range through the HET band from NQF level 5 to NQF level 8, i.e. from Certificate to Doctor of Technology (DTech). This chapter presents the programmes offered at higher education institutions and the demographic breakdown of agricultural enrolments.

The universities of technology offering AET programmes in South Africa are Cape Peninsula University of Technology (CPUT), Central University of Technology, Free State (CUT,FS), Mangosuthu University of Technology (MUT), Durban University of Technology (DUT) and Tshwane University of Technology (TUT).

3.2 AET programmes and National Qualification Framework offered at universities of technology in 2009

Table 12: Agricultural programmes offered at universities of technology

Agricultural Programmes	Cape Peninsula University of Technology	Central University of Technology Free State	Durban University of Technology	Mangosuthu University of Technology	Tshwane University of Technology
National Certificate programmes					
National Certificate Agriculture Animal Production					X
National Certificate, Agriculture Crop Science					X
National Certificate, Agricultural Management Crop Science					X
National Certificate, Game Ranch Management					X
National Certificate, Horticulture					X
National Certificate, Nature Conservation					X
National Certificate, Landscape Technology					X
National Certificate, Turf grass Management					X
National Higher Certificate Programmes					
National Higher Certificate, Agriculture Animal Production					X
National Higher Certificate, Agriculture Crop Science					X
National Higher Certificate, Agricultural Management - Crop Science					X
National Higher Certificate, Game Ranch Management					X
National Higher Certificate, Horticulture					X
National Higher Certificate, Nature Conservation					X
National Diploma programmes					
National Diploma, Agriculture	X				X
National Diploma, Agriculture - Crop Production					X
National Diploma, Agriculture - Crop Science					X
National Diploma, Agriculture - Commercial Mixed Farming					X
National Diploma, Agriculture - Mixed Farming					X

Table 12: Agricultural programmes offered at universities of technology					
Agricultural Programmes	**Cape Peninsula University of Technology**	**Central University of Technology Free State**	**Durban University of Technology**	**Mangosuthu University of Technology**	**Tshwane University of Technology**
National Diploma, Agriculture - Rural Development					X
National Diploma, Agricultural Management	X	X			X
National Diploma, Agriculture - Animal Production				X	X
National Diploma, Agriculture - Plant Production				X	
National Diploma, Agriculture - Equine Science					X
National Diploma, Agriculture - Horticulture			X		X
National Diploma, Biotechnology			X		
National Diploma, Community Extension				X	
National Diploma, Consumer Science - Food and Nutrition			X		
National Diploma, Ecotourism Management			X		
National Diploma, Food Science			X		
National Diploma, Food Technology	X				X
National Diploma, Game Ranch Management					X
National Diploma, Landscape Technology			X		X
National Diploma, Nature Conservation			X		X
National Diploma, Turf grass Management					X
National Diploma, Veterinary Technology					X
National Higher Diploma programmes					
National Higher Diploma, Pig Production					X
National Higher Diploma, Poultry Production Management					X
BTech. Programmes					
BTech. Agriculture	X	X			X
BTech. Agricultural Management					X
BTech. Agriculture - Animal Production					X
BTech. Agriculture - Crop Production					X
BTech. Agricultural Development & Ext					X
BTech. Agriculture - Mixed Farming					X
BTech. Agriculture - Rural Development					X
BTech. Agriculture - Animal Health					X
BTech. Equine Science					X
BTech. Biotechnology			X		
BTech. Food Science			X		
BTech. Food Technology	X				X
BTech. Food and Consumer Sciences			X		
BTech. Game Ranch Management					X
BTech. Agriculture Horticulture			X		X
BTech. Landscape Technology					X
BTech. Nature Conservation					X
BTech. Turf grass Management					X
BTech. Veterinary Technology					X
MTech. Programmes					
MTech. Agriculture					X
MTech. Biotechnology			X		
MTech. Food Science			X		

Table 12: Agricultural programmes offered at universities of technology					
Agricultural Programmes	**Cape Peninsula University of Technology**	**Central University of Technology Free State**	**Durban University of Technology**	**Mangosuthu University of Technology**	**Tshwane University of Technology**
MTech. Food Technology	X				X
MTech. Horticulture					X
MTech. Nature Conservation					X
MTech. Veterinary Technology					X
DTech. programmes					
DTech. Agriculture					X
DTech. Agriculture - Animal Production					X
DTech. Biotechnology			X		
DTech. Horticulture					X
DTech. Nature Conservation					X

Table 12 above indicates the types of agricultural programmes offered by individual universities of technology. As depicted in Table 12 above, TUT offers a wide range of agricultural programmes on a broad curriculum that is divided into four main departments namely Horticulture, Crop Science, Nature Conservation and Animal Science. Veterinary Technology is offered in the Department of Biomedical Science.

Universities of technology offer few agricultural programmes, such as Agricultural Management, from Diploma to BTech level, with the exception of TUT and DUT, which offer programmes up to DTech level. Historically African institutions have curricula focused on skills that are less in demand in the public sector's agricultural labour market, i.e. General Agriculture and Agricultural Management qualifications with no focus or specialisation on agricultural scarce skills such as Agricultural Economics, Agricultural Engineering, Viticulture and Veterinary Science.

There is a high probability that graduates qualifying in these programmes might not secure employment. However, in the private sector, the situation with regards to the demand for agricultural graduates with these qualifications might be different, since the research conducted by Department of Agriculture did not cover the private sector.

Table 13: NQF levels at universities of technology		
NQF level	**Band**	**Types of qualification and Certificates**
8	Higher Education and Training Band	Doctorate/ further research degree
7		Higher degree/professional qualifications
6		First degree/ higher diplomas
5		Diplomas/occupational Certificates

Coordination of Agricultural Higher Education at universities of technology has been more progressive considering the transformation made as far as regulation is concerned. All the agricultural programmes offered at either of these universities of technology have their standards monitored, certified and registered under the NQF. The table above presents the programme levels together with NQF levels at which the programmes are rated (Department of Agriculture, 2005). The NQF levels determine the

programme levels at each university of technology, which range from NQF level 5, which is a Higher Certificate, to NQF level 8, which is the DTech.

3.3 Enrolments in AET programmes at universities of technology during the 2009 academic year

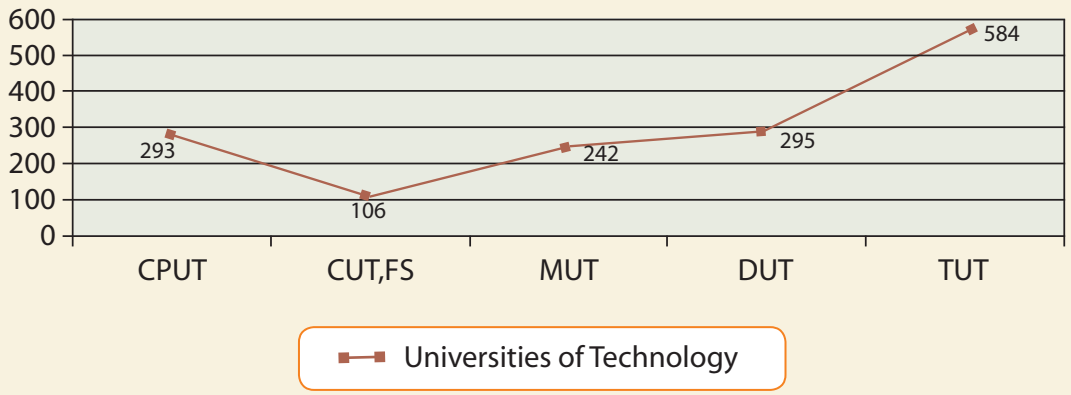
Table 14: Enrolments per university of technology during the 2009 academic year

University of technology	Enrolment figures	Percentage (%)
CPUT	293	19
CUT,FS	106	7
MUT	242	16
DUT	295	19
TUT	584	38
Total	**1520**	**100**

Table 14 above presents enrolment figures at universities of technology during the 2009 academic year. TUT enrolled a majority of students in 2009 with 38%, followed by DUT and CPUT with 19% each. MUT and CUT, FS enrolled 16% and 7% respectively of the total enrolments at universities of technology.

Table 14 above and Figure 5 below depict a significant difference between TUT and the rest of the universities of technology in terms of student intake. The higher enrolment figures at TUT might be attributed to the many programmes offered by the institution as compared to fewer programmes offered by the other universities of technology. Out of 1 520 agricultural enrolments registered nationally at universities of technology in 2009, 584 were from TUT.

Figure 5: Enrolment figures at Universities of Technology



3.3.1 Demographic breakdown of AET enrolments at universities of technology during the 2009 academic year

Table 15 below presents a demographic breakdown of AET enrolments by universities of technology during the 2009 academic year.

Table 15: Demographic breakdown of AET enrolments at universities of technology during the 2009 academic year

University of Technology	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	66	91	**157**	24	17	**41**	72	23	**95**	0	0	**0**	**293**
CUT,FS	45	31	**76**	3	2	**5**	22	2	**24**	1	0	**1**	**106**
MUT	106	134	**240**	2	0	**2**	0	0	**0**	0	0	**0**	**242**
DUT	102	134	**236**	1	1	**2**	3	2	**5**	10	42	**52**	**295**
TUT	255	230	**485**	0	1	**1**	51	42	**93**	2	3	**5**	**584**
Total	**574**	**620**	**1194**	**30**	**21**	**51**	**148**	**69**	**217**	**13**	**45**	**58**	**1520**

Figure 6: Racial breakdown of AET enrolments at Universities of Technology

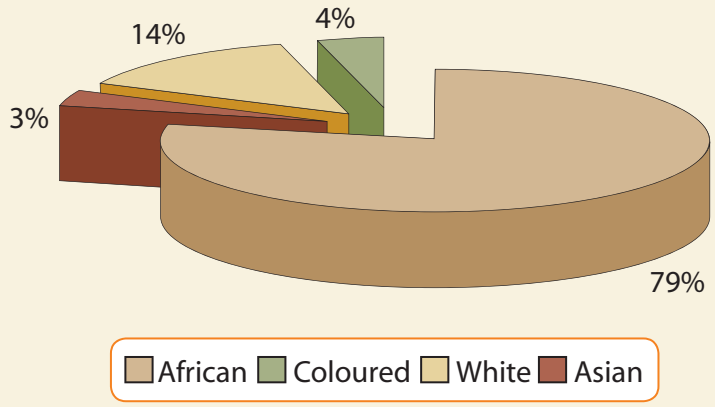


Table 15 and Figure 6 above depict that African constituted the highest enrolment number with 79%, followed by Whites with 14%. Coloured and Asian students collectively constituted 7% of the total enrolments during the 2009 academic year.

Figure 7: Gender breakdown of AET enrolments at Universities of Technology

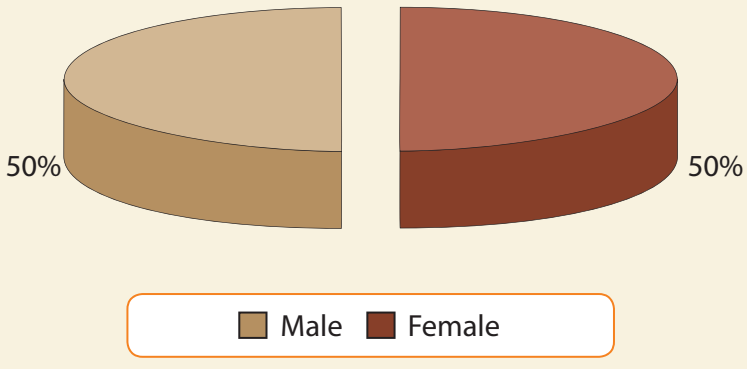


Figure 7 above depicts that both male and female students constituted 50% of the total enrolments at university of technology during the 2009 academic year.

Figure 8: Racial breakdown of female enrolments at Universities of Technology

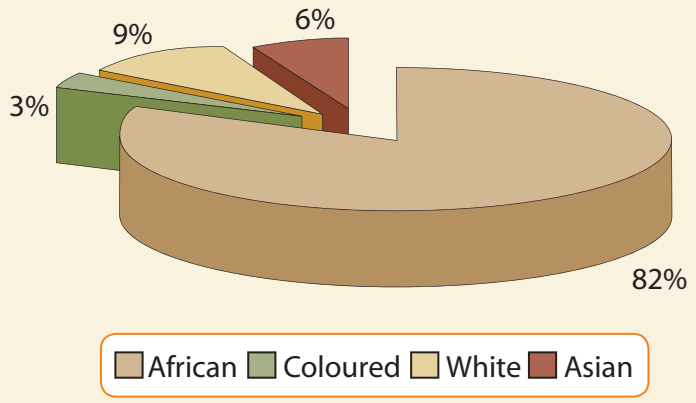


Figure 8 above depicts that African female students constituted the highest number of female enrolments at universities of technology with 82%, followed by Whites with 9%. Asian and Coloured female students accounted for 6% and 3% respectively of the total female enrolments at universities of technology during the 2009 academic year.

Figure 9: Racial breakdown of male enrolments at Universities of Technology

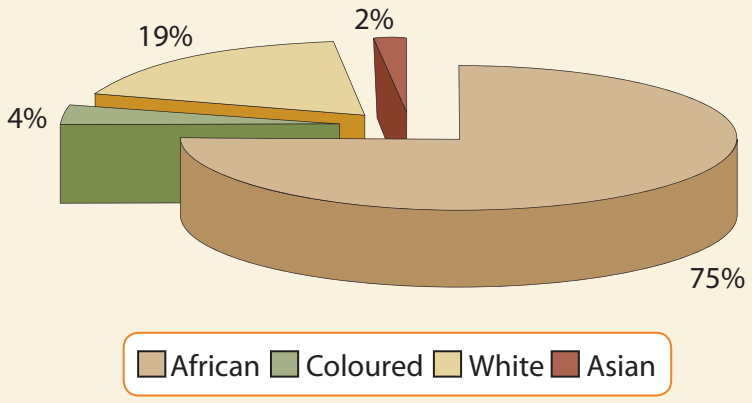


Figure 9 above indicates that African males constituted 75% of the total male enrolments during the 2009 academic year. White males accounted for 19%, while Coloured and Asian males accounted for 4% and 2% respectively of the overall male enrolments.

3.3.2 AET enrolments at universities of technology by level of qualifications & CESM in 2009

Table 16: Agricultural enrolments at universities of technology by CESM & levels of qualification in 2009

CESM	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Animal Science	224	2	0	0	**226**	**15**
Horticulture	96	0	0	0	**96**	**6**
Plant Science	108	29	0	0	**137**	**9**
Agricultural Management	98	89	0	0	**187**	**12**
Wildlife Management	317	32	2	1	**352**	**23**
Agricultural Science - General	85	0	13	4	**102**	**7**
Agricultural Extension	74	15	0	0	**89**	**6**

Table 16: Agricultural enrolments at universities of technology by CESM & levels of qualification in 2009						
CESM	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**Total**	**%**
Veterinary Technology	20	12	4	0	**36**	**2**
Agricultural Biotechnology	43	5	4	0	**52**	**3**
Food Science and Technology	186	0	2	0	**188**	**12**
Land Reclamation	34	0	0	0	**34**	**2**
Renewable Natural Resources	21	0	0	0	**21**	**1**
Total	**1306**	**184**	**25**	**5**	**1520**	
Percentage (%)	**86**	**12**	**2**	**0**		**100**

Table 16 above is a statistical presentation of enrolments at universities of technology by Category of Education Subject Matter (CESM). Universities of technology offer programmes in the various CESMs as indicated in Table 16 above. There are qualifications that do not appear in Table 16 which are also offered by the universities of technology, but no enrolments were recorded in these qualifications in 2009.

From Table 16 above, it appears that Wildlife Management and Animal Science have the highest enrolment figures, with 23% and 15% respectively. Biotechnology, Veterinary Technology, Land Reclamation and Renewable Natural Resources accounted for less than 5% each.

3.3.2.1 Demographic breakdown of Agricultural Education and Training enrolments at universities of technology by CESM & levels of qualifications in 2009

Table 17: Demographic breakdown of Diploma enrolments by CESM at universities of technology in 2009													
CESM (Diploma)	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Animal Science	97	93	**190**	0	0	**0**	7	25	**32**	1	1	**2**	**224**
Horticulture	37	42	**79**	5	3	**8**	8	1	**9**	0	0	**0**	**96**
Plant Science	58	45	**103**	1	0	**1**	4	0	**4**	0	0	**0**	**108**
Agricultural Management	18	17	**35**	2	3	**5**	52	6	**58**	0	0	**0**	**98**
Wildlife Management	118	123	**241**	6	6	**12**	38	22	**60**	2	2	**4**	**317**
Agricultural Science -General	39	38	**77**	0	0	**0**	8	0	**8**	0	0	**0**	**85**
Agricultural Extension	31	43	**74**	0	0	**0**	0	0	**0**	0	0	**0**	**74**
Veterinary Technology	9	10	**19**	0	0	**0**	1	0	**1**	0	0	**0**	**20**
Agricultural Biotechnology	8	14	**22**	0	0	**0**	0	0	**0**	3	18	**21**	**43**
Food Science and Technology	49	92	**141**	9	7	**16**	0	7	**7**	4	18	**22**	**186**
Renewable Natural Resources	6	12	**18**	0	0	**0**	3	0	**3**	0	0	**0**	**21**
Land Reclamation	11	7	**18**	0	4	**4**	9	2	**11**	1	0	**1**	**34**
Total	**481**	**536**	**1017**	**23**	**23**	**46**	**130**	**63**	**193**	**11**	**39**	**58**	**1306**

Table 17 above presents enrolments for Diploma in Agricultural programmes at universities of technology during the 2009 academic year. Diploma enrolments constituted 86% of the total enrolments at universities of technology.

Africans contributed 78% of the total number of Diploma enrolments, followed by Whites with 15%. Coloured and Asian students together enrolled less than 5% of the total number of Diploma students.

Table 18: Demographic breakdown of BTech enrolments by CESM at universities of technology in 2009

CESM (BTech)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Animal Science	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Plant Science	15	14	**29**	0	0	**0**	0	0	**0**	0	0	**0**	**29**
Agricultural Management	43	25	**68**	3	2	**5**	14	1	**15**	1	0	**1**	**89**
Wildlife Management	18	14	**32**	0	0	**0**	0	0	**0**	0	0	**0**	**32**
Agricultural Extension	7	8	**15**	0	0	**0**	0	0	**0**	0	0	**0**	**15**
Veterinary Technology	0	8	**8**	0	0	**0**	0	3	**3**	0	1	**1**	**12**
Agricultural Biotechnology	0	1	**1**	0	0	**0**	1	0	**1**	0	3	**3**	**5**
Total	**83**	**72**	**155**	**3**	**2**	**5**	**15**	**4**	**19**	**1**	**4**	**5**	**184**

Table 18 above presents enrolments for BTech in agricultural programmes at universities of technology in 2009. BTech enrolments constituted 12% of the total enrolments at universities of technology during the 2009 academic year.

Africans constituted 84% of the total number of BTech enrolments at universities of technology during the 2009 academic year, followed by Whites with 10%. Asian and Coloured students each contributed 3% of the total BTech students.

Table 19: Demographic breakdown of Post-graduates enrolments by CESM at universities of technology in 2009

CESM (Post-graduate)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
MTech (Agricultural Science - General)	6	6	**12**	0	0	**0**	1	0	**1**	0	0	**0**	**13**
MTech (Veterinary Technology)	0	2	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**
MTech (Agricultural Biotechnology)	0	1	**1**	0	1	**1**	0	0	**0**	0	2	**2**	**4**
MTech (Wildlife Management)	0	1	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
MTech Food Science)	0	2	**2**	0	0	**0**	0	0	**0**	0		**0**	**2**
DTech (Wildlife Management)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
DTech (Agricultural Science - General)	3	0	**3**	0	0	**0**	0	0	**0**	1	0	**1**	**4**
Total	**10**	**12**	**22**	**0**	**1**	**1**	**3**	**1**	**4**	**1**	**2**	**3**	**30**

Table 19 above outlines enrolments at Post-graduate level in agricultural programmes at universities of technology in 2009. Post-graduate enrolments constituted just 2% of the total enrolments at universities of technology during the 2009 academic year. Of the 30 students enrolled for Post-graduate Degree in agricultural programmes in 2009 at universities of technology, 25 were MTech and 5 were DTech students.

3.3.2.2. Animal Science enrolments at universities of technology in 2009

This CESM at universities of technology includes Diploma, BTech, MTech and DTech in Animal Health, Animal Production, Pig Production Management, Equine Science, Production Physiology and Animal Production Management. Programmes in this CESM are offered by CPUT, MUT and TUT. There were 226 students enrolled in this CESM during the 2009 academic year.

Table 20 below presents a demographic breakdown of Animal Science enrolments by level of qualification during the 2009 academic year.

Table 20: Demographic breakdown of Animal Science enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	97	93	**190**	0	0	**0**	7	25	**32**	1	1	**2**	**224**	**99**
BTech	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**1**
Total	**97**	**95**	**192**	**0**	**0**	**0**	**7**	**25**	**32**	**1**	**1**	**2**	**226**	**100**

High numbers of Animal Science enrolments were enrolled at Diploma level, with 99% while BTech constituted only 1%. As depicted in Table 20 above, no MTech or DTech students were enrolled during the 2009 academic year.

Figure 10: Racial breakdown of Diploma enrolments in Animal Science

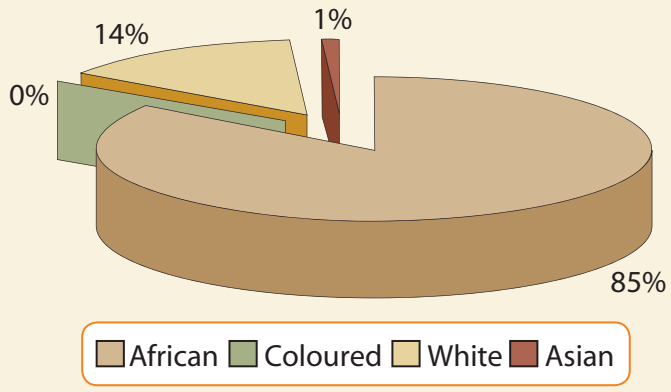


Figure 10 above depicts that African students dominated the Animal Science Diploma enrolments with 85%, followed by Whites with 14% and Asians with 1%. No Coloured students were enrolled in this CESM at Diploma level during the 2009 academic year.

Figure 11: Gender breakdown of Diploma enrolments in Animal Science

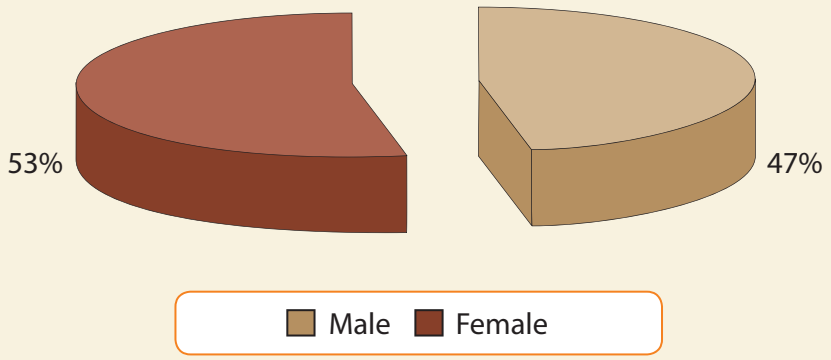


Figure 11 above depicts that female students constituted 53% of the Diploma enrolments in this CESM, while male students constituted 47%. African females dominated the total female Diploma enrolments in Animal Science with 78%, followed by Whites with 21% and Asians with 1%. There were no Coloured females enrolled in this CESM.

3.3.2.3. Horticulture enrolments at universities of technology in 2009

Horticulture CESM at universities of technology includes Certificate, Diploma, BTech, MTech and DTech in Horticulture and Turf Grass Management. Ninety six (96) students enrolled for Horticulture at universities of technology in 2009. TUT, CPUT and DUT are the only universities of technology offering Horticulture programmes in South Africa.

Table 21 below presents a demographic breakdown of Horticulture enrolments during the 2009 academic year by level of qualification.

Table 21: Demographic breakdown of Horticulture enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	37	42	**79**	5	3	**8**	8	1	**9**	0	0	**0**	**96**	**100**
Total	**37**	**42**	**79**	**5**	**3**	**8**	**8**	**1**	**9**	**0**	**0**	**0**	**96**	**100**

All the 96 students enrolled in this CESM were registered at Diploma level and this CESM is dominated by Africans.

Figure 12: Racial breakdown of Diploma enrolments in Horticulture

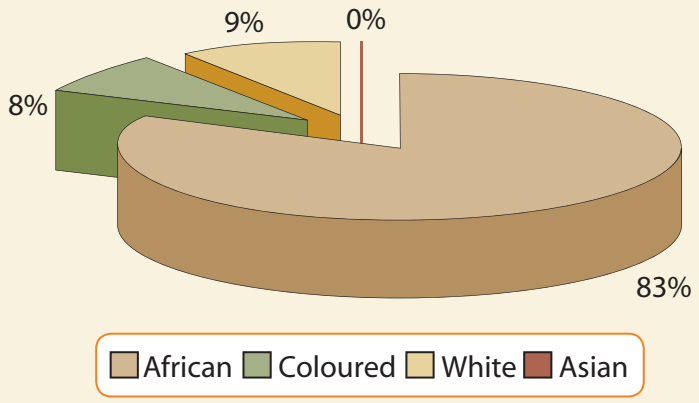


Figure 12 above depicts that African students dominated the Diploma enrolments in Horticulture with 83%, followed by Whites and Coloureds with 9% and 8% respectively. No Asian students registered in this CESM at universities of technology during the 2009 academic year.

Figure 13: Gender breakdown of Diploma enrolments in Horticulture

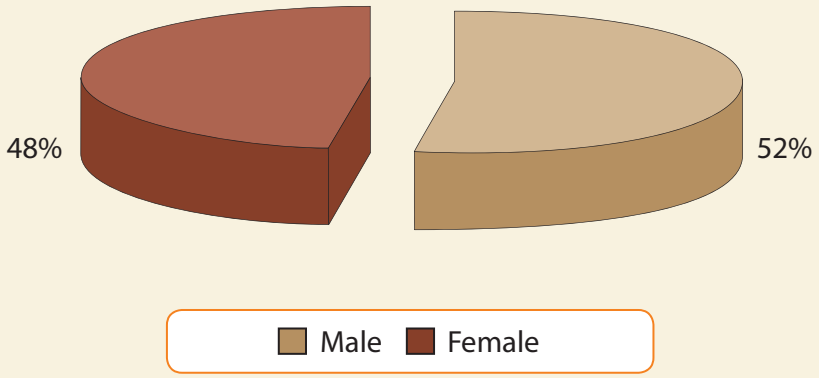


Figure 13 above shows that male students constituted 52% and female students constituted 48% of the Horticulture Diploma enrolments during the 2009 academic year. African males dominated male enrolments with 74%, followed by Whites with 16% and Coloureds with 10%. No Asian males enrolled in this CESM at Diploma level in 2009.

3.3.2.4. Plant Science enrolments at universities of technology in 2009

Plant Science CESM consists of Diploma, BTech, MTech and DTech in Crop Production and Plant Production. One hundred and thirty seven (137) students enrolled in this programme in 2009. Plant Science constitutes 9% of the total AET enrolments at universities of technology during the 2009 academic year. Only Diploma and BTech students enrolled for this CESM in 2009 at universities of technology. Plant Science programmes are offered by MUT and TUT.

Table 22 below presents a demographic breakdown of Plant Science enrolments in 2009 by level of qualification.

Table 22: Demographic breakdown of Plant Science enrolments by level of qualification														
Level	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	58	45	**103**	1	0	**1**	4	0	**4**	0	0	**0**	**108**	**79**
BTech	15	14	**29**	0	0	**0**	0	0	**0**	0	0	**0**	**29**	**21**
Total	**73**	**59**	**132**	**1**	**0**	**1**	**4**	**0**	**4**	**0**	**0**	**0**	**137**	**100**

Table 22 above illustrates that Diploma enrolments accounted for 79% of the overall Plant Science enrolments and BTech comprised 21%.

Figure 14: Racial breakdown of Diploma enrolments in Plant Science

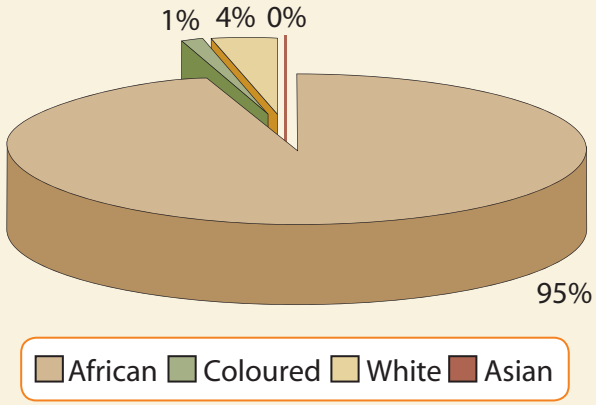


Figure 14 above indicates that African students dominated the Plant Science Diploma enrolments with 95%, followed by Whites with 4% and Coloureds with 1%. There were no Asian students enrolled for this programme during the 2009 academic year.

Figure 15: Gender breakdown of Diploma enrolments in Plant Science

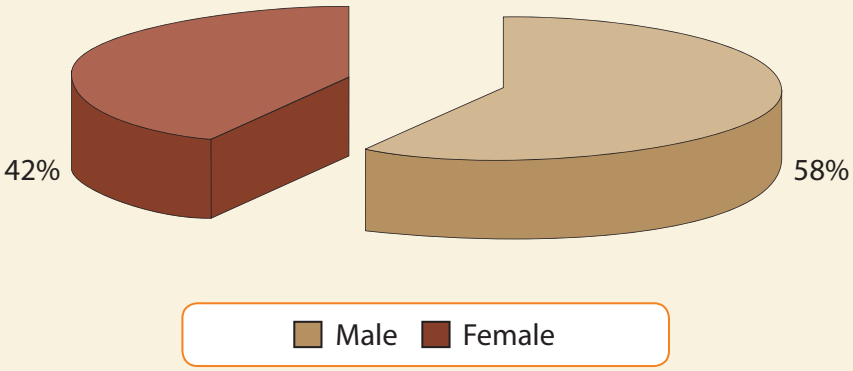


Figure 15 above depicts that male students constituted 58% of the Diploma Plant Science enrolments and female students constituted 42% in this programme during the 2009 academic year.

All 29 students enrolled for BTech in Plant Science were African students.

Figure 16: Gender breakdown of BTech enrolments in Plant Science

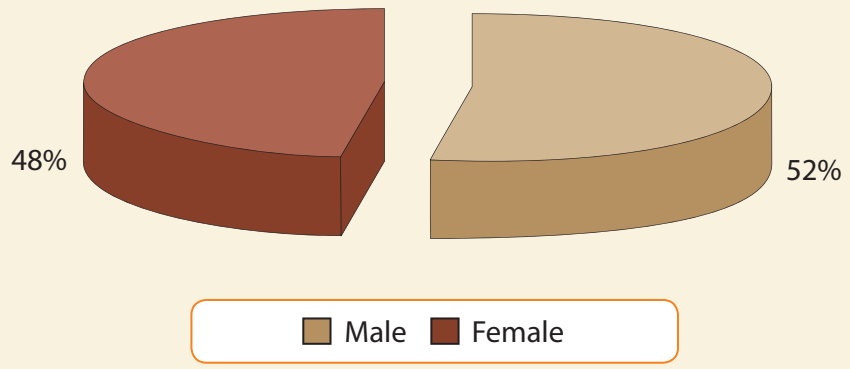


Figure 16 above depicts that male students constituted 52% of the BTech Plant Science enrolments and female students accounted for 48%.

3.3.2.5 Agricultural Management enrolments at universities of technology in 2009

Agricultural Management programmes are offered by CPUT, CUT,FS and TUT. One hundred and eighty seven (187) students registered in this CESM during the 2009 academic year at the three universities of technology. Agricultural Management enrolments comprise Diploma and BTech levels only during the 2009 academic year.

Table 23 below presents a demographic breakdown of Agricultural Management enrolments by level of qualification during the 2009 academic year.

Table 23: Demographic breakdown of Agricultural Management enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	18	17	**35**	2	3	**5**	52	6	**58**	0	0	**0**	**98**	**52**
BTech	43	25	**68**	3	2	**5**	14	1	**15**	1	0	**1**	**89**	**48**
Total	**61**	**42**	**103**	**5**	**5**	**10**	**66**	**7**	**73**	**1**	**0**	**1**	**187**	**100**

Table 23 above indicates that Diploma enrolments accounted for 52% of the overall Agricultural Management while BTech contributed 48%.

Figure 17: Racial breakdown of Diploma enrolments in Agricultural Management

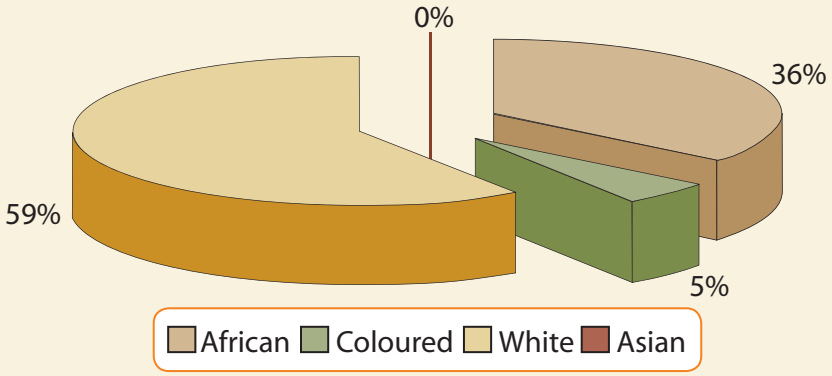


Figure 17 above depicts that Whites accounted for 59% of the Diploma enrolments in Agricultural Management, followed by Africans with 36% and Coloureds with 5%. No Asian students were enrolled in this CESM at Diploma level during the 2009 academic year.

Figure 18: Gender breakdown of Diploma enrolments in Agricultural Management

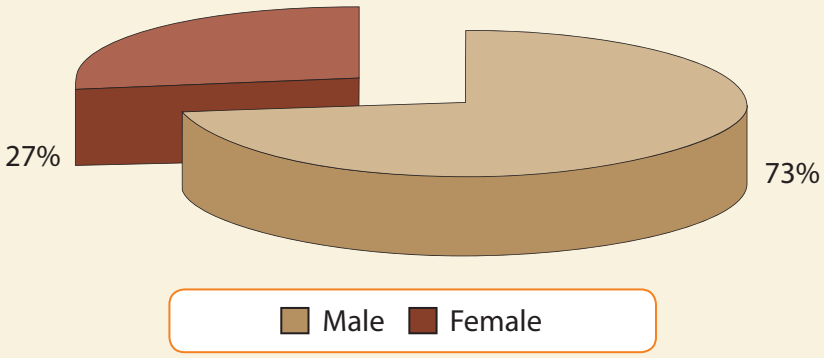


Figure 18 above indicates that males constituted a majority of the Diploma enrolments in Agricultural Management with 73% and females accounted for 27%. White males constituted 72% of the total male enrolments in this CESM at Diploma level, followed by African males with 25% and Coloured males with 3%.

Figure 19: Racial breakdown of BTech enrolments in Agricultural Management

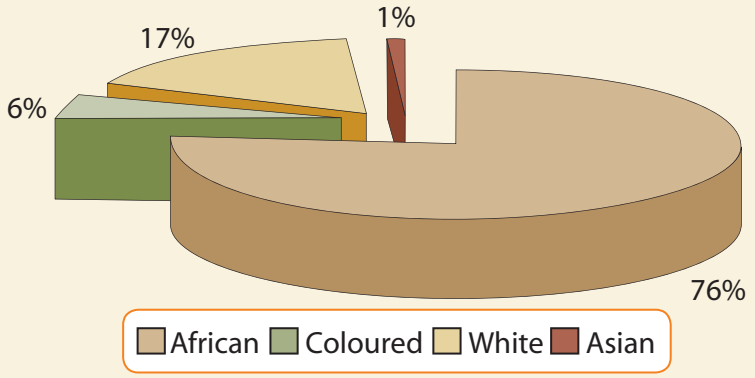


Figure 19 above depicts that Africans dominated the BTech Agricultural Management with 76%, followed by Whites with 17%. Coloureds and Asians respectively constituted 6% and 1% of the total BTech enrolments in this CESM during the 2009 academic year.

Figure 20: Gender breakdown of BTech enrolments in Agricultural Management

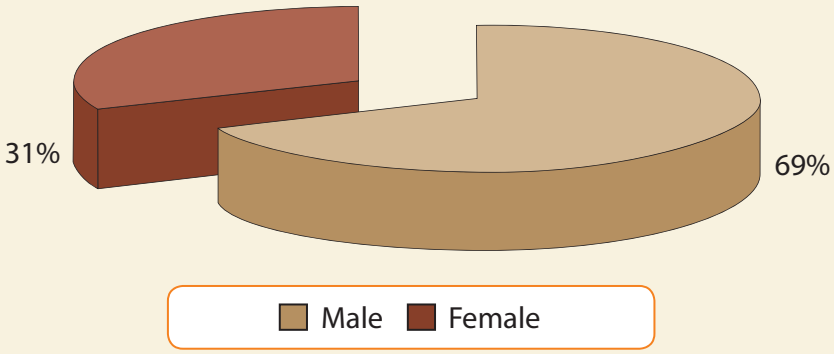


Figure 20 above indicates that male students constituted 69% of the total BTech Agricultural Management enrolments and female students constituted 31%. Africans dominated the male enrolments with 70%, followed by Whites with 23%, Coloureds with 5% and Asians with 3%.

3.3.2.6. Agricultural Science - General enrolments at universities of technology in 2009

Agricultural Science - General CESM includes Diploma, BTech, MTech and DTech. One hundred and two (102) students registered during the 2009 academic year at universities of technology. Agricultural Science - General programmes are offered by CPUT, TUT and CUT,FS.

Table 24 below presents a demographic breakdown of Agricultural Science - General enrolments by level of qualification during the 2009 academic year.

Table 24: Demographic breakdown of Agricultural Science - General enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	39	38	**77**	0	0	**0**	8	0	**8**	0	0	**0**	**85**	**83**
MTech	6	6	**12**	0	0	**0**	1	0	**1**	0	0	**0**	**13**	**13**
DTech	3	0	**3**	0	0	**0**	0	0	**0**	1	0	**1**	**4**	**4**
Total	**48**	**44**	**92**	**0**	**0**	**0**	**9**	**0**	**9**	**1**	**0**	**1**	**102**	**100**

Table 24 above illustrates that the enrolments in Diploma accounted for 83% of the overall enrolments in this CESM, followed by MTech with 13% and DTech accounted for 4%.

Figure 21: Racial breakdown of Diploma enrolments in Agricultural Science-General

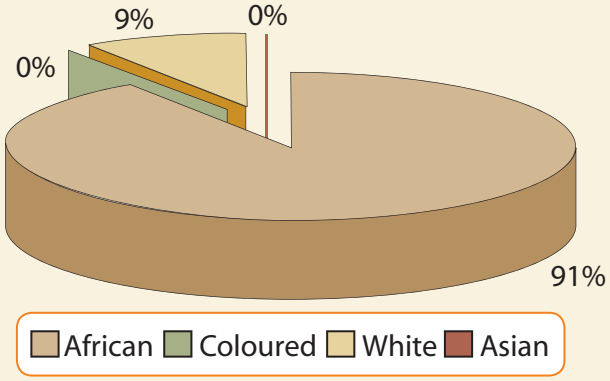


Figure 21 above depicts that African students dominated with 91% of the Diploma enrolments in Agricultural Science - General, followed by Whites with 9%. No Asian and Coloured students enrolled in this CESM at Diploma level during the 2009 academic year.

Figure 22: Gender breakdown of Diploma enrolments in Agricultural Science-General

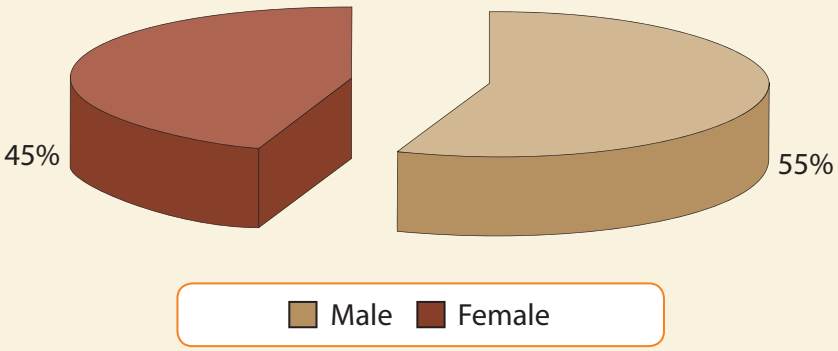


Figure 22 above indicates that male students constituted 55% of the Diploma enrolments in Agricultural Science - General and that female students accounted for 45%. African males dominated the male enrolments in this CESM at Diploma level with 83%, followed by Whites with 17%. No Coloureds or Asians enrolled in this CESM at Diploma level.

Figure 23: Racial breakdown of MTech enrolments in Agricultural Science-General

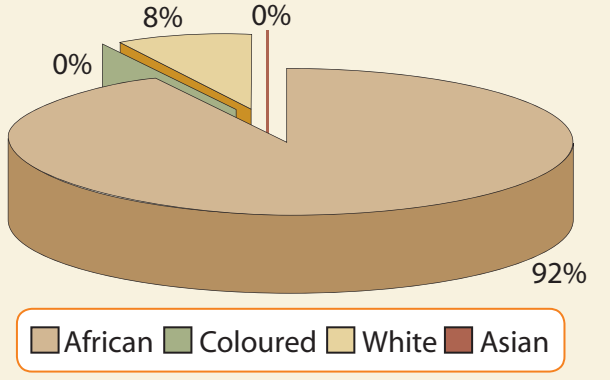


Figure 23 above depicts that the MTech Agricultural Science - General programme was dominated by African students with 92% and White students constituted 8%. No Asian or Coloured students enrolled in this CESM at MTech level at universities of technology during the 2009 academic year.

Figure 24: Gender breakdown of MTech enrolments in Agricultural Science-General

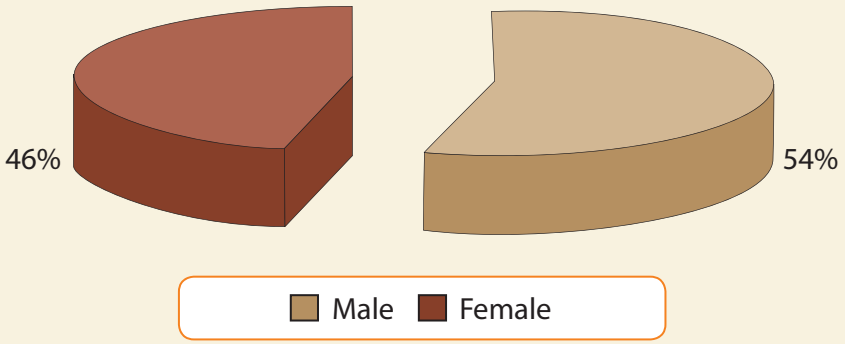


Figure 24 above indicates that male students constituted 54% of the total MTech Agricultural Science - General enrolments, while females accounted for 46%. African males represented 6 out of 7 males enrolled in this CESM at MTech level, while Whites constituted only 1 student.

Four (4) male students enrolled at universities of technology for DTech Agricultural Science - General during the 2009 academic year; 3 were Africans and 1 was Asian.

3.3.2.7. Renewable Natural Resources enrolments at universities of technology in 2009

Renewable Natural Resources includes Diploma, BTech, MTech and DTech in Nature Conservation. TUT and DUT are the only universities of technology offering these programmes. Twenty one (21) students enrolled in this CESM during the 2009 academic year.

Table 25 below presents a demographic breakdown of Renewable Natural Resources enrolments by level of qualification during the 2009 academic year.

Table 25: Demographic breakdown of Renewable Natural Resources enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	6	12	**18**	0	0	**0**	3	0	**3**	0	0	**0**	**21**	**100**
Total	**6**	**12**	**18**	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**21**	**100**

All the 21 students enrolled in this CESM were registered at Diploma level.

Figure 25: Racial breakdown of Diploma enrolments in Renewable Natural Resources

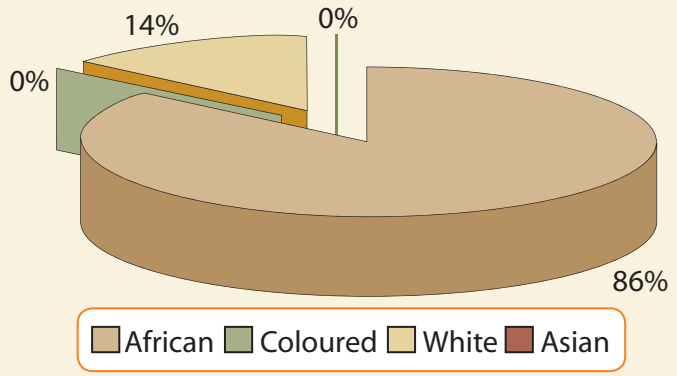


Figure 25 above depicts that Africans dominated the Diploma enrolments in Renewable Natural Resources with 86%, followed by Whites with 14%. No Coloureds or Asians registered for a Diploma in this CESM during the 2009 academic year.

Figure 26: Gender breakdown of Diploma enrolments in Renewable Natural Resources

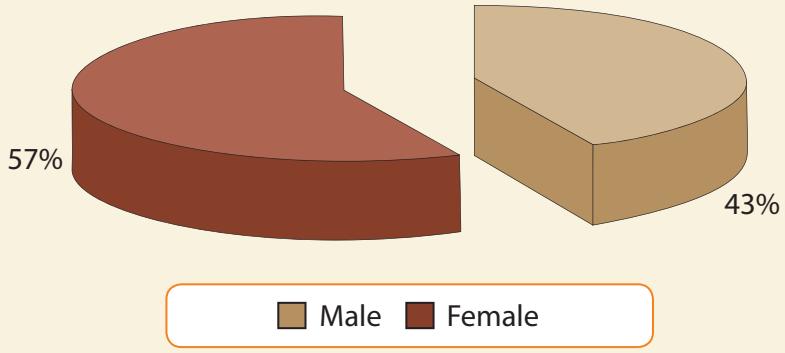


Figure 26 above depicts that female students constituted 57% of the Diploma enrolments in Renewable Natural Resources, while male students constituted 43%. African enrolments dominated the total female students for the Diploma in Renewable Natural Resources with 80%, followed by White students with 20%.

3.3.2.8 Wildlife Management enrolments at universities of technology in 2009

Wildlife Management CESM includes Diploma, BTech, MTech and DTech in Game Ranch Management. TUT is the only university of technology offering this programme. Three hundred and fifty two (352) students registered for Wildlife Management in 2009.

Table 26 below presents a demographic breakdown of Wildlife Management enrolments by level of qualification during the 2009 academic year.

Table 26: Demographic breakdown of Wildlife Management enrolments by level of qualification														
Level	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	118	123	**241**	6	6	**12**	38	22	**60**	2	2	**4**	**317**	**90**
BTech	18	14	**32**	0	0	**0**	0	0	**0**	0	0	**0**	**32**	**9**
MTech	0	1	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**	**1**
DTech	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**	**0**
Total	**136**	**137**	**275**	**6**	**6**	**12**	**38**	**22**	**61**	**2**	**2**	**4**	**352**	**100**

Table 26 above shows that Diplomas dominated Wildlife Management enrolments with 90%, followed by BTech with 9%, MTech with 1% and DTech with less than 1%.

Figure 27: Racial breakdown of Diploma enrolments in Wildlife Management

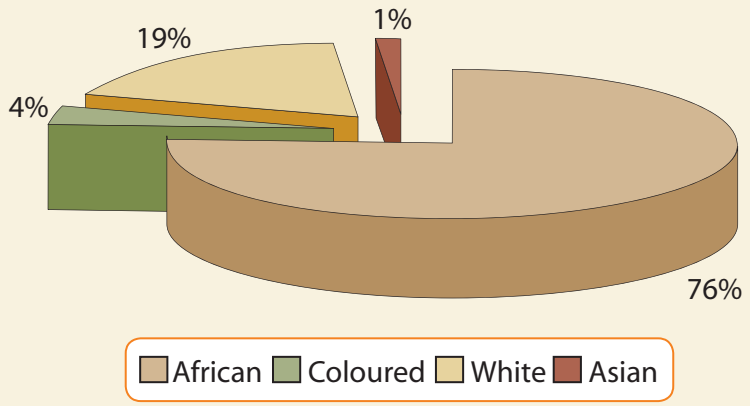


Figure 27 above indicates that enrolments during the 2009 academic year at Diploma level in this CESM were dominated by Africans with 76%, followed by Whites with 19%. Coloureds and Asians respectively constituted 4% and 1% of the total Diploma enrolments in this CESM during the 2009 academic year.

Figure 28: Gender breakdown of Diploma enrolments in Wildlife Management

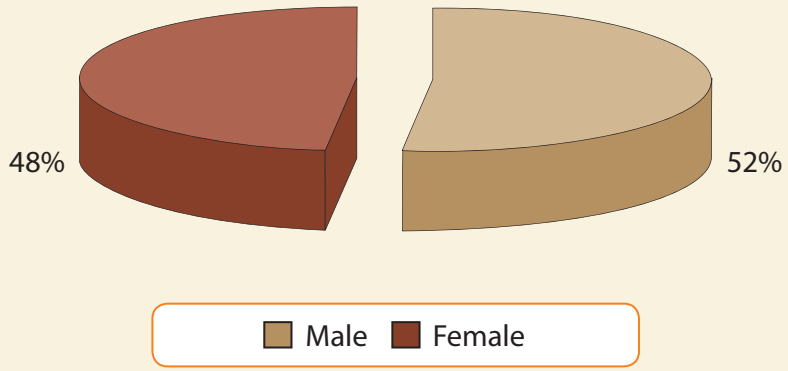


Figure 28 above shows that male students constituted 52% of the Diploma enrolments in Wildlife Management while female students constituted 48%. African males accounted for 72% of the male students in Diploma in Wildlife Management, followed by Whites males with 34%, Coloured and Asian males constituted 4% and 1% of the male students respectively.

Thirty two (32) African students were enrolled in this CESM at BTech level.

Figure 29: Gender breakdown of BTech enrolments in Wildlife Management

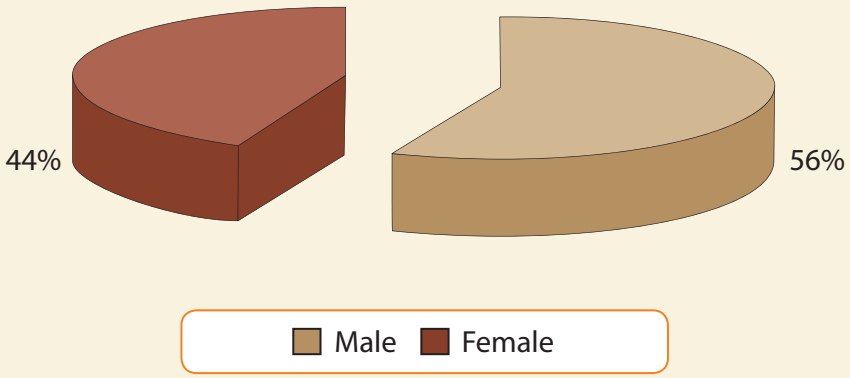


Figure 29 above depicts that males accounted for 56% of enrolments in Wildlife Management while females constituted 44%.

3.3.2.9. Agricultural Extension enrolments at universities of technology in 2009

Agricultural Extension CESM includes Diploma, BTech, MTech and DTech in Agriculture: Development and Extension and the only universities of technology offering these programmes are TUT and MUT. Eighty nine (89) African students enrolled in this CESM in 2009.

Table 27 below presents a demographic breakdown of Agricultural Extension enrolments by level of qualification during the 2009 academic year.

Table 27: Demographic breakdown of Agricultural Extension enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	31	43	**74**	0	0	**0**	0	0	**0**	0	0	**0**	**74**	**83**
BTech	7	8	**15**	0	0	**0**	0	0	**0**	0	0	**0**	**15**	**17**
Total	**38**	**51**	**89**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**89**	**100**

Table 27 above shows that Diploma dominated Agricultural Extension enrolments during the 2009 academic year at universities of technology with 83%, followed by BTech with 17%.

Out of 74 African students enrolled for Diploma in this CESM; 43 were females and 31 were males.

Of the 15 African students registered for BTech in Agricultural Extension; 8 were females and 7 were males.

3.3.2.10 Veterinary Technology enrolments at universities of technology in 2009

Veterinary Technology programmes are offered by TUT only. Thirty six (36) students registered in this CESM during the 2009 academic year.

Table 28 below presents a demographic breakdown of Veterinary Technology enrolments by level of qualification during the 2009 academic year.

Table 28: Demographic breakdown of Veterinary Technology enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	9	10	**19**	0	0	**0**	1	0	**1**	0	0	**0**	**20**	**56**
BTech	0	8	**8**	0	0	**0**	0	3	**3**	0	1	**1**	**12**	**33**
MTech	0	2	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**	**11**
Total	**9**	**20**	**29**	**0**	**0**	**0**	**2**	**4**	**6**	**0**	**1**	**1**	**36**	**100**

Table 28 above shows that Diploma constituted 56% of the total Veterinary Technology enrolments for the 2009 academic year, followed by BTech with 33% and MTech with 11%.

Figure 30: Racial breakdown of Diploma enrolments in Veterinary Technology

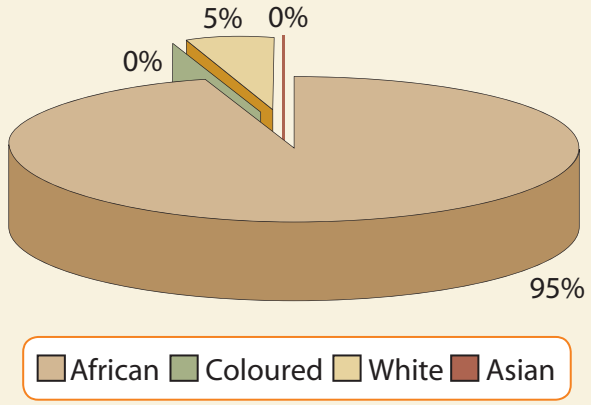


Figure 30 above indicates that African students dominated Diploma enrolments in Veterinary Technology with 95%, followed by White students with 5%. No Coloureds or Asians registered for Diploma enrolments in this CESM during the 2009 academic year.

Figure 31: Gender breakdown of Diploma enrolments in Veterinary Technology

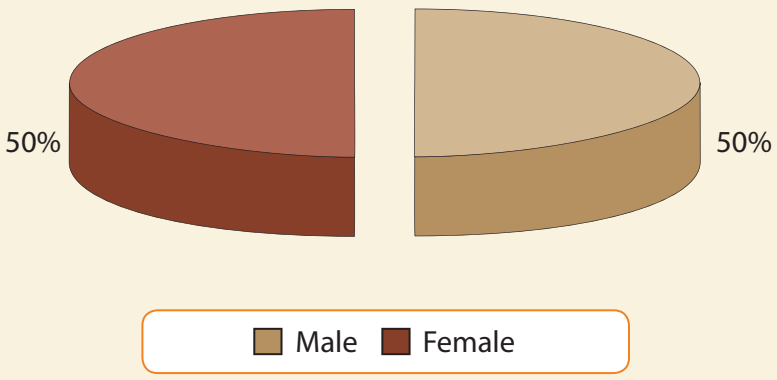


Figure 31 above indicates that male students and female students accounted for 50% each in Diploma Veterinary Technology enrolments during the 2009 academic year.

Figure 32: Racial breakdown of BTech enrolments in Veterinary Technology

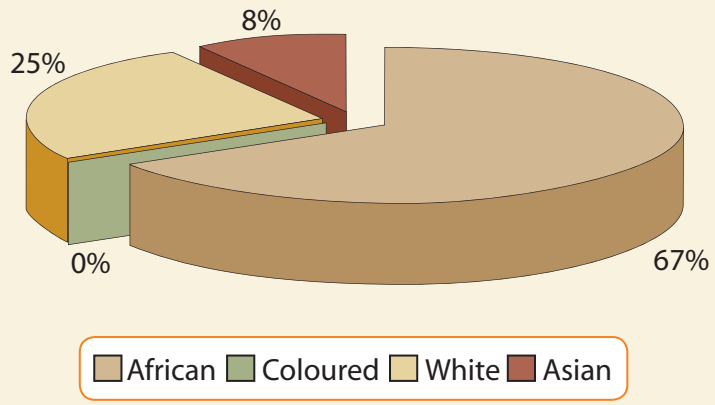


Figure 32 above indicates that Africans comprised 67% of the total BTech enrolments in Veterinary Technology, followed by Whites with 25% and Asians with 8%. No Coloured students registered for BTech in this CESM during the 2009 academic year.

Figure 33: Racial breakdown of MTech enrolments in Veterinary Technology

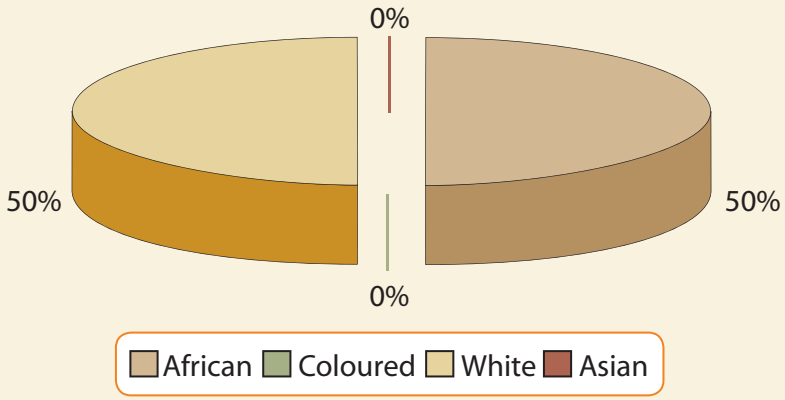


Figure 33 above indicates that African and White students accounted for 50% each of MTech enrolments in Veterinary Technology. No Coloured or Asian students registered for MTech in this CESM during the 2009 academic year.

Figure 34: Gender breakdown of MTech enrolments in Veterinary Technology

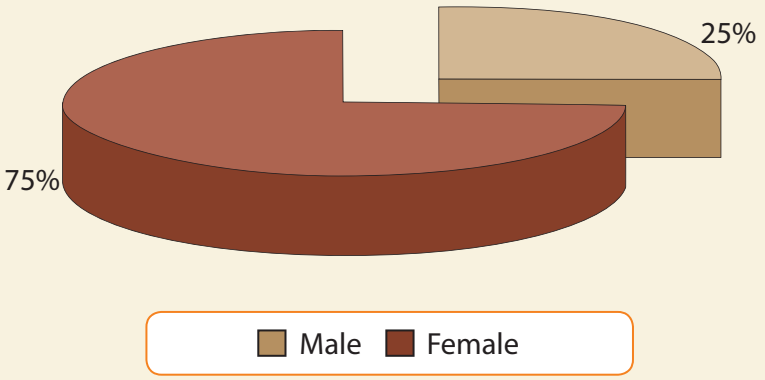


Figure 34 above indicates that female students dominated with 75% and males constituted 25% of the total MTech enrolments in Veterinary Technology during the 2009 academic year.

3.3.2.11. Agricultural Biotechnology enrolments at universities of technology in 2009

Agricultural Biotechnology programmes are offered by DUT only. Fifty two (52) students enrolled in this CESM during the 2009 academic year.

Table 29 below presents a demographic breakdown of Agricultural Biotechnology enrolments by level of qualification during the 2009 academic year.

Table 29: Demographic breakdown of Agricultural Biotechnology enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	8	14	**22**	0	0	**0**	0	0	**0**	3	18	**21**	**43**	**88**
BTech	0	1	**1**	0	0	**0**	1	0	**1**	0	3	**3**	**5**	**10**
MTech	0	1	**1**	0	1	**1**	0	0	**0**	0	2	**2**	**4**	**8**
Total	**8**	**16**	**24**	**0**	**1**	**1**	**1**	**0**	**1**	**3**	**23**	**26**	**52**	**100**

Table 29 above shows that Diploma dominated Agricultural Biotechnology enrolments during the 2009 academic year with 82%, followed by BTech with 10% and MTech with 8%.

Figure 35: Racial breakdown of Diploma enrolments in Agricultural Biotechnology

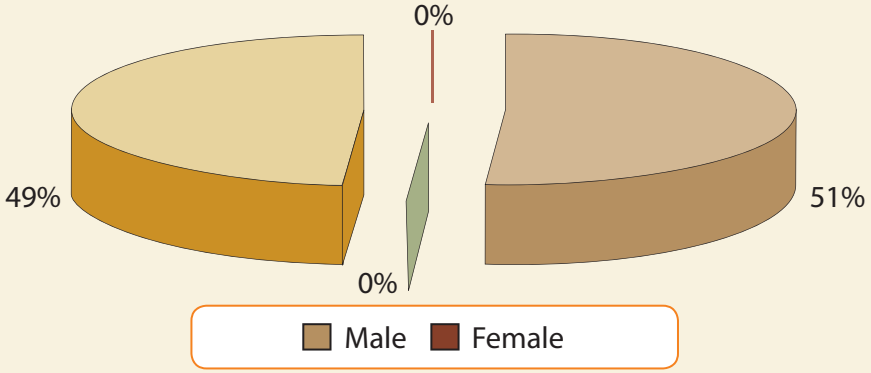


Figure 35 above indicates that African students constituted 51% of the Diploma enrolments in Agricultural Biotechnology during the 2009 academic year, followed by Asian students with 49%.

Figure 36: Gender breakdown of Diploma enrolments in Agricultural Biotechnology

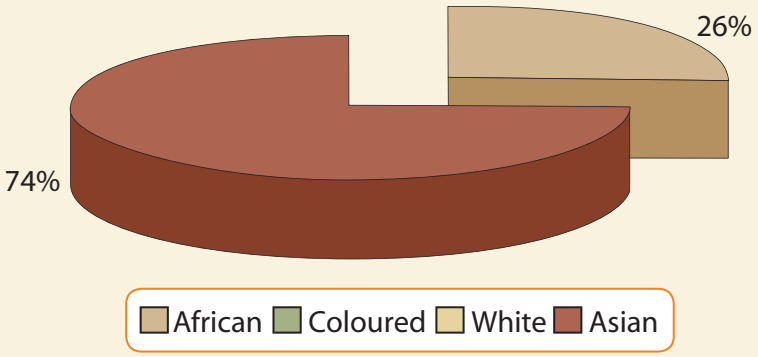


Figure 36 above indicates that female students constituted 74% of the total Diploma enrolments in Agricultural Biotechnology during the 2009 academic year, while male students constituted 26%. Asian females dominated female Diploma enrolments in this CESM with 56%, followed by Africans with 44%. No White or Coloured students registered for the Diploma in this CESM during the 2009 academic year.

Figure 37: Racial breakdown of BTech enrolments in Agricultural Biotechnology

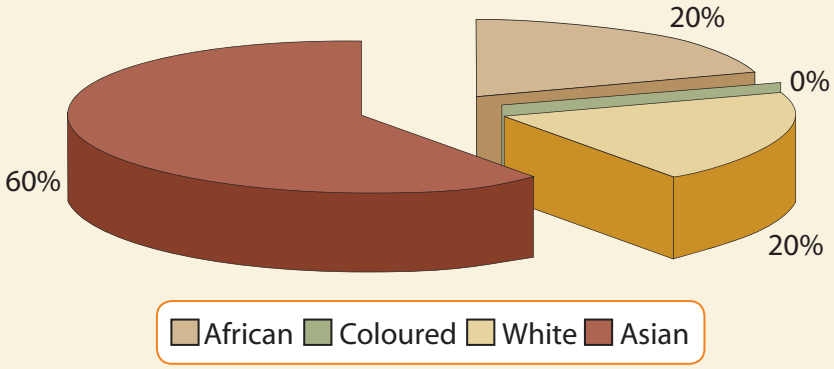


Figure 37 above indicates that Asians comprised 60% of the total BTech enrolments in Agricultural Biotechnology, followed by African and White students with 20% each. No Coloureds enrolled in this CESM during the 2009 academic year.

Figure 38: Gender breakdown of BTech enrolments in Agricultural Biotechnology

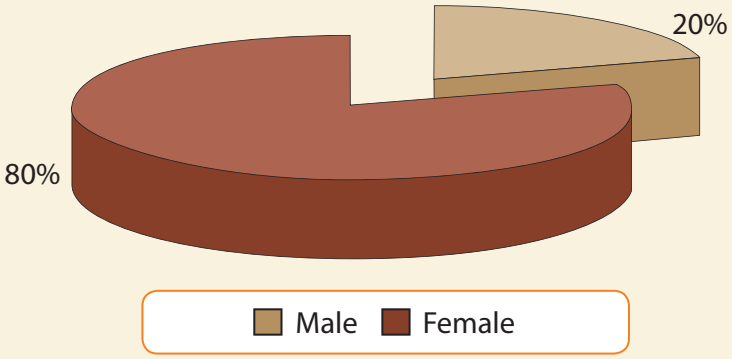


Figure 38 above indicates that female students dominated the BTech enrolments in Agricultural Biotechnology during the 2009 academic year with 80% while male students comprised 20%. Asian females dominated the female BTech enrolments in this CESM with 75%, followed by Africans with 25%. No White or Coloured females were enrolled in this CESM at BTech level.

Figure 39: Racial breakdown of MTech enrolments in Agricultural Biotechnology

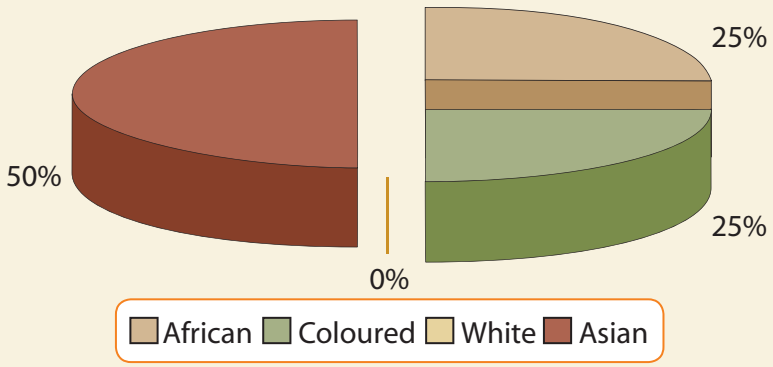


Figure 39 above indicates that Asians comprised 50% of the total MTech enrolments in Agricultural Biotechnology, followed by African and Coloured students with 25% each. No White students were registered at MTech level in this CESM.

3.3.2.12. Food Science and Technology enrolments at universities of technology in 2009

One hundred and eighty eight (188) students enrolled in this CESM during the 2009 academic year. This data was received from DUT and CPUT.

Table 30 below presents a demographic breakdown of Food Science and Technology enrolments by level of qualification during the 2009 academic year.

Table 30: Demographic breakdown of Food Science and Technology enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	49	92	**141**	9	7	**16**	0	7	**7**	4	18	**22**	**186**	**99**
MTech	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**1**
Total	**49**	**94**	**143**	**9**	**7**	**16**	**0**	**7**	**7**	**4**	**18**	**22**	**188**	**100**

One hundred and eighty six (186) students enrolled in this CESM were registered at Diploma level and 2 were registered at MTech level.

Figure 40: Racial breakdown of Diploma enrolments in Food Science and Technology

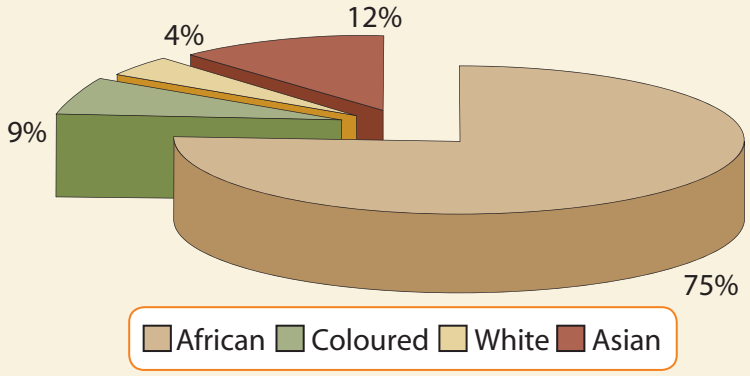


Figure 40 above indicates that Africans comprised 75% of the total Diploma enrolments in Food Science and Technology, followed by Asians with 12%, while Coloured and White students contributed 9% and 4% respectively.

Figure 41: Gender breakdown of Diploma enrolments in Food Science and Technology

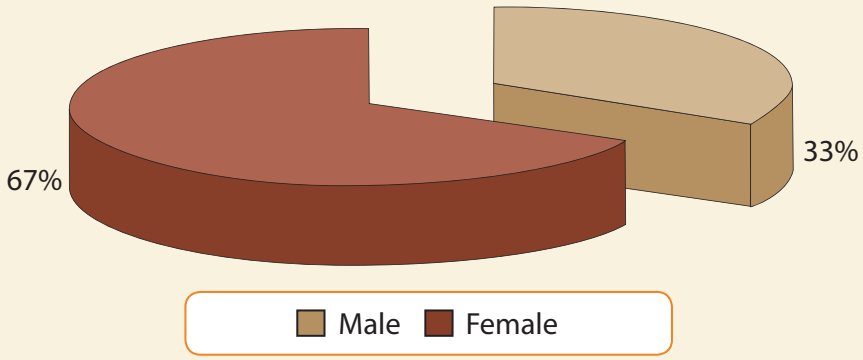


Figure 41 above indicates that female students constituted 67% of the total Diploma enrolments in Food Science and Technology during the 2009 academic year and male students accounted for 33%. African females accounted for 73% of the female enrolments in this CESM at Diploma level, followed by Asians with 15%, while, Coloureds and Whites accounted for 6% each.

3.3.2.13. Land Reclamation enrolments at universities of technology in 2009

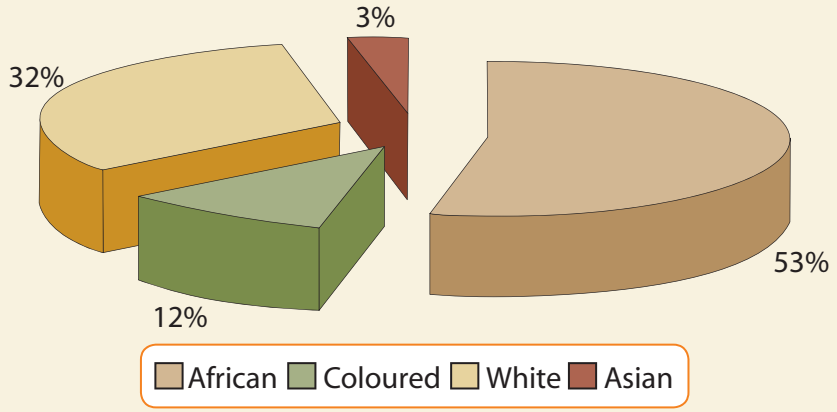
Land Reclamation CESM includes Diploma, BTech, MTech and DTech in Landscape Technology. Land Reclamation programmes are offered by TUT, DUT and CPUT only. Thirty four (34) students registered in this CESM during the 2009 academic year.

Table 31: Demographic breakdown of Land Reclamation enrolments by level of qualification

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	11	7	**18**	0	4	**4**	9	2	**11**	1	0	**1**	**34**	**100**
Total	**11**	**7**	**18**	**0**	**4**	**4**	**9**	**2**	**11**	**1**	**0**	**1**	**34**	**100**

All 34 students enrolled in this CESM were registered at Diploma level.

Figure 42: Racial breakdown of Diploma enrolments in Land Reclamation



Racial breakdown in Figure 42 above shows that Africans accounted for 53% of the Diploma enrolments in Land Reclamation, followed by Whites with 32%, while Coloureds and Asians accounted for 12% and 3% respectively.

Figure 43: Gender breakdown of Diploma enrolments in Land Reclamation

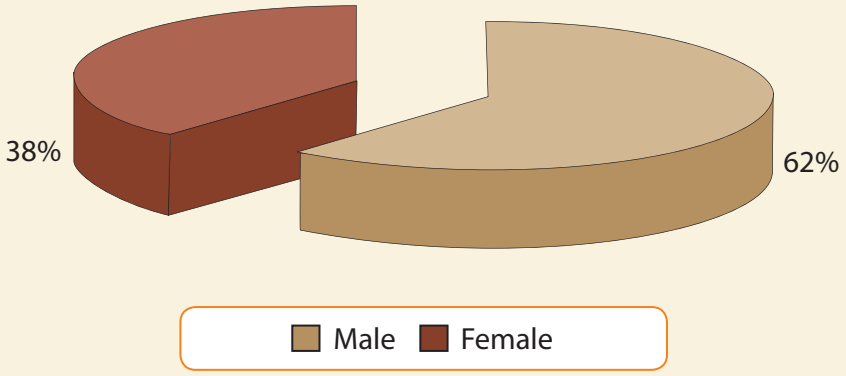


Figure 43 above depicts that males constituted 62% of the Diploma enrolments in Land Reclamation while females accounted for 38%. African males dominated the male enrolments in this CESM at Diploma level with 52%, followed by Whites with 43%, while Asians accounted for 5%.

3.4 Graduate outputs of universities of technology during the 2009 academic year

Table 32 and Figure 44 below presents number of graduates in the universities of technology during the 2009 academic year.

Table 32: Graduate figures at universities of technology in 2009

Name of University of Technology	Number of AET Graduates	Percentage (%)
CPUT	104	13
CUT	52	6
DUT	188	23
MUT	189	23
TUT	283	35
Total	**816**	**100**

Figure 44: Graduates at Universities of Technology in 2009

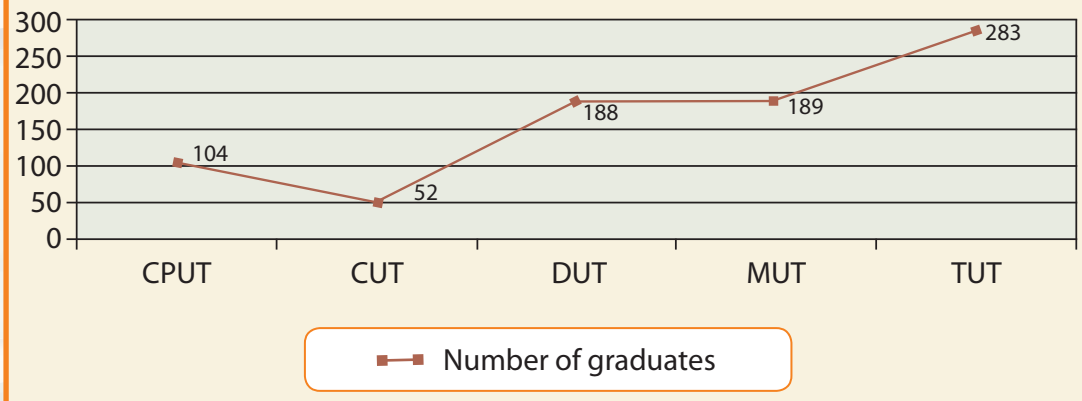


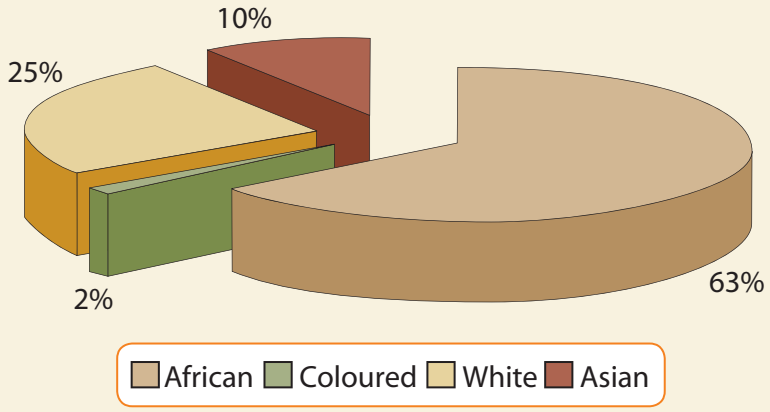
Figure 44 and Table 32 above show that TUT is the only university of technology that had more than 200 graduates during the 2009 academic year.

Table 33 below presents a demographic breakdown of graduates from the universities of technology in AET programmes during the 2009 academic year .

Table 33: Breakdown of graduates by gender and race per university of technology during 2009

Name of the university	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	4	4	**8**	8	2	**10**	73	13	**86**	0	0	**0**	**104**
CUT	13	6	**19**	0	0	**0**	31	2	**33**	0	0	**0**	**52**
DUT	28	68	**96**	1	2	**3**	4	8	**12**	10	67	**77**	**188**
MUT	104	84	**188**	0	0	**0**	1	0	**1**	0	0	**0**	**189**
TUT	124	86	**210**	1	0	**1**	46	25	**71**	1	0	**1**	**283**
Total	**273**	**248**	**521**	**10**	**4**	**14**	**155**	**48**	**203**	**11**	**67**	**78**	**816**

Figure 45: Racial breakdown of AET graduates at Universities of Technology



Racial breakdown in Figure 45 above shows that African graduates constituted 63% of all AET graduates at universities of technology during the 2009 academic year, followed by Whites with 25% and Asians with 10%. Coloured graduates comprised 2% of the total graduates from universities of technology in 2009.

Figure 46: Gender breakdown of AET graduates at Universities of Technology

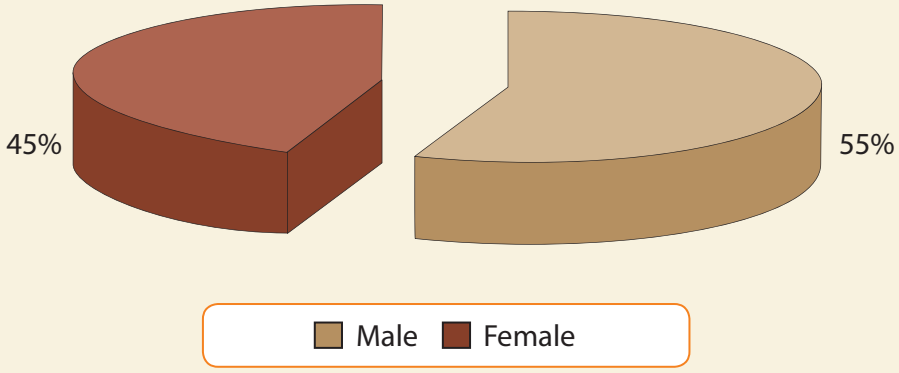
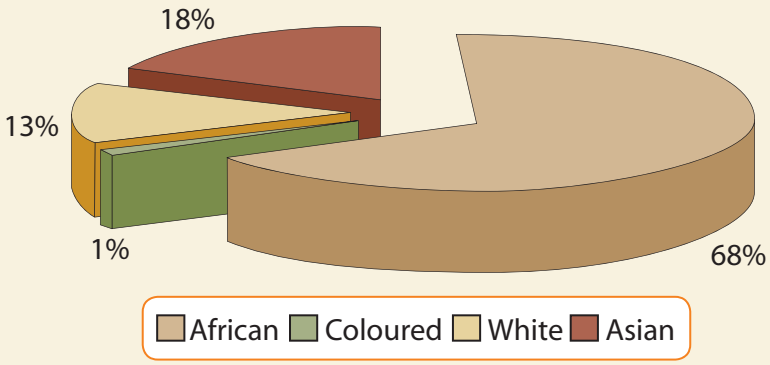


Figure 46 above indicates that male graduates constituted 55% of the overall AET graduates at universities of technology during the 2009 academic year and female graduates accounted for 45%.

Figure 47: Racial breakdown of AET female graduates at Universities of Technology



As depicted in Figure 47 above, African female graduates accounted for 68% of the total female

graduates during the 2009 academic year. Asian and White female graduates constituted 18% and 13% respectively. Coloured female graduates accounted for 1% of the total number of female graduates at universities of technology during the 2009 academic year.

Figure 48: Racial breakdown of AET male graduates at Universities of Technology

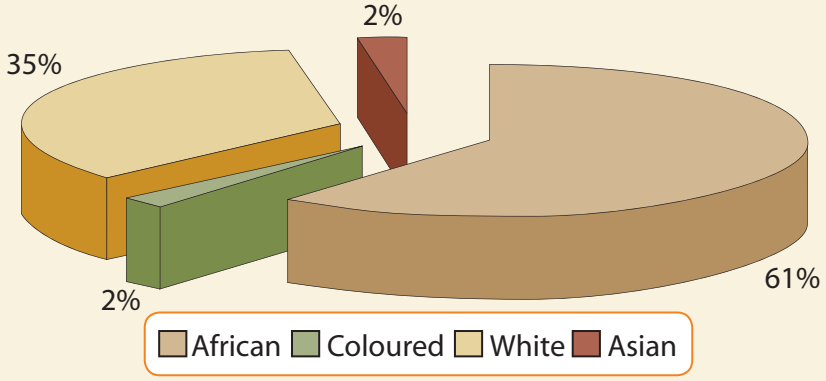


Figure 48 above shows that African and White graduates constituted 61% and 35% of the total male graduates respectively. Coloureds and Asians each comprised 2% of the total male graduates at universities of technology.

3.4.1 AET graduates at universities of technology by level of qualification and CESM in 2009

Table 34 below indicates that Animal Science, Plant Science and Renewable Natural Resources have high graduate figures with 22%, 17% and 13% respectively. Other CESM categories accounted for less than 12% of the overall graduates each.

Table 34: Agricultural graduates at universities of technology by CESM & levels of qualification during the 2009 academic year

CESM	N.H. CER.	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Agricultural Management	0	48	33	0	0	**81**	**10**
Animal Science	1	160	21	1	0	**183**	**22**
Horticulture	0	16	0	0	0	**16**	**2**
Plant Science	0	102	35	2	0	**139**	**17**
Renewable Natural Resources	0	62	38	3	0	**103**	**13**
Wildlife Management	0	46	0	0	0	**46**	**6**
Agricultural Science - General	0	28	8	3	0	**39**	**5**
Agricultural Extension	0	34	0	0	0	**34**	**4**
Veterinary Technology	0	11	6	0	0	**17**	**2**
Biotechnology	0	52	21	4	0	**77**	**9**
Food Science	0	54	15	0	0	**69**	**8**
Rural Development	0	11	0	0	0	**11**	**1**
Land Reclamation	1	0	0	0	0	**1**	**0**
Total	**2**	**624**	**177**	**13**	**0**	**816**	
Percentage (%)	**0**	**76**	**22**	**2**	**0**		**100**

Table 34 above indicates that Diplomas dominated the graduates at universities of technology during the 2009 academic year with 76%, followed by BTech with 22% and MTech with 2%. National Higher Certificate graduates were almost non-existent with less than 1 percent.

Table 35: Demographic breakdown of National Higher Certificate graduates by CESM at universities of technology during the 2009 academic year

CESM (Certificate)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Animal Science	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Land Reclamation	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**2**

The National Higher Certificate programmes are rated at NQF level 5.The data in Table 35 above depicts that only 2 Certificates were awarded during the 2009 academic year.

Table 36: Demographic breakdown of Diploma graduates by CESM at universities of technology during the 2009 academic year

CESM (Diploma)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Agricultural Management	3	5	**8**	0	0	**0**	39	1	**40**	0	0	**0**	**48**	**8**
Animal Science	84	57	**141**	1	0	**1**	10	7	**17**	1	0	**1**	**160**	**26**
Horticulture	8	4	**12**	0	0	**0**	2	0	**2**	1	1	**2**	**16**	**3**
Plant Science	59	41	**100**	0	0	**0**	2	0	**2**	0	0	**0**	**102**	**16**
Renewable Natural Resources	29	18	**47**	0	0	**0**	11	4	**15**	0	0	**0**	**62**	**10**
Wildlife Management	9	14	**23**	0	0	**0**	19	2	**21**	1	1	**2**	**46**	**7**
Agricultural Science - General	1	0	**1**	1	1	**2**	19	6	**25**	0	0	**0**	**28**	**4**
Agricultural Extension	16	18	**34**	0	0	**0**	0	0	**0**	0	0	**0**	**34**	**5**
Veterinary Technology	5	3	**8**	0	0	**0**	0	3	**3**	0	0	**0**	**11**	**2**
Agricultural Biotechnology	4	17	**21**	0	0	**0**	0	1	**1**	3	27	**30**	**52**	**8**
Food Science	2	23	**25**	0	1	**1**	0	3	**3**	4	21	**25**	**54**	**9**
Rural Development	6	5	**11**	0	0	**0**	0	0	**0**	0	0	**0**	**11**	**2**
Total	**226**	**205**	**431**	**2**	**2**	**4**	**102**	**27**	**129**	**10**	**50**	**60**	**624**	**100**

Table 36 above indicates that a total number of 624 graduates were awarded with Diploma in 2009. Animal Science and Plant Science graduates accounted for 26% and 16% of the overall Diploma graduates respectively. All other CESMs comprise less than 10% of the total Diploma graduates.

African graduates dominated Diploma graduates with 66%, followed by Whites with 23% and Asians with 11%. Coloureds constituted just 1% of the total number of Diploma graduates during the 2009 academic year.

Table 37: Demographic breakdown of BTech graduates by CESM at universities of technology during the 2009 academic year

CESM (BTech)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Agricultural Management	10	2	**12**	0	0	**0**	19	2	**21**	0	0	**0**	**33**	**19**
Animal Science	8	9	**17**	2	0	**2**	1	1	**2**	0	0	**0**	**21**	**12**
Plant Science	24	7	**31**	1	0	**1**	3	0	**3**	0	0	**0**	**35**	**20**
Renewable Natural Resources	21	8	**29**	1	0	**1**	6	2	**8**	0	0	**0**	**38**	**21**
Agricultural Science - General	0	2	**2**	3	0	**3**	3	0	**3**	0	0	**0**	**8**	**5**

Table 37: Demographic breakdown of BTech graduates by CESM at universities of technology during the 2009 academic year

CESM (BTech)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Food Science	1	3	**4**	0	0	**0**	0	4	**4**	0	7	**7**	**15**	**8**
Veterinary Technology	1	2	**3**	0	0	**0**	1	2	**3**	0	0	**0**	**6**	**3**
Total	**68**	**39**	**107**	**7**	**0**	**7**	**35**	**11**	**46**	**1**	**16**	**17**	**177**	**100**

Table 37 above indicates that there were 177 graduates produced at BTech level from universities of technology in 2009. Renewable Natural Resources, Plant Science and Agricultural Management accounted for 21%, 20% and 19% respectively of the total graduates in BTech at universities of technology during the 2009 academic year.

Africans were the largest recipients of BTech qualifications during the 2009 academic year with 60%, followed by Whites with 26%. Coloured and Asian graduates accounted for 10% and 4% respectively of the overall number of BTech graduates produced at universities of technology during the 2009 academic year.

Table 38: Demographic breakdown of Post-graduates graduates by CESM at universities of technology during the 2009 academic year

CESM (Post-graduate)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
MTech (Animal Science)	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**8**
MTech (Agricultural Science - General)	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**	**23**
MTech (Plant Science)	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**15**
MTech (Biotechnology)	0	1	**1**	1	0	**1**	0	0	**0**	0	2	**2**	**4**	**31**
MTech (Renewable Resources)	1	0	**1**	0	0	**0**	1	1	**2**	0	0	**0**	**3**	**23**
Total	**3**	**2**	**5**	**1**	**0**	**1**	**4**	**1**	**5**	**0**	**2**	**2**	**13**	**100**

As depicted in Table 38 above, 13 graduates received MTech qualifications during the 2009 academic year. Africans and Whites constituted 38% each of the total MTech at universities of technology, followed by Asians with 15% and Coloureds with 8%.

3.4.1.1 Agricultural Management graduates at universities of technology in 2009

Eighty one (81) graduates received Agricultural Management qualifications during the 2009 academic year.

Table 39 below presents a demographic breakdown of Agricultural Management graduates by level of qualification during the 2009 academic year.

Table 39: Demographic breakdown of Agricultural Management graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	3	5	**8**	0	0	**0**	39	1	**40**	0	0	**0**	**48**	**59**
BTech	10	2	**12**	0	0	**0**	19	2	**21**	0	0	**0**	**33**	**41**
Total	**13**	**7**	**20**	**0**	**0**	**0**	**58**	**3**	**61**	**0**	**0**	**0**	**81**	**100**

Diploma graduates constituted 59% of the overall Agricultural Management graduates while BTech accounted for 41%.

Figure 49: Racial breakdown of Diploma graduates in Agricultural Management

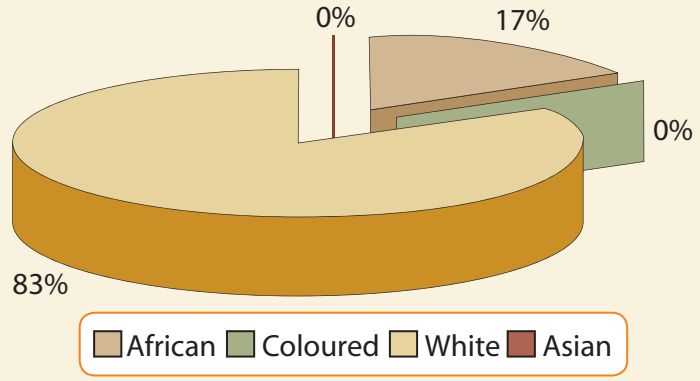


Figure 49 above indicates that Whites vastly dominated Diploma graduates in Agricultural Management with 83%, followed by Africans with 17%. There were no Coloured or Asian graduates produced in Agricultural Management during the 2009 academic year.

Figure 50: Gender breakdown of Diploma graduates in Agricultural Management

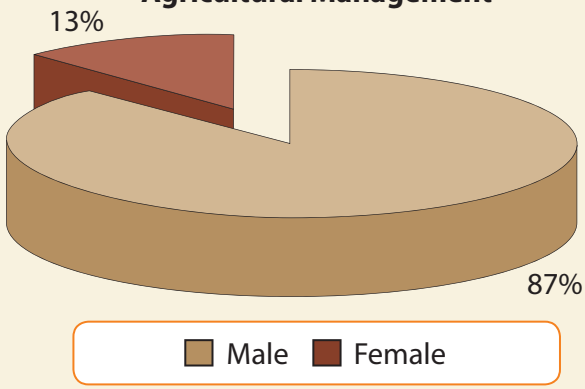


Figure 50 above indicates that male graduates constituted 87% of Diploma graduates in Agricultural Management and female graduates accounted for 13%. White males constituted 93% of the male graduates, followed by Africans with 7%. African female graduates amounted to 5, while 1 White female qualified. Coloured and Asian females were not represented in this CESM at Diploma level.

Figure 51: Racial breakdown of BTech graduates in Agricultural Management

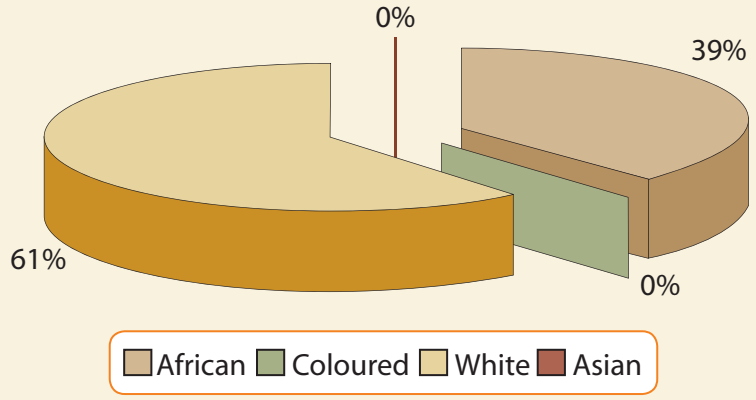


Figure 51 above indicates that Whites represented 61% of BTech graduates in this CESM, followed by Africans with 39%. There were no Coloured or Asian graduates in Agricultural Management during the 2009 academic year.

Figure 52: Gender breakdown of BTech graduates in Agricultural Management

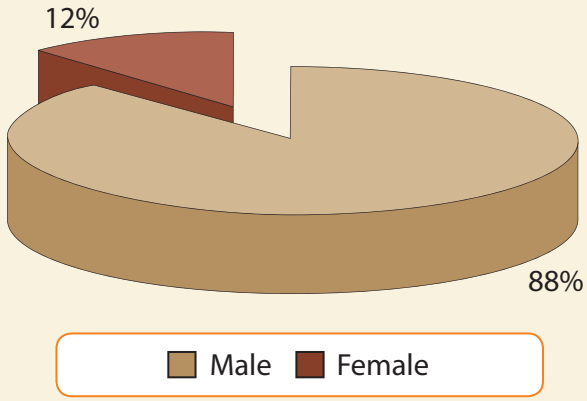


Figure 52 above indicates that male graduates constituted 88% of BTech graduates in this CESM and female graduates accounted for 12%.

3.4.1.2 Animal Science graduates at universities of technology in 2009

One hundred and eighty three (183) graduates received Animal Science qualifications during the 2009 academic year.

Table 40 below presents a demographic breakdown of Animal Science graduates by level of qualification during the 2009 academic year.

Table 40: Demographic breakdown of Animal Science graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
N.H. Certificate	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**	**1**
Diploma	84	57	**141**	1	0	**1**	10	7	**17**	1	0	**1**	**160**	**87**
BTech	8	9	**17**	2	0	**2**	1	1	**2**	0	0	**0**	**21**	**11**
MTech	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**1**
Total	**92**	**66**	**158**	**3**	**0**	**3**	**12**	**9**	**21**	**1**	**0**	**1**	**183**	**100**

Eighty seven percent (87%) of the total Animal Science graduates were Diploma graduates and 11% were BTech graduates. National Higher Certificates and MTech each comprised 1% of all Animal Science graduates.

As indicated in the Table 40 above, a total number of 160 graduates were produced at Diploma Animal Science level during the 2009 academic year.

Figure 53: Racial breakdown of Diploma graduates in Animal Science

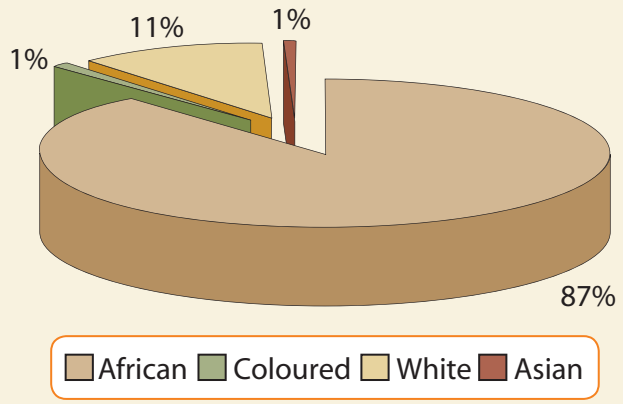


Figure 53 above shows that Africans comprised 87% of the total Diploma graduates in Animal Science, followed by Whites with 11%. Coloured and Asian graduates each constituted only 1% of the Diploma graduates in Animal Science at universities of technology during the 2009 academic year.

Figure 54: Gender breakdown of Diploma graduates in Animal Science

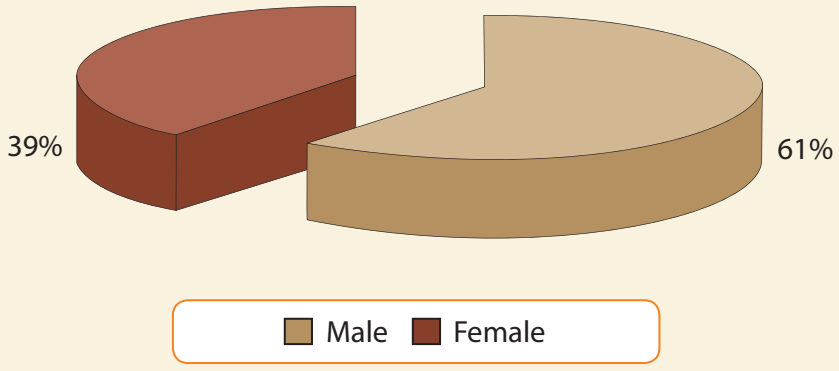


Figure 54 above shows that male graduates formed 61% of Diploma graduates in Animal Science and female graduates formed 39%. Of the 96 males graduating in this CESM at Diploma; 84 were Africans, 10 were Whites, 1 was Coloured and 1 was Asian. Fifty seven (57) African females and 7 White females qualified for the Diploma in Animal Science.

Figure 55: Racial breakdown of BTech graduates in Animal Science

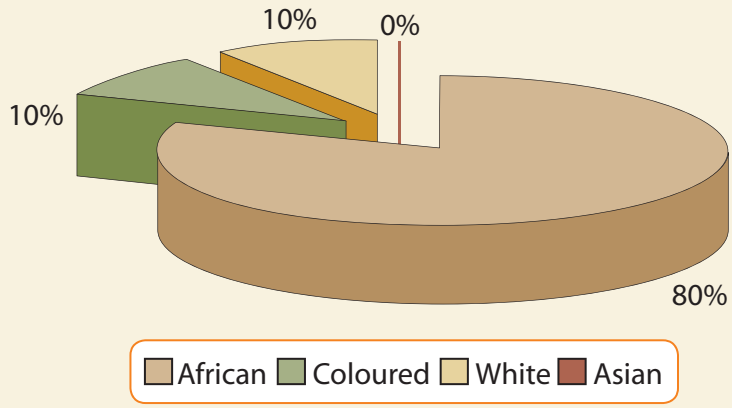


Figure 55 above depicts that African graduates dominated BTech graduates in Animal Science with 81%, while Whites and Coloureds each constituted just 10%. No Asians graduated in this CESM at BTech level during the 2009 academic year at universities of technology.

Figure 56: Gender breakdown of BTech graduates in Animal Science

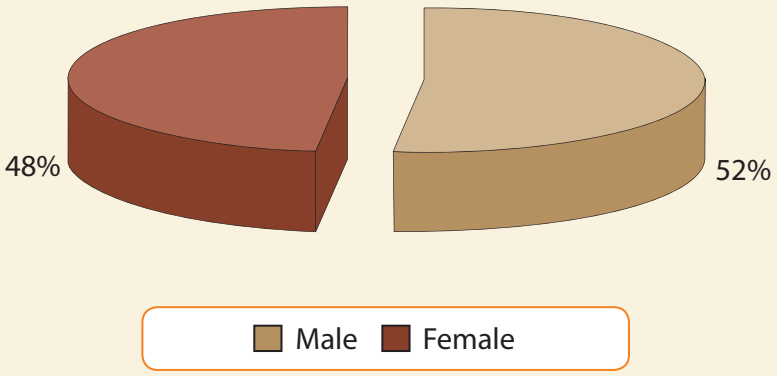


Figure 56 above shows that male graduates constituted 52% of BTech graduates in Animal Science and female graduates constituted 48%. Of the 11 males graduating in this CESM at BTech level; 8 were Africans, 2 were Coloureds and 1 was White. Nine (9) African females and 1 White female qualified for BTech in Animal Science.

3.4.1.3 Horticulture graduates at universities of technology in 2009

Sixteen (16) graduates received Horticulture qualifications at universities of technology during the 2009 academic year.

Table 41 below presents a demographic breakdown of Horticulture graduates by level of qualification during the 2009 academic year.

Table 41: Demographic breakdown of Horticulture graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	8	4	**12**	0	0	**0**	2	0	**2**	1	1	**2**	**16**	**100**
Total	**8**	**4**	**12**	**0**	**0**	**0**	**2**	**0**	**2**	**1**	**1**	**2**	**16**	**100**

Only Diploma graduates were produced in this CESM during the 2009 academic year at the universities of technology; 11 were males and 5 were females.

Figure 57: Racial breakdown of Diploma graduates in Horticulture

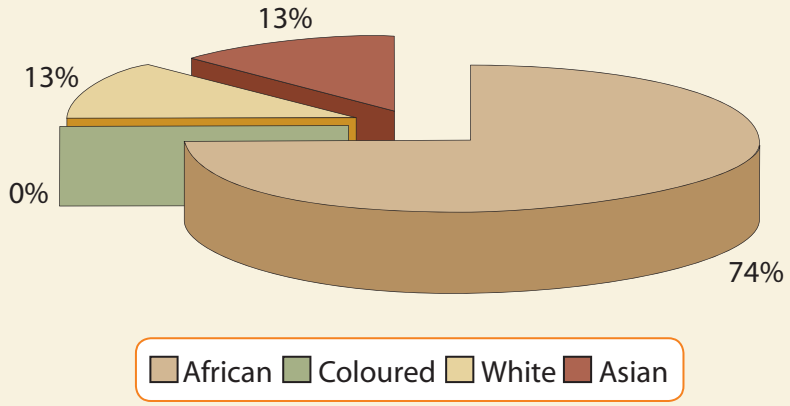
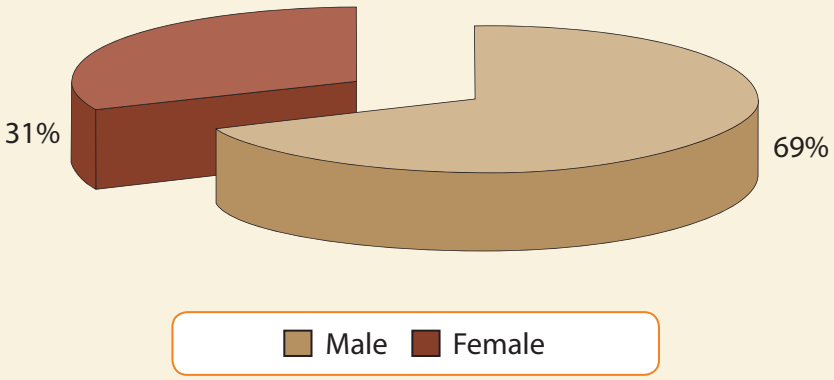


Figure 57 above depicts that African graduates dominated Diploma graduates in Horticulture with 74%, while Whites and Asians each constituted 13%. No Coloureds graduated in this CESM at Diploma level during the 2009 academic year.

Figure 58: Gender breakdown of Diploma graduates in Horticulture



As it appears in Figure 58 above, males dominated Diploma graduates in Horticulture with 69% and females constituted 31%. African males represented 73% of the male graduates in this CESM at Diploma level, Whites constituted 18% and Asians constituted only 9%. Of the 5 females who graduated in this CESM at Diploma level 2009; 4 were Africans and 1 was Asian.

3.4.1.4 Plant Science graduates at universities of technology in 2009

A total number of 138 graduates were produced in this CESM at universities of technology during the 2009 academic year.

Table 42 below presents a demographic breakdown of Plant Science graduates by level of qualification during the 2009 academic year.

Table 42: Demographic breakdown of Plant Science graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	59	41	**100**	0	0	**0**	2	0	**2**	0	0	**0**	**102**	**73**
BTech	24	7	**31**	1	0	**1**	3	0	**3**	0	0	**0**	**35**	**25**
MTech	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**1**
Total	**84**	**49**	**133**	**1**	**0**	**1**	**5**	**0**	**5**	**0**	**0**	**0**	**139**	**100**

Seventy three percent (73%) of the total Plant Science graduates were Diploma graduates and 25% were BTech graduates. MTech constituted 1% of the overall Plant Science graduates.

As indicated in Table 42 above, a total number of 102 graduates were produced in Diploma Plant Science level during the 2009 academic year.

Figure 59: Racial breakdown of Diploma graduates in Plant Science

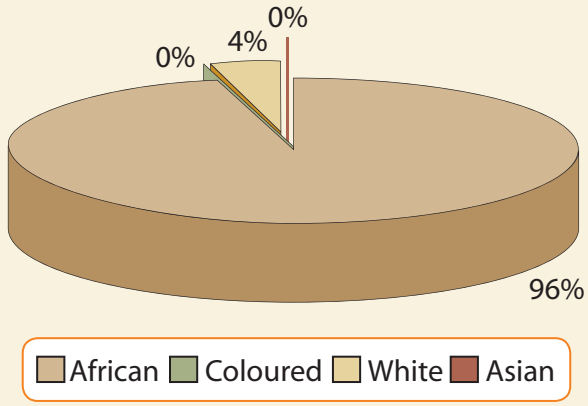


Figure 59 above illustrates that African graduates dominated Diploma in Plant Science with 98%, followed by Whites with 2%. No Coloureds or Asians graduated in this CESM at Diploma level at universities of technology during the 2009 academic year.

Figure 60: Gender breakdown of Diploma graduates in Plant Science

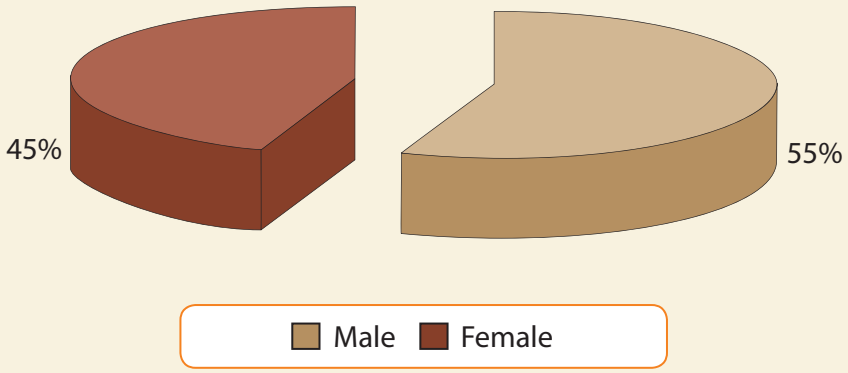


Figure 60 above indicates that males received more Diploma qualifications in this CESM sitting at 60% while females represented 40%.

Figure 61: Racial breakdown of BTech graduates in Plant Science

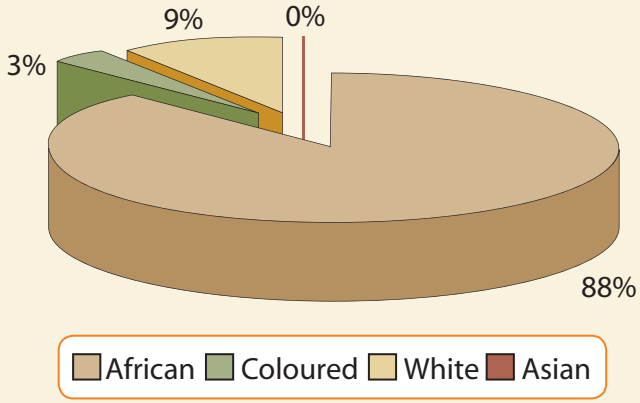


Figure 61 above indicates that Africans constituted 88% of BTech graduates in Plant Science, followed by Whites with 9% and Coloureds with 3%. No Asians received BTech Degrees in this CESM at universities of technology during the 2009 academic year.

Figure 62: Gender breakdown of BTech graduates in Plant Science

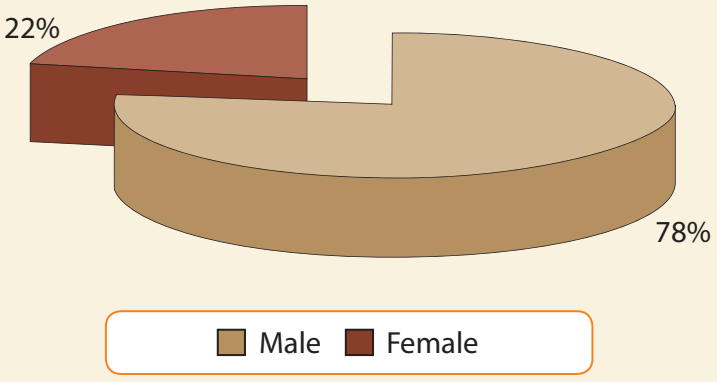


Figure 62 above depicts that male graduates dominated BTech graduates in this CESM with 80% while females constituted 20%. Of the 28 males graduates in this CESM at BTech level; 24 were Africans, 3 were Whites and 1 was Coloured.

3.4.1.5 Agricultural Science - General graduates at universities of technology in 2009

Thirty nine (39) graduates were produced in this CESM during the 2009 academic year.

Table 43 below presents a demographic breakdown of Agricultural Science - General graduates by level of qualification during the 2009 academic year.

Table 43: Demographic breakdown of Agriculturural Science - General graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	1	0	**1**	1	1	**2**	19	6	**25**	0	0	**0**	**28**	**72**
BTech	0	2	**2**	3	0	**3**	3	0	**3**	0	0	**0**	**8**	**21**
MTech	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**	**8**
Total	**2**	**2**	**4**	**4**	**1**	**5**	**24**	**6**	**30**	**0**	**0**	**0**	**39**	**100**

Seventy two percent (72%) of total Agricultural Science - General graduates were Diploma graduates and 21% were BTech graduates. MTech constituted 8% of the overall Agricultural Science - General graduates.

As indicated in the Table 43 above, a total number of 28 graduates were produced in Diploma Agricultural Science - General during the 2009 academic year.

Figure 63: Racial breakdown of Diploma graduates in Agricultural Science-General

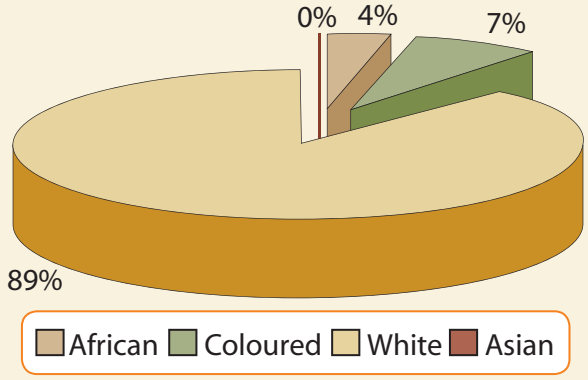


Figure 63 above indicates that Whites represented a majority of Diploma graduates in this CESM with 89%, followed by Coloureds and Africans with 7% and 4% respectively. No Asians graduated in this CESM at Diploma level during the 2009 academic year.

Figure 64: Gender breakdown of Diploma graduates in Agricultural Science-General

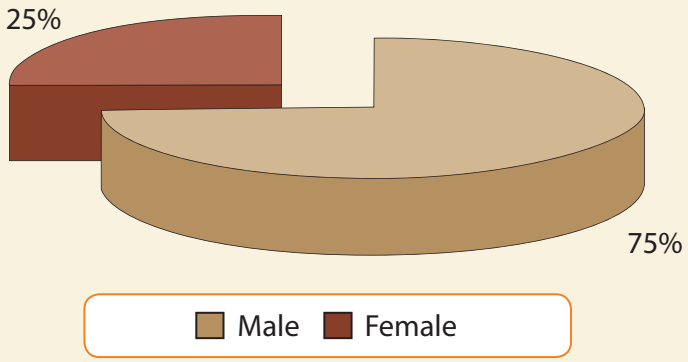


Figure 64 above depicts that male graduates dominated Diploma graduates in this CESM with 75% while females constituted 25%. Of the 21 males graduating in this CESM at Diploma level; 19 were Whites, 1 was African and 1 was Coloured. Six (6) White females and 1 Coloured female qualified for Diploma in Agricultural Science - General at universities of technology during the 2009 academic year.

Figure 65: Racial breakdown of BTech graduates in Agricultural Science-General

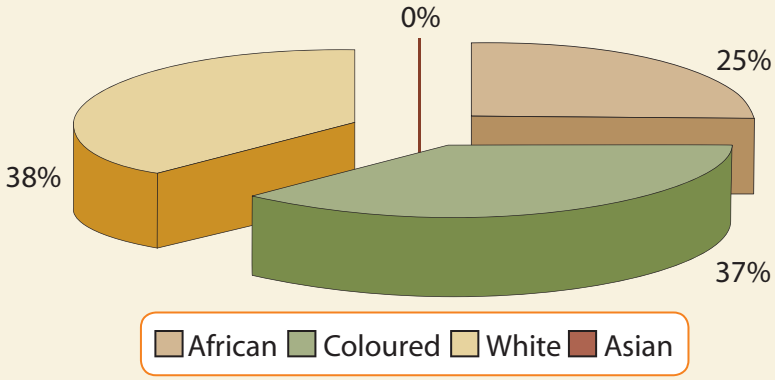


Figure 65 above indicates that Whites represented a majority of Diploma graduates in this CESM with 38%, followed by Coloureds with 37% and Africans with 25%. No Asians graduated in this CESM at Diploma level during the 2009 academic year.

Figure 66: Gender breakdown of BTech graduates in Agricultural Science-General

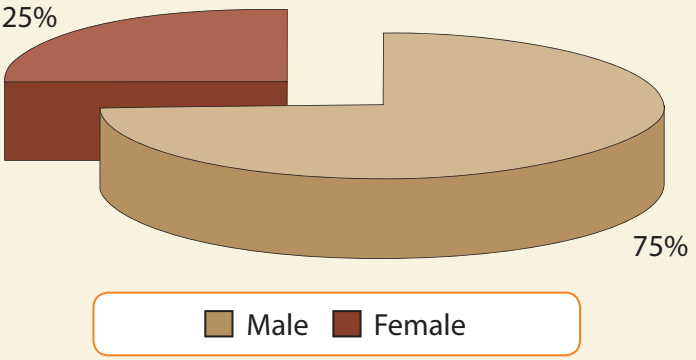


Figure 66 above depicts that male graduates dominated BTech graduates in this CESM at BTech level with 75% while females constituted 25%. Of the 6 males graduating in this CESM at BTech level; 3 were Whites and 3 were Coloureds. Two (2) African females were awarded BTech qualifications in Agricultural Science - General.

Figure 67: Racial breakdown of MTech graduates in Agricultural Science-General

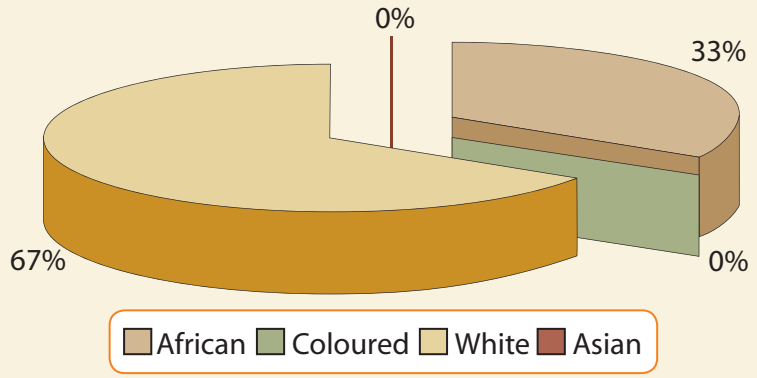


Figure 67 above indicates that Whites represented a majority of MTech graduates in this CESM with 67%, followed by African graduates with 33%. No Coloureds or Asians graduated in this CESM at Diploma level during the 2009 academic year.

3.4.1.6 Agricultural Extension graduates at universities of technology in 2009

Thirty four (34) Africans graduated in this CESM at Diploma level during the 2009 academic year.

Table 44 below presents a demographic breakdown of Agricultural Extension graduates by level of qualification during the 2009 academic year.

Table 44: Demographic breakdown of Agricultural Extension graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	16	18	**34**	0	0	**0**	0	0	**0**	0	0	**0**	**34**	**100**
Total	**16**	**18**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**100**

Eighteen (18) female and 16 male graduates were produced in the CESM at Diploma level at universities of technology.

3.4.1.7 Agricultural Biotechnology graduates at universities of technology in 2009

Seventy seven (77) graduates received qualifications in Agricultural Biotechnology at universities of technology during the 2009 academic year.

Table 45 below presents a demographic breakdown of Agricultural Biotechnology graduates by level of qualification during the 2009 academic year.

Table 45: Demographic breakdown of Agricultural Biotechnology graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	4	17	**21**	0	0	**0**	0	1	**1**	3	27	**30**	**52**	**68**
BTech	3	6	**9**	0	0	**0**	2	0	**2**	1	9	**10**	**21**	**27**
MTech	0	1	**1**	1	0	**1**	0	0	**0**	0	2	**2**	**4**	**5**
Total	**7**	**24**	**31**	**1**	**0**	**1**	**2**	**1**	**3**	**4**	**38**	**42**	**77**	**100**

Diploma graduates constituted 68% of all Agricultural Biotechnology graduates, followed by BTech with 27% and MTech with 5%.

Figure 68: Racial breakdown of Diploma graduates in Agricultural Biotechnology

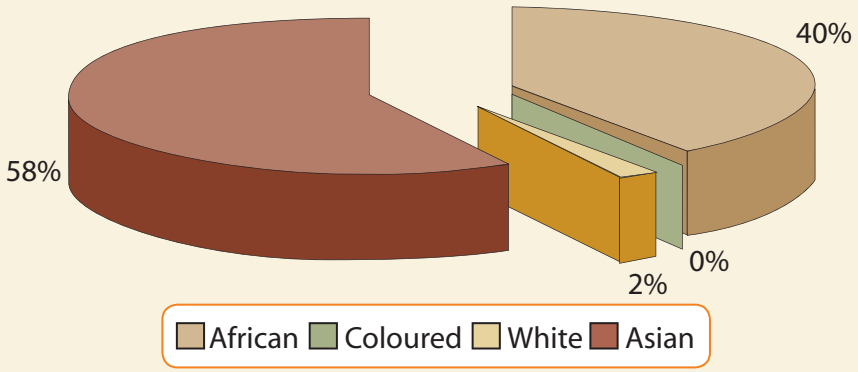


Figure 68 above depicts that Asians received 58% of Diploma qualification, followed by Africans with 40%, while Whites accounted for 2%. No Coloureds graduated in this CESM during the 2009 academic year.

Figure 69: Gender breakdown of Diploma graduates in Agricultural Biotechnology

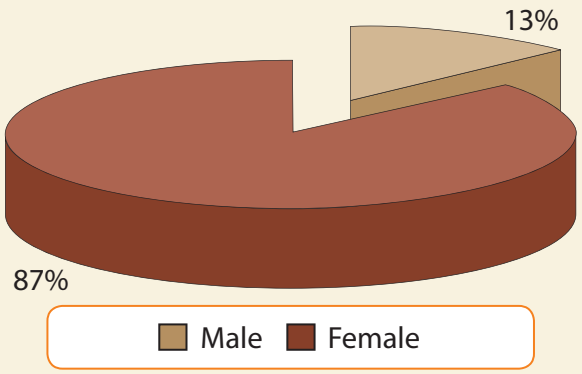


Figure 69 above depicts that Female graduates dominated Diploma graduates in Agricultural Biotechnology with 87% and males accounted for 13%. African males accounted for 57% of all Diploma male graduates in this CESM, followed by Asians with 43%. Coloured and White males were not represented in this CESM. Asian and African females accounted for 60% and 38% of female graduates in this CESM respectively, followed by White females with 2%. Coloured females were not represented in this CESM at Diploma level.

Figure 70: Racial breakdown of BTech graduates in Agricultural Biotechnology

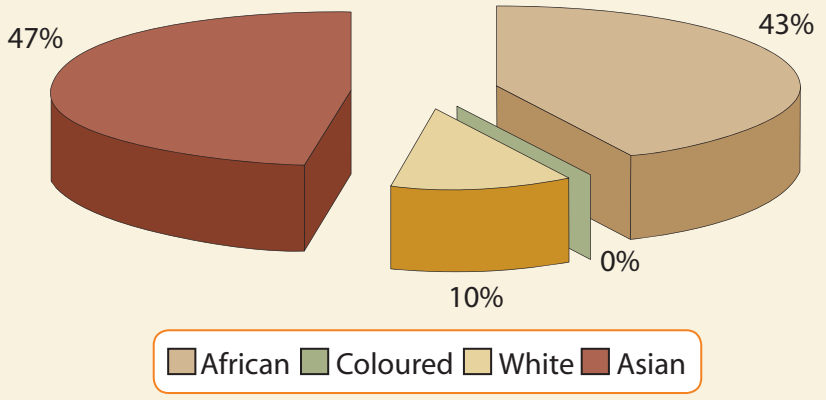


Figure 70 above indicates that Asian graduates dominated BTech graduates in Agricultural Biotechnology with 47%, followed by Africans with 43%. White graduates accounted for 10% of all graduates in this CESM at BTech level at universities of technology during the 2009 academic year.

Figure 71: Gender breakdown of BTech graduates in Agricultural Biotechnology

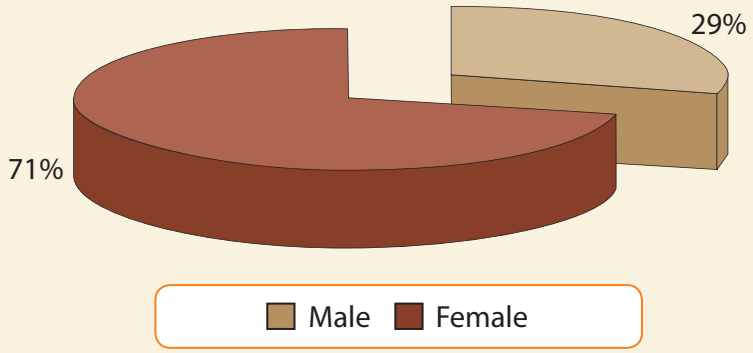


Figure 71 above depicts that female graduates dominated BTech graduates in Agricultural Biotechnology with 71% and males constituted 29%. Asian females constituted 60% of the female graduates in this CESM at BTech level, followed by African females with 40%.

Figure 72: Racial breakdown of MTech graduates in Agricultural Biotechnology

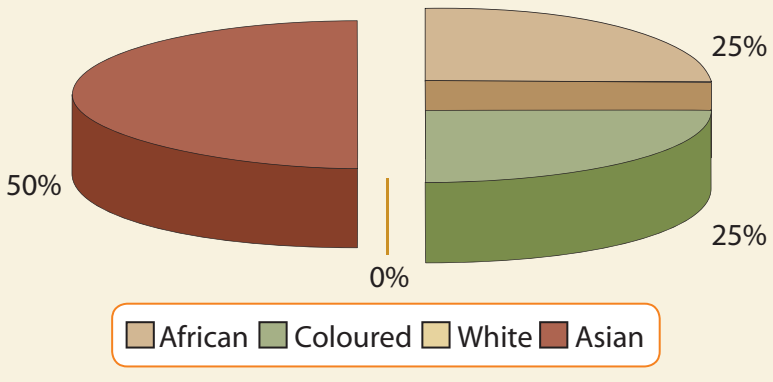


Figure 72 above indicates that Asians dominated MTech graduates in Agricultural Biotechnology with 50%, followed by Africans and Coloureds with 25% each. Whites were not represented in this CESM at MTech level.

Figure 73: Gender breakdown of MTech graduates in Agricultural Biotechnology

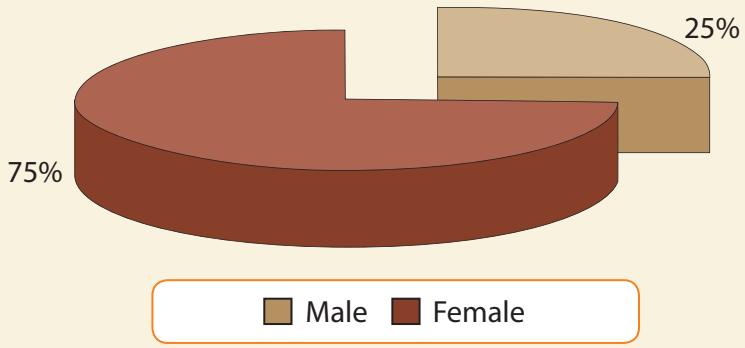


Figure 73 above depicts that female graduates vastly dominated MTech graduates in Agricultural Biotechnology with 75% and males constituted 25%. Asian females constituted 67% of the female graduates in this CESM at MTech level, followed by African females with 33%.

3.4.1.8 Agricultural Food Technology graduates at universities of technology in 2009

Sixty nine (69) graduates qualified in Agricultural Food Technology at universities of technology during the 2009 academic year.

Table 46 below presents a demographic breakdown of Agricultural Food Technology graduates by level of qualification during the 2009 academic year.

Table 46: Demographic breakdown of Agricultural Food Technology graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	2	23	**25**	0	1	**1**	0	3	**3**	4	21	**25**	**54**	**78**
BTech	1	3	**4**	0	0	**0**	0	4	**4**	0	7	**7**	**15**	**22**
Total	**3**	**26**	**29**	**0**	**1**	**1**	**0**	**7**	**7**	**4**	**28**	**32**	**69**	**100**

Seventy eight percent (78%) of the total Agricultural Food Technology graduates were Diploma graduates and 22% were BTech graduates.

As indicated in the Table 46 above, a total number of 54 graduates were produced at Diploma Agricultural Food Technology level during the 2009 academic year.

Figure 74: Racial breakdown of Diploma graduates in Agricultural Food Technology

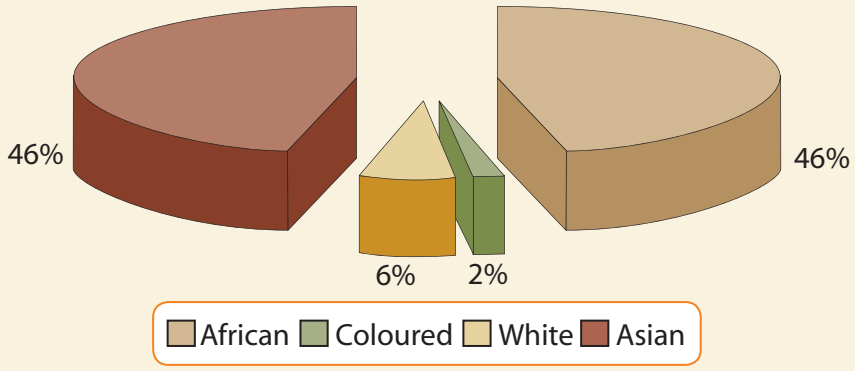


Figure 74 above indicates that Africans and Asians dominated Diploma graduates in Agricultural Food Technology with 46% each, followed by Whites with 6% and Coloureds with 2%.

Figure 75: Gender breakdown of Diploma graduates in Agricultural Food Technology

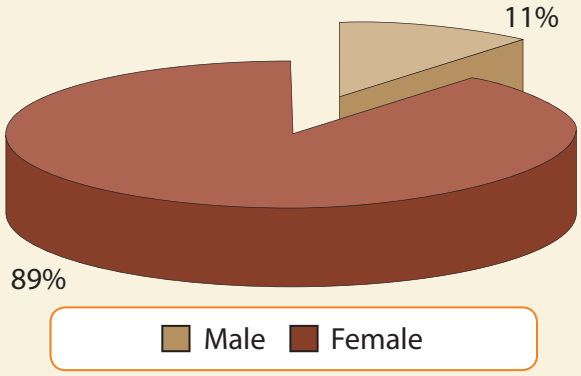


Figure 75 above depicts that female graduates dominated Diploma graduates in Agricultural Food Technology with 89% and males constituted 11%. African females constituted 48% of the female graduates in this CESM at Diploma level, followed by Asians with 44% and Whites with 6%. Coloured females constituted 2% of female graduates in this CESM at Diploma during the 2009 academic year.

Figure 76: Racial breakdown of BTech graduates in Agricultural Food Technology

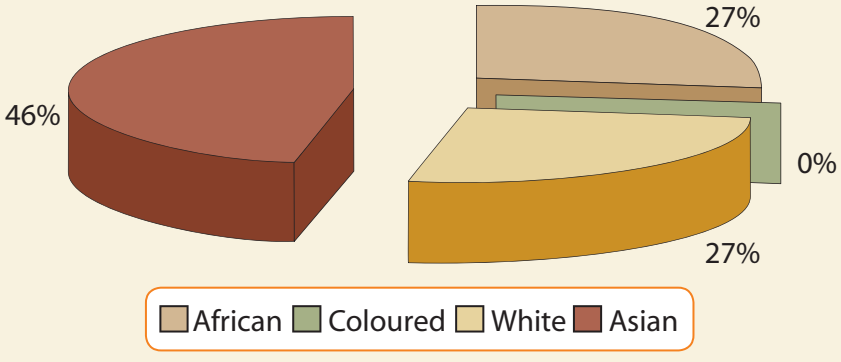


Figure 76 above indicates that Asians dominated BTech graduates in Agricultural Food Technology with 46%, followed by Africans and Whites with 27% each. Coloureds were not represented in this CESM at BTech level.

Figure 77: Gender breakdown of BTech graduates in Agricultural Food Technology

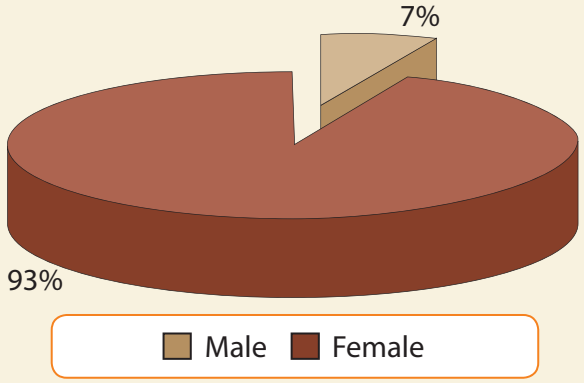


Figure 77 above depicts that female graduates vastly dominated BTech graduates in Agricultural Food Technology with 93% and males constituted 7%. Asian females constituted 50% of the female graduates in this CESM at BTech level, followed by Whites with 29% and Africans with 21%.

3.4.1.9 Land Reclamation graduates at universities of technology in 2009

One (1) White female graduate qualified in Land Reclamation at universities of technology during the 2009 academic year.

3.4.1.10 Renewable Natural Resources graduates at universities of technology in 2009

Twenty (20) graduates were produced in this CESM during the 2009 academic year.

Table 47 below presents a demographic breakdown of graduates in Renewable Natural Resources in 2009 by level of qualification.

Table 47: Demographic breakdown of Renewable Natural Resources graduates by level of qualification during 2009

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	29	18	**47**	0	0	**0**	11	4	**15**	0	0	**0**	**62**	**60**
BTech	21	8	**29**	1	0	**1**	6	2	**8**	0	0	**0**	**38**	**37**
MTech	1	0	**1**	0	0	**0**	1	1	**2**	0	0	**0**	**3**	**3**
Total	**51**	**26**	**77**	**1**	**0**	**1**	**18**	**7**	**25**	**0**	**0**	**0**	**103**	**100**

Sixty percent (60%) of the total number of Renewable Natural Resources graduates were Diploma graduates, 37% were BTech and 3% were MTech.

As indicated in the Table 47 above, a total number of 62 graduates in Renewable Natural Resources were produced at Diploma level during the 2009 academic year.

Figure 78: Racial breakdown of Diploma graduates in Renewable Natural Resources

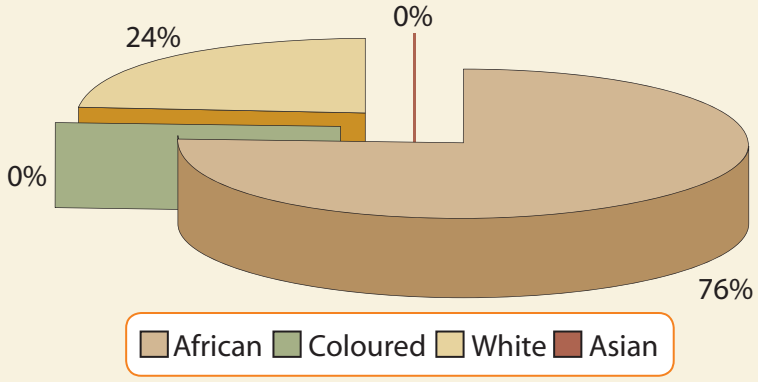


Figure 78 above indicates that Africans dominated Diploma graduates in Renewable Natural Resources with 76%, followed by Whites with 24%. Asians and Coloureds were not represented in this CESM at Diploma level.

Figure 79: Gender breakdown of Diploma graduates in Renewable Natural Resources

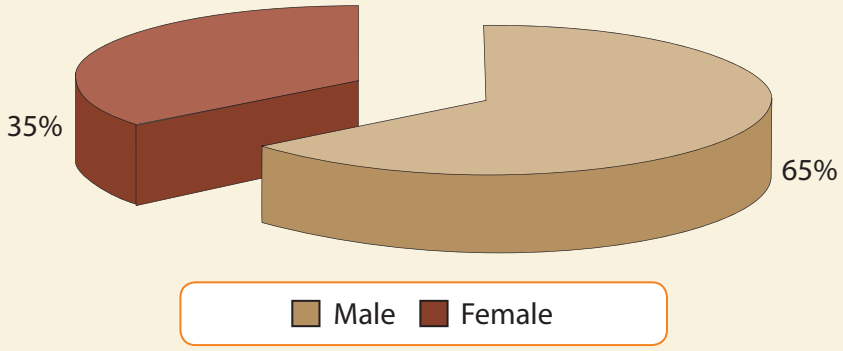


Figure 79 above depicts that male graduates dominated Diploma graduates in Renewable Natural Resources with 65% and female constituted 35%. African males constituted 72% of the male graduates in this CESM at Diploma level, followed by Whites with 28%.

Figure 80: Racial breakdown of BTech graduates in Renewable Natural Resources

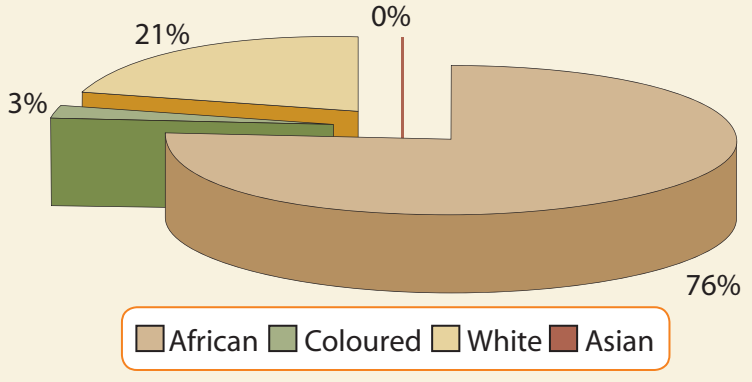


Figure 80 above indicates that Africans dominated BTech graduates in Renewable Natural Resources with 76%, followed by Whites with 21% and Coloureds with 3%. Asian graduates were not represented in this CESM at BTech level.

Figure 81: Gender breakdown of BTech graduates in Renewable Natural Resources

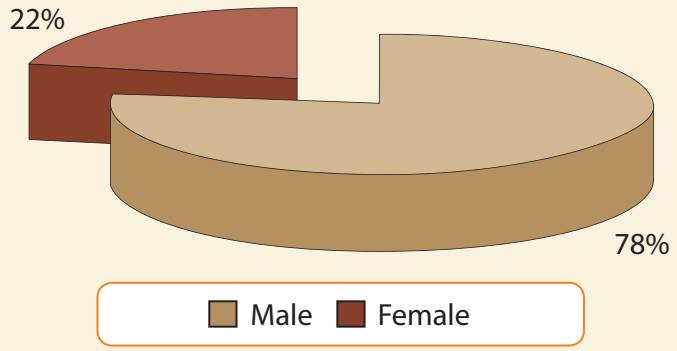


Figure 81 above depicts that male graduates dominated BTech graduates in Renewable Natural Resources with 78% and females constituted 22%.

Figure 82: Racial breakdown of MTech graduates in Renewable Natural Resources

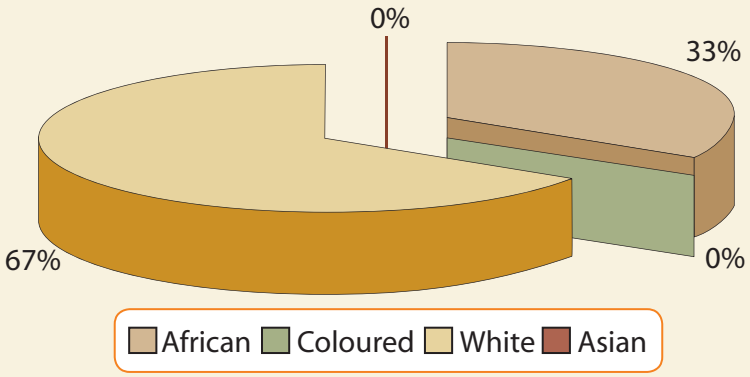


Figure 82 above indicates that Whites dominated MTech graduates in Renewable Natural Resources with 67%, followed by Africans with 33%. Coloureds and Asians were not represented in this CESM at MTech level.

Figure 83: Gender breakdown of MTech graduates in Renewable Natural Resources

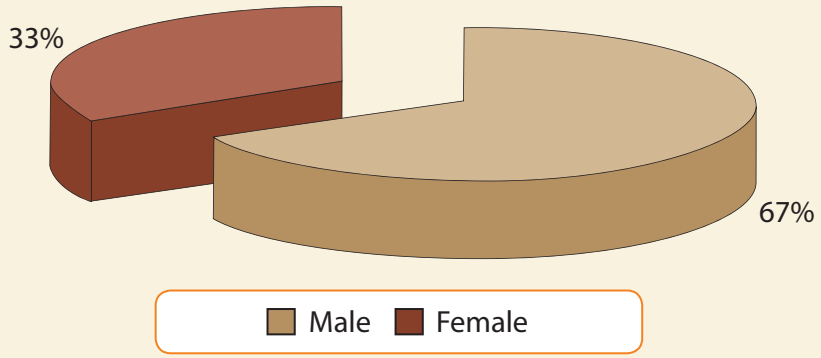


Figure 83 above depicts that male graduates dominated MTech graduates in this CESM with 67% while females constituted 33%.

Two (2) males graduated in this CESM at MTech level; 1 was African and 1 was White. One (1) White female qualified for MTech in Renewable Natural Resources during the 2009 academic year.

3.4.1.11 Rural Development graduates at universities of technology in 2009

Eleven (11) Africans qualified in this CESM at Diploma level during the 2009 academic year.

Table 48 below presents a demographic breakdown of graduates in Rural Development during the 2009 by level of qualification.

Table 48: Demographic breakdown of Rural Development graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	6	5	**11**	0	0	**0**	0	0	**0**	0	0	**0**	**11**	**100**
Total	**6**	**5**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**100**

Figure 84: Gender breakdown of Diploma graduates in Rural Development

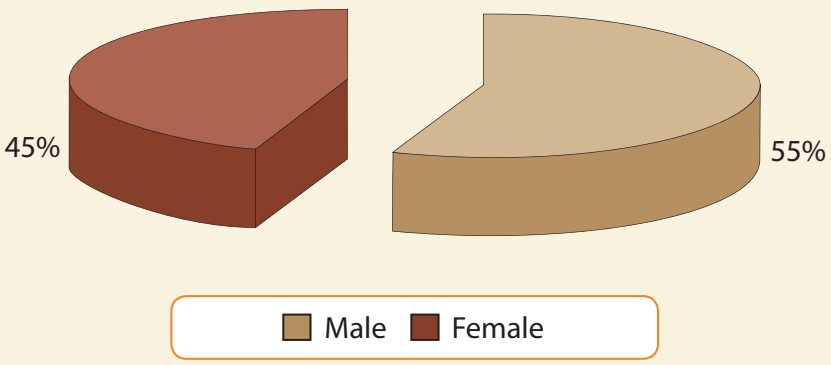


Figure 84 above depicts that male graduates dominated Diploma graduates in Rural Development with 55% and females constituted 45%.

3.4.1.12 Wildlife Management graduates at universities of technology in 2009

Forty six (46) graduates were produced in this CESM at universities of technology during the 2009 academic year.

Table 49 below presents a demographic breakdown of Wildlife Management graduates by the level of qualification during the 2009 academic year.

Table 49: Demographic breakdown of Wildlife Management graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	9	14	**23**	0	0	**0**	19	2	**21**	1	1	**2**	**46**	**100**
Total	**9**	**14**	**23**	**0**	**0**	**0**	**19**	**2**	**21**	**1**	**1**	**2**	**46**	**100**

Figure 85: Racial breakdown of Diploma graduates in Wildlife Management

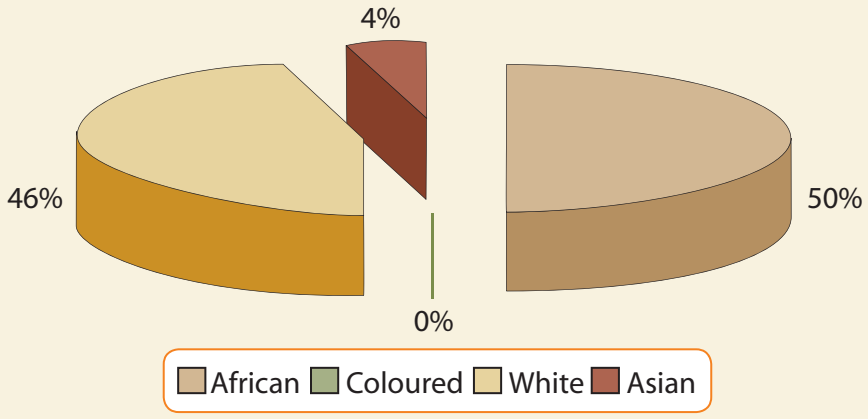


Figure 85 and Table 49 above indicates that Africans dominated Diploma graduates in Wildlife Management with 50%, followed by Whites with 46% and Asians with 4%. No Coloured graduates were produced in this CESM at universities of technology during the 2009 academic year.

Figure 86: Gender breakdown of Diploma graduates in Wildlife Management

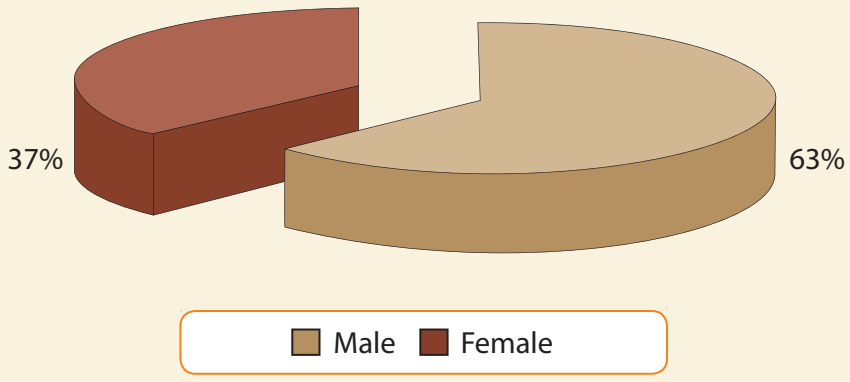


Figure 86 above depicts that male graduates dominated Diploma graduates in Wildlife Management with 63% and females constituted 37%.

3.4.1.13 Veterinary Technology graduates at universities of technology in 2009

Seventeen (17) graduates were produced in Veterinary Technology at universities of technology during the 2009 academic year.

Table 50 below presents a demographic breakdown of Veterinary Technology graduates by level of qualification during the 2009 academic year.

Table 50: Demographic breakdown of Veterinary Technology graduates by level of qualification during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	5	3	**8**	0	0	**0**	0	3	**3**	0	0	**0**	**11**	**65**
BTech	1	2	**3**	0	0	**0**	1	2	**3**	0	0	**0**	**6**	**35**
Total	**6**	**5**	**11**	**0**	**0**	**0**	**1**	**5**	**6**	**0**	**0**	**0**	**17**	**100**

Sixty five percent (65%) of the total Veterinary Technology graduates were Diploma graduates and 35% were BTech graduates.

As indicated in Table 50 above, 11 graduates only were produced in Diploma Veterinary Technology during the 2009 academic year.

Figure 87: Racial breakdown of Diploma graduates in Veterinary Technology

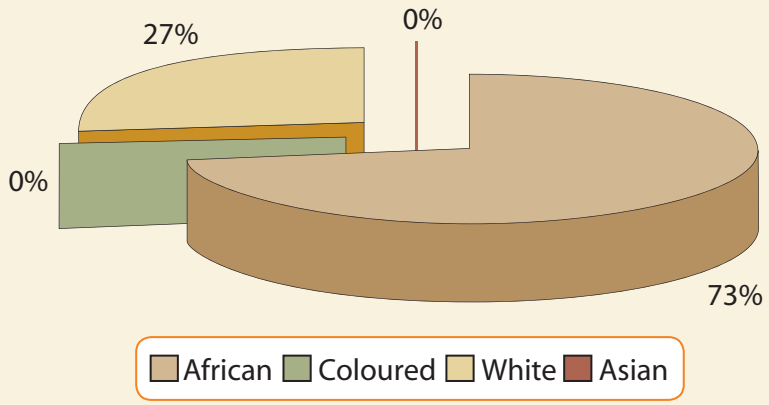


Figure 87 above indicates that Africans dominated Diploma graduates in Veterinary Technology with 73%, followed by Whites with 27%. Asians and Coloureds were not represented in this CESM during the 2009 academic year.

Figure 88: Gender breakdown of Diploma graduates in Veterinary Technology

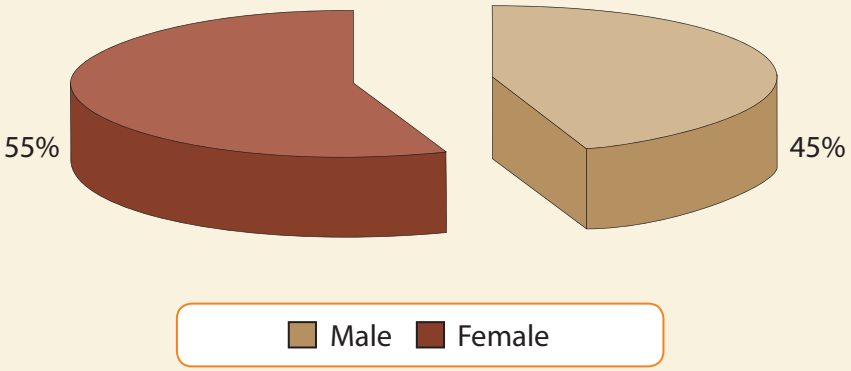


Figure 88 above depicts that female graduates dominated Diploma graduates in Veterinary Technology with 55% and males constituted 45%. African and White females each constituted 50% of the female graduates in this CESM at Diploma level. African males constituted 100% of the male graduates in this CESM at Diploma level.

Figure 89: Racial breakdown of BTech graduates in Veterinary Technology

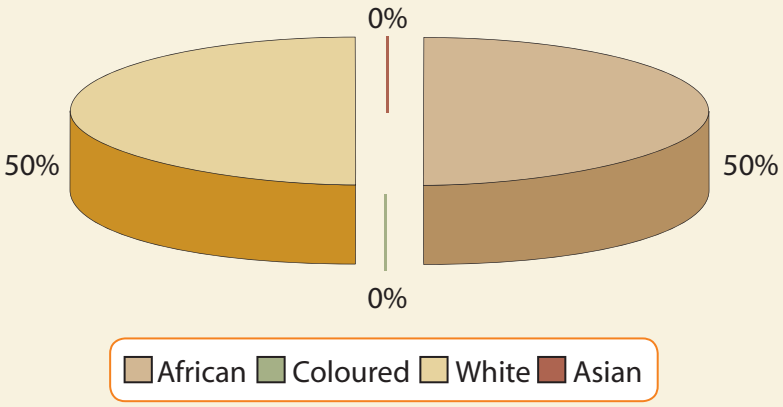


Figure 89 above indicates that Africans and Whites dominated BTech graduates in Veterinary Technology with 50% each. Coloureds and Asians were not represented in this CESM during the 2009 academic year.

Figure 90: Gender breakdown of BTech graduates in Veterinary Technology

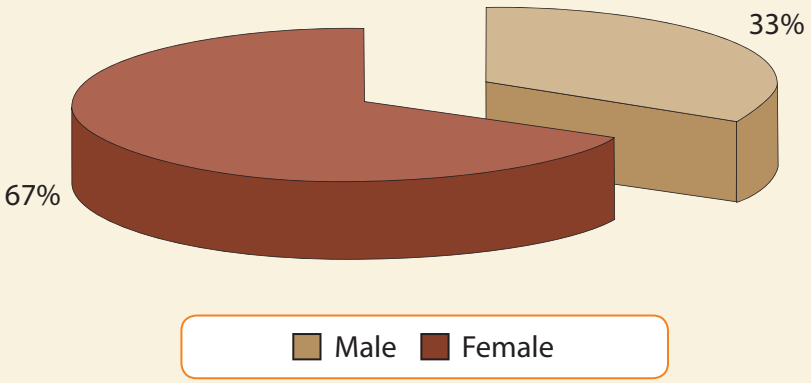


Figure 90 above depicts that female graduates dominated BTech graduates in Veterinary Technology with 67% and males constituted 33%.

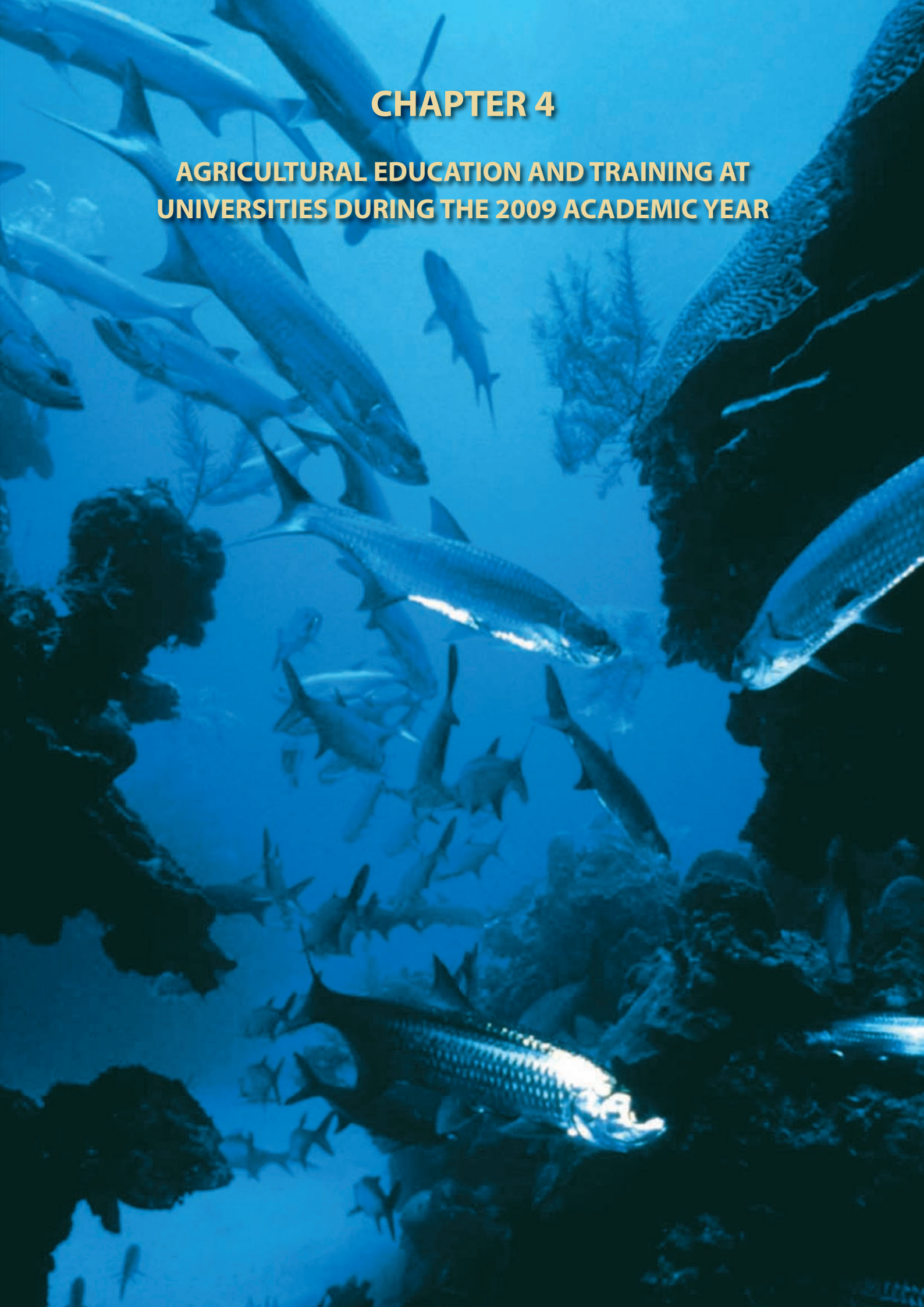
3.5 Conclusion

In the series of reports released by the Department of Agriculture since 2004, it is evident that enrolments at universities of technology far outweigh graduates figures and this trend continued even during the 2009 academic year. One thousand five hundred and twenty (1 520) students enrolled for agricultural programmes while only 816 graduated. There was a major decrease in enrolments compared to 3 894 students enrolled in 2008.

It is evident from the findings that Africans generally dominated both the enrolment and graduate figures in universities of technology and this trend also continues from the 2004 academic year. From 1 520 enrolments registered at universities of technology, 79% were Africans and out of 816 graduates 63% were Africans. Africans almost dominated some of programmes that were hugely dominated by Whites in the past three series of reports.

In almost all of the programmes, males dominated enrolments and graduates across all race groups. Only in four cases; namely Animal Science, Food Technology, Agricultural Biotechnology and Veterinary Technology, females enrolled outweigh males. The general trend is that males particularly Africans and Whites, constituted a higher number of graduates and enrolments, with African males dominating.

From the findings, it is clear that TUT continues to record a bigger share of enrolments and graduates than all other universities of technology. This is attributed to the fact that the institution offers many agricultural programmes. CUT, FS and MUT had the lowest number of both enrolments and graduates during the 2009 academic year.



CHAPTER 4

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES DURING THE 2009 ACADEMIC YEAR

CHAPTER 4

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES DURING THE 2009 ACADEMIC YEAR

4.1 Introduction

There are thirteen universities that offer AET programmes in South Africa, namely Fort Hare, Free State, Johannesburg, KwaZulu-Natal, Limpopo, North West, Nelson Mandela Metropolitan, Pretoria, Stellenbosch, UNISA, Venda, Western Cape and Zululand. The Majority of these institutions offer agricultural qualifications from NQF level five (5) to level eight (8), i.e. from university diploma to Doctor of Philosophy (PhD) programmes. Universities offer various agricultural programmes and they vary in terms of scope.

4.2 Agricultural Education and Training programmes and National Qualification Framework offered at universities in 2009

Universities offer various agricultural programmes and they vary in terms of scope.

Table 51 presents the various programmes offered by these universities.

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
Undergraduate Degree Programmes													
Veterinary Special Undergraduate Degree						X							
Veterinary Foreign Co-op						X							
Veterinary Science (Non-Exam. Purposes)						X							
Veterinary Foreign (Non-Ex Purp)													
N Certificate Programmes													
N Certificate Commercial Floristry										X			
National Diploma Programmes													
Veterinary Nursing						X							
N Dip Horticulture										X			
N Dip Nature Conservation										X			X
N Dip Open Space & Recreation Management										X			
Diploma in Disaster Management			X										
Diploma in Agriculture			X										
N Dip Science and Agriculture				X									
Diploma in Rural Resource Management				X									
Diploma Food Security				X									
Diploma Animal Health		X								X			
Diploma in Agriculture: Animal Production			X							X			
Diploma in Agriculture: Crop Production			X										

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
Diploma in Agriculture: Agricultural Management			X							X			X
Diploma in Agriculture: Natural Resources			X										
Univ Dip Ext and Rural Develop						X							
Diploma in Agric Economics and Management		X											
Nature Conservation													X
N Diploma: Landscape Technology										X			
Forestry													X
Game Ranch Management													X
Diploma in Food Technology											X		
BTech Programmes													
BTech Horticulture										X			
BTech Nature Conservation										X			
BTech Agricultural Management										X			X
BTech Food Technology											X		
BA Degree Programmes													
B Human Ecology										X			
B Consumer Science Education										X			
B Consumer Science						X				X			
B Human Ecology (Community Nutrition)										X			
B Human Ecology (Community Agriculture)										X			
B Agric Economics	X												
B Agric Ext/Prod	X												
B Agric Sci (UP) Foreign Post D. Fellowship						X							
B Agric Sci (FRD) Foreign Post D Fellowship						X							
B Agric Irrigation Management			X										
B Agric Animal Production Management			X										
B Agric Mixed Farming Management			X										
B Agric Crop Production Management			X										
B Agric Agriculture Management			X	X									
B Agric Wildlife Management			X										
B Agric Management /Admin					X		X						
B Agric			X	X			X	X					
B Family Ecology								X					
B Forestry							X						
B Agric Admin					X		X						
B Agric Admin Agri-business Management							X						
B Agric Admin Business Specific Farm Management - Viticulture							X						
B Agri Business Management						X		X					
B Family Ecology and Consumer Science								X					

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
BSc Degree Programmes													
Biotechnology			X			X						X	
Biodiversity and Conservation (Botany and Zoology)												X	
Agricultural Engineering				X									
Veterinary Science						X							
Viticulture & Oenology							X						
BSc Agric. Soil Science and Chemistry							X						
BSc Agric. Soil Science and Horticulture							X						
BSc Agric. Soil Science and Viticulture							X						
BSc Agric Horticulture and Entomology							X						
BSc Agric Horticulture and Genetics							X						
BSc Agric Horticulture and Agric Economics							X						
BSc Agric Horticulture and Plant Pathology							X						
BSc Agric Agronomy and Entomology							X						
BSc Agric Agronomy and Genetics							X						
BSc Agric Agronomy and Agricultural Economics							X						
BSc Agric Agronomy and Plant Pathology							X						
BSc Agric. Soil Science and Agronomy							X						
BSc Agric Animal Science							X						
BSc Agric Animal Science with Agronomy							X						
BSc Agric Animal Science with Conservation Ecology							X						
BSc Agric Animal Science with Agricultural Economics							X						
BSc Agric Aquaculture and Animal Science							X						
BSc Agric Aquaculture & Conservative Ecology							X						
BSc Agric Plant Pathology & Entomology							X						
BSc Agric Aquaculture							X						
BSc Food Science							X						
BSc Agriculture		X	X	X	X		X	X					
BSc Food Science and Technology			X	X		X	X	X			X		
BSc Forestry							X	X					
BSc Agric Animal Science									X				
BSc Conservation Ecology							X						
BSc Agric Economics		X	X		X	X							
B Sc Agric Agronomy			X		X				X				
BSc Animal Production					X								
BSc Horticulture					X	X							
BSc Agric Pasture Science					X								
BSc Soil Science and Agronomy and Pastures							X						
BSc Agric. Soil Science.			X		X								
BSc Environmental & Resource Studies					X								
BSc Crop Science		X											

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
BSc Animal Health		X											
BSc Land Management		X											
BSc Agronomy and Agrometeorology			X										
BSc Plant Pathology			X			X							
BSc Irrigation Science			X										
BSc Plant Pathology & Entomology			X										
BSc Plant Breeding and Genetics			X			X							
BSc Natural Agricultural Resources			X										
BSc Animal Science / Grassland Science		X	X										
BSc Food Science and Biochemistry			X										
BSc Food Science & Microbiology			X										
BSc Food Science & Chemistry			X										
BSc Agric Econ. Agri-Business Management						X			X				
BSc Animal Science and Animal Genetics						X							
BSc Food Science & Technology						X							
BSc Genetics: Plant Breeding						X							
BSc Plant Production						X							
BSc Plant Protection						X							
BSc Food Management						X							
BSc Nutrition & Food Science						X							
BSc Agric Genetics & Plant Pathology							X						
BSc Conservation Ecology							X						
BSc Agriculture							X						
BSc Agriculture Science										X			
B Inst. Agrar. Programmes													
B Inst. Agrar. Agric Econ Animal Production						X							
B Inst. Agrar. Agronomy/ Horticulture						X							
B Inst. Agrar. Animal Production						X							
B Inst. Agrar.Animal Production Management						X							
B Inst. Agrar. Crop Protection						X							
B Inst. Agrar. Food Production & Process.						X							
B Inst. Agrar. Land Use Planning						X							
B Inst. Agrar. Plant Protection						X							
B Inst. Agrar. Rural Development Management						X							
Honours Degree Programmes													
B Agric Admin							X						
BSc Conservation Ecology							X						
BSc Biodiversity and Conservation (Hons)												X	
BSc Food Science							X						
BSc Geography										X			
B A Geography										X			

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
B Agric	X		X	X									
BSc Food Science						X							
B Agric Extension	X												
B Agric Crop/Horticulture	X												
B Agric Pasture/Livestock	X												
B Agric Management			X	X									
B Agric Admin					X		X						
Rural Development								X					
B Agric Admin (Hons) Horticulture							X						
BSc Agric Animal Health		X											
BSc Agric Crop Science	X	X											
BSc Agric Animal Science	X	X							X				
BSc Agric Economics	X	X	X										
BSc Agric Extension		X											
BSc Agric Land Management		X											
BSc Forestry							X						
BSc Agric			X				X		X				
BSc Biotechnology			X										
BSc Soil Science	X		X										
BSc Medicinal Plant Science						X							
BSc Plant Breeding			X										
BSc Plant Pathology			X										
BSc Plant Science						X							
BSc Animal Science	X		X										
BSc Wildlife Management			X										
BCom (Hons) Actuarial Science						X							
BCom (Hons) Agricultural Economics						X							
B Inst. Agrar. (Hons) Agribusiness Management						X							
B Inst. Agrar. (Hons) Agricultural Economics						X							
B Inst. Agrar. (Hons) Crop Protection						X							
B Inst. Agrar. (Hons) Extension						X							
B Inst. Agrar. (Hons) Food Processing						X							
B Inst. Agrar. (Hons) Food Production and Process.						X							
B Inst. Agrar. (Hons) Land Use Planning						X							
B Inst. Agrar. (Hons) Plant Production						X							
B Inst. Agrar. (Hons) Rural Dev Planning						X							
MTech Programmes													
MTech Nature Conservation										X			
MTech Food Technology											X		
Master's Degree Programmes													
MMedVet Small Animal Surgery											X		

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
MMedVet Theriogenology											X		
MMedVet Bovine Medicine											X		
MMedVet Equine Medicine											X		
MMedVet Small Animal Medicine											X		
MMedVet Pathology											X		
MMedVet Anaesthesiology											X		
MMedVet Diagnostic Imaging											X		
MMedVet Pig Herd Health											X		
MMedVet Clinical Laboratory Diagnostics											X		
MMedVet Wildlife Diseases											X		
MMedVet Cattle Herd Health											X		
MMedVet Small Stock Herd Health											X		
MMedVet Ophthalmology											X		
MMedVet Equine Surgery											X		
MMedVet Pharmalogy											X		
MSc Veterinary Tropical Diseases						X							
MSc Anatomy and Physiology						X							
MSc Companion Animal Clinical Studies						X							
MSc Para clinical Studies						X							
MSc Production Animal Studies						X							
MSc Vet Industrial Pharmacology						X							
M Phil Livestock Industry Management							X						
M Phil Livestock Industry Aquaculture							X						
M Phil Livestock Industry Pig Production Sciences							X						
M Phil Livestock Industry Poultry Science							X						
Assisted Reproduction							X						
MSc Zoology						X							
M Phil Livestock Industry Dairy Science							X						
M Phil Agriculture							X						
MA Geography										X			
M Human Ecology										X			
M Consumer Science										X			
M Agric Admin/ Management				X	X		X						
MA Agriculture			X	X									
MSc Geography										X			
MSc Environmental Science										X			
M Veterinary Medicine						X							
M Phil							X						
MSc Food Science							X						
MSc Nutrition						X							
MSc Research Based						X							

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
M Forestry							X						
MSc Forestry							X						
MSc Agriculture		X	X	X	X		X	X	X				
MSc Conservation Ecology							X						
MSc Food Science and Technology						X	X	X					
M Rural Development								X					
MA Agric Economics	X				X	X							
MA Agric Extension	X				X								
M.Phil Environmental Studies	X												
MSc Agric Crop Science	X				X								
MSc Agric Animal Science	X					X	X						
MScAgric. Soil Science.	X				X	X	X						
MSc Agric Horticulture	X				X	X	X						
MSc Plant Production						X							
MSc Agric Pasture Science	X				X								
MSc Agric Geography and Environmental Science	X												
MSc Agric Plant Protection & Plant Pathology					X								
MSc Agronomy						X							
MSc Agric Remote Sensing					X								
MA Disaster Management			X										
MA Sustainable Agriculture			X										
M Com Agric Economics						X							
M Inst. Agrar. Agric Economics						X							
M Inst. Agrar. Agronomy						X							
M Inst. Agrar. Animal Production Management						X							
M Inst. Agrar. Animal Production						X							
M Inst. Agrar. Crop Protection						X							
M Inst. Agrar. Environmental Management						X							
M Inst. Agrar. Extension						X							
M Inst. Agrar. Food Processing						X							
M Inst. Agrar. Food Production & Processing						X							
M Inst. Agrar. Horticulture						X							
M Inst. Agrar. Land Dev						X							
M Inst. Agrar. Land Use Planning						X							
M Inst. Agrar. Plant Production Agronomy						X							
M Inst Agrar. Plant Production Horticulture						X							
M Inst. Agrar. Plant Protection						X							
M Inst. Agrar. Rural Dev. & Ecotourism						X							
M Inst. Agrar. Rural Dev Planning						X							
M Inst. Agrar. Rural Household Dev. (Diss)						X							
M Inst. Agrar. Sust Ecol Management						X							

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
M Inst. Agrar. Sust Insect Management.						X							
MSc Agric Agronomy						X	X						
MSc Agric Entomology, Nematology and Insect pest Management						X	X						
Wildlife (M Inst. Agrar)						X							
MSc Animal Breeding & and Genetics						X							
MSc Agric Aquaculture							X						
MSc Agric Plant Pathology							X						
MSc Agric Genetics							X						
MSc Genetics						X							
MSc Mammalogy (Course Work)						X							
MSc Biochemistry						X							
MSc Microbiology						X							
MSc Genetics						X							
MSc Plant Biotechnology						X							
PhD Degree Programmes													
PhD Agricultural Administration							X						
PhD Literature & Philosophy in Geography										X			
PhD Geography										X			
PhD Environmental Management										X			
PhD Environmental Science										X			
PhD Agrarian Extension						X							
PhD Agricultural Economics	X					X							
PhD (Agric) Animal Science							X						
PhD (Agric) Animal Physiology							X						
PhD (Agric) Plant Pathology							X						
PhD (Agric) Horticulture							X						
PhD (Agric) Soil Science							X						
PhD (Agric) Genetics							X						
PhD (Agric) Entomology							X						
PhD Agronomy						X							
PhD (Agric) Agronomy							X						
PhD Animal Production						X							
PhD Animal Science						X							
PhD Crop Protection						X							
PhD Food Science						X	X						
PhD Horticultural Science						X							
PhD Pasture Science						X							
PhD Plant Production: Agronomy						X							
PhD Plant Production: Horticulture						X							
PhD Plant Production: Pasture Science						X							
PhD Rural Development Planning						X							

Table 51: Agricultural programmes offered by universities during the 2009 academic year

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	UNISA	Johannesburg	Western Cape	Nelson Mandela
PhD Soil Science	X					X							
PhD Soil Science and Plant Nutrition						X							
PhD Agriculture				X	X	X	X	X	X				
PhD Science and Agriculture				X									
PhD Crop Science	X												
PhD Geography and Environmental Science	X												
PhD Anatomy and Physiology						X							
PhD Companion Anim Clin Studies						X							
PhD Para clinical Sciences						X							
PhD Production Animal Studies						X							
PhD Veterinary Tropical Diseases						X							
PhD Conservation Ecology							X						
PhD Forestry							X						

Table 52 below outlines the NQF ratings at universities, i.e. the programme levels and matching NQF levels of these programmes (Department of Agriculture, 2005). These ratings have remained very indifferent amongst the institutions since 2004, with less substantial changes from one year to the next, except where an institution loses accreditation completely. This largely occurs due to an institution's inability to obtain prescribed credits for a particular qualification or unit standards.

Table 52: NQF levels at universities

NQF Level	Band	Types of qualification and Certificates
8	Higher Education and Training Band	Doctorate/ Further Research degree
7		Higher degree/professional qualification
6		First degree/ higher Diploma
5		Diploma/Occupational Certificate

The rating of the university programmes, in terms of NQF standards, precisely resembles that of universities of technology. The lowest agricultural qualification offered at both universities is the NQF level 5, i.e. diploma and the highest qualification is NQF level 8, which is the PhD.

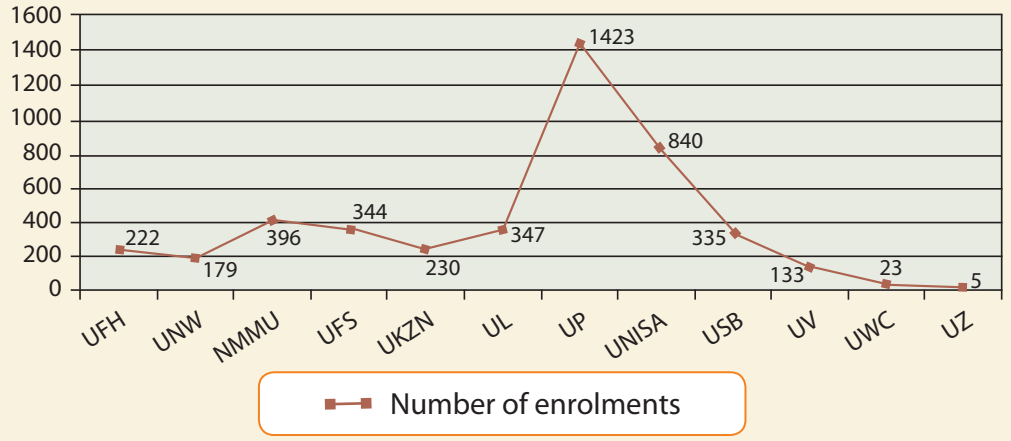
4.3 Enrolments in agricultural education and training programmes at universities in 2009

A total number of 4 477 students registered for agricultural programmes at universities during the 2009 academic year.

Table 53 below presents enrolment figures at universities during the 2009 academic year.

Table 53: AET enrolments figures at universities during the 2009 academic year		
Name of the university	**Number of AET graduates**	**Percentage (%)**
University of Fort Hare	222	5
University of the North West	179	4
Nelson Mandela Metropolitan University	396	9
University of the Free State	344	8
University of KwaZulu-Natal	230	5
University of Limpopo	347	8
University of Pretoria	1423	32
University of South Africa	840	19
University of Stellenbosch	335	7
University of Venda	133	3
University of the Western Cape	23	1
University of Zululand	5	0
Total	**4477**	**100**

Figure 91: Enrolments at Universities in 2009



As illustrated in Table 53 and Figure 91 above, University of Pretoria and University of South Africa (UNISA) had a higher number of students than all other universities, dominating enrolments with 32% and 19% respectively. Nelson Mandela Metropolitan University enrolled a significant number of students comprising 9% of the total number of enrolments at universities during the 2009 academic year. Likewise, in previous years, North West, Fort Hare, Free State, Limpopo, Stellenbosch and Venda attracted less than 9% of the total enrolments in agricultural education and training at universities during the 2009 academic year.

As has been the trend in the past academic years, universities with many programmes had higher numbers of registrations during the 2009 academic year than those universities with fewer programmes.

4.3.1 Demographic breakdown of agricultural education and training enrolments at universities

Table 54 below presents a demographic breakdown of AET enrolments at universities during the 2009 academic year.

Table 54: Demographic breakdown of AET enrolments by gender and race at Universities during the 2009 academic year

Name of the university	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
University of Fort Hare	134	87	**221**	0	0	**0**	0	1	**1**	0	0	**0**	**222**
University of North West	99	80	**179**	0	0	**0**	0	0	**0**	0	0	**0**	**179**
Nelson Mandela Metropolitan University	139	82	**221**	11	4	**15**	122	37	**159**	0	1	**1**	**396**
University of Free State	95	67	**162**	2	3	**5**	157	18	**175**	1	1	**2**	**344**
University of KwaZulu-Natal	52	82	**134**	1	1	**2**	19	46	**65**	4	25	**29**	**230**
University of Limpopo	168	178	**346**	0	0	**0**	1	0	**1**	0	0	**0**	**347**
University of Pretoria	112	192	**304**	4	20	**24**	281	746	**1027**	19	49	**68**	**1423**
University of South Africa	302	366	**668**	11	6	**17**	52	88	**140**	2	13	**15**	**840**
University of Stellenbosch	26	15	**41**	17	9	**26**	156	108	**264**	1	3	**4**	**335**
University of Venda	70	63	**133**	0	0	**0**	0	0	**0**	0	0	**0**	**133**
University of Western Cape	8	7	**15**	3	3	**6**	1	1	**2**	0	0	**0**	**23**
University of Zululand	1	4	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Total	**1206**	**1223**	**2429**	**49**	**46**	**95**	**789**	**1045**	**1834**	**27**	**92**	**119**	**4477**

Figure 92: Gender breakdown of AET enrolments at Universities

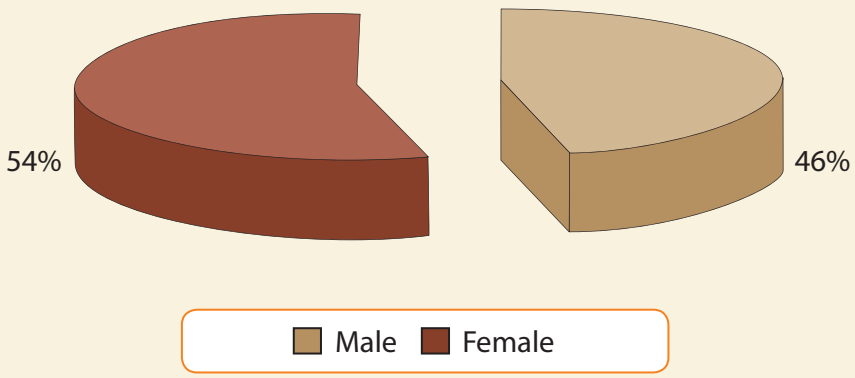
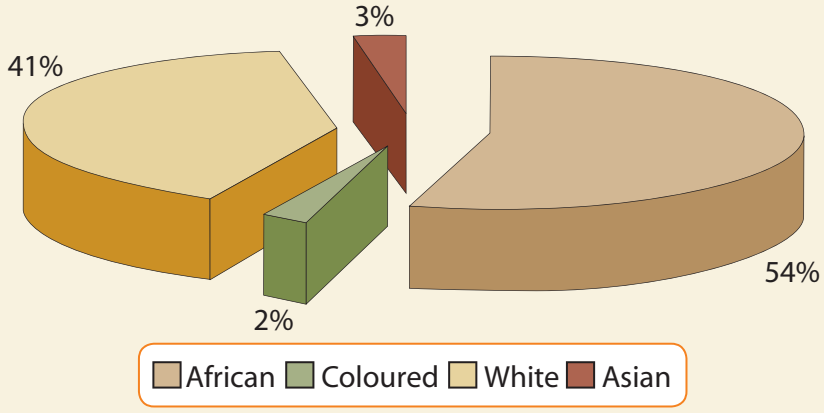


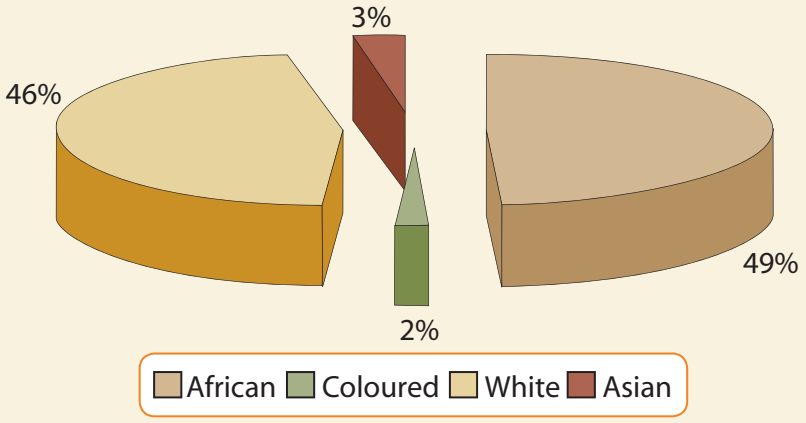
Figure 92 above portrays the gender breakdown of AET enrolments at universities during the 2009 academic year, females dominated with 54% and males comprised 46%.

Figure 93: Racial breakdown of AET enrolments at Universities



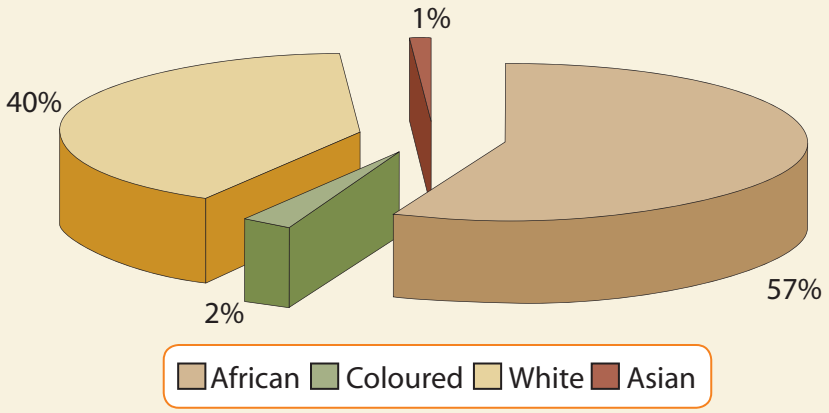
As depicted in Figure 93 above, Africans constituted the majority of AET enrolments at universities during the 2009 academic year with 54%, followed by Whites with 41%. Coloured and Asian students accounted for 3% and 2% respectively of the overall enrolments at universities during the 2009 academic year .

Figure 94: Racial breakdown of female AET enrolments at Universities



The racial female classification in Figure 94 above, shows that African females dominated with 49%, followed by Whites with 46%. Asian and Coloured females enrolled at universities accounted for 3% and 2% respectively during the 2009 academic year.

Figure 95: Racial breakdown of male AET enrolments at Universities



According to Figure 95 above, African and White males accounted for 57% and 40% respectively of the male enrolments at universities during the 2009 academic year. Coloureds and Asians constituted 2% and 1% respectively of the total male enrolments during the 2009 academic year.

4.3.2 Agricultural enrolments at universities by CESM in 2009

Table 55 below presents enrolments at universities by Category of Education Subject Matter (CESM).

Table 55: Agricultural enrolments in universities during the 2009 by CESM and academic level

CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total
Agricultural Economics (Science Stream)	168	0	12	10	1	**191**
Agricultural Economics (Art Stream)	3	0	0	11	0	**14**
Agricultural Economics (BCom Stream)	0	0	8	0	0	**8**
Agricultural Economics (Agribusiness)	33	0	23	0	0	**56**
Agricultural Science (Art Stream)	98	0	12	8	13	**131**
Agricultural Science (Science Stream)	632	0	30	90	10	**762**
Agricultural Extension	72	3	0	7	2	**84**
Agricultural Extension (Inst. Agrar. Stream)	0	0	3	0	0	**3**
Agricultural Food Science	107	35	11	25	2	**180**
Animal Science	392	0	53	50	6	**501**
Horticulture	103	0	18	4	0	**125**
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**
Plant Science	77	0	39	26	5	**147**
Plant Science (Inst. Agrar. Stream)	0	0	6	1	0	**7**
Soil Science	62	0	4	16	0	**82**
Forestry	200	0	1	4	1	**206**
Renewable Natural Resources	285	0	0	11	0	**296**
Agricultural Management	452	0	9	135	0	**596**
Other Agricultural and Renewable Resources	9	1	0	0	0	**10**
Rural Development	0	0	8	13	0	**21**
Rural Development (Inst. Agrar. Stream)	0	0	1	0	0	**1**
Agricultural Economics (Inst. Agrar. Stream)	0	0	1	4	0	**5**
Environmental Management	49	0	67	19	1	**136**
Environmental Management (Inst. Agrar. Stream)	0	0	0	5	0	**5**
Agribusiness (Inst. Agrar. Stream	0	0	1	0	0	**1**
Land Reclamation (Land Use)	0	53	1	0	0	**54**
Agronomy	9	0	8	4	1	**22**
Agronomy (Inst. Agrar. Stream)	0	0	0	1		**1**
Wildlife	62	0	20	9	2	**93**
BSc Veterinary Biology	329	0	0	0	0	**329**
Veterinary Nursing	44	0	0	0	0	**44**
Microbiology	5	0	16	9	2	**32**
Consumer Science	213	0	4	9	1	**227**
Biotechnology	48	0	24	21	13	**106**
Total	**3452**	**92**	**380**	**493**	**60**	**4477**
Percentage (%)	**77**	**2**	**8**	**11**	**1**	**100**

Table 55 above presents various agricultural programmes offered by universities under each CESM. The focus of this section is on the AET enrolments by level of qualification per CESM and the demographic breakdown of enrolments in each CESM.

Table 55 above indicates that the majority of students at universities during the 2009 academic year were at Undergraduate Degree level with 77%, followed by Master's enrolments with 11% and Honours with 8%. Post-graduate Diploma and PhD registered 2% and 1% of the overall enrolments.

4.3.3 Breakdown of agricultural education and training enrolments at universities by CESM in 2009

Table 56 below outlines the enrolments at Undergraduate Degree level at universities during the 2009 academic year.

Table 56: Enrolments in Undergraduate Degree programmes by CESM at universities during the 2009 academic year

CESM (Undergraduate)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	84	84	**168**	0	0	**0**	0	0	**0**	0	0	**0**	**168**
Agricultural Economics (Art Stream)	0	3	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Agricultural Economics (Agribusiness)	10	14	**24**	0	1	**1**	2	6	**8**	0	0	**0**	**33**
Agricultural Science (Art Stream)	15	14	**29**	6	4	**10**	45	13	**58**	0	1	**1**	**98**
Agricultural Science (Science Stream)	85	129	**214**	5	10	**15**	123	244	**367**	10	26	**36**	**632**
Agricultural Extension	37	34	**71**	0		**0**	1	0	**1**	0	0	**0**	**72**
Agricultural Food Science	13	35	**48**	1	1	**2**	3	41	**44**	0	13	**13**	**107**
Animal Science	121	114	**235**	1	4	**5**	84	51	**135**	7	10	**17**	**392**
Plant Science	21	26	**47**	0	0	**0**	25	5	**30**	0	0	**0**	**77**
Soil Science	32	24	**56**	0	0	**0**	6	0	**6**	0	0	**0**	**62**
Forestry	99	56	**155**	6	0	**6**	38	1	**39**	0	0	**0**	**200**
Horticulture	38	50	**88**	2	0	**2**	7	6	**13**	0	0	**0**	**103**
Renewable Natural Resources	77	91	**168**	5	5	**10**	28	30	**58**	18	31	**49**	**285**
Other Agricultural and Renewable Resources	3	0	**3**	0	0	**0**	4	2	**6**	0	0	**0**	**9**
Agricultural Management	190	176	**366**	5	1	**6**	73	5	**78**	1	1	**2**	**452**
Environmental Management	14	32	**46**	0	0	**0**	1	2	**3**	0	0	**0**	**49**
Agronomy	0	3	**3**	0	5	**5**	1	0	**1**	0	0	**0**	**9**
Wildlife	2	2	**4**	0	0	**0**	51	7	**58**	0	0	**0**	**62**
Consumer Science	6	46	**52**	2	5	**7**	10	138	**148**	0	6	**6**	**213**
Veterinary Nursing	2	1	**3**	0	1	**1**	0	40	**40**	0	0	**0**	**44**
BSc Veterinary Biology	8	10	**18**	1	2	**3**	96	196	**292**	5	11	**16**	**329**
Biotechnology	9	11	**20**	0	2	**2**	8	18	**26**	0	0	**0**	**48**
Microbiology	0	3	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
Total	**866**	**958**	**1824**	**34**	**41**	**75**	**607**	**806**	**1413**	**41**	**99**	**140**	**3452**

As indicated in Table 56 above, Agricultural Science (Art Stream), Agricultural Management, Animal Science and Veterinary Biology contributed the largest number of Undergraduate Degree enrolments at universities with 18%, 13%, 11% and 10% respectively. The lowest figures at Undergraduate Degree level were recorded at Agricultural Economics (Art Stream), Other Agricultural and Renewable Resources, Agronomy and Microbiology contributed less than 1%.

Africans constituted 53% of the total number of enrolments at Undergraduate Degree level, followed by White students with 41%. Asian and Coloured enrolments at Undergraduate Degree level were relatively very low, constituting 4% and 2% respectively.

Table 57 below outlines the enrolments at Post-graduate Diploma level at universities during the 2009 academic year.

Table 57: Post-graduate Diploma enrolments by CESM at universities during the 2009 academic year

CESM (Post-graduate Diploma)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Extension	1	1	**2**	1	0	**1**	0	0	**0**	0	0	**0**	**3**
Agricultural Food Technology	1	11	**12**	0	0	**0**	0	17	**17**	1	5	**6**	**35**
Other Agricultural and Renewable Resources	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Land Reclamation	29	15	**44**	1	1	**2**	2	3	**5**	1	1	**2**	**53**
Total	**31**	**28**	**59**	**2**	**1**	**3**	**2**	**20**	**22**	**2**	**6**	**8**	**92**

At Post-graduate Diploma level; Land Reclamation, Agricultural Food Technology, Agricultural Extension and Other Agricultural and Renewable Resources constituted the overall enrolments with 58%, 38%, 3% and 1% respectively.

African and White students contributed 64% and 24% respectively of the total Post-graduate Diploma enrolments during the 2009 academic year. Asian and Coloured students contributed 9% and 3% respectively of Post-graduate Diploma studies in universities during the 2009 academic year.

Table 58 outlines the enrolments at Honours Degree at universities for the 2009 academic year.

Table 58: Enrolments in Honours Degree by CESM at universities during the 2009 academic year

CESM (Honours)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	9	3	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Agricultural Economics (BCom Stream)	2	1	**3**	0	1	**1**	3	1	**4**	0	0	**0**	**8**
Agricultural Economics (Agribusiness)	6	9	**15**	0	0	**0**	6	1	**7**	1	0	**1**	**23**
Agricultural Science (Art Stream)	9	2	**11**	0	0	**0**	1	0	**1**	0	0	**0**	**12**
Agricultural Science (Science Stream)	15	9	**24**	0	2	**2**	3	1	**4**	0	0	**0**	**30**
Agricultural Food Technology	2	3	**5**	0	0	**0**	0	5	**5**	0	1	**1**	**11**
Animal Science	9	3	**12**	0	1	**1**	17	21	**38**	1	1	**2**	**53**
Horticulture	6	11	**17**	0	0	**0**	0	1	**1**	0	0	**0**	**18**
Consumer Science	0	1	**1**	0	0	**0**	0	3	**3**	0	0	**0**	**4**
Microbiology	1	4	**5**	0	1	**1**	3	7	**10**	0	0	**0**	**16**
Biotechnology	2	4	**6**	0	3	**3**	4	9	**13**	1	1	**2**	**24**
Plant Science	7	11	**18**	0	1	**1**	8	9	**17**	0	3	**3**	**39**
Soil Science	2	1	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Forestry	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Land Reclamation	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agricultural Management	2	4	**6**	1	0	**1**	1	1	**2**	0	0	**0**	**9**
Agronomy	2	0	**2**	0	0	**0**	5	1	**6**	0	0	**0**	**8**
Environmental Management	22	28	**50**	0	0	**0**	5	6	**11**	0	6	**6**	**67**
Wildlife	0	0	**0**	0	1	**1**	10	9	**19**	0	0	**0**	**20**
Rural Development	5	3	**8**	0	0	**0**	0	0	**0**	0	0	**0**	**8**
Agricultural Extension (Inst. Agrar. Stream)	3	0	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Plant Science (Inst. Agrar. Stream)	2	2	**4**	0	0	**0**	2	0	**2**	0	0	**0**	**6**
Rural Development (Inst. Agrar. Stream)	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agribusiness Management (Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agricultural Economics (Inst. Agrar. Stream)	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**108**	**101**	**209**	**1**	**10**	**11**	**70**	**75**	**145**	**3**	**12**	**15**	**380**

Environmental Management, Animal Science and Plant Science were the programmes that have registered the highest number of Honours students with 18%, 14% and 10% respectively. The other programmes accounted for less than 10% of the overall Honours enrolments during the 2009 academic year.

Africans constituted the majority of enrolments with 55% while Whites enrolments accounted for 38% at Honours level during the 2009 academic year. Asian and Coloured enrolments accounted for 4% and 3% respectively of the total Honours enrolments during the 2009 academic year.

Table 59 below outlines the Master's Degree enrolments at universities during the 2009 academic year.

Table 59: Enrolments in Master's Degree programmes by CESM at universities during the 2009 academic year

CESM (Master's)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	6	4	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**
Agricultural Economics (Art Stream)	7	3	**10**	0	1	**1**	0	0	**0**	0	0	**0**	**11**
Agricultural Science (Art Stream)	1	0	**1**	0	0	**0**	5	2	**7**	0	0	**0**	**8**
Agricultural Science (Science Stream)	25	21	**46**	2	1	**3**	16	21	**37**	1	3	**4**	**90**
Agricultural Extension	4	3	**7**	0	0	**0**	0	0	**0**	0	0	**0**	**7**
Agricultural Food Science	1	1	**2**	2	0	**2**	3	18	**21**	0	0	**0**	**25**
Animal Science	9	14	**23**	0	0	**0**	10	15	**25**	0	2	**2**	**50**
Plant Science	10	9	**19**	0	0	**0**	2	4	**6**	0	1	**1**	**26**
Soil Science	13	3	**16**	0	0	**0**	0	0	**0**	0	0	**0**	**16**
Forestry	0	0	**0**	0	0	**0**	4	0	**4**	0	0	**0**	**4**
Horticulture	2	2	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Renewable Natural Resources	2	0	**2**	1	0	**1**	5	2	**7**	1	0	**1**	**11**
Agricultural Management	78	43	**121**	0	2	**2**	11	1	**12**	0	0	**0**	**135**
Environmental Management	8	7	**15**	0	0	**0**	0	4	**4**	0	0	**0**	**19**
Rural Development	6	7	**13**	0	0	**0**	0	0	**0**	0	0	**0**	**13**
Agronomy	4	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Agronomy (Inst. Agrar.)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agricultural Economics (Inst. Agrar.)	2	2	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Wildlife	0	0	**0**	0	0	**0**	7	1	**8**	0	1	**1**	**9**
Consumer Science	2	1	**3**	0	0	**0**	0	6	**6**	0	0	**0**	**9**
Environmental Management (Inst. Agrar.)	0	3	**3**	0	0	**0**	0	1	**1**	0	1	**1**	**5**
Horticulture (Inst. Agrar.)	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Plant Science (Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Biotechnology	5	3	**8**	1	0	**1**	4	5	**9**	2	1	**3**	**21**
Microbiology	0	2	**2**	0	0	**0**	4	3	**7**	0	0	**0**	**9**
Total	**187**	**129**	**316**	**6**	**4**	**10**	**71**	**83**	**154**	**4**	**9**	**13**	**493**

Agricultural Management, Agricultural Science (Science Stream) and Animal Science were the programmes that registered the highest number of Master's students with 27%, 18% and 10% respectively. Other programmes accounted for less than 10% during the 2009 academic year.

African and White students accounted for 64% and 31% respectively of the overall Master's students during the 2009 academic year. Asians and Coloureds respectively constituted 3% and 2% of the total Master's enrolments during the 2009 academic year.

Table 60 below presents the PhD Degree enrolments at universities for the 2009 academic year.

Table 60: PhD Degree enrolments by CESM at universities during the 2009 academic year

CESM (PhD)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	0	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**	**1**
Agricultural Science (Art Stream)	5	0	**5**	1	0	**1**	2	4	**6**	0	1	**1**	**13**
Agricultural Science (Art Stream)	3	0	**3**	0	0	**0**	4	3	**7**	0	0	**0**	**10**
Agricultural Extension	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	**2**
Food Science	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	**2**
Animal Science	2	0	**2**	0	0	**0**	1	1	**2**	1	1	**2**	**6**
Plant Science	2	0	**2**	1	0	**1**	2	0	**2**	0	0	**0**	**5**
Forestry	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Environmental Management	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agronomy	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Wildlife	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	**2**
Microbiology	0	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
Consumer Science	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Biotechnology	5	4	**9**	2	0	**2**	1	1	**2**	0	0	**0**	**13**
Total	**21**	**5**	**26**	**6**	**2**	**8**	**13**	**10**	**23**	**1**	**2**	**3**	**60**

Students who enrolled for Agricultural Science (Art Stream) and Biotechnology at PhD level accounted for 22% each, followed by Agricultural Science (Art Stream) with 17% and Animal Science with 10%. The other programmes registered less than 10% of the total number of PhD enrolments during the 2009 academic year.

White students constituted 43% of the total PhD enrolments in the 2009 academic year, followed by African students with 38%. Coloured and Asian students accounted for 13% and 5% respectively.

4.3.3.1 Agricultural Economics (Science Stream) enrolments at universities in 2009

One hundred and ninety one (191) students registered in this CESM during the 2009 academic year. Programmes in this CESM are offered by Universities of Fort Hare, Free State, Limpopo and Pretoria. Agricultural Economics (Science Stream) includes programmes in: Agricultural Economics - Livestock/ Extension, Agricultural Economics - Plant Production, Agricultural Economics - General, Agricultural Economics (Natural) and Environmental Economics.

Table 61 below presents a demographic breakdown of Agricultural Economics (Science Stream) enrolments by academic level during the 2009 academic year.

Table 61: Demographic breakdown of Agricultural Economics (Science Stream) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	84	84	**168**	0	0	**0**	0	0	**0**	0	0	**0**	**168**
Honours	9	3	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Master's	6	4	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**
PhD	0	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**	**1**
Total	**99**	**91**	**190**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**191**

Undergraduate Degree students constituted 89% of the total enrolments in this CESM during the 2009 academic year. Honours enrolments accounted for 6% of the total students enrolled in Agricultural Economics (Science Stream) and Master's accounted for 5%. No Post-graduate Diploma or PhD students enrolled in this CESM.

One hundred and sixty eight (168) African students registered at Undergraduate Degree level in Agricultural Economics (Science Stream) during the 2009 academic year.

Figure 96: Gender breakdown of Undergraduate Degree enrolments in Agricultural Economics (Science Stream)

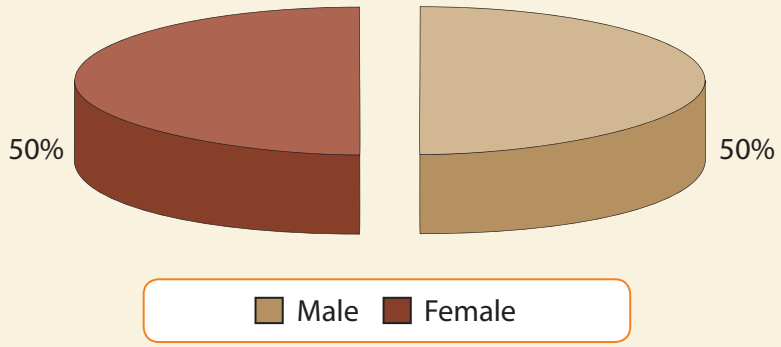
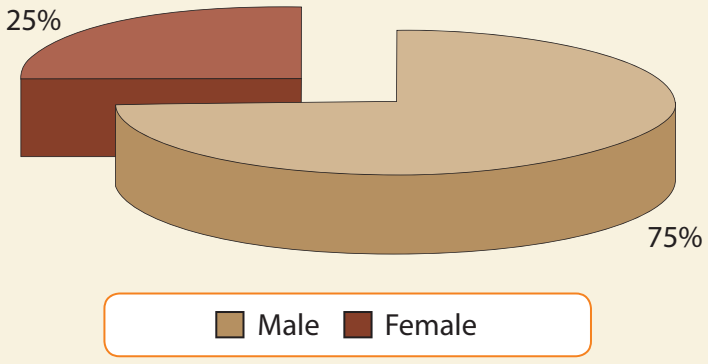


Figure 96 above depicts that males and females shared an equal percentage with 50% in this CESM during the 2009 academic year.

Twelve (12) African students enrolled for Honours in Agricultural Economics (Science Stream) during the 2009 academic year.

Figure 97: Gender breakdown of Honours Degree enrolments in Agricultural Economics (Science Stream)



Gender breakdown in Figure 97 above illustrates that males dominated the Honours Degree enrolments in this CESM with 75%, while females comprised 25%.

Ten (10) African students enrolled for Master's in Agricultural Economics (Science Stream) during the 2009 academic year.

Figure 98: Gender breakdown of Master's enrolments in Agricultural Economics (Science Stream)

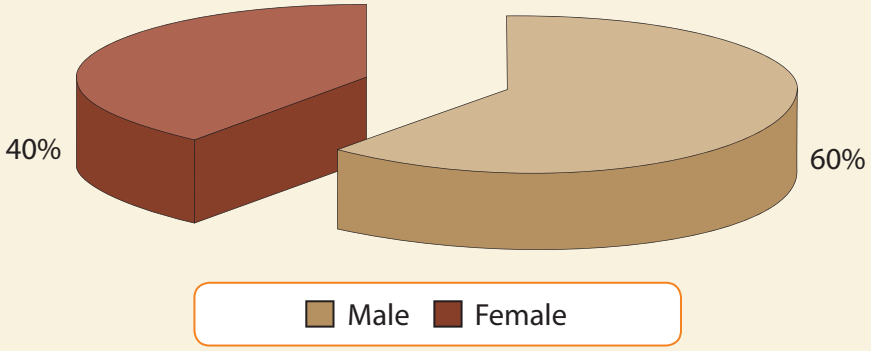


Figure 98 above portrays that males dominated Agricultural Economics (Science Stream) Master's Degree enrolments with 60%, while females accounted for 40%.

One (1) Coloured female student enrolled for PhD in Agricultural Economics (Science Stream) during the 2009 academic year.

4.3.3.2 Agricultural Economics (BCom Stream) enrolments at universities in 2009

Eight (8) Honours Degree students enrolled in Agricultural Economics (BCom Stream) at universities during the 2009 academic year. Programmes in this CESM are offered by University of Pretoria only.

Table 62 below presents a demographic breakdown of Agricultural Economics (BCom) enrolments by academic level during the 2009 academic year.

Table 62: Demographic breakdown of Agricultural Economics (BCom Stream) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	2	1	**3**	0	1	**1**	3	1	**4**	0	0	**0**	**8**
Total	**2**	**1**	**3**	**0**	**1**	**1**	**3**	**1**	**4**	**0**	**0**	**0**	**8**

Figure 99: Racial breakdown of Honours Degree enrolments in Agricultural Economics (BCom Stream)

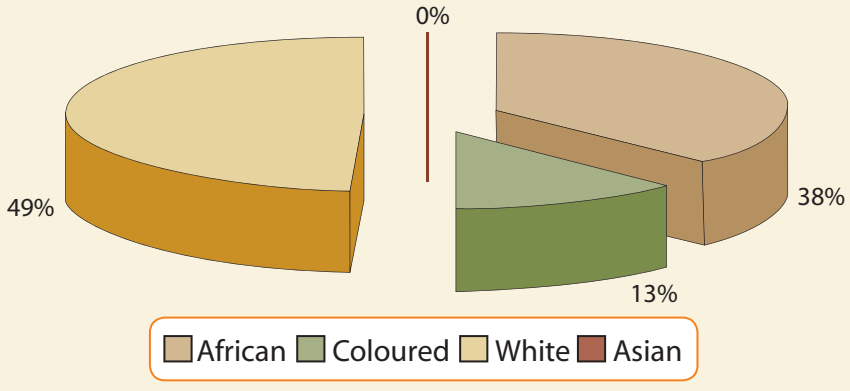


Figure 99 above depicts that White students accounted for 49% of Honours Degree enrolments in this CESM while Africans constituted 38% and Coloured students accounted for 13%.

Figure 100: Gender breakdown of Honours Degree enrolments in Agricultural Economics (BCom Stream)

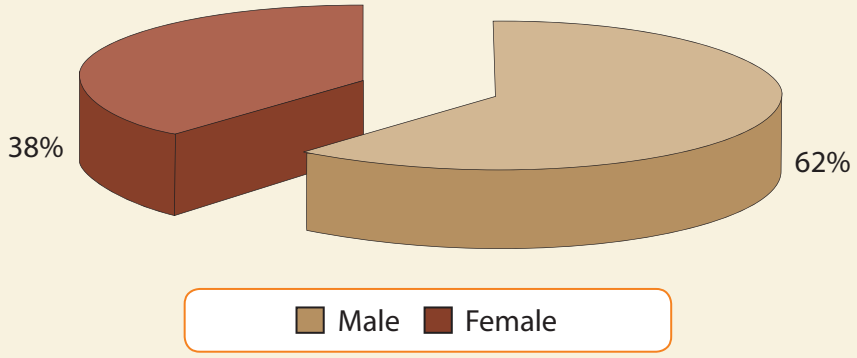


Figure 100 above indicates that males dominated the Honours Degree enrolments in Agricultural Economics (BCom Stream) with 62% and females contributed 38%.

4.3.3.3 Agricultural Economics (Agribusiness Management) enrolments at universities in 2009

Fifty six (56) students enrolled in Agricultural Economics (Agribusiness Management) during the 2009 academic year. Institutions offering programmes in this CESM are University of Pretoria and University of Stellenbosch. This CESM includes programmes in Agricultural Economics (Agribusiness Management).

Table 63 below presents a demographic breakdown of Agricultural Economics (Agribusiness Management) enrolments for 2009 in terms of academic levels.

Table 63: Demographic breakdown of Agricultural Economics (Agribusiness Management) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	10	14	**24**	0	1	**1**	2	6	**8**	0	0	**0**	**33**
Honours	6	9	**15**	0	0	**0**	6	1	**7**	1	0	**1**	**23**
Total	**16**	**23**	**39**	**0**	**1**	**1**	**8**	**7**	**15**	**1**	**0**	**1**	**56**

Thirty three (33) students enrolled in this CESM during the 2009 academic year were registered at Undergraduate level and 23 enrolled at Honours Degree level.

Figure 101: Racial breakdown of Undergraduate Degree enrolments in Agricultural Economics (Agribusiness Management)

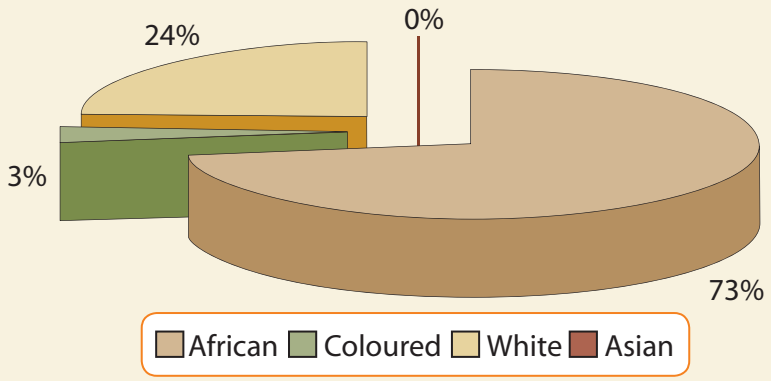
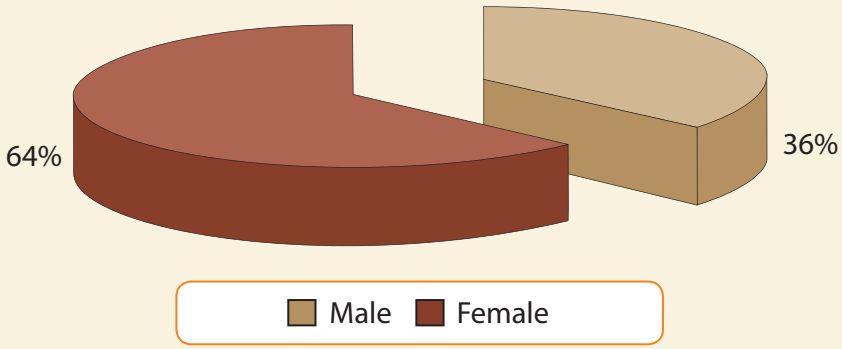


Figure 101 above portrays that Africans dominated the Undergraduate Degree enrolments in this CESM with 73%, followed by Whites with 24%. Coloureds constituted 3% of the total enrolments in this CESM at Undergraduate Degree level during the 2009 academic year. No Asian students were enrolled.

Figure 102: Gender breakdown of Undergraduate Degree enrolments in Agricultural Economics (Agribusiness Management)



The gender breakdown in Figure 102 above shows a female domination of enrolments in this CESM at Undergraduate Degree level with 64%, while males constituted only 36%.

Figure 103: Racial breakdown of Honours Degree enrolments in Agricultural Economics (Agribusiness Management)

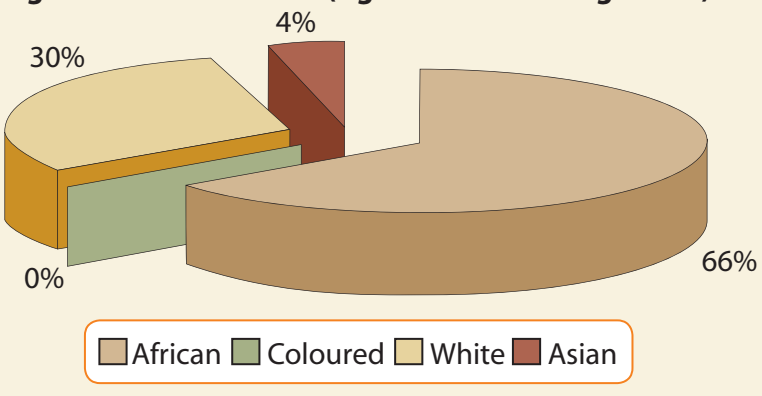
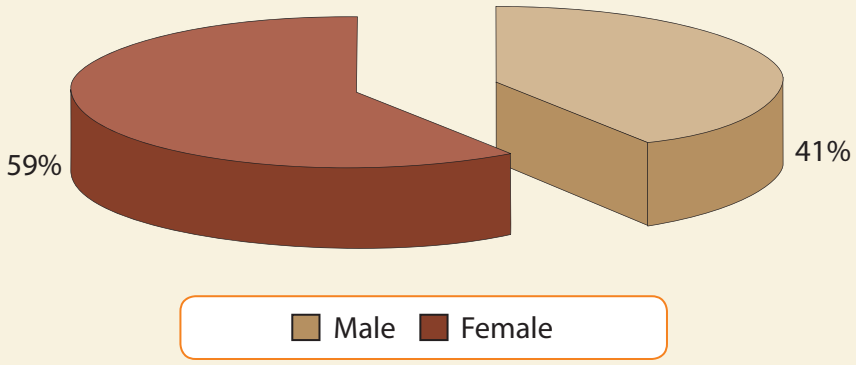


Figure 103 above portrays that Africans dominated the Honours Degree enrolments in this CESM with 66%, followed by Whites with 30%. Asians constituted 4% of the total enrolments in this CESM at Honours Degree during the 2009 academic year. No Coloured students were enrolled at Honours level.

Figure 104: Gender breakdown of Honours Degree enrolments in Agricultural Economics (Agribusiness Management)



The gender breakdown in Figure 104 above shows a female domination of enrolments in this CESM at Honours Degree level with 59%, while males constituted 41%.

4.3.3.4 Agricultural Economics (Art Stream) enrolments at universities in 2009

Fourteen (14) students registered at universities in this CESM for the 2009 academic year.

University of Fort Hare is the only institution that offered programmes in Agricultural Economics (Art Stream) during the 2009 academic year.

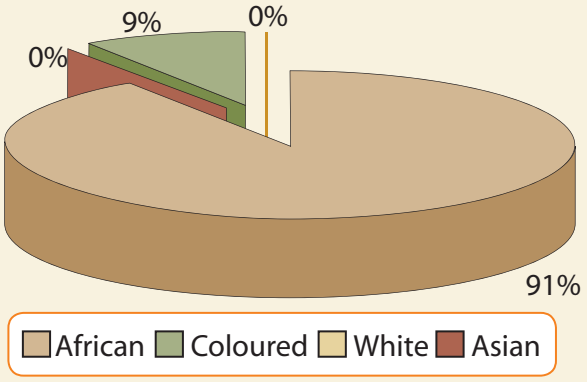
Table 64 presents a demographic breakdown of Agricultural Economics (Art Stream) enrolments during the 2009 academic year by level of qualification.

Table 64: Demographic breakdown of Agricultural Economics (Art Stream) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	3	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Master's	7	3	**10**	0	1	**1**	0	0	**0**	0	0	**0**	**11**
Total	**7**	**6**	**13**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**14**

Master's students registered in Agricultural Economics (Art Stream) during the 2009 academic year constituted 79% and Undergraduate Degree students accounted for 21% of the total enrolments in this CESM.

Figure 105: Racial breakdown of Master's Degree enrolments in Agricultural Economics (Art Stream)



As shown in Figure 105 above, Africans dominated the Master's Degree enrolments in this CESM with 91%, followed by Coloured with 9%. White and Asian students were not represented in this CESM.

Figure 106: Gender breakdown of Master's Degree enrolments in Agricultural Economics (Art Stream)

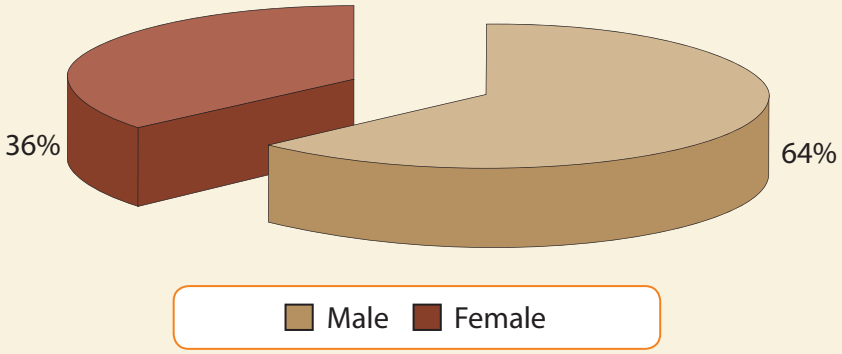


Figure 106 above portrays that male students constituted 64% of Master's Degree enrolments in this CESM and female students accounted for 36%.

4.3.3.5 Agricultural Science (Art Stream) enrolments at universities in 2009

Ninety nine (99) students enrolled for Agricultural Science (Art Stream) during the 2009 academic year. Programmes in this CESM are offered by University of Free State and University of Stellenbosch.

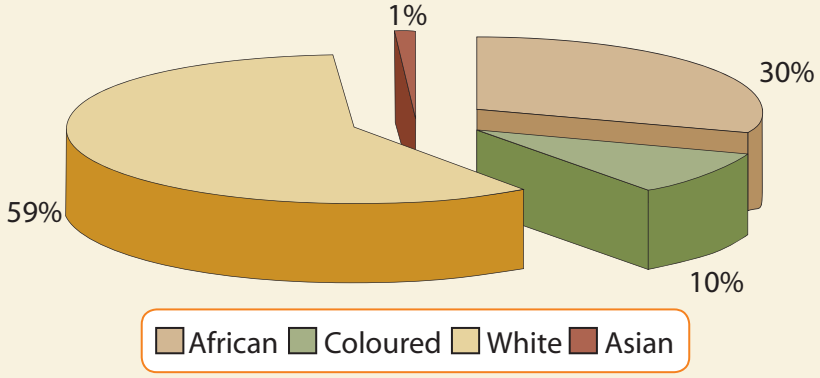
Table 65 below presents a demographic breakdown of Agricultural Science (Art Stream) enrolments by level of qualification during the 2009 academic year.

Table 65: Demographic breakdown of Agricultural Science (Art Stream) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	15	14	**29**	6	4	**10**	45	13	**58**	0	1	**1**	**98**
Honours	9	2	**11**	0	0	**0**	1	0	**1**	0	0	**0**	**12**
Master's	1	0	**1**	0	0	**0**	5	2	**7**	0	0	**0**	**8**
PhD	5	0	**5**	1	0	**1**	2	4	**6**	0	1	**1**	**13**
Total	**30**	**16**	**46**	**7**	**4**	**11**	**53**	**19**	**72**	**0**	**2**	**2**	**131**

Undergraduate Degree enrolments accounted for 79% of the enrolments in this CESM. PhD students enrolled in this CESM represented 12%, while Master's constituted 8% and Honours constituted 1%.

Figure 107: Racial breakdown of Undergraduate Degree enrolments in Agricultural Science (Art Stream)



As shown in Figure 107 above, Whites accounted for 59% of Undergraduate Degree enrolments in this CESM, followed by Africans with 30%. Coloureds and Asian students represented 10% and 1% respectively.

Figure 108: Gender breakdown of Undergraduate Degree enrolments in Agricultural Science (Art Stream)

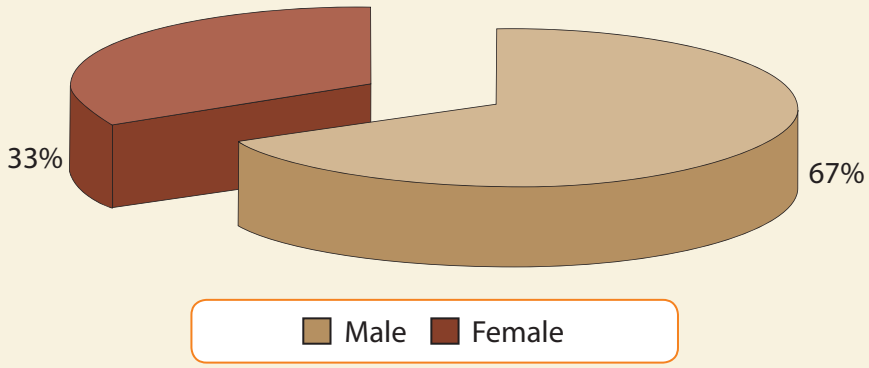
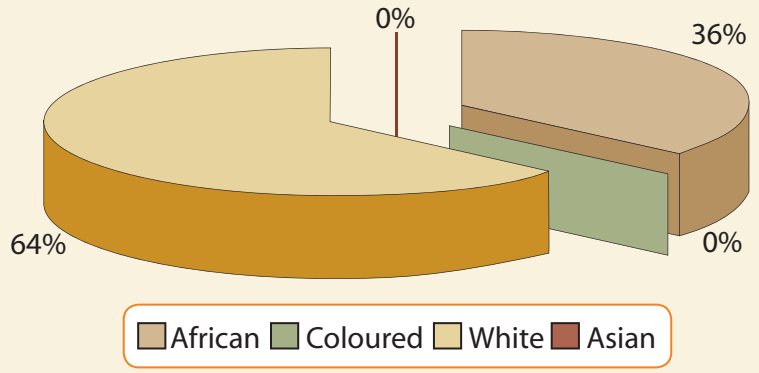


Figure 108 above indicates that males were dominant in this CESM at Undergraduate Degree level with 67%, while females accounted for 33%.

In total, 12 students registered at Honours level in this CESM during the 2009 academic year. As Table 65 above portrays, African students dominated the enrolments with 92%, followed by Whites with 8%. Asian and Coloured students were not represented.

Figure 109: Racial breakdown of Master's Degree enrolments in Agricultural Science (Art Stream)



As shown in Figure 109 above, Whites accounted for 64% of Master's Degree enrolments in this CESM and African accounted for 36%. Coloured and Asian students were not represented in this CESM at Master's Degree level during the 2009 academic year.

Figure 110: Gender breakdown of Master's Degree enrolments in Agricultural Science (Art Stream)

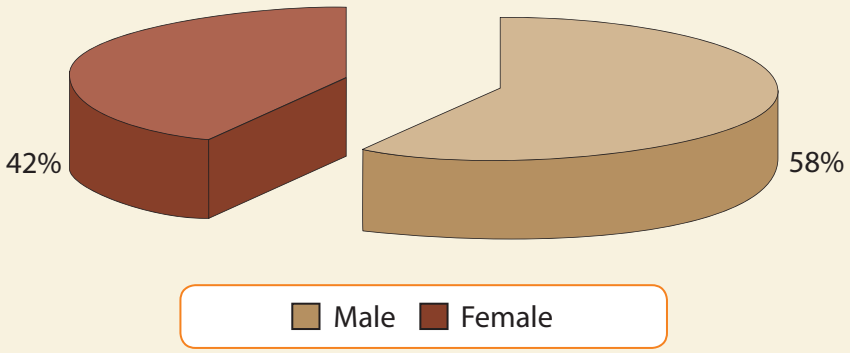
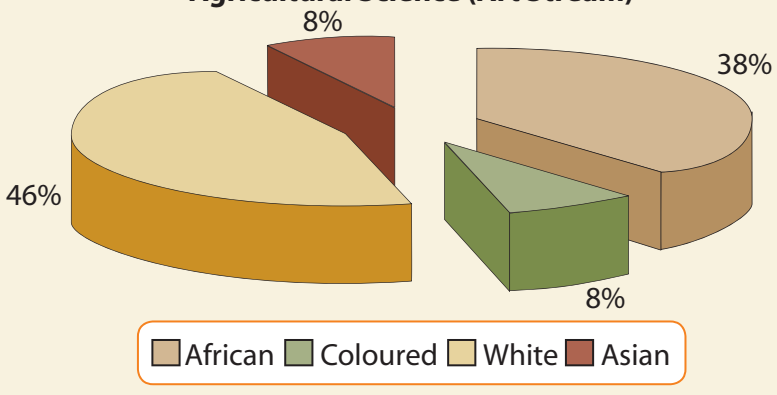


Figure 110 above indicates that males were dominant in this CESM at Master's Degree with 58% while females accounted for 42%.

Figure 111: Racial breakdown of PhD Degree enrolments in Agricultural Science (Art Stream)



As shown in Figure 111 above, Whites accounted for 46% of PhD Degree enrolments in this CESM and Africans accounted for 38%. Coloured and Asian students represented 8% each.

Figure 112: Gender breakdown of PhD Degree enrolments in Agricultural Science (Art Stream)

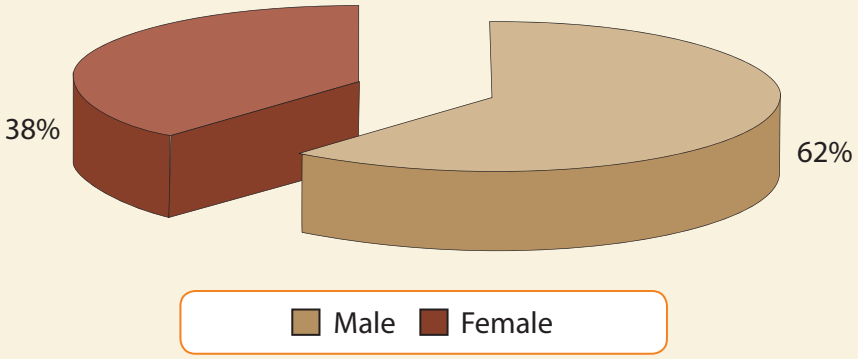


Figure 112 above indicates that males were dominant in this CESM at PhD Degree level with 62% while females accounted for 38%.

4.3.3.6 Agricultural Science (Science Stream) enrolments at universities in 2009

Seven hundred and sixty two (762) students enrolled for Agricultural Science (Science Stream) during the 2009 academic year.

Table 66 below presents a demographic breakdown of Agricultural Science (Science Stream) enrolments by level of qualification during the 2009 academic year.

Table 66: Demographic breakdown of Agricultural Science (Science Stream) enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	85	129	**214**	5	10	**15**	123	244	**367**	10	26	**36**	**632**
Honours	15	9	**24**	0	2	**2**	3	1	**4**	0	0	**0**	**30**
Master's	25	21	**46**	2	1	**3**	16	21	**37**	1	3	**4**	**90**
PhD	3	0	**3**	0	0	**0**	4	3	**7**	0	0	**0**	**10**
Total	**128**	**159**	**287**	**7**	**13**	**20**	**146**	**269**	**415**	**11**	**29**	**40**	**762**

Undergraduate Degree accounted for 83% of the total enrolments in this CESM, while Master's and Honours Degree accounted for 12% and 4% respectively. PhD constituted 1% of the total enrolments in this CESM at universities during the 2009 academic year.

Six hundred and thirty two (632) students enrolled for Agricultural Science (Science Stream) at Undergraduate Degree during the 2009 academic year.

Figure 113: Racial breakdown of Undergraduate Degree enrolments in Agricultural Science (Science Stream)

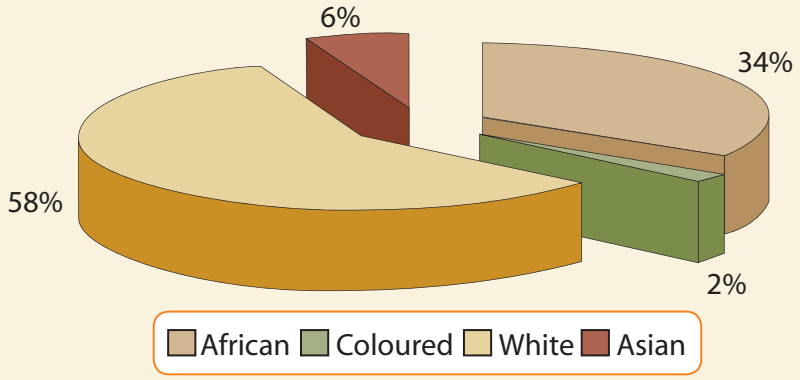


Figure 113 above portrays that White students formed a majority with 58% of Undergraduate Degree students in this CESM followed African students with 34%. Coloured and Asian students respectively accounted for 6% and 2% of the total number of Undergraduate Degree enrolments in this CESM during the 2009 academic year.

Figure 114: Gender breakdown of Undergraduate Degree enrolments in Agricultural Science (Science Stream)

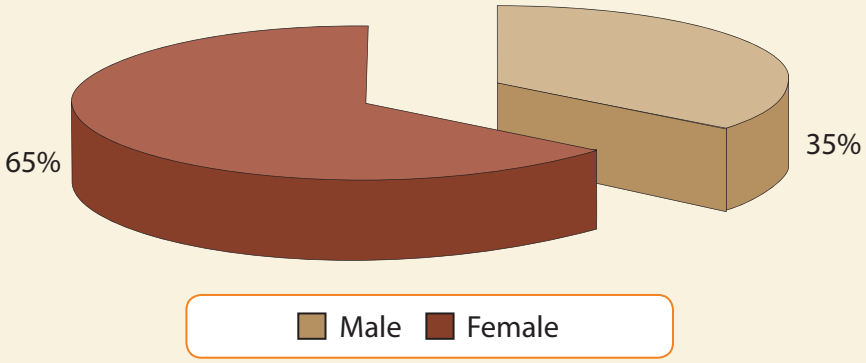


Figure 114 above depicts that females accounted for 65% of Undergraduate Degree students in this CESM, while males constituted 35%.

Thirty (30) students enrolled for Honours Degree in this CESM during the 2009 academic year.

Figure 115: Racial breakdown of Honours Degree enrolments in Agricultural Science (Science Stream)

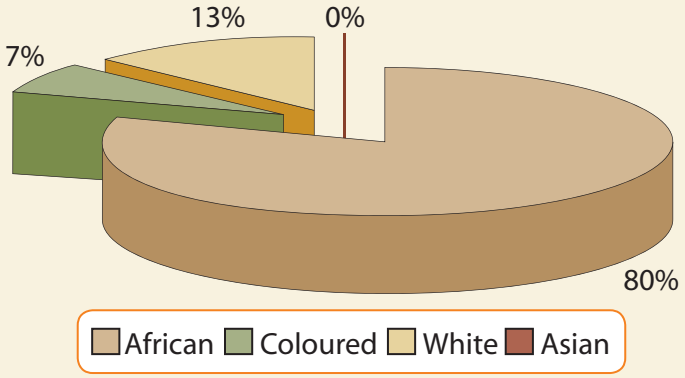
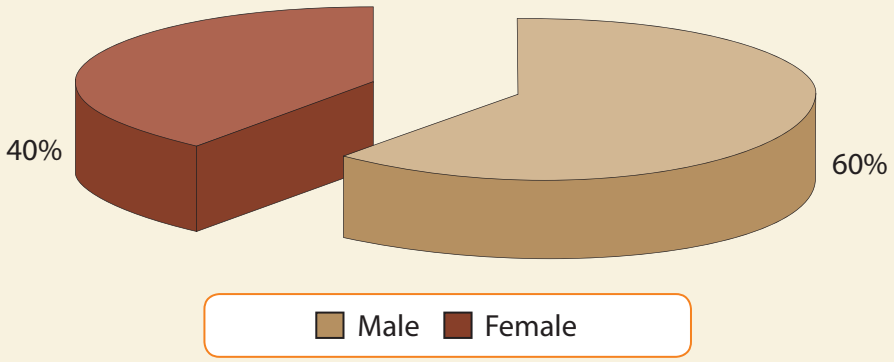


Figure 115 above shows that Africans constituted a majority of Honours Degree enrolments in this CESM with 80%, followed by Whites and Coloureds with 13% and 7% respectively. Asians were not represented in this CESM at Honours level during the 2009 academic year.

Figure 116: Gender breakdown of Honours Degree enrolments in Agricultural Science (Science Stream)



As shown in Figure 116 above, males comprised 60% of Honours Degree enrolments in Agricultural Science (Science Stream), while females represented 40%.

Figure 117: Racial breakdown of Master's Degree enrolments in Agricultural Science (Science Stream)

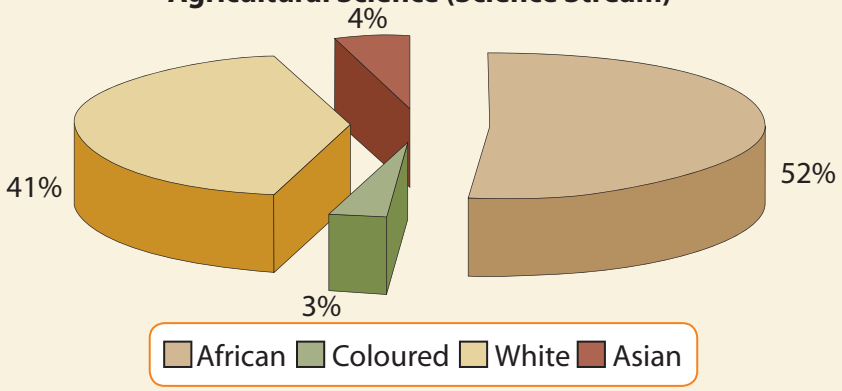


Figure 117 above depicts that Africans and Whites constituted a majority of Master's Degree enrolments in this CESM with 52% and 41% respectively. Asians and Coloureds accounted for 4% and 3% of the Master's enrolments in this CESM.

Figure 118: Gender breakdown of Master's Degree enrolments in Agricultural Science (Science Stream)

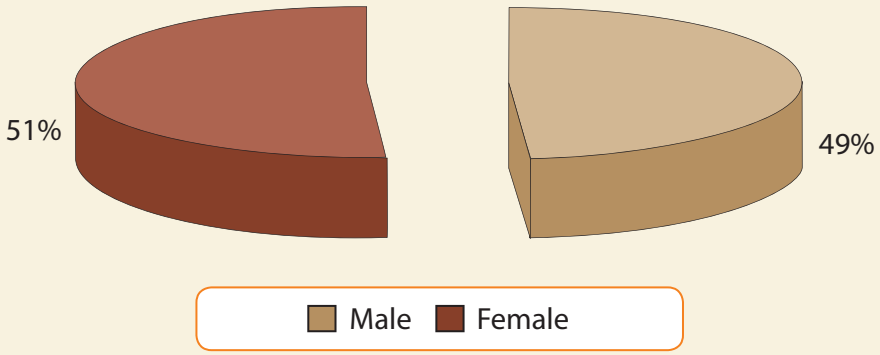
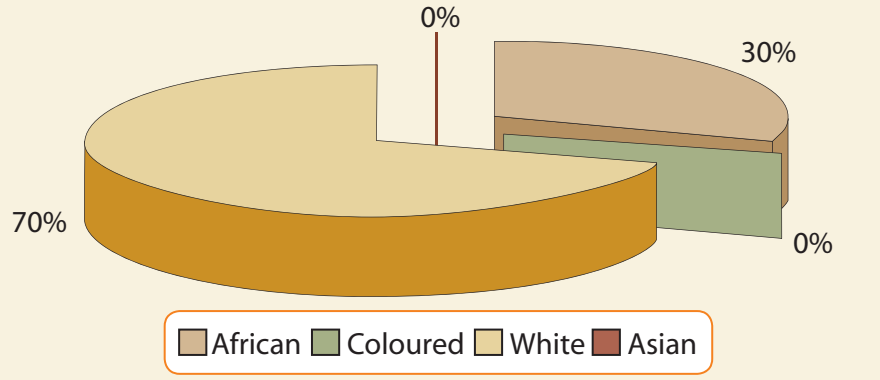


Figure 118 above depicts that males accounted for 51% of Master's Degree in this CESM, while females constituted 49%.

Ten (10) students registered for PhD Degree in Agricultural Science (Science Stream) at universities during the 2009 academic year.

Figure119: Racial breakdown of PhD Degree enrolments in Agricultural Science (Science Stream)



As depicted in Figure 119 above, Whites constituted a majority of Agricultural Science (Science Stream) PhD Degree enrolments with 70%, followed by Africans with 30%. Coloureds and Asians were not represented in this CESM at PhD level.

4.3.3.7 Agricultural Extension enrolments at universities in 2009

Eighty four (84) students registered for Agricultural Extension CESM at universities during the 2009 academic year. Programmes in Agricultural Extension are offered by Universities of Pretoria, Fort Hare and Limpopo. This CESM includes programmes in Extension and Rural Development, Agrarian Extension and Agricultural Extension/Production.

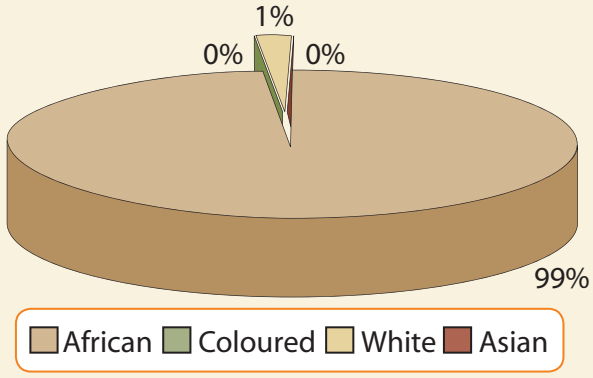
Table 67 below presents a demographic breakdown of Agricultural Extension enrolments during the 2009 academic year by academic level of qualification.

Table 67: Demographic breakdown of Agricultural Extension enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	37	34	**71**	0	0	**0**	1	0	**1**	0	0	**0**	**72**
Post-graduate Diploma	1	1	**2**	1	0	**1**	0	0	**0**	0	0	**0**	**3**
Master's	4	3	**7**	0	0	**0**	0	0	**0**	0	0	**0**	**7**
PhD	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	**2**
Total	**43**	**38**	**81**	**2**	**0**	**2**	**1**	**0**	**1**	**0**	**0**	**0**	**84**

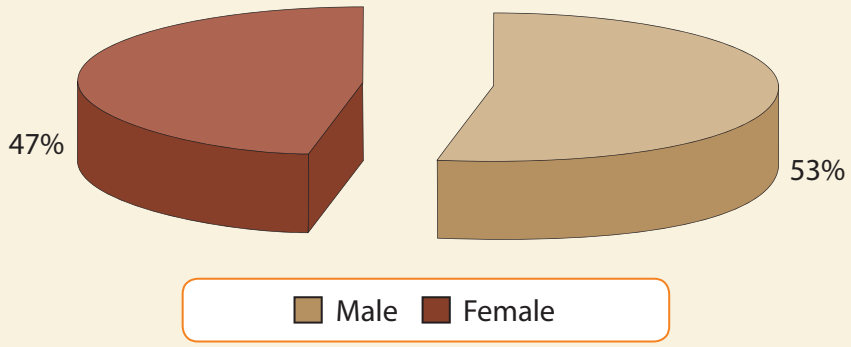
Student enrolments at Undergraduate Degree level in Agricultural Extension accounted for 85% during the 2009 academic year, followed by Master's Degree enrolments with 9%. Honours and PhD Degree enrolments constituted 3% each.

Figure 120: Racial breakdown of Undergraduate Degree enrolments in Agricultural Extension



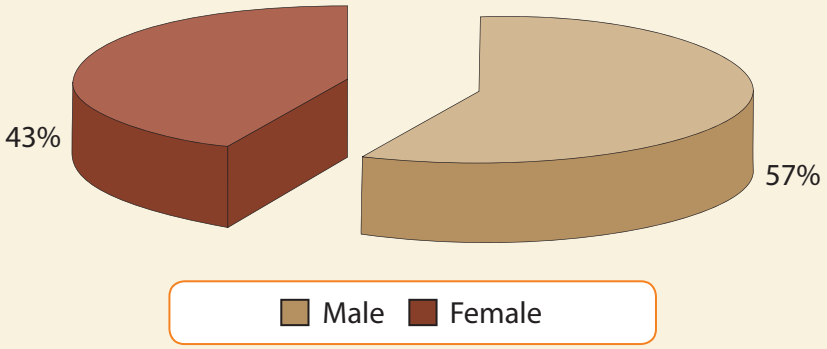
In Figure 120, a racial breakdown for Undergraduate Degree in Agricultural Extension shows that 99% of the overall enrolments were African students and 1% was White students. No Coloured or Asian students were enrolled in this CESM at Undergraduate Degree level.

Figure 121: Gender breakdown of Undergraduate Degree enrolments in Agricultural Extension



As shown in Figure 121 above, males comprised 53% of Master's Degree enrolments in Agricultural Extension, while females represented 47%.

Figure 122: Gender breakdown of Master's Degree enrolmentsin Agricultural Extension



As shown in Figure 122 above, males comprised 57% of Master's Degree enrolments in Agricultural Extension, while females represented 43%.

4.3.3.8 Agricultural Food Technology enrolments at universities in 2009

This CESM includes programmes in BSc, BSc (Hons), MSc and PhD in Food Science and Technology, Food Science and Chemistry, Food Science and Biochemistry, Food Science and Microbiology, Food Security, Food Science Technology and Nutrition and BSc Wine Science.

One hundred and eighty (180) students registered for Agricultural Food Technology during the 2009 academic year.

Table 68: Demographic breakdown of Agricultural Food Technology enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	13	35	**48**	1	1	**2**	3	41	**44**	0	13	**13**	**107**
Post-graduate Diploma	1	11	**12**	0	0	**0**	0	17	**17**	1	5	**6**	**35**
Honours	2	3	**5**	0	0	**0**	0	5	**5**	0	1	**1**	**11**
Master's	1	1	**2**	2	0	**2**	3	18	**21**	0	0	**0**	**25**
PhD	1	0	**1**	1	0	**1**	0	0	**0**	0	0	**0**	**2**
Total	**18**	**50**	**68**	**4**	**1**	**5**	**6**	**81**	**87**	**1**	**19**	**20**	**180**

Undergraduate Degree accounted for 60% of the total enrolments in this CSM, followed by Post-graduate Diploma with 19%, Master's Degree with 14%, Honours Degree with 6% and PhD Degree with 1%.

Figure 123: Racial breakdown of Undergraduate Degree enrolments in Food Science

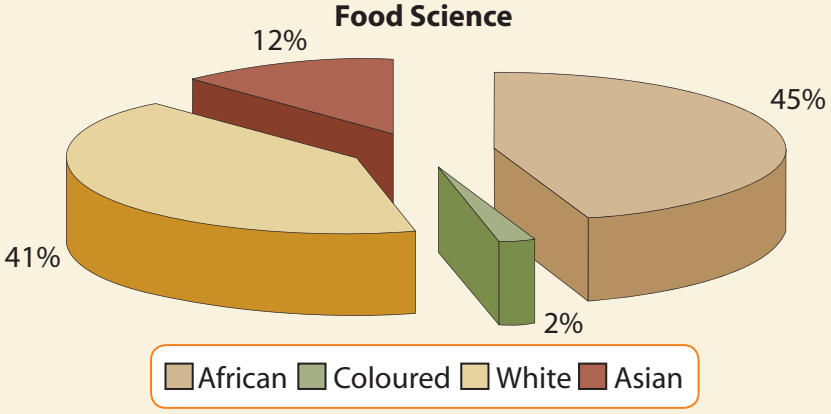
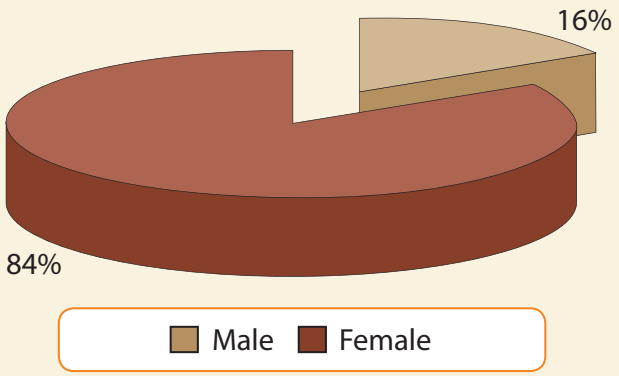


Figure 123 above portrays that African students formed a majority of Undergraduate Degree enrolments in this CESM with 45%, followed by Whites with 41%. Asian students accounted for 12% and Coloureds constituted for 2% of Undergraduate enrolments in this CESM.

Figure 124: Gender breakdown of Undergraduate Degree enrolments in Food Science



Gender classification in Figure 124 above shows that females dominated the Agricultural Food Science Undergraduate Degree enrolments with 84%, while males constituted 16%.

Figure 125: Racial breakdown of Post-graduate Diploma enrolments in Food Science

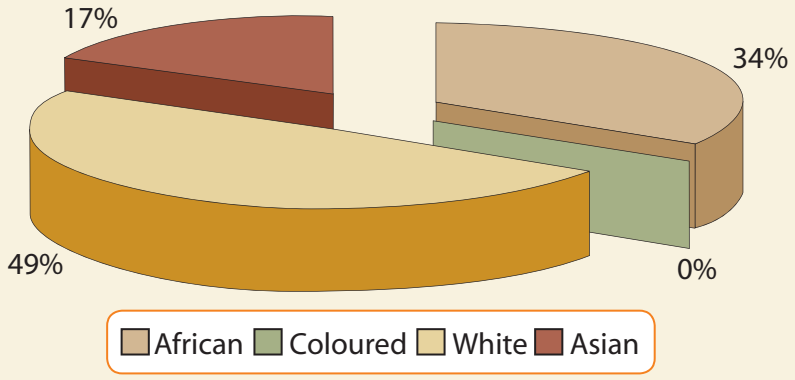
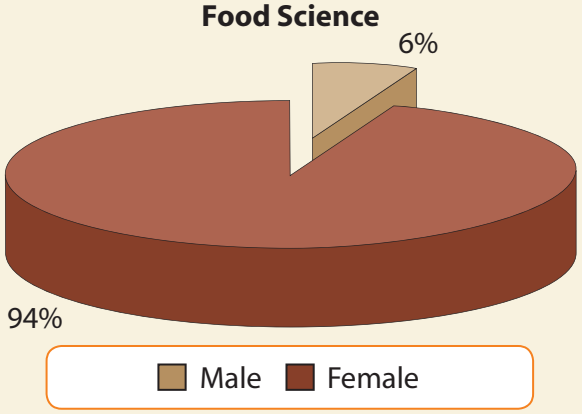


Figure 125 above shows that Whites constituted a majority of Post-graduate Diploma enrolments in this CESM with 49%, followed by Africans and Asians with 34% and 17% respectively. Coloureds were not represented at all in this CESM at Post-graduate Diploma level during the 2009 academic year.

Figure 126: Gender breakdown of Post-graduate Diploma enrolments in Food Science



Gender classification in Figure 126 above, shows that females dominated Agricultural Food Science Post-graduate Diploma enrolments with 94%, while males constituted 6%.

Figure 127: Racial breakdown of Honours Degree enrolments in Food Science

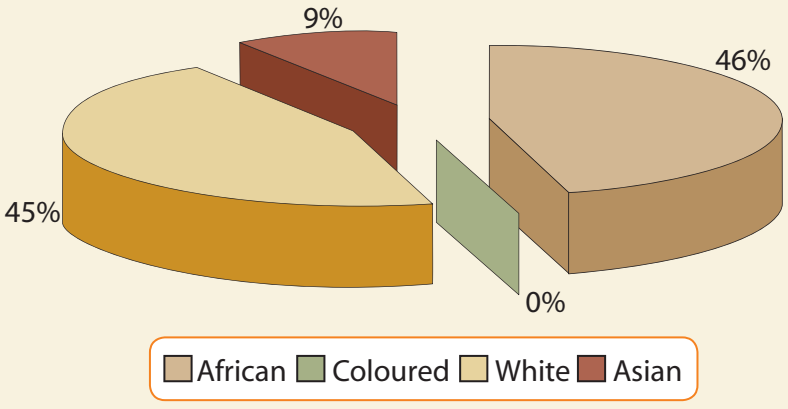
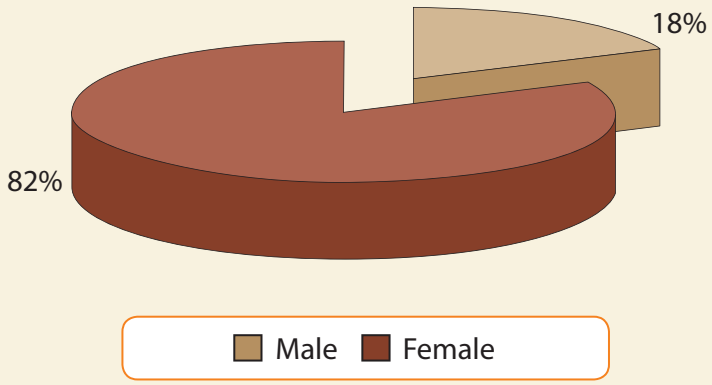


Figure 127 above portrays that African and White students represented 46% and 45% respectively of Honours Degree enrolments in this CESM, followed by Asian with 9%. No Coloured students were enrolled in this CESM at Honours Degree level.

Figure 128: Gender breakdown of Honours Degree enrolments in Food Science



Gender classification in Figure 128 above shows that females dominated the Agricultural Food Science Honours Degree enrolments with 82%, while males constituted 18%.

Figure 129: Racial breakdown of Master's Degree enrolments in Food Science

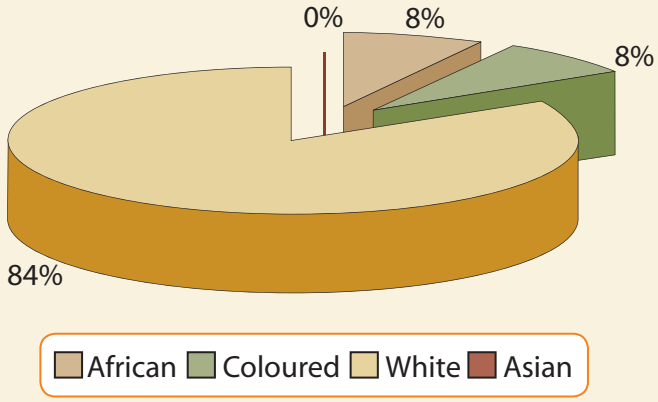
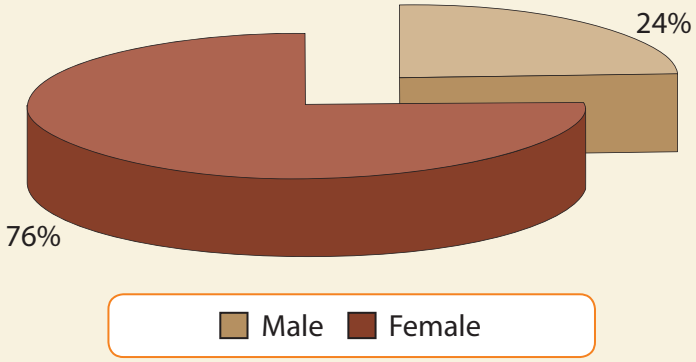


Figure 129 above portrays that White students were a majority of Master's Degree enrolments in this CESM with 84%, followed by African and Coloured students with 8% each. Asians accounted for less than 1% of Master's enrolments in this CESM.

Figure 130: Gender breakdown breakdown of Master's Degree enrolments in Food Science



Gender classification in Figure 130 above shows that females dominated the Agricultural Food Science Master's enrolments with 76%, while males constituted 24%.

4.3.3.9. Animal Science enrolments at universities in 2009

Programmes in Animal Science are offered by Universities of Fort Hare, Limpopo, South Africa, Zululand, Free State, Stellenbosch and Pretoria.

Table 69 below presents a demographic breakdown of Animal Science enrolments by level of qualification during the 2009 academic year.

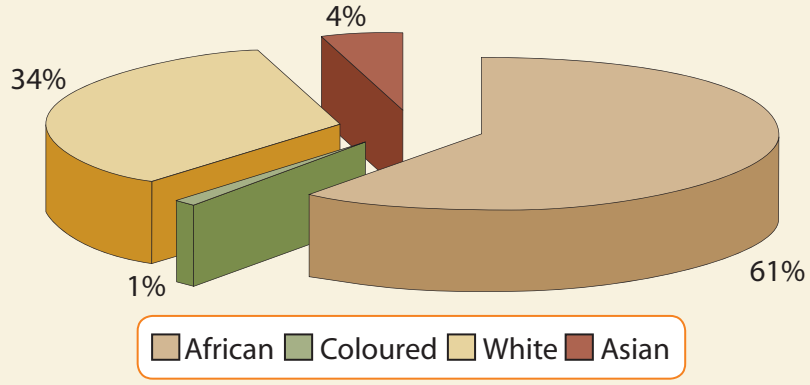
Table 69: Demographic breakdown of Animal Science enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	121	114	**235**	1	4	**5**	84	51	**135**	7	10	**17**	**392**
Honours	9	3	**12**	0	1	**1**	17	21	**38**	1	1	**2**	**53**
Master's	9	14	**23**	0	0	**0**	10	15	**25**	0	2	**2**	**50**
PhD	2	0	**2**	0	0	**0**	1	1	**2**	1	1	**2**	**6**
Total	**141**	**131**	**272**	**1**	**5**	**6**	**112**	**88**	**200**	**9**	**14**	**23**	**501**

Undergraduate Degree enrolments constituted 78% of the overall enrolments in Animal Science during the 2009 academic year. Honours and Master's enrolments accounted for 11% and 10% respectively, while PhDs constituted only 1%.

Three hundred and ninety two (392) students enrolled for Undergraduate Degree in Animal Science during the 2009 academic year.

Figure 131: Racial breakdown of Undergraduate Degree enrolments in Animal Science



As shown in Figure 131 above, Africans dominated the Undergraduate Degree enrolments in this CESM with 61%, followed by Whites with 34%. Asians and Coloureds constituted 4% and 1% respectively of Undergraduate Degree enrolments in Animal Science.

Figure 132: Gender breakdown of Undergraduate Degree enrolments in Animal Science

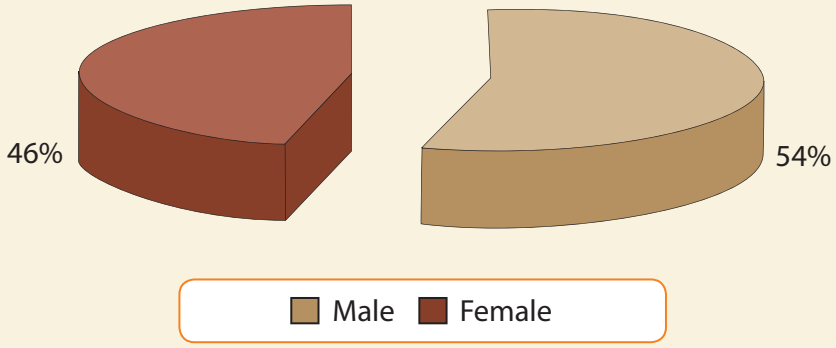
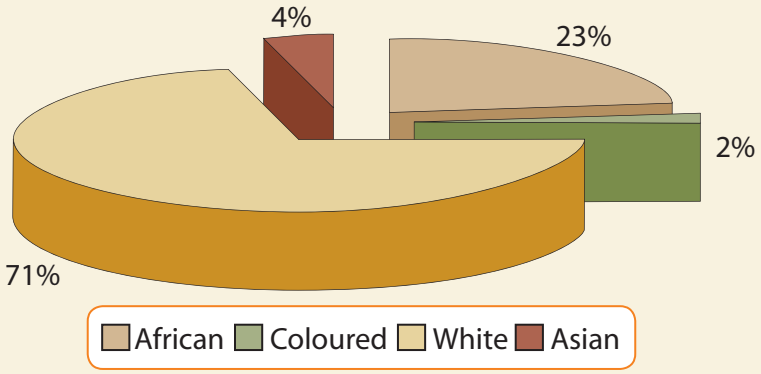


Figure 132 above depicts that males dominated the Undergraduate Degree enrolments in this CESM with 54%, while females accounted for 46%.

Only 53 students enrolled in this CESM at Honours Degree level during the 2009 academic year. Twenty one (21) of the students were White females, 17 were White males, 9 were African males, 3 were African females, 1 was a Coloured female, 1 was an Asian male and 1 was an Asian female.

Figure 133: Racial breakdown of Honours Degree enrolments in Animal Science



As shown in Figure 133 above, Whites dominated the Honours Degree enrolments in this CESM with 71%, followed by Africans with 23%. Coloureds and Asians constituted 4% and 2% respectively of the enrolments in Honours Degree in Animal Science.

Figure 134: Gender breakdown of Honours Degree enrolments in Animal Science

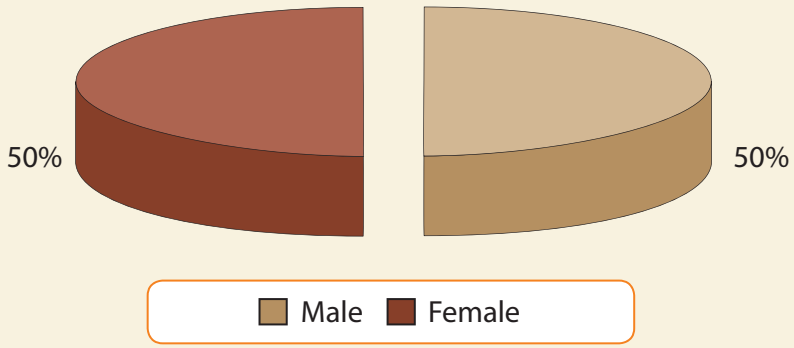
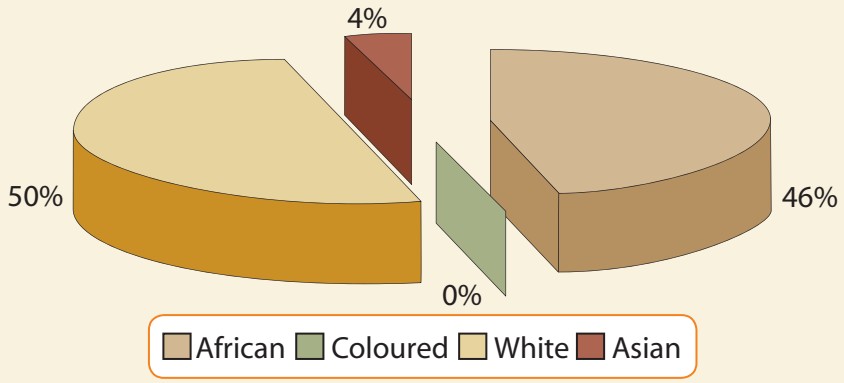


Figure 134 above depicts that male and female students had an equal share of enrolments in this CESM with 50% each.

Figure 135: Racial breakdown of Master's Degree enrolments in Animal Science



The racial classification in Figure 135 above portrays that Whites were dominant in this CESM at Master's level with 50%, followed by Africans and Asians with 46% and 4% respectively. No Coloureds were enrolled in this CESM at Master's level during the 2009 academic year.

Figure 136: Gender breakdown of Master's Degree enrolments in Animal Science

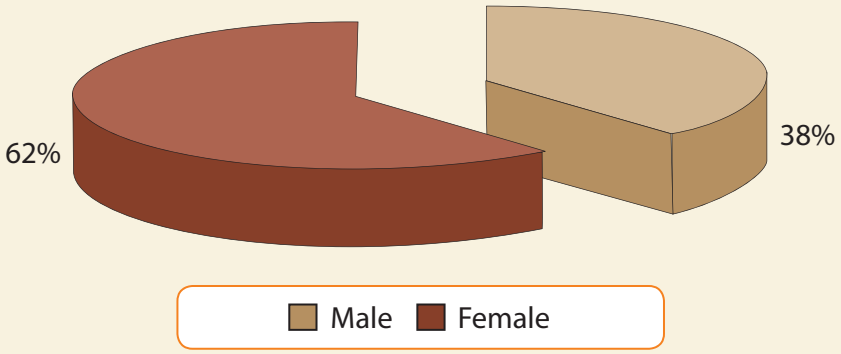
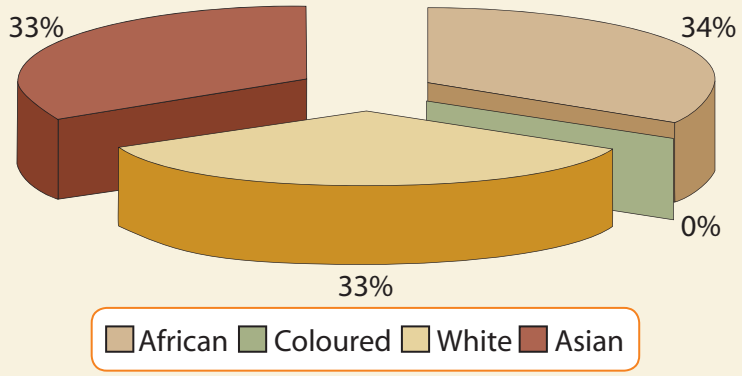


Figure 136 above depicts that females accounted for 62% of Master's Degree in Animal Science during the 2009 academic year, while males constituted 38%.

Six (6) students enrolled for PhD in this CESM during the 2009 academic year.

Figure 137: Racial breakdown of PhD enrolments in Animal Science



As portrayed in Figure 137 above, Africans constituted 34% of the PhD Degree enrolments in this CESM, while Whites and Asians accounted for 33% each. No Coloured students were enrolled for PhD during the 2009 academic year.

Figure 138: Gender breakdown of PhD enrolments in Animal Science

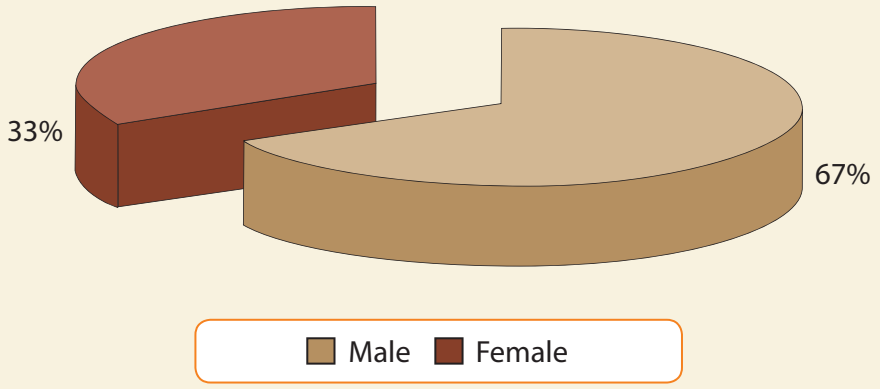


Figure 138 above depicts that males accounted for 67% of the PhD Degree in Animal Science during the 2009 academic year, while females constituted 33%.

4.3.3.10 Horticulture enrolments at universities in 2009

One hundred and twenty five (125) students registered in this CESM during the 2009 academic year. Programmes in this CESM are offered by Universities of Fort Hare, Stellenbosch, Limpopo, Pretoria and South Africa.

Table 70 below presents a demographic breakdown by level of qualification of Horticulture enrolments during the 2009 academic year.

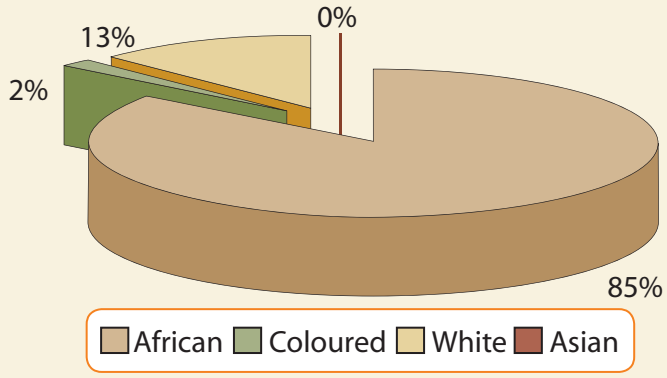
Table 70: Demographic breakdown of Horticulture enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	38	50	**88**	2	0	**2**	7	6	**13**	0	0	**0**	**103**
Honours	6	11	**17**	0	0	**0**	0	1	**1**	0	0	**0**	**18**
Master's	2	2	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Total	**46**	**63**	**109**	**2**	**0**	**2**	**7**	**7**	**14**	**0**	**0**	**0**	**125**

Undergraduate Degree enrolments accounted for 83% of the total enrolments at universities in this CESM during the 2009 academic year, followed by Honours and Master's with 14% and 3% respectively.

One hundred and three (103) students enrolled for Undergraduate Degree in this CESM during the 2009 academic year.

Figure 139: Racial breakdown of Undergraduate Degree enrolments in Horticulture



As portrayed in Figure 139 above, Africans constituted 85% and Whites contributed 13% of Undergraduate Degree enrolments in this CESM. Coloured students only had 2% representation, while Asians were not represented.

Figure 140: Gender breakdown of Undergraduate Degree enrolments in Horticulture

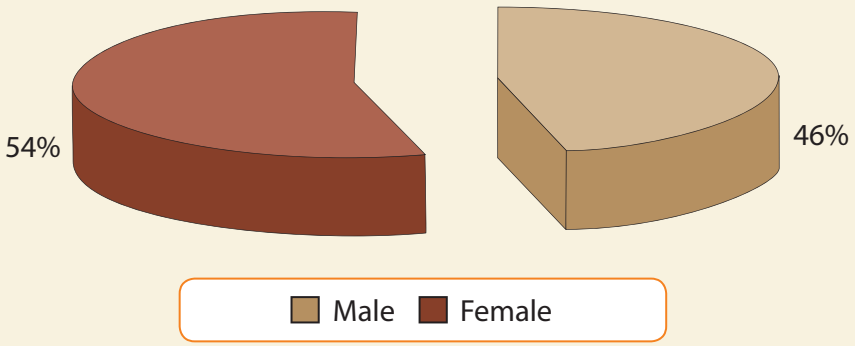
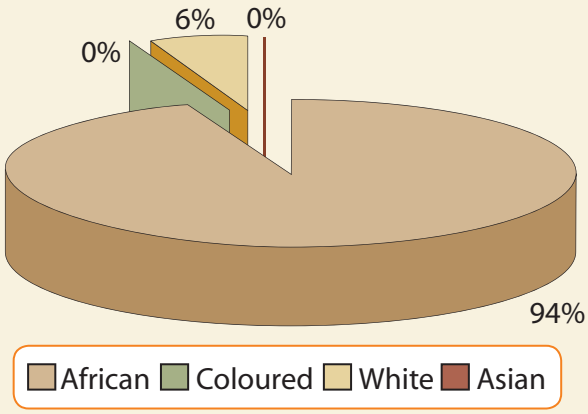


Figure 140 above shows that females accounted for 54% of the overall Undergraduate Degree enrolments in Horticulture, while males accounted for 46%.

Figure 141: Racial breakdown of Honours Degree enrolments in Horticulture



As portrayed in Figure 141 above, Africans extremely dominated CESM enrolment at Honours Degree level with 94% and Whites constituted 6%. Coloureds and Asians were not represented in this CESM.

Figure 142: Gender breakdown of Honours Degree enrolments in Horticulture

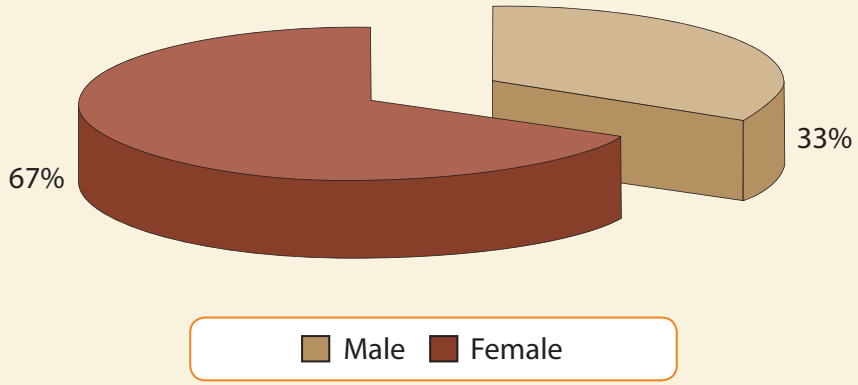


Figure 142 above shows dominance by females of Honours Degree enrolments in Horticulture with 67%, while males accounted for 33%.

Figure 143: Gender breakdown of Master's Degree enrolments in Horticulture

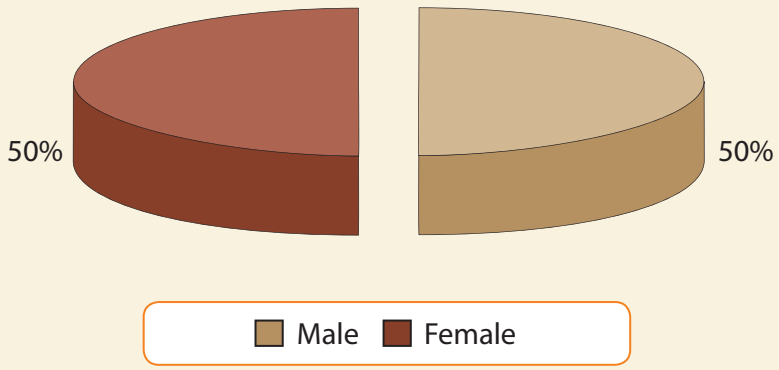


Figure 143 above depicts that male and female students had an equal share of enrolments in this CESM with 50% each.

4.3.3.11 Plant Science enrolments at universities in 2009

Students enrolled for Plant Science during the 2009 academic year were 136. This CESM includes programmes in the following: Crop Production, Crop Production Management, Plant Pathology and Entomology, Plant Breeding and Genetics, Plant Production, Plant Protection and Life and soil science, Pasture Science and Crop Protection, Crop Science, Plant Production, Plant Production: Agronomy, Plant production: Pasture Science, Plant Production: Pasture Science, Plant Production: Horticulture.

Programmes in this CESM are offered by Universities of Fort Hare, Free State, North West, Limpopo, Stellenbosch and Pretoria.

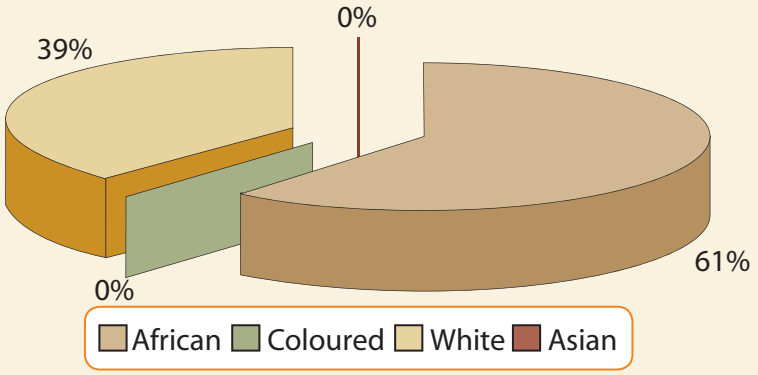
Table 71 below presents a demographic breakdown of Plant Science enrolments by CESM level of qualification.

Table 71: Demographic breakdown of Plant Science enrolments at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	21	26	**47**	0	0	**0**	25	5	**30**	0	0	**0**	**77**
Honours	7	11	**18**	0	1	**1**	8	9	**17**	0	3	**3**	**39**
Master's	10	9	**19**	0	0	**0**	2	4	**6**	0	1	**1**	**26**
PhD	2	0	**2**	1	0	**1**	2	0	**2**	0	0	**0**	**5**
Total	**40**	**46**	**86**	**1**	**1**	**2**	**37**	**18**	**55**	**0**	**4**	**4**	**147**

Enrolments at Undergraduate Degree level accounted for 52% of the total Plant Science enrolments, followed by Honours with 27%. Master's and PhD Degree enrolments constituted 18% and 4% respectively of the total enrolments in this CESM.

Seventy seven (77) students registered in the Undergraduate Degree in Plant Science.

Figure 144: Racial breakdown of Undergraduate Degree enrolments in Plant Science



As portrayed in Figure 144 above, Africans constituted 61% and Whites 39% of Undergraduate Degree enrolments in this CESM. Coloured and Asian students were not represented in this CESM.

Figure 145: Gender breakdown of Undergraduate Degree enrolments in Plant Science

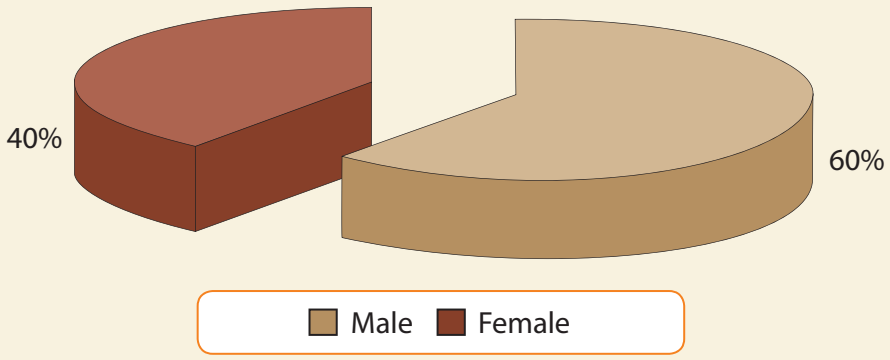
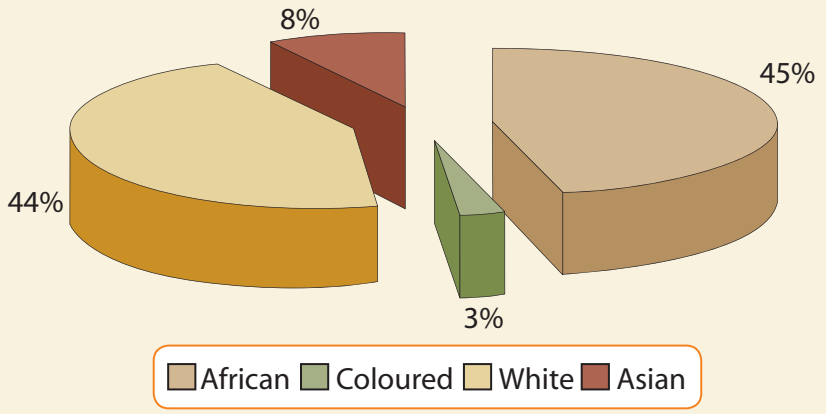


Figure 145 above shows that males have dominated the Undergraduate Degree enrolments in Plant Science with 60%, while females accounted for 40%.

Thirty nine (39) students enrolled at Honours level in Plant Science during the 2009 academic year.

Figure 146: Racial breakdown of Honours Degree enrolments in Plant Science



As depicted in Figure 146 above, African students accounted for 45% of the total Honours enrolments in this CESM, followed by Whites with 44%. Asians and Coloureds respectively constituted 8% and 3% of the total Honours Degree enrolments in this CESM.

Figure 147: Gender breakdown of Honours Degree enrolments in Plant Science

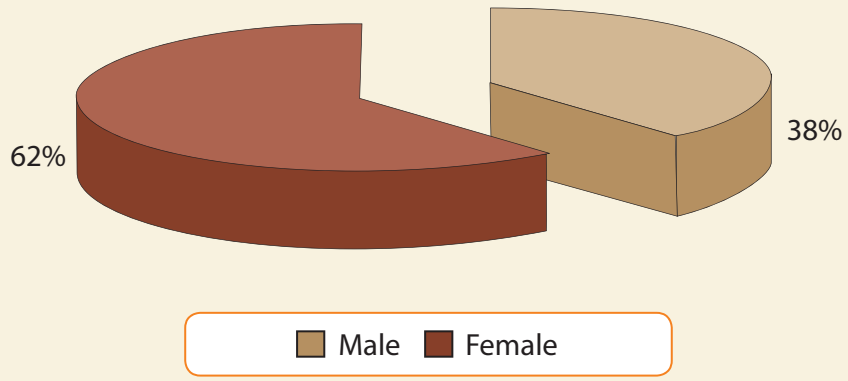


Figure 147 above shows that females dominated the Honours Degree enrolments in Plant Science with 62%, while males accounted for 38%.

Twenty six (26) students enrolled for Master's Degree in this CESM during the 2009 academic year.

Figure 148: Racial breakdown of Master's Degree enrolments in Plant Science

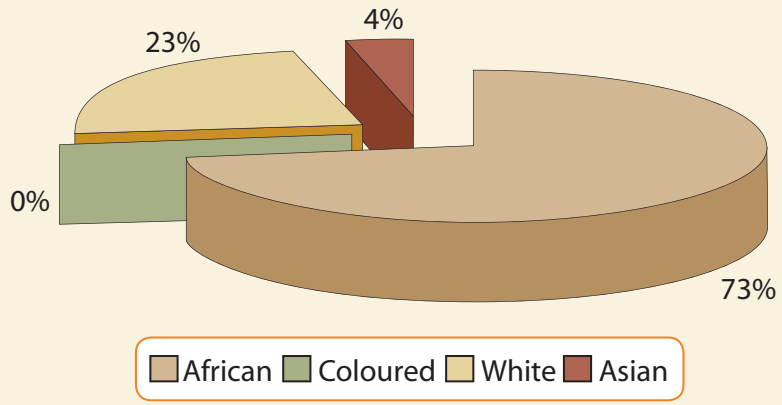


Figure 148 above shows that Africans dominated the Master's Degree enrolments in this CESM with 73%, followed by Whites with 23% and Asians with 4%. No Coloureds were enrolled for Master's courses in this CESM.

Figure 149: Gender breakdown of Master's Degree enrolments in Plant Science

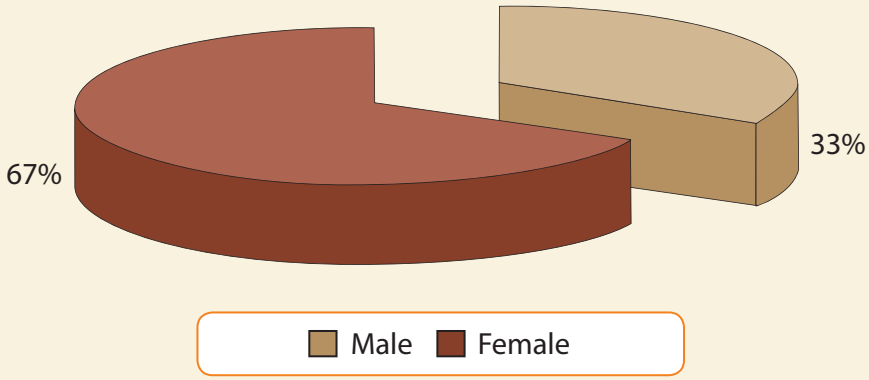


Figure 149 depicts that females were dominant in the Master's Degree in this CESM with 67%, while males accounted for 33%.

Five (5) students enrolled for PhD in Plant Science during the 2009 academic year.

Figure 150: Racial breakdown of PhD Degree enrolments in Plant Science

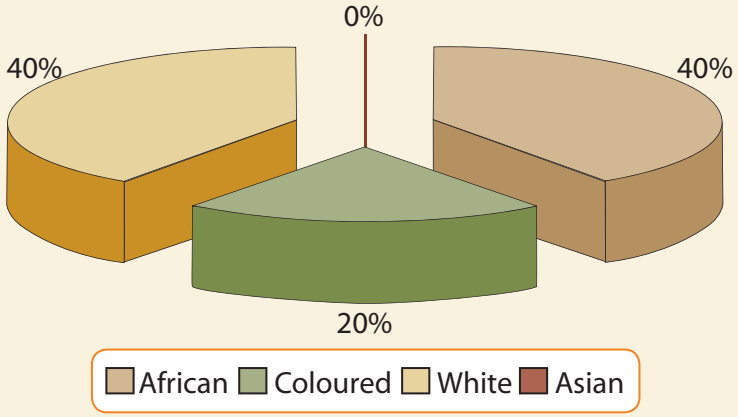


Figure 150 above shows that Whites and Africans each constituted 40% of PhD Degree enrolments in this CESM, followed by Coloureds with 20%. Asians were not represented in PhD Degree enrolments in this CESM during the 2009 academic year.

4.3.3.12 Soil Science enrolments at universities in 2009

The 2009 enrolments in Soil Science totalled to 82 students at universities. Soil Science includes programmes in Remote Sensing, Soil Science/Plant Pathology, Soil Science/Grassland Science, Soil Science and Plant Nutrition, Soil Science and Agronomy, Irrigation Management, Irrigation Science/Agronomy, Irrigation Science/Soil Science.

Programmes in Soil Science are offered by Universities of Fort Hare, Free State, Stellenbosch, Limpopo and Pretoria.

Table 72 below presents a demographic breakdown of Soil Science enrolments by level of qualification during the 2009 academic year.

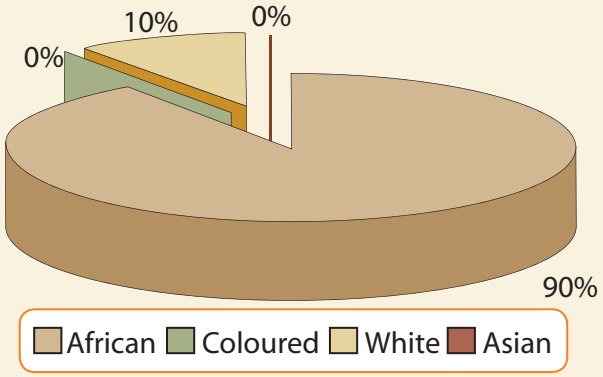
Table 72: Demographic breakdown of Soil Science enrolments at Universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	32	24	**56**	0	0	**0**	6	0	**6**	0	0	**0**	**62**
Honours	2	1	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Master's	13	3	**16**	0	0	**0**	0	0	**0**	0	0	**0**	**16**
Total	**47**	**28**	**75**	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**0**	**0**	**82**

Table 72 above indicates that Undergraduate Degree enrolments dominated the Soil Science enrolments with 75%, followed by Master's and Honours with 20% and 5% respectively.

Sixty two (62) students enrolled for Undergraduate Degree in this CESM during the 2009 academic year.

Figure 151: Racial breakdown of Undergraduate Degree enrolments in Soil Science



Racial classification in Figure 151 above shows that African students dominated enrolments in this CESM at Undergraduate Degree level with 90%, followed by White with 10%. No Coloured or Asian students were enrolled at Undergraduate Degree level in this CESM .

Figure 152: Gender breakdown of Undergraduate Degree enrolments in Soil Science

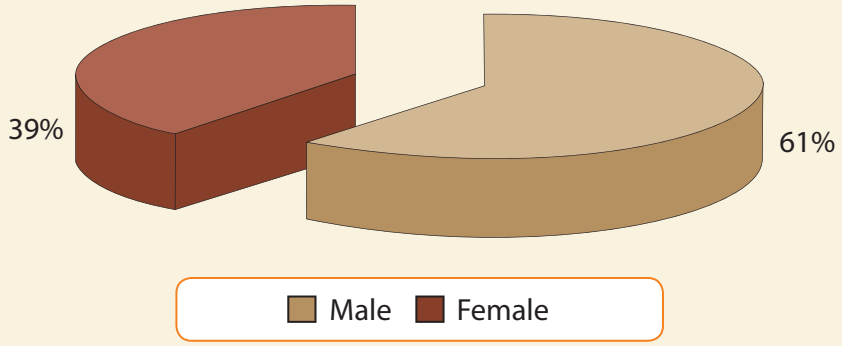


Figure 152 above depicts that males were dominant in Undergraduate Degree enrolments in this CESM with 61%, while females accounted for 39%.

Figure 153: Racial breakdown of Honours Degree enrolments in Soil Science

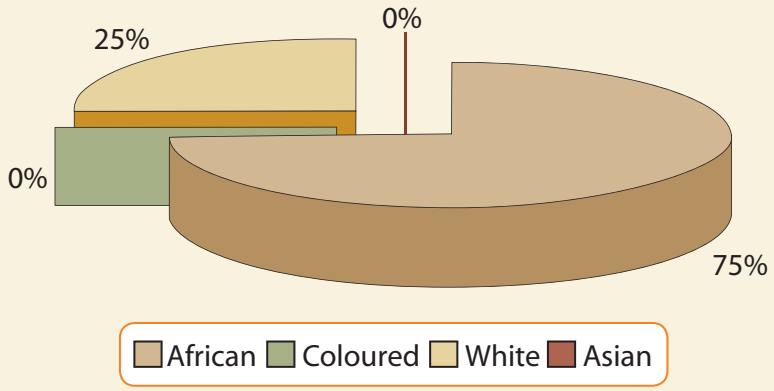


Figure 153 above shows that Africans and Whites respectively constituted 75% and 25% of Honours Degree enrolments in this CESM. Coloureds and Asians were not represented at Honours Degree level in this CESM during the 2009 academic year.

Figure 154: Gender breakdown of Honours Degree enrolments in Soil Science

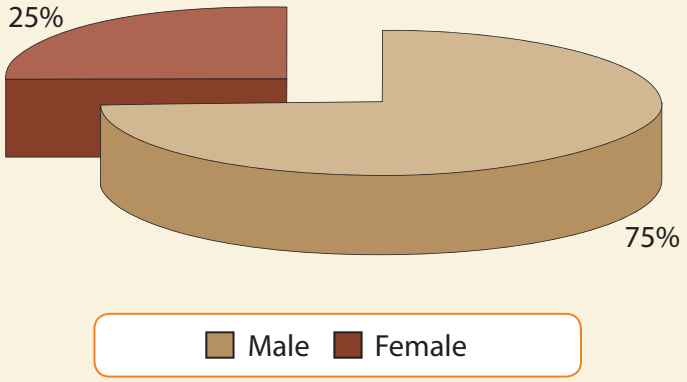


Figure 154 above depicts that males were dominant in Honours Degree in this CESM with 75%, while females accounted for 25%.

Sixteen (16) African students enrolled for Master's Degree in this CESM during the 2009 academic year.

Figure 155: Gender breakdown of Master's Degree enrolments in Soil Science

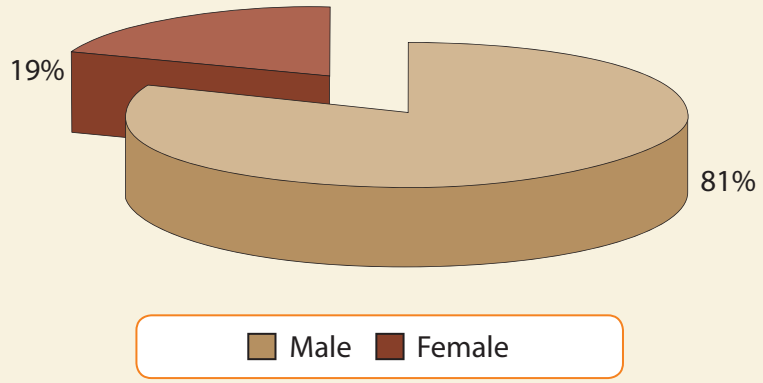


Figure 155 above depicts that males dominated the Master's Degree in this CESM with 81%, while females accounted for 19%.

4.3.3.13 Forestry enrolments at universities in 2009

Two hundred and six (206) students enrolled at universities in this CESM during the 2009 academic year. Programmes in this CESM are offered by University of Stellenbosch.

Table 73 below presents a demographic breakdown of enrolments for Forestry by level of qualification during the 2009 academic year.

Table 73: Demographic breakdown of Forestry enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	99	56	**155**	6	0	**6**	38	1	**39**	0	0	**0**	**200**
Honours	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Master's	0	0	**0**	0	0	**0**	4	0	**4**	0	0	**0**	**4**
PhD	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Total	**99**	**56**	**155**	**6**	**0**	**6**	**44**	**1**	**45**	**0**	**0**	**0**	**206**

Table 73 above indicates that Undergraduate Degree accounted for majority of Forestry enrolments during the 2009 academic year with 98%, followed by Master's with 2%, Honours and PhD each accounted for less than 1%.

Figure 156: Racial breakdown of Undergraduate Degree enrolments in Forestry

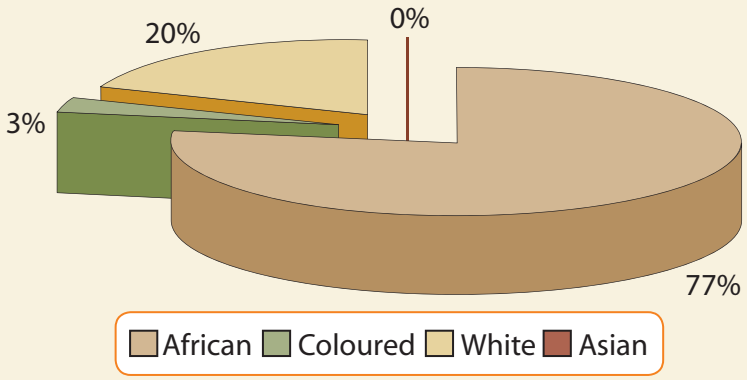
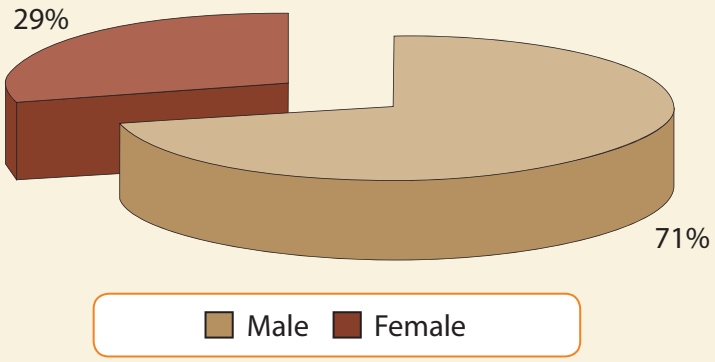


Figure 156 above portrays that Africans dominated the Undergraduate Degree in this CESM with 77%, followed by Whites and Coloureds with 20% and 3% respectively. Asians were not represented in this CESM.

Figure 157: Gender breakdown of Undergraduate Degree enrolments in Forestry



As depicted in Figure 157 above, males dominated the Undergraduate Degree enrolments in Forestry with 71%, while females constituted 29%.

4.3.3.14 Renewable Natural Resources enrolments at universities in 2009

Two hundred and ninety six (296) students were enrolled in this CESM during the 2009 academic year. This CESM includes programmes in Rural Resources Management, Natural Resources and Conservation Ecology, Nature conservation and Land use planning.

Programmes in this CESM are offered by Universities of Stellenbosch, Fort Hare, Free State and Pretoria.

Table 74 below presents a demographic breakdown of Renewable Natural Resources enrolments by level of qualification during the 2009 academic year.

Table 74: Demographic breakdown of Renewable Natural Resources enrolments at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	77	91	**168**	5	5	**10**	28	30	**58**	18	31	**49**	**285**
Master's	2	0	**2**	1	0	**1**	5	2	**7**	1	0	**1**	**11**
Total	**79**	**91**	**170**	**6**	**5**	**11**	**33**	**32**	**65**	**19**	**31**	**50**	**296**

Table 74 above indicates that Undergraduate Degree dominated the enrolments for Renewable Natural Resources during the 2009 academic year with 96%, followed by Master's with 14%.

Figure 158: Racial breakdown of Undergraduate Degree enrolments in Renewable Natural Resources

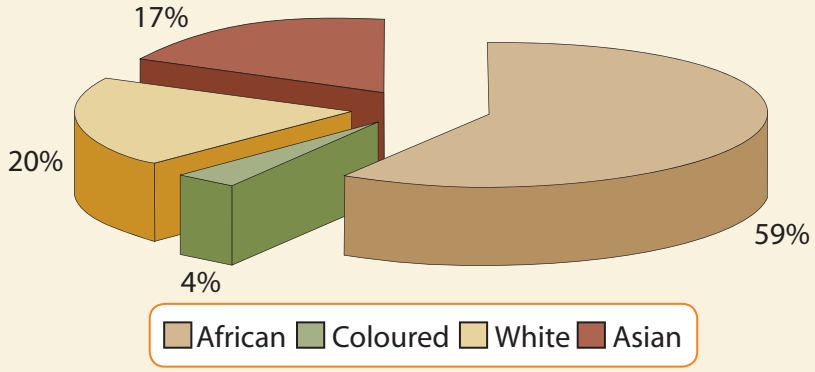


Figure 158 above indicates that Africans accounted for 59% of Undergraduate Degree enrolments in this CESM, followed by Whites, Asians and Coloureds with 20%, 17% and 4% respectively.

Figure159: Gender breakdown of Undergraduate Degree enrolments in Renewable Natural Resources

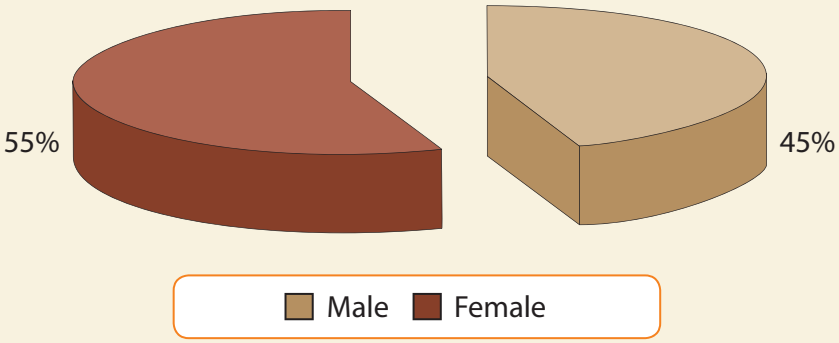


Figure 159 above shows that females were dominant with 55% of Undergraduate Degree enrolments in this CESM and males accounted for 45%.

Figure 160: Racial breakdown of Master's Degree in Renewable Natural Resources enrolments

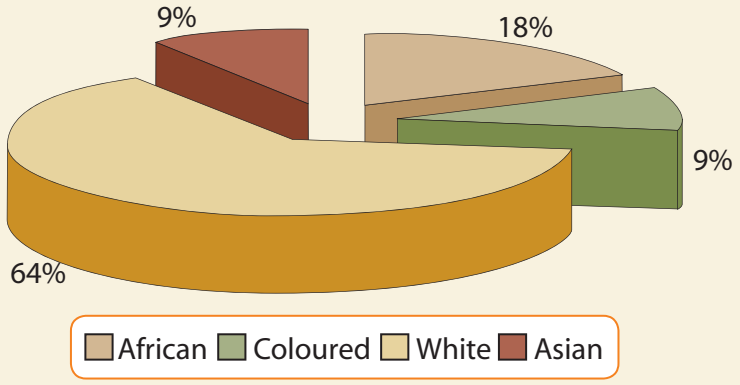


Figure 160 above indicates that Whites accounted for 64% of Master's Degree enrolments in this CESM, followed by Africans with 18%, Asians and Coloureds with 9% each.

Figure 161: Gender breakdown of Master's Degree enrolments in Renewable Natural Resources

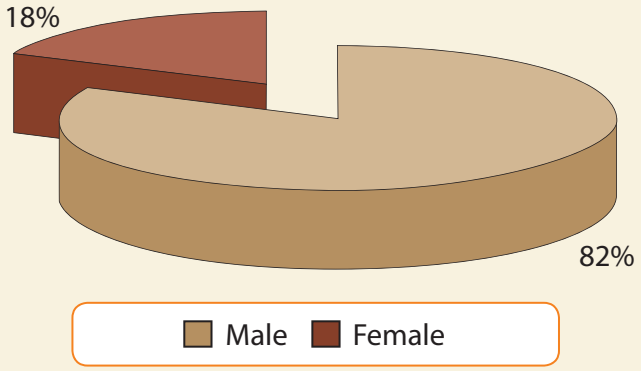


Figure 161 above shows that males were dominant with 82% of Master's Degree enrolments in this CESM and females accounted for 18%.

4.3.3.15 Agricultural Management enrolments at universities in 2009

Five hundred and seventy eight (578) students registered for Agricultural Management during the 2009 academic year. This CESM includes programmes in Agricultural Administration, Mixed Farming Management and Business Specific Farm Management -Viticulture.

Programmes in this CESM are offered by Universities of Free State, North West, Limpopo, Stellenbosch, South Africa and KwaZulu-Natal.

Table 75 below presents a demographic breakdown of Agricultural Management enrolments by level of qualification during the 2009 academic year.

Table 75: Demographic breakdown of Agricultural Management enrolments at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	190	176	**366**	5	1	**6**	73	5	**78**	1	1	**2**	**452**
Honours	2	4	**6**	1	0	**1**	1	1	**2**	0	0	**0**	**9**
Master's	78	43	**121**	0	2	**2**	11	1	**12**	0	0	**0**	**135**
Total	**270**	**223**	**493**	**6**	**3**	**9**	**85**	**7**	**92**	**1**	**1**	**2**	**596**

Undergraduate Degree enrolments constituted 75% of the total enrolments in this CESM, while Master's and Honours accounted for 23% and 2% respectively.

Four hundred and fifty two (452) students enrolled in this CESM at universities at Undergraduate Degree level during the 2009 academic year.

Figure 162: Racial breakdown of Undergraduate Degree enrolments in Agricultural Management

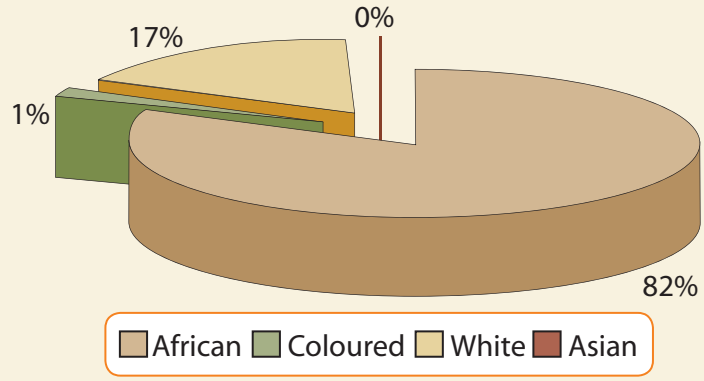


Figure 162 above indicates that Africans constituted 82% of Undergraduate Degree enrolments in this CESM, followed by Whites with 17%. Coloureds accounted for 1% of Undergraduate Degree enrolments in Agricultural Management. No Asians enrolled in this CESM at Undergraduate Degree level during the 2009 academic year.

Figure 163: Gender breakdown of Undergraduate Degree enrolments in Agricultural Management

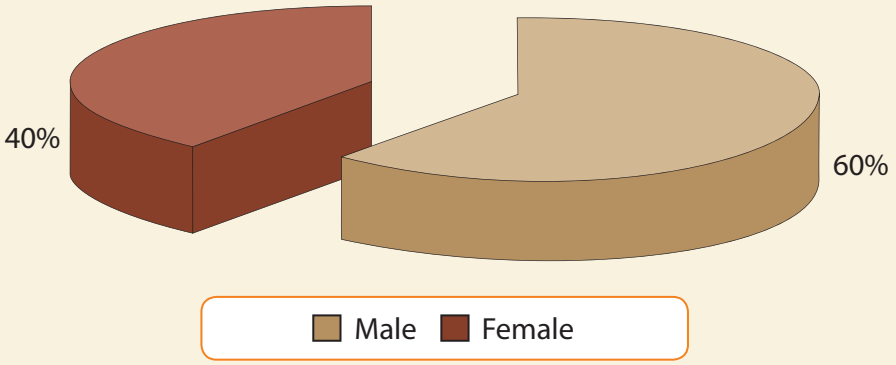


Figure 163 above shows that males were dominant in Undergraduate Degree enrolments of Agricultural Management with 60%, while females comprised 40%. African males accounted for 70%

of male enrolments in this CESM at Undergraduate Degree level, followed by Whites with 27% and Coloureds with 2%. Asian males recorded the least male enrolments in this CESM at Undergraduate Degree level with less than 1%.

Figure 164: Racial breakdown of Honours Degree enrolments in Agricultural Management

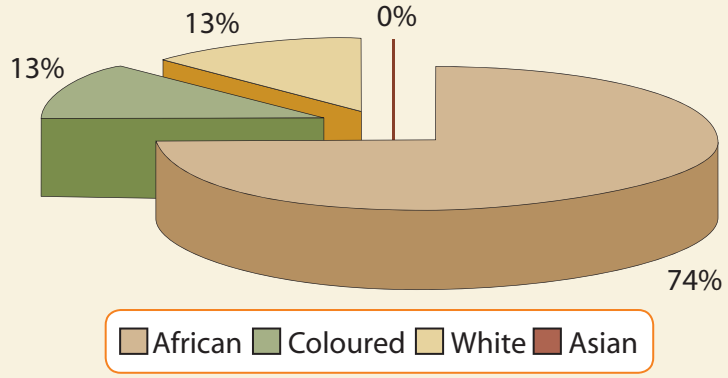


Figure 164 above indicates that Africans constituted 74% of Honours Degree enrolments in this CESM, followed by Whites and Coloureds with 13% each. Asians were not represented at Honours Degree level in this CESM.

Figure 165: Gender breakdown of Honours Degree enrolments in Agricultural Management

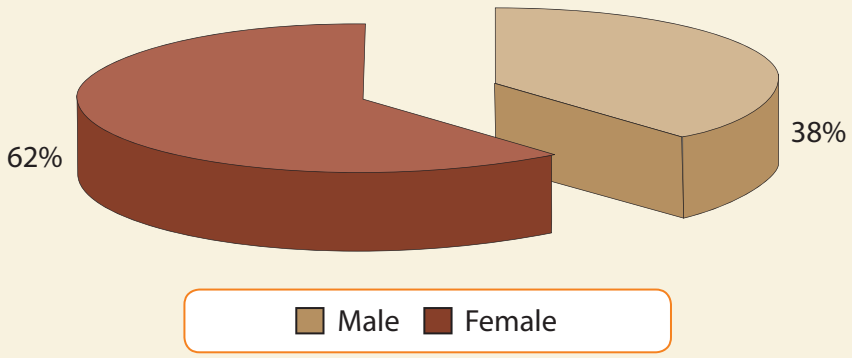


Figure 165 above shows that females were dominant in the Honours Degree enrolments of Agricultural Management with 62%, while males comprised 38%.

Figure 166: Racial breakdown of Master's Degree enrolments in Agricultural Management

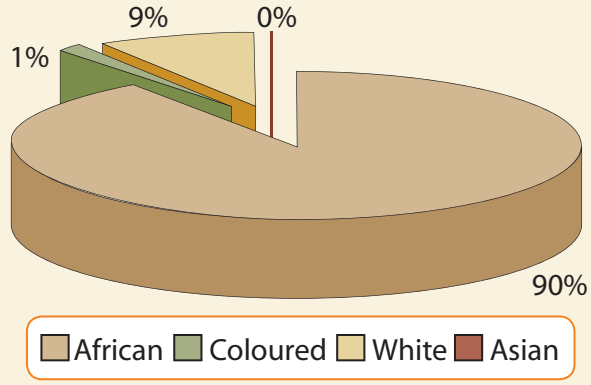
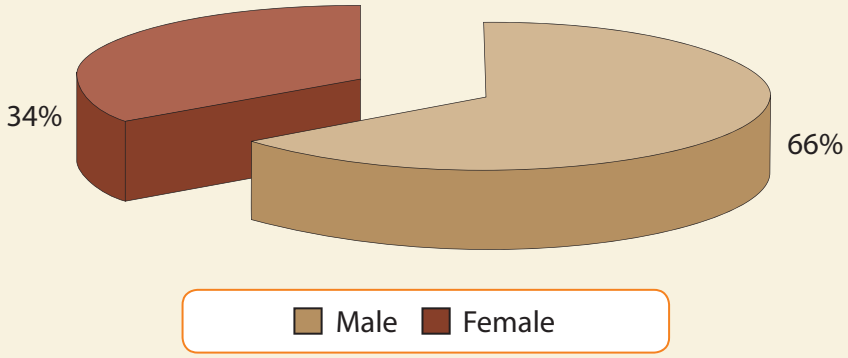


Figure 166 above depicts that Africans represented 90% of Master's Degree enrolments in this CESM, followed by Whites with 9%. Coloureds accounted for 1% of Master's Degree enrolments in this CESM and Asians were not represented.

Figure 167: Gender breakdown of Master's Degree enrolments in Agricultural Management



In Figure 167 above, gender classification shows that males accounted for 66% of Master's Degree enrolments in this CESM, while females constituted 34%. African males comprised 88% of male enrolments in Agricultural Management, followed by White males with 12%.

4.3.3.16 Other Agricultural and Renewable Resources enrolments at universities in 2009

Ten (10) students enrolled for this CESM at universities during the 2009 academic year. This CESM includes programmes in Aquaculture, Sustainable Agriculture, Aquaculture and Animal Science, Aquaculture, Disaster Management and Conservation Ecology.

Programmes in this CESM are offered by Universities of Limpopo, Free State and Stellenbosch.

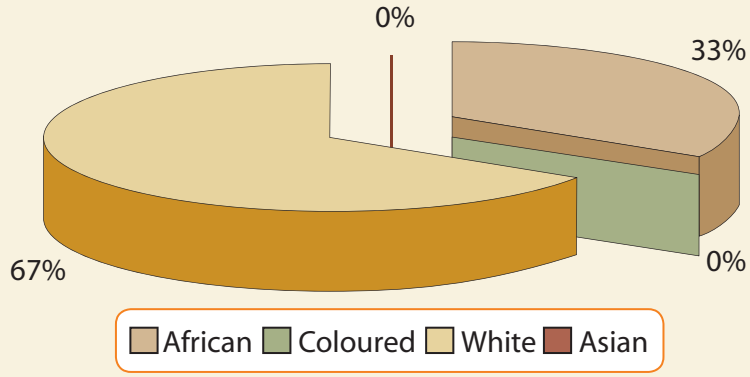
Table 76 below presents a demographic breakdown of Other Agricultural and Renewable Resources enrolments by level of qualification during the 2009 academic year.

Table 76: Demographic breakdown of Other Agricultural and Renewable Resources enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	0	**3**	0	0	**0**	4	2	**6**	0	0	**0**	**9**
Post-graduate Diploma	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**3**	**1**	**4**	**0**	**0**	**0**	**4**	**2**	**6**	**0**	**0**	**0**	**10**

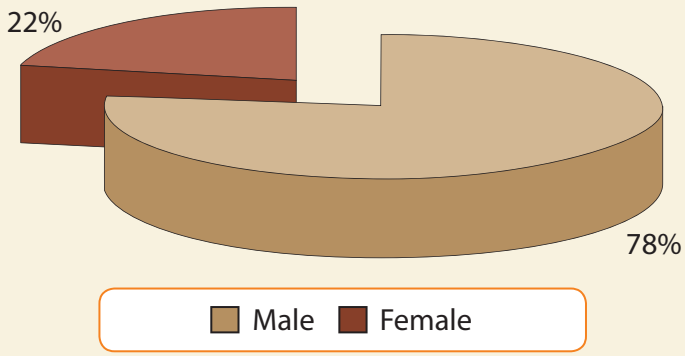
Table 79 above indicates that Undergraduate Degree dominated the Other Agricultural and Renewable Resources enrolments during the 2009 academic year with 90%, followed by Post-graduate Diploma with 10%.

Figure 168: Racial breakdown of Undergraduate Degree enrolments in Other Agricultural and Renewable Resources



Racial classification in Figure 168 above shows that Whites formed a majority of Undergraduate Degree in this CESM with 67%, followed by African with 33%. Coloureds and Asians did not enrol in this CESM during the 2009 academic year.

Figure 169: Gender breakdown of Undergraduate Degree enrolments in Other Agricultural and Renewable Resources



Gender breakdown in Figure 169 above, depicts that males dominated enrolments in this CESM at Undergraduate Degree level with 78% and females accounted for 22% only.

4.3.3.17 Environmental Management enrolments at universities in 2009

One hundred and thirty six (136) students enrolled in this CESM at universities during the 2009 academic year. This CESM comprises programmes in Geography, Science and Geography, Environmental Science Studies and Environmental Management.

Programmes in this CESM are offered by Universities of Limpopo, Fort Hare and South Africa.
Table 77 below presents a demographic breakdown of Environmental Management enrolments by level of qualification during the 2009 academic year.

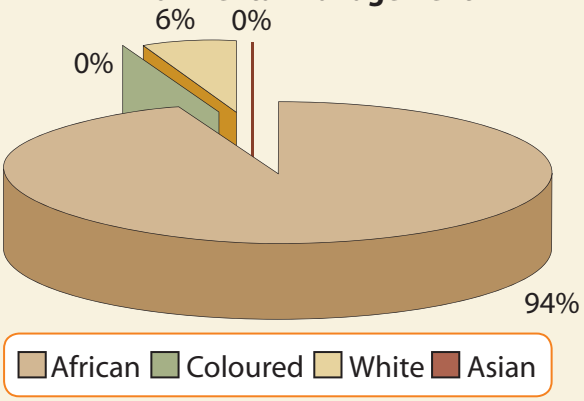
Table 77: Demographic breakdown of Environmental Management enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	14	32	**46**	0	0	**0**	1	2	**3**	0	0	**0**	**49**
Honours	22	28	**50**	0	0	**0**	5	6	**11**	0	6	**6**	**67**
Master's	8	7	**15**	0	0	**0**	0	4	**4**	0	0	**0**	**19**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**45**	**67**	**112**	**0**	**0**	**0**	**6**	**12**	**18**	**0**	**6**	**6**	**136**

Honours Degree enrolments constituted 49% of Environmental Management enrolments, followed by Undergraduate Degree with 36%, Master's Degree with 14% and PhD with 1%.

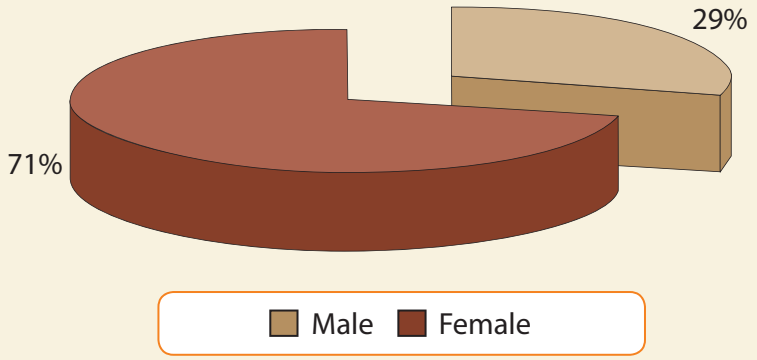
Forty nine (49) students enrolled at Undergraduate level in this CESM during the 2009 academic year.

Figure 170: Racial breakdown of Undergraduate Degree enrolments in Environmental Management



Racial classification in Figure 170 above, shows that Africans formed a majority of Undergraduate Degree in this CESM with 94%, followed by Whites with 6%. Coloureds and Asians were not enrolled in this CESM during the 2009 academic year.

Figure 171: Gender breakdown of Undergraduate Degree enrolments in Environmental Management



Gender breakdown in Figure 171 above, depicts that females dominated the enrolments in this CESM at Undergraduate Degree level with 71% and males accounted for 29%.

Figure 172: Racial breakdown of Honours Degree enrolments in Environmental Management

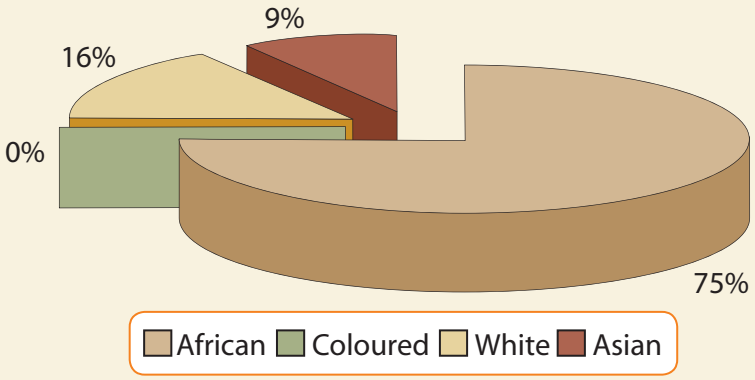


Figure 172 above depicts that Africans formed a majority of Honours Degree enrolments in this CESM with 75%, followed by Whites and Asians with 16% and 9% respectively. Coloured students were not represented in this CESM during the 2009 academic year.

Figure 173: Gender breakdown of Honours Degree enrolments in Environmental Management

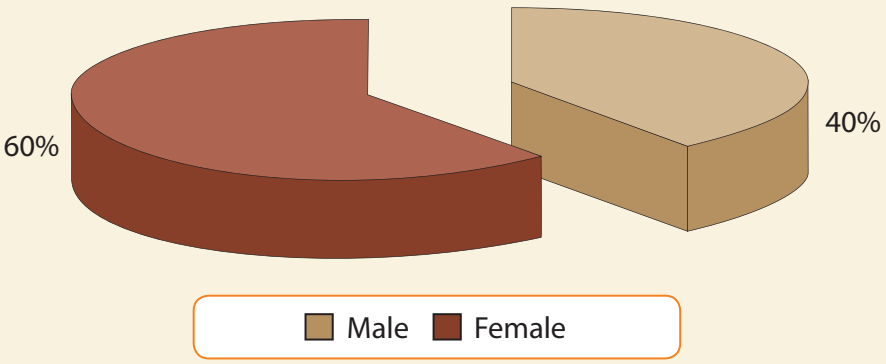


Figure 173 above shows that females were dominant in this CESM at Honours Degree level with 60%, while males amounted to 40%. African females accounted for 64% of the female enrolments in this CESM at Honours Degree level, followed by Whites with 26%. Coloured and Asian females were not represented in this CESM at Honours Degree level.

Figure 174: Racial breakdown of Master's Degree enrolments in Environmental Management

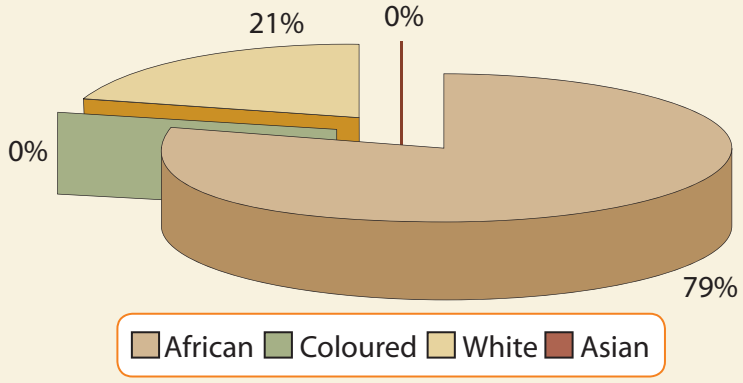


Figure 174 above depicts that Africans formed a majority of Master's Degree enrolments in this CESM with 79%, followed by Whites with 21%. Coloured and Asian students were not represented in this CESM during the 2009 academic year.

Figure 175: Gender breakdown of Master's Degree enrolments in Environmental Management

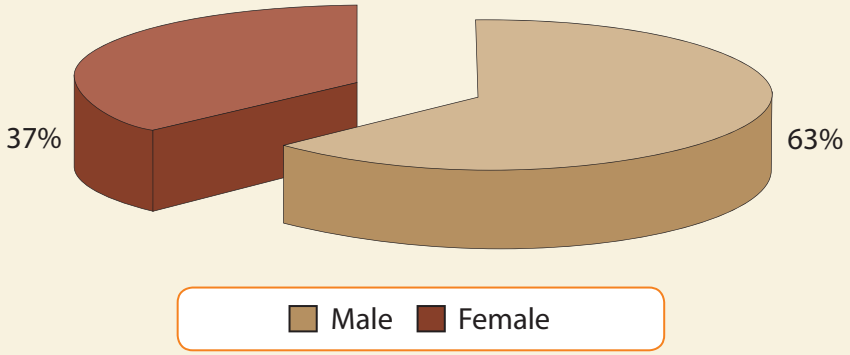


Figure 175 above shows that males were dominant in this CESM at Master's Degree level with 63%, while females amounted to 37%.

4.3.3.18 Wildlife Management enrolments at universities in 2009

Ninety three (93) students enrolled in this CESM at universities for the 2009 academic year. The CESM includes programmes in Agricultural Wildlife Management. Wildlife programmes are offered by University of Pretoria and University of Free State.

Table 78 below presents a demographic breakdown of Wildlife enrolments by level of qualification during the 2009 academic year.

Table 78: Demographic breakdown of Wildlife Management enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	2	**4**	0	0	**0**	51	7	**58**	0	0	**0**	**62**
Honours	0	0	**0**	0	1	**1**	10	9	**19**	0	0	**0**	**20**
Master's	0	0	**0**	0	0	**0**	7	1	**8**	0	1	**1**	**9**
PhD	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	**2**
Total	**2**	**2**	**4**	**0**	**1**	**1**	**70**	**17**	**87**	**0**	**1**	**1**	**93**

Undergraduate Degree constituted 67% of the total enrolments in this CESM, followed by Honours Degree enrolments with 32% and Master's Degree with 10%. PhD enrolments were the lowest, amounting to only 2%.

Figure 176: Racial breakdown of Honours Degree enrolments in Horticulture

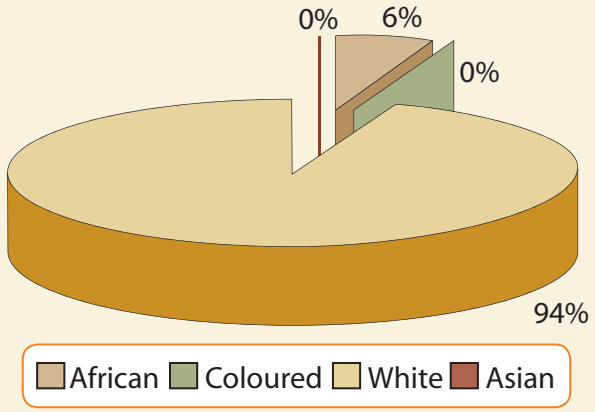


Figure 176 above depicts that Whites formed a majority of Undergraduate Degree enrolments in this CESM with 94%, followed by Africans with 6%. Coloured and Asian students were not represented in Undergraduate Degree enrolments in this CESM during the 2009 academic year.

Figure 177: Gender breakdown of Undergraduate Degree enrolments in Wildlife Management

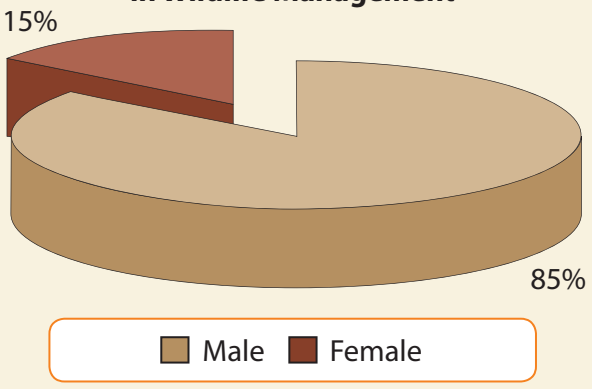


Figure 177 above shows that males were dominant in this CESM at Undergraduate Degree level with 85%, while females amounted to 15%. White males accounted for 96% of the male enrolments in this CESM at Undergraduate Degree level, followed by African males with 4%.

Figure 178: Racial breakdown of Honours Degree enrolments in Wildlife Management

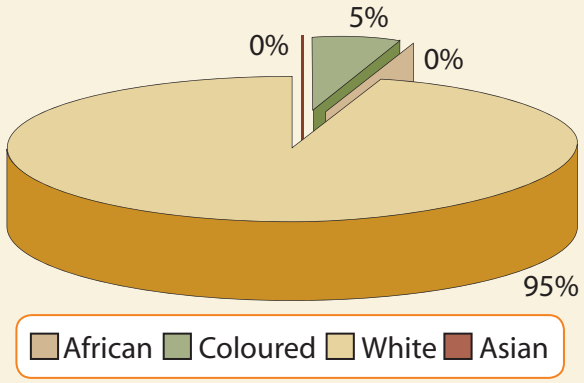


Figure 178 above depicts that Whites formed a majority of Honours Degree enrolments during the 2009 academic year in this CESM with 95%, followed by Africans with 5%.

Figure 179: Gender breakdown of Honours Degree enrolments in Wildlife Management

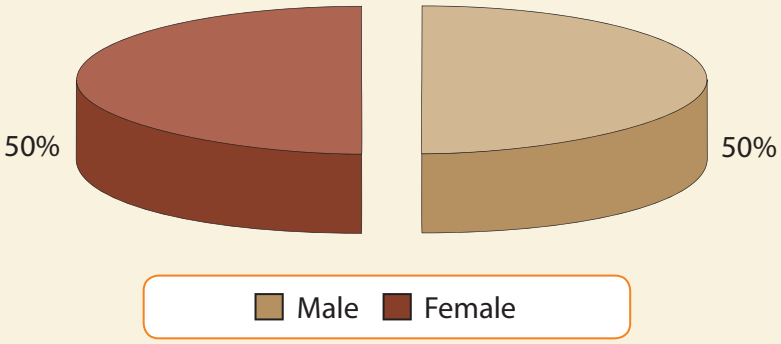
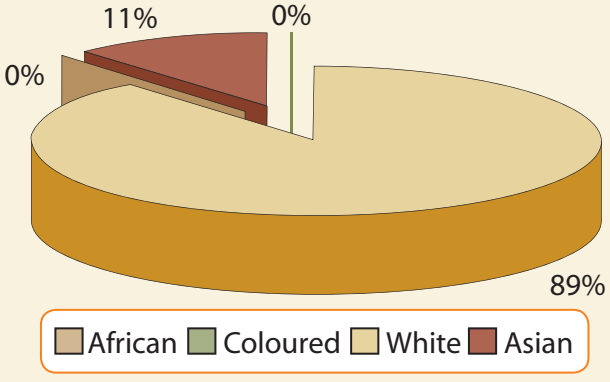


Figure 179 above shows that males and females constituted 50% each in this CESM at Honours Degree level.

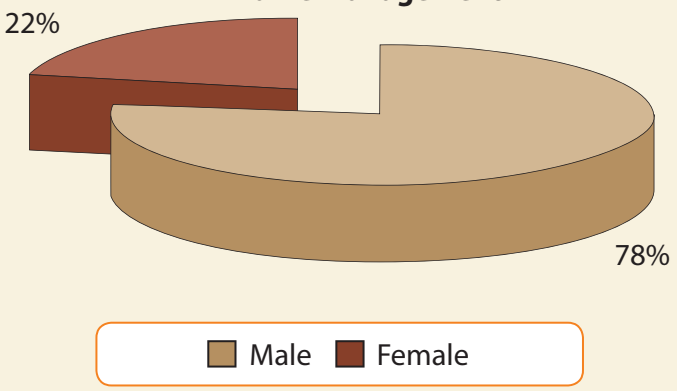
A total number of 9 students registered at Master's level in this CESM during the 2009 academic year.

Figure 180: Racial breakdown of Master's Degree enrolments in Wildlife Management



As Figure 180 above portrays, White students dominated the Master's Degree enrolments in this CESM with 89%, while Asian students accounted for 11%.

Figure 181: Gender breakdown of Master's Degree enrolments in Wildlife Management



As Figure 181 above portrays, males dominated the Wildlife Management Master's Degree enrolments with 78%, while females accounted for 22%. All male enrolments at Master's level were Whites.

4.3.3.19 Agronomy enrolments at universities at 2009

This CESM includes programmes in Agronomy and Soil Science, Agronomy and Agriculture Economics, Agronomy and Agro-meteorology, Agronomy and Plant Breeding, Agronomy and Plant Pathology, Agronomy and Animal Science, Agronomy and Food Science and Agronomy and Entomology.

Programmes in this CESM are offered by Universities of Stellenbosch, Zululand, Limpopo, Pretoria and Free State.

Table 79 below presents a demographic breakdown of Agronomy enrolments by level of qualification during the 2009 academic year.

Table 79: Demographic breakdown of Agronomy enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	3	**3**	0	5	**5**	1	0	**1**	0	0	**0**	**9**
Honours	2	0	**2**	0	0	**0**	5	1	**6**	0	0	**0**	**8**
Master's	4	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**7**	**3**	**10**	**0**	**5**	**5**	**6**	**1**	**7**	**0**	**0**	**0**	**22**

Undergraduate Degree enrolments amounted to 41% of the total enrolments in this CESM, followed by Honours Degree with 36% and Master's Degree with 16%, while PhD Degree accounted for 5%.

Nine (9) students enrolled in this CESM at Undergraduate Degree level during the 2009 academic year.

Figure 182: Racial breakdown of Undergraduate Degree enrolments in Agronomy

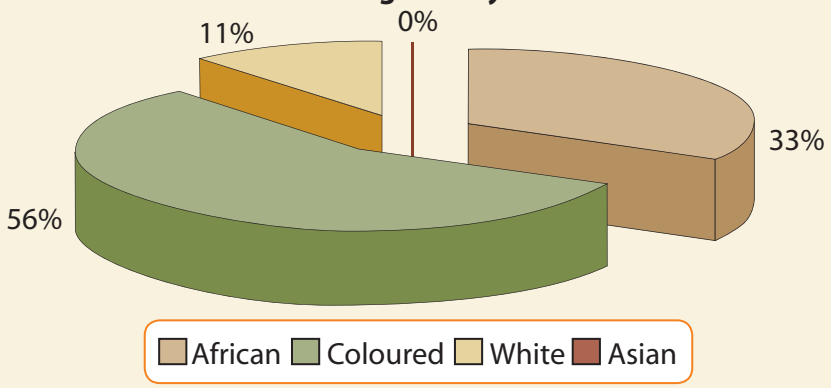
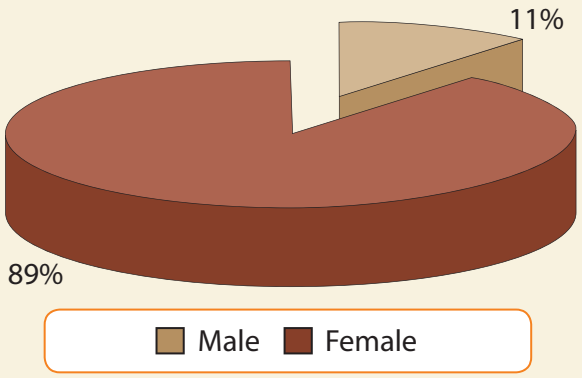


Figure 182 above reflects that Coloureds were a majority of Undergraduate Degree in this CESM with 56%, followed by Africans with 33% and Whites with 11%. Asians were not enrolled for Undergraduate Degree in this CESM.

Figure 183: Gender breakdown of Undergraduate Degree enrolments in Agronomy



As depicted in Figure 183 above, females were dominant in this CESM at Undergraduate Degree enrolments with 89%, while males accounted for 11%. Coloured females comprised 63% of the female enrolments at Undergraduate Degree in this CESM followed by African females with 37%.

Figure 184: Racial breakdown of Honours Degree enrolments in Agronomy

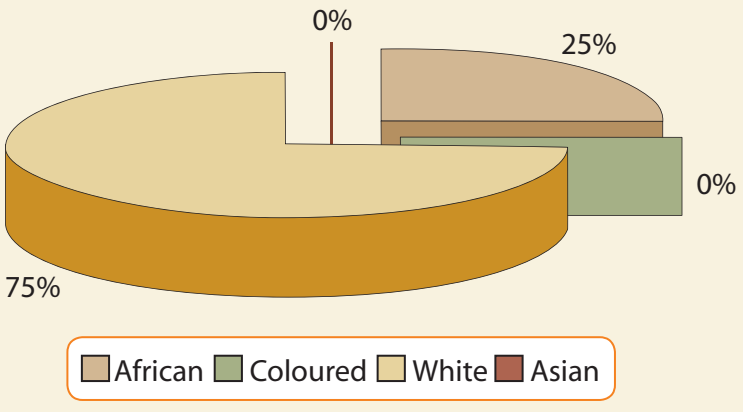
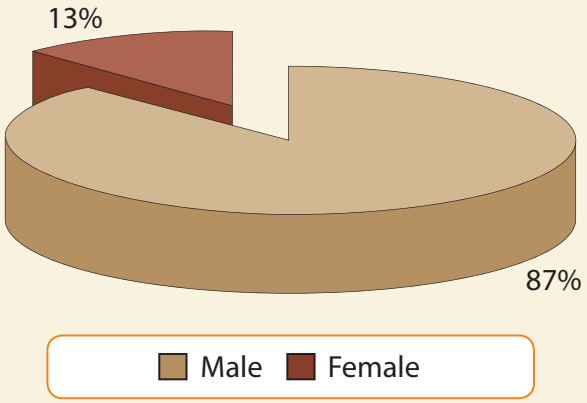


Figure 184 above reflects that Whites were a majority of Honours Degree enrolled in this CESM with 75%, followed by Africans with 25%. Coloureds and Asians were not enrolled for Honours Degree in this CESM.

Figure 185: Gender breakdown of Honours Degree enrolments in Agronomy



As depicted in Figure 185 above, males were dominant in Honours Degree enrolments in this CESM with 87%, while females accounted for 13%. White males comprised 71% of the male enrolments at Honours Degree in this CESM, followed by African males with 29%.

4.3.3.20 Consumer Science enrolments at universities in 2009

Two hundred and twenty seven (227) students enrolled for Consumer Science during the 2009 academic year. This CESM includes programmes in Family Ecology and Cons Sc, Human Ecology - Community Agriculture, Human Ecology - Community Nutrition, Cons Sc: Educations, Cons Sc: Clothing Retail Management, Cons Sc: Clothing Small Business Management, Cons Sc: Food Management Cons Sc: Retail Management, Cons Sc: Hospitality Management, Cons Sc: Interior Management (Interior Retail Management), Cons Sc: Interior Management (Small Business. Management, Cons Sc: Development, Ed (Home Economics), Cons Sc: Ed (Hotel-keeping & Catering, Cons Sc: Ed (Consumer Studies), Cons Sc: Ed (Hospitality Studies), Cons Sc: (Interior Merchandise Retail Management, Cons Sc: Food Management, Cons Sc: Merchandise Management, Cons Sc: Clothing Management, Cons Sc: General and Cons Sc: Rural Household Development.

Programmes in this CESM are offered by Universities of Venda, KwaZulu-Natal, Pretoria and South Africa.

Table 80 below presents a demographic breakdown of Consumer Science enrolments by level of qualification during 2009 academic year.

Table 80: Demographic breakdown of Consumer Science enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	6	46	**52**	2	5	**7**	10	138	**148**	0	6	**6**	**213**
Honours	0	1	**1**	0	0	**0**	0	3	**3**	0	0	**0**	**4**
Master's	2	1	**3**	0	0	**0**	0	6	**6**	0	0	**0**	**9**
PhD	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**8**	**49**	**57**	**2**	**5**	**7**	**10**	**147**	**157**	**0**	**6**	**6**	**227**

Undergraduate Degree enrolments accounted for 94% of the total enrolments in this CESM, followed by Master's Degree with 4% and Honours Degree with 2%. PhD accounted for less than 1% of the overall enrolment in this CESM during the 2009 academic year.

Two hundred and thirteen (213) students enrolled at Undergraduate Degree level in Consumer Science during the 2009 academic year.

Figure186: Racial breakdown of Undergraduate Degree enrolments in Consumer Science

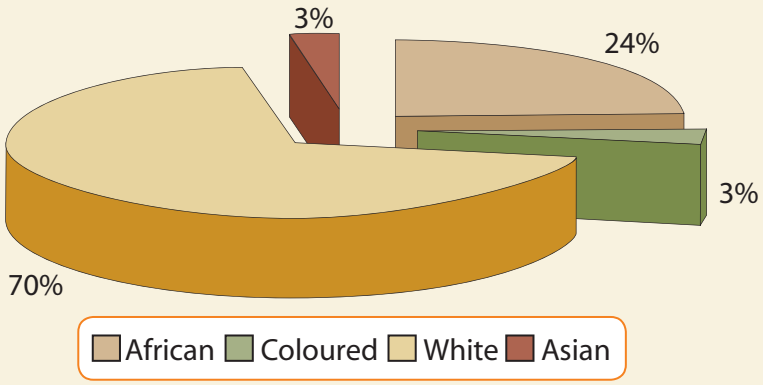
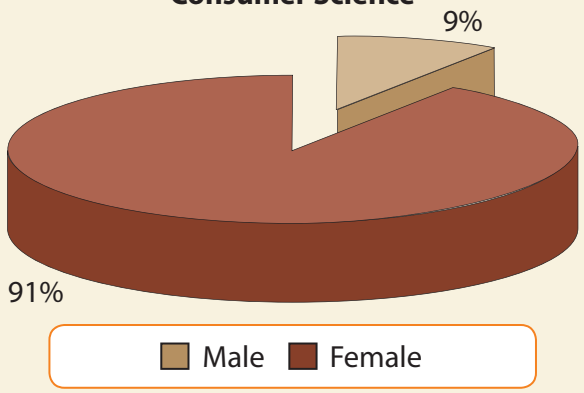


Figure 186 above portrays that Whites formed a majority of Undergraduate Degree enrolments in this CESM with 70%, followed by Africans with 24%, while Coloureds and Asians constituted for 3% each.

Figure 187: Gender breakdown of Undergraduate Degree enrolments in Consumer Science



As Figure 187 above depicts that female students represented a majority of Undergraduate Degree in this CESM with 91%, while males accounted for 9%. White females comprised 72% of the female enrolments in this CESM at Undergraduate Degree level, followed by African females with 22%, while Coloureds and Asians constituted 3% each.

Figure 188: Racial breakdown of Honours Degree enrolments in Consumer Science

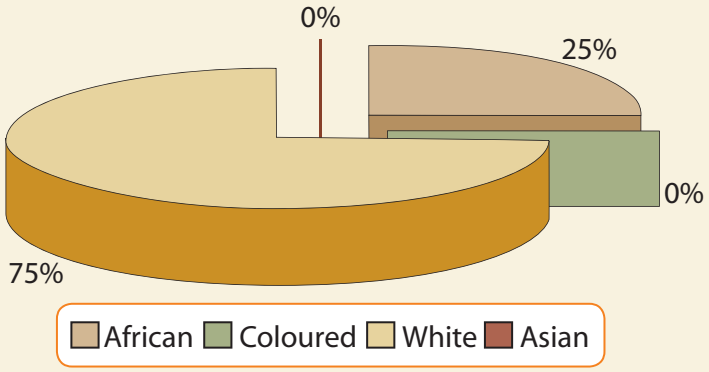


Figure 188 above portrays that Whites formed a majority of Honours Degree enrolments in this CESM with 75%, followed by Africans with 25%. Coloureds and Asians were not represented.

Figure 189: Racial breakdown of Master's Degree enrolments in Consumer Science

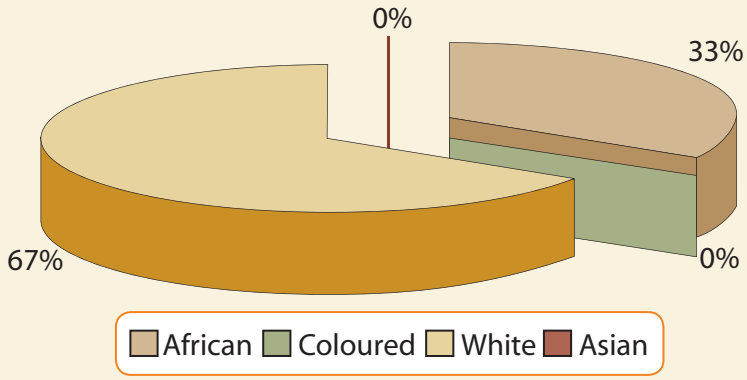
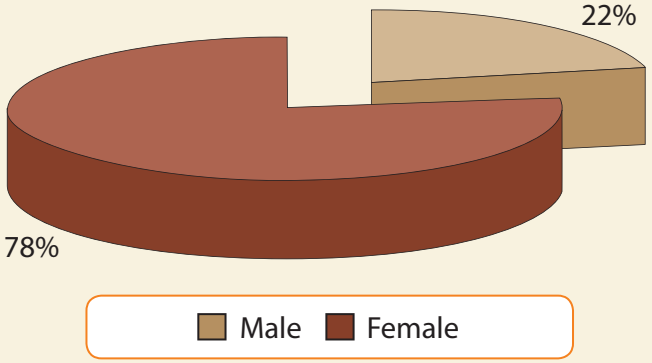


Figure 189 above portrays that Whites formed a majority of Master's Degree enrolments in this CESM with 67%, followed by Africans with 33%. Coloureds and Asians were not represented in this CESM.

Figure 190: Gender breakdown of Master's Degree enrolments in Consumer Science



As Figure 190 above depicts, female students represented a majority of Master's Degree enrolments in this CESM with 78%, while males accounted for 22%. Whites comprised 86%, while Africans comprised 14% of the female enrolments in this CESM at Master's level.

4.3.3.21 BSc Veterinary Biology enrolments at universities in 2009

Three hundred and twenty nine (329) students enrolled for BSc Veterinary Biology during the 2009 academic year. This programme in South Africa is offered by University of Pretoria only.

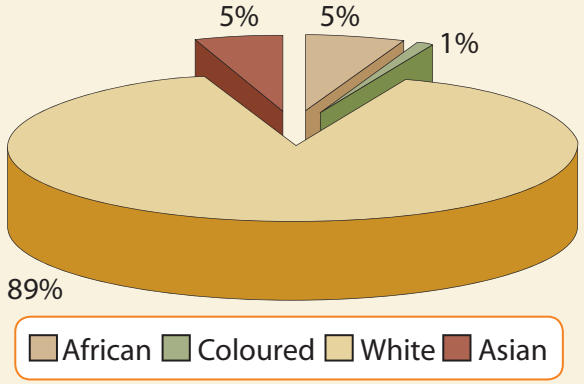
Table 81 below presents a demographic breakdown of BSc Veterinary Biology enrolments at universities during the 2009 academic year.

Table 81: Demographic breakdown of BSc Veterinary Biology enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	8	10	**18**	1	2	**3**	96	196	**292**	5	11	**16**	**329**
Total	**8**	**10**	**18**	**1**	**2**	**3**	**96**	**196**	**292**	**5**	**11**	**16**	**329**

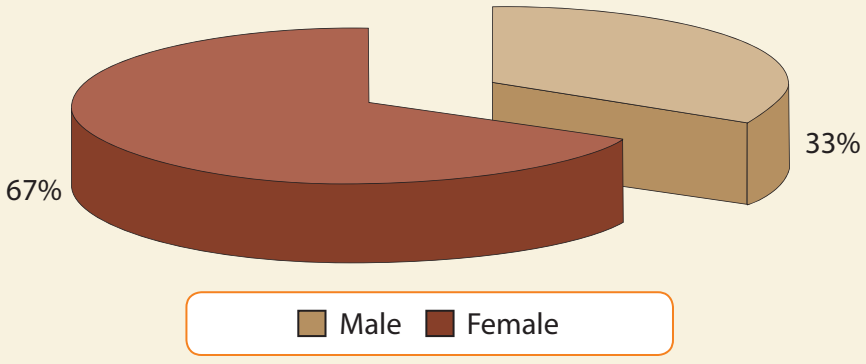
As illustrated in Table 84 above, 329 students registered for BSc Veterinary Biology.

Figure 191: Racial breakdown of Undergraduate Degree enrolments in Veterinary Biology



Racial classification in Figure 191 above, illustrate that Whites dominated this CESM with 89%, while Africans and Asians comprised 5% each. Coloureds represented the least enrolment figures with 1% of the overall Undergraduate Degree enrolments in this CESM.

Figure 192: Gender breakdown of Undergraduate Degree enrolments in Veterinary Biology



Gender breakdown in Figure 192 above shows that female students were dominant in BSc Veterinary Biology with 67%, while males accounted for 33%. White females represented the most female enrolment figures in this CESM with 89%, while Africans and Asians accounted for 5% each. Coloured females recorded the least enrolments with 1% of the female enrolments in BSc Veterinary Biology during the 2009 academic year.

4.3.3.22 Biotechnology enrolments at universities in 2009

One hundred and six (106) students enrolled at universities in this CESM during the 2009 academic year. This CESM includes programmes in Agricultural Biotechnology, Genetics and Plant Breeding. These programmes are offered by Universities of Pretoria, Free State, Stellenbosch and Western Cape.

Table 82 below presents a demographic breakdown of Biotechnology by level of qualification during the 2009 academic year.

Table 82: Demographic breakdown of Biotechnology enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	9	11	**20**	0	2	**2**	8	18	**26**	0	0	**0**	**48**
Honours	2	4	**6**	0	3	**3**	4	9	**13**	1	1	**2**	**24**
Master's	5	3	**8**	1	0	**1**	4	5	**9**	2	1	**3**	**21**
PhD	5	4	**9**	2	0	**2**	1	1	**2**	0	0	**0**	**13**
Total	**21**	**22**	**43**	**3**	**5**	**8**	**17**	**33**	**50**	**3**	**2**	**5**	**106**

Undergraduate Degree constituted 45% of the total enrolments in this CESM, followed by Honours Degree and Master's Degree with 23% and 20%. PhD enrolments were the lowest amounting to 12% of the total enrolments in this CESM.

Figure 193: Racial breakdown of Undergraduate Degree enrolments in Biotechnology

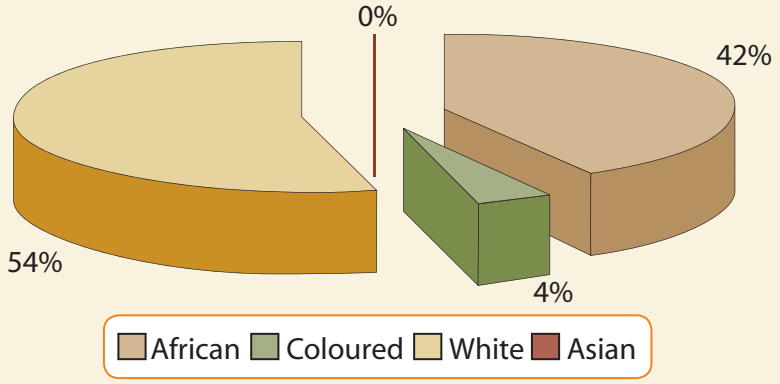


Figure 193 above depicts that Whites formed a majority of enrolments in Undergraduate Degree in this CESM with 54%, followed by Africans and Coloureds with 42% and 4% respectively. Asian students were not represented in this CESM during the 2009 academic year.

Figure 194: Gender breakdown of Undergraduate Degree enrolments in Biotechnology

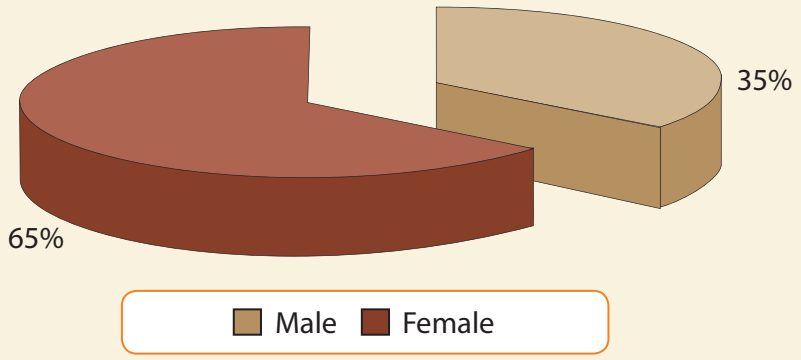
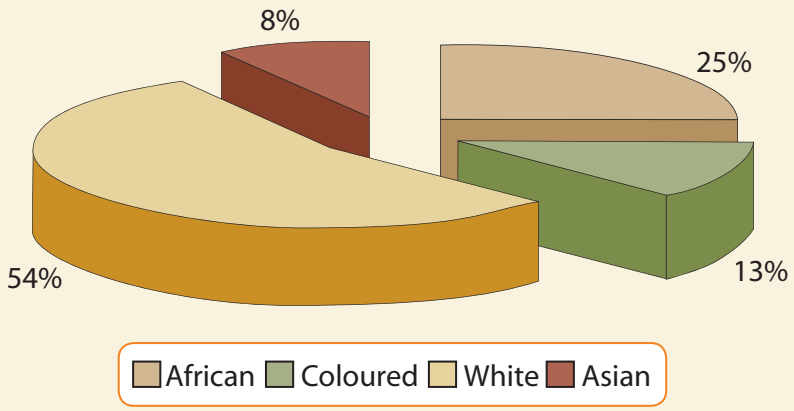


Figure 194 above shows that females were dominant in this CESM at Undergraduate Degree level with 65%, while males amounted to 35%. White females accounted for 58% of the female enrolments in this CESM at Undergraduate Degree level, followed by African females with 35% and Coloured females with 6%.

Figure 195: Racial breakdown of Honours Degree enrolments in Biotechnology



As Figure 195 above portrays, White students accounted for 54% of the total number of Honours Degree enrolments in this CESM, followed by Africans with 25%. Coloureds and Asians respectively constituted 13% and 8% of Honours Degree enrolments.

Figure 196: Gender breakdown of Honours Degree enrolments in Biotechnology

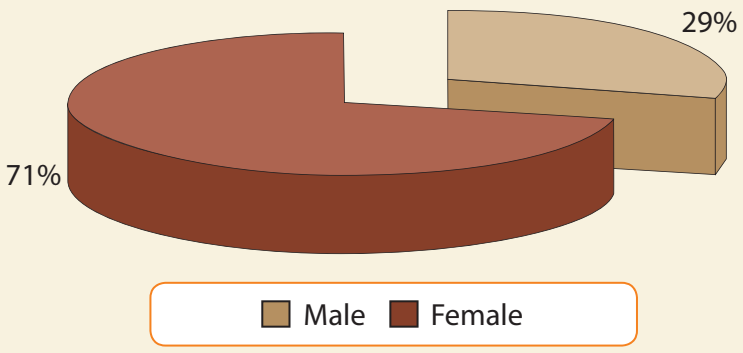
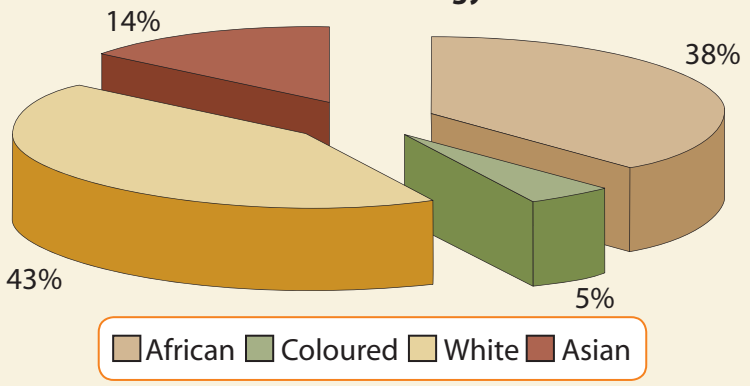


Figure 196 above indicates that female students accounted for 71% of the overall Honours Degree enrolments in Biotechnology during the 2009 academic year and males accounted for 29%.

Figure 197: Racial breakdown of Master's Degree enrolments in Biotechnology



As Figure 197 above portrays, White students constituted 43% of the total enrolments for Master's Degree in this CESM, followed by Africans with 38% and Asians with 14%. Coloured students accounted for 5% of the total number of Master's Degree enrolments in this CESM.

Figure 198: Gender breakdown of Master's Degree enrolments in Biotechnology

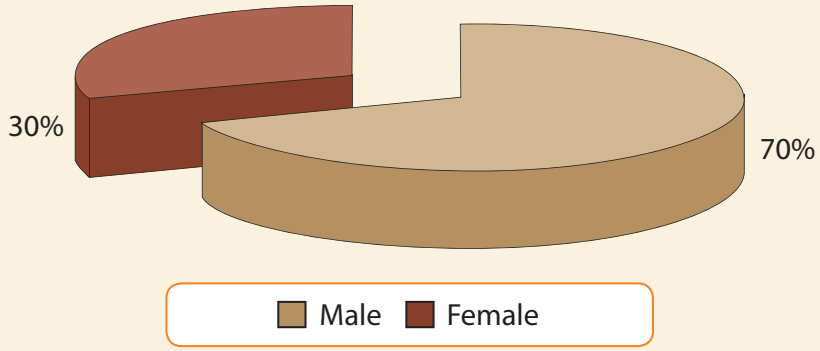


Figure 198 above shows that males were dominant in this CESM at Master's Degree level with 70%, while females amounted to 30%.

4.3.3.23 Microbiology enrolments at universities in 2009

Twenty six (26) students enrolled at universities in this CESM during the 2009 academic year. This CESM includes programmes in Pasture Science, which are offered by University of Pretoria and University of Limpopo.

Table 83 below presents a demographic breakdown of Microbiology enrolments by level of qualification during the 2009 academic year.

Table 83: Demographic breakdown of Microbiology enrolments by level of qualification during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	0	3	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
Honours	1	4	**5**	0	1	**1**	3	7	**10**	0	0	**0**	**16**
Master's	0	2	**2**	0	0	**0**	4	3	**7**	0	0	**0**	**9**
PhD	0	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
Total	**1**	**9**	**10**	**0**	**2**	**2**	**8**	**12**	**20**	**0**	**0**	**0**	**32**

Honours Degree constituted 50% of the total number of enrolments in this CESM, followed by Master's Degree enrolments with 28% and Undergraduate Degree enrolments with 16%. PhD Degree enrolments were the lowest amounting to only 6% of the total enrolments in this CESM.

Figure 199: Racial breakdown of Undergraduate Degree enrolments in Microbiology

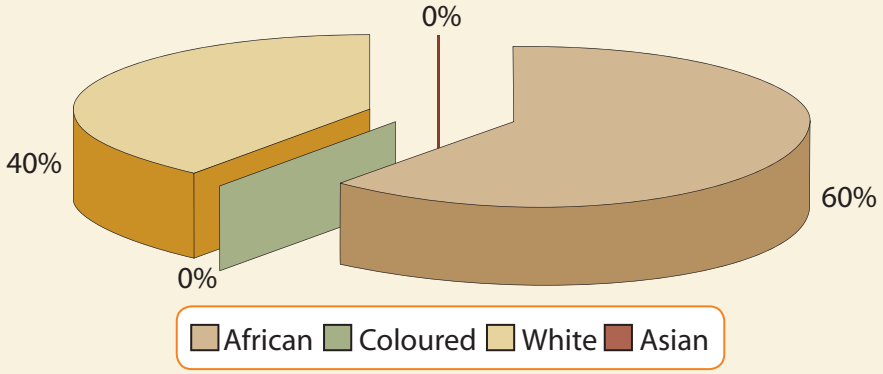


Figure 199 above depicts that Africans formed a majority of Undergraduate Degree enrolments in this CESM with 60%, followed by Whites with 40%. Coloured and Asian students were not represented in the Undergraduate Degree enrolments in this CESM during the 2009 academic year.

Figure 200: Gender breakdown of of Undergraduate Degree enrolments in Microbiology

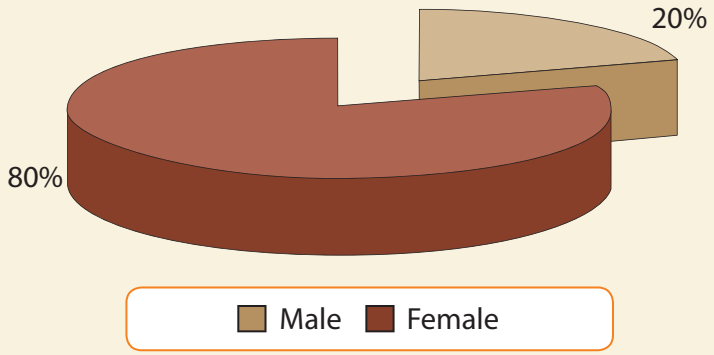


Figure 200 above shows that females were dominant in this CESM at Undergraduate Degree level with 80%, while males amounted to 20%. African females accounted for 75% of the female enrolments in this CESM at Undergraduate Degree level, followed by Whites with 25%.

Figure 201: Racial breakdown of Honours Degree enrolments in Microbiology

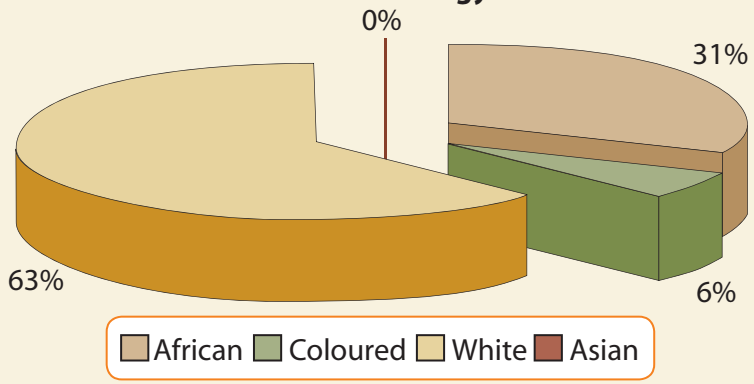


Figure 201 above depicts that Whites formed a majority of Honours Degree enrolments in this CESM with 63%, followed by Africans with 31% and Coloureds with 6%. Asian students were not represented in Honours Degree enrolments in this CESM during the 2009 academic year.

Figure 202: Gender breakdown of Honours Degree enrolments in Microbiology

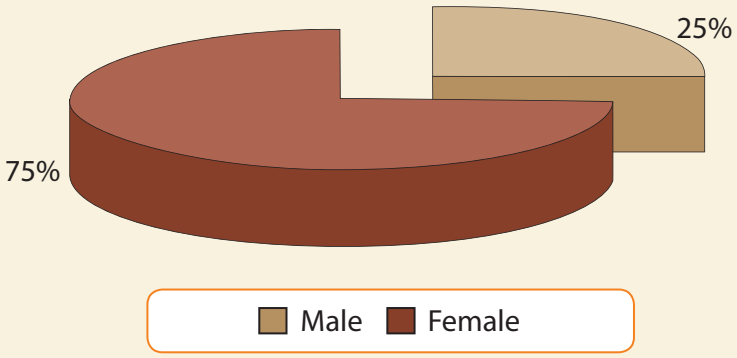


Figure 202 above shows that females were dominant in this CESM at Honours Degree level with 75%, while males amounted to 25%. White females accounted for 58% of the female enrolments in this CESM at Honours level, followed by Africans and Coloureds with 33% and 8% respectively.

Figure 203: Racial breakdown of Master's Degree enrolments in Microbiology

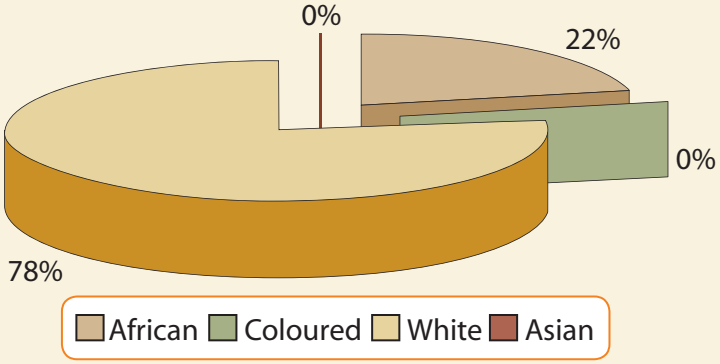


Figure 203 above depicts that Whites formed a majority of Honours Degree enrolments in this CESM with 78%, followed by Africans with 22%. Coloureds and Asians were not represented in the Master's Degree enrolments in this CESM during the 2009 academic year.

Figure 204: Gender breakdown of Master's Degree enrolments in Microbiology

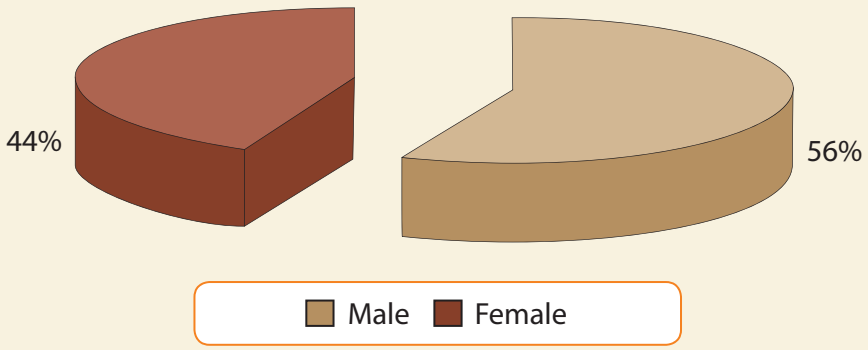


Figure 204 shows that males were dominant in this CESM at Master's Degree level with 56%, while females amounted to 44%.

Two (2) female students enrolled in this CESM at PhD level during the 2009 academic year; 1 was Coloured and 1 was White.

4.3.3.24 Land Reclamation enrolments at universities in 2009

Fifty our (54) students enrolled at universities in this CESM for the 2009 academic year. This CESM includes programmes in Chemistry and Biochemistry. These programmes are offered by Universities of Pretoria and Free State.

Table 84 below presents a demographic breakdown of Land Reclamation enrolments by level of qualification during the 2009 academic year.

Table 84: Demographic breakdown of Land Reclamation enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Post-graduate Diploma	29	15	**44**	1	1	**2**	2	3	**5**	1	1	**2**	**53**
Honours	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**30**	**15**	**45**	**1**	**1**	**2**	**2**	**3**	**5**	**1**	**1**	**2**	**54**

Post-graduate Diploma dominated the Land Reclamation enrolments with 98% and Honours Degree constituted 2%.

Figure 205: Racial breakdown of Post-graduate Diploma enrolments in Land Reclamation

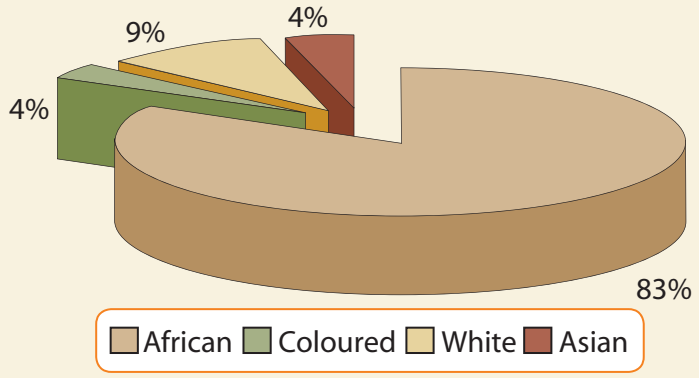


Figure 205 above depicts that Africans formed a majority of Post-graduate Diploma enrolments in this CESM with 83%, followed by White with 9%. Coloured and Asians constituted 4% each.

Figure 206: Gender breakdown of Post-graduate Diploma enrolments in Land Reclamation

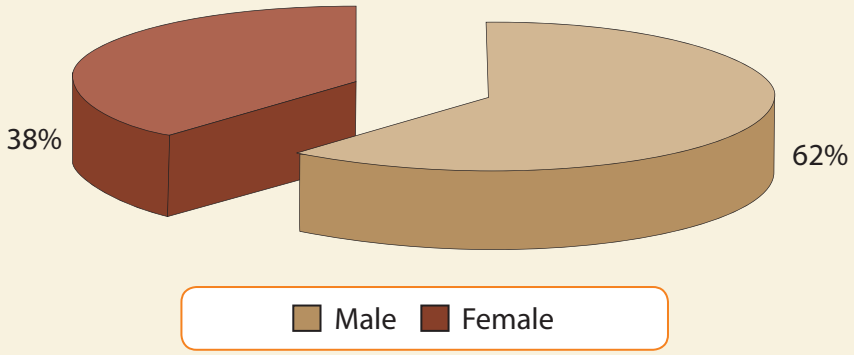


Figure 206 above shows that males were dominant in this CESM at Post-graduate Diploma level with 62%, while females amounted to 38%. African males accounted for 88% of the male enrolments in this CESM at Post-graduate Diploma level, followed by Whites with 6%. Coloured and Asian males each accounted for 3% of the Post-graduate Diploma enrolments in CESM.

4.3.3.25 Veterinary Nursing enrolments at universities in 2009

Forty four (44) students enrolled at universities in this CESM for the 2009 academic year. These programmes are offered by University of Pretoria.

Table 85 below presents a demographic breakdown of Veterinary Nursing Biology enrolments during the 2009 academic year.

Table 85: Demographic breakdown of Veterinary Nursing Biology enrolments at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	2	1	**3**	0	1	**1**	0	40	**40**	0	0	**0**	**44**
Total	**2**	**1**	**3**	**0**	**1**	**1**	**0**	**40**	**40**	**0**	**0**	**0**	**44**

As illustrated in Table 85 above, 44 students registered for Veterinary Nursing Biology during the 2009 academic year.

Figure 207: Racial breakdown of Undergraduate Degree enrolments in Veterinary Nursing

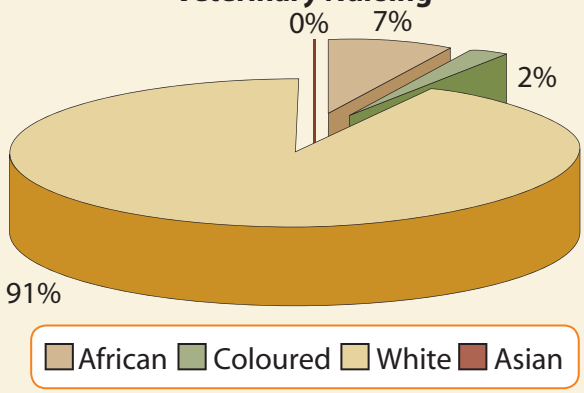


Figure 207 above depicts that Whites formed a majority of Undergraduate Degree enrolments in this CESM with 91%, followed by Africans and Coloureds with 7% and 2% respectively. No Asian students enrolled for Undergraduate Degree in this CESM during the 2009 academic year.

Figure 208: Gender breakdown of Undergraduate Degree enrolments in Veterinary Nursing

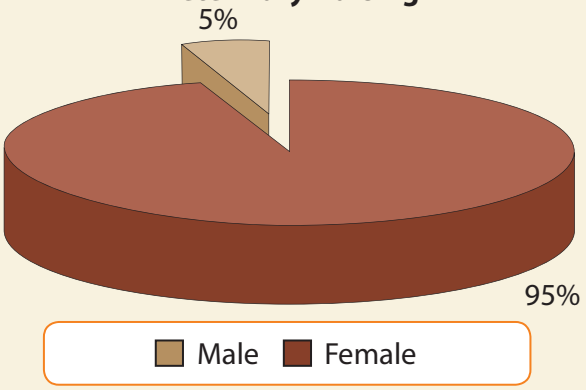


Figure 208 above shows that females were dominant in this CESM at Undergraduate Degree level with 95%, while males amounted to 5%.

4.3.3.26 Rural Development enrolments at universities in 2009

This CESM encompasses programmes in Rural Development Management and Rural Development. Table 86 below presents a demographic breakdown of Rural Development enrolments during the 2009 academic year by level of qualification.

Table 86: Demographic breakdown of Rural Development enrolments at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	5	3	**8**	0	0	**0**	0	0	**0**	0	0	**0**	**8**
Master's	6	7	**13**	0	0	**0**	0	0	**0**	0	0	**0**	**13**
Total	**11**	**10**	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**21**

Master's Degree at universities accounted for 62% of the overall enrolments in this CESM during the 2009 academic year and Honours Degree constituted 38%.

Eight (8) African students enrolled for Honours Degree in this CESM during the 2009 academic year. Gender classification shows that 5 were males and 3 were females.

Thirteen (13) African students enrolled in this CESM at Master's level during the 2009 academic year. Gender classification shows that 6 were males and 7 were females.

4.3.4 Inst. Agrar. Stream Programmes

Inst. Agrar. Stream programmes are offered by University of Pretoria only. These include, but are not limited to Plant Science, Agribusiness Management, Animal Science, Horticulture, Food Technology, Animal Production, Horticulture, Land Reclamation, Rural Development, Agricultural Economics, Agronomy and Agricultural Extension. Students enrolled or qualified in these programmes might be allowed to proceed to the PhD level or divert to the Science Stream in a similar field, depending on their academic performance.

4.3.4.1 Enrolments in Plant Science (Inst. Agrar. Stream) in 2009

Seven (7) students enrolled in this CESM at University of Pretoria during the 2009 academic year. This CESM consist of programmes in Plant Production, Plant Production: Horticulture, Plant Production: Agronomy and Pasture Science.

Table 87 below presents a demographic breakdown of Plant Science (Inst. Agrar. Stream) enrolments at University of Pretoria during the 2009 academic year.

Table 87: Demographic breakdown of Plant Science (Inst. Agrar. Stream) enrolments at University of Pretoria during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	2	2	**4**	0	0	**0**	2	0	**2**	0	0	**0**	**6**
Master's	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**3**	**2**	**5**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**7**

Honours Degree enrolments accounted for 86% of the Plant Science (Inst. Agrar.) Stream, while Master's Degree constituted 14%.

At Honours level, 6 students enrolled of which 2 were African males, 2 were African females and 2 were White males.

At Master's level, 1 African male student enrolled during the 2009 academic year in this CESM.

4.3.4.2 Enrolments in Agribusiness Management (Inst. Agrar. Stream) at University of Pretoria in 2009

One (1) African male student enrolled in this CESM for an Honours Degree during the 2009 academic year.

4.3.4.3 Horticulture (Inst. Agrar. Stream) enrolments at University of Pretoria in 2009

This CESM includes B.Inst. Agrar, B.Inst. Agrar Honours and M.Inst. Agrar. in Horticulture. One (1) African female student enrolled in this CESM at Master's level during the 2009 academic year.

4.3.4.4 Rural Development (Inst. Agrar. Stream) enrolments at University of Pretoria in 2009

This CESM encompasses programmes in Rural Development Management and Rural Development. One (1) African female enrolled for the Honours Degree in this CESM during the 2009 academic year.

4.3.4.5 Agricultural Economics (Inst. Agrar. Stream) enrolments at University of Pretoria in 2009

This CESM comprises programmes in Agricultural Economics. One (1) African female enrolled in this CESM at Honours level during the 2009 academic year.

4.3.4.6 Agricultural Extension (Inst. Agrar. Stream) enrolments at University of Pretoria in 2009

Three (3) African males enrolled in this CESM at Honours level for the 2009 academic year.

4.3.4.7 Environmental Management (Inst. Agrar. Stream) enrolments at University of Pretoria in 2009

Five (5) female students enrolled in this CESM at Master's level; 3 were Africans, 1 was White and 1 was Asian.

4.4 AET graduates at universities in 2009

A total number of 2 039 graduates were produced at universities during the 2009 academic year. University of Pretoria constituted the highest percentage of overall graduates at universities during the 2009 academic year with 36%, followed by University of Stellenbosch with 16% and University of Free State with 10%. The other universities contributed less than 10% of the overall graduates produced at universities during the 2009 academic year.

Table 88: AET graduates figures at universities during the 2009 academic year

Name of the university	Number of AET graduates	Percentage (%)
University of Fort Hare	64	3
University of North West	100	5
Nelson Mandela Metropolitan University	190	9
University of Free State	207	10
University of KwaZulu-Natal	140	7
University of Limpopo	118	6
University of Pretoria	729	36

Table 88: AET graduates figures at universities during the 2009 academic year		
Name of the university	**Number of AET graduates**	**Percentage (%)**
University of South Africa	75	4
University of Stellenbosch	329	16
University of Venda	67	3
University of Western Cape*	0	0
University of Zululand	20	1
Total	**2039**	**100**

* No information available

Figure 209: Graduates at universities in 2009

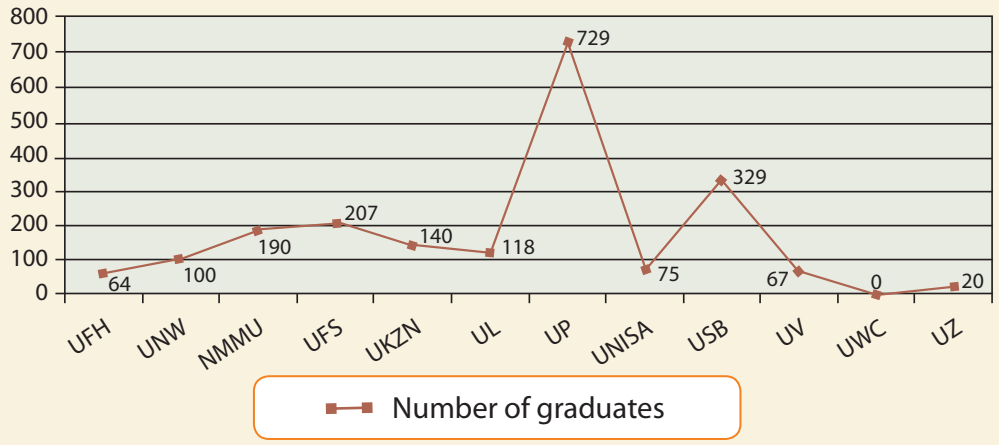


Table 88 and Figure 209 above shows that Universities of Pretoria, Stellenbosch, Free State and Nelson Mandela Metropolitan produced more graduates during the 2009 academic year. Graduates produced by these universities constituted 78% of the total AET graduates at universities in 2009.

4.4.1 Demographic breakdown of AET graduates at universities in 2009

Table 89 below presents a demographic breakdown of graduate figures in AET programmes at universities during the 2009 academic year.

Table 89: Demographic breakdown of AET graduates at universities during the 2009 academic year													
Name of the university	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
University of Fort Hare	39	25	**64**	0	0	**0**	0	0	**0**	0	0	**0**	**64**
University of North West	46	54	**100**	0	0	**0**	0	0	**0**	0	0	**0**	**100**
Nelson Mandela Metropolitan University	50	21	**71**	3	0	**3**	86	29	**115**	1	0	**1**	**190**
University of Free State	30	60	**90**	3	1	**4**	19	93	**112**	1	0	**1**	**207**
University of KwaZulu-Natal	26	34	**60**	1	1	**2**	16	49	**65**	4	9	**13**	**140**
University of Limpopo	72	46	**118**	0	0	**0**	0	0	**0**	0	0	**0**	**118**
University of Pretoria	55	61	**116**	2	7	**9**	181	397	**578**	8	18	**26**	**729**
University of South Africa	33	26	**59**	0	0	**0**	5	6	**11**	1	4	**5**	**75**
University of Stellenbosch	29	12	**41**	8	6	**14**	152	122	**274**	0	0	**0**	**329**
University of Venda	32	35	**67**	0	0	**0**	0	0	**0**	0	0	**0**	**67**
University of Zululand	10	10	**20**	0	0	**0**	0	0	**0**	0	0	**0**	**20**
Total	**422**	**384**	**806**	**17**	**15**	**32**	**459**	**696**	**1155**	**15**	**31**	**46**	**2039**

Figure 210: Racial breakdown of AET graduates at Universities

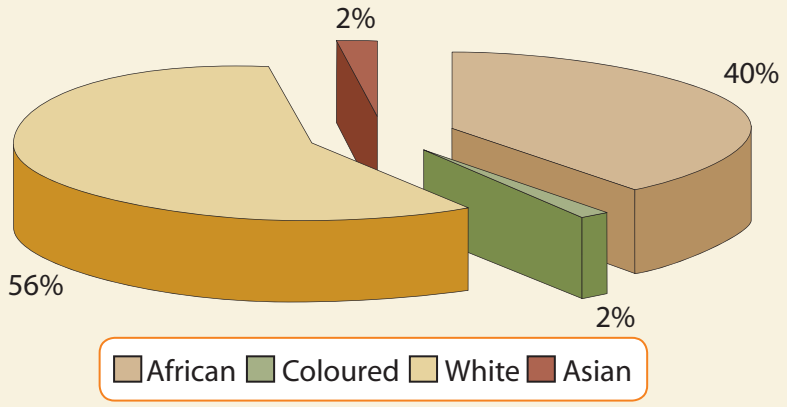


Figure 210 and Table 89 above show that Whites dominated graduates at universities during the 2009 academic year with 56%, followed by Africans with 40%, while Coloureds and Asians each accounted for 2%.

Figure 211: Gender breakdown of AET graduates at Universities

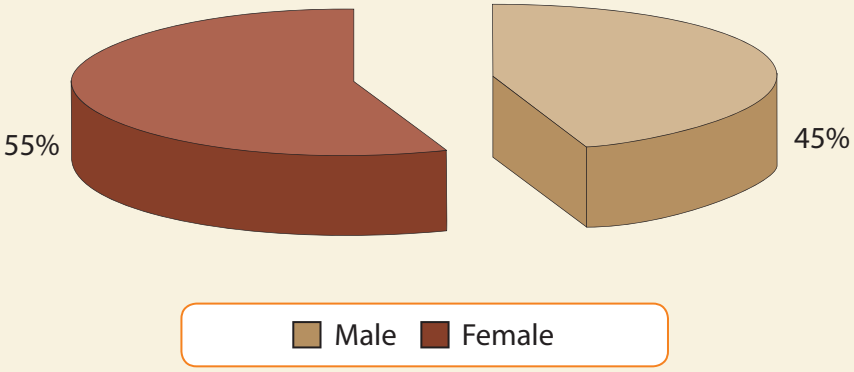


Figure 211 above portrays that females formed a majority of the total graduates at universities with 55%, while males accounted for 45%.

Figure 212: Racial breakdown of female AET graduates at Universities

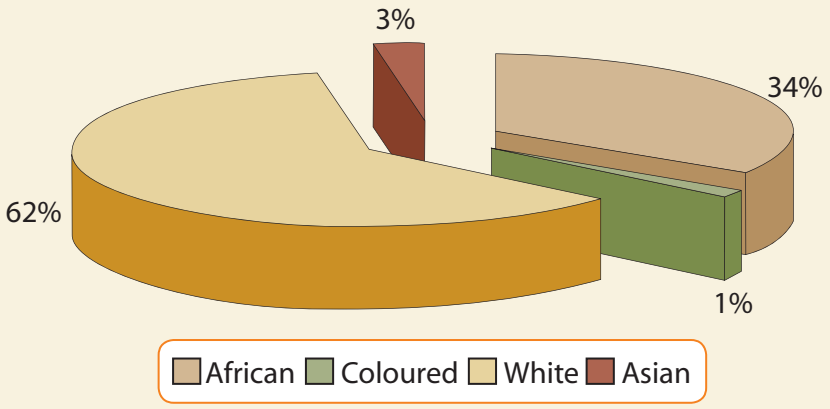
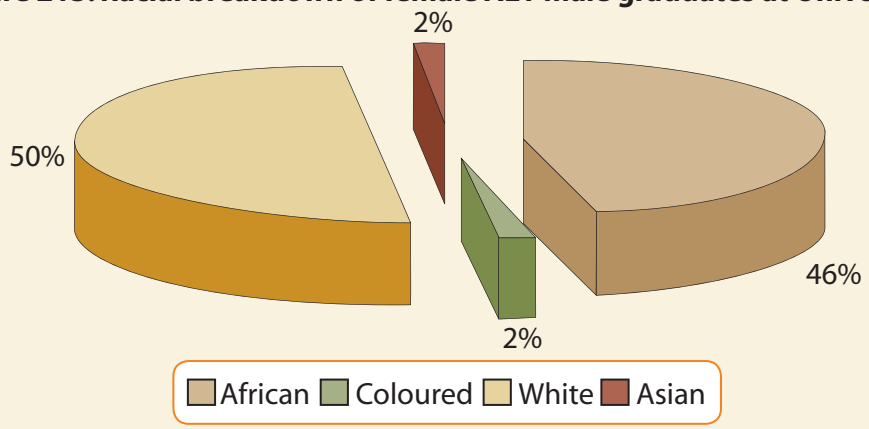


Figure 212 above indicates that White females dominated the total female graduates during the 2009 academic year with 62%, followed by Africans with 34%. Coloured and Asian female graduates respectively accounted for 3% and 1% of the total female graduates.

Figure 213: Racial breakdown of female AET male graduates at Universities



According to racial breakdown of male graduates at universities during the 2009 academic year in Figure 213 above, Whites represented 50%, followed by Africans with 46%, while Coloured and Asian males each constituted 2%.

4.4.2 AET graduates at universities by CESM in 2009

Table 90 below presents AET graduates at universities by level of qualification per CESM and academic level.

Table 90: Agricultural graduates in universities by CESM and level of qualification during the 2009 academic year

CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total	%
Agricultural Economics (Science Stream)	42	0	17	8	0	**67**	**3**
Agricultural Economics (Art Stream)	12	0	5	0	2	**19**	**1**
Agricultural Economics (BCom Stream	0	0	3	0	0	**3**	**0**
Agricultural Economics (Agribusiness)	20	0	0	0	0	**20**	**1**
Agricultural Science (Art Stream)	142	0	4	40	10	**196**	**10**
Agricultural Science (Science Stream)	113	0	14	64	6	**197**	**10**
Agricultural Extension	6	4	0	4	0	**14**	**1**
Agricultural Food Science	82	32	13	18	4	**149**	**7**
Agricultural Food Science (Inst. Agrar. Stream)	5	0	0	0	0	**5**	**0**
Animal Science	234	0	53	29	5	**321**	**16**
Horticulture	3	0	5	3	0	**11**	**1**
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Plant Science	26	0	33	18	5	**82**	**4**
Plant Science (Inst. Agrar. Stream)	2	0	6	3	0	**11**	**1**
Soil Science	23	0	3	6	2	**34**	**2**
Forestry	64	0	11	4	1	**80**	**4**

Table 90: Agricultural graduates in universities by CESM and level of qualification during the 2009 academic year

CESM	Undergraduate	Post-graduate Diploma	Honours	Master's	PhD	Total	%
Renewable Natural Resources	39	0	0	0	0	**39**	**2**
Agricultural Management	149	0	3	16	0	**168**	**8**
Other Agricultural and Renewable Resources	0	23	0	2	0	**25**	**1**
Rural Development	0	0	2	3	1	**6**	**0**
Agricultural Economics (Inst. Agrar. Stream)	0	0	1	1	0	**2**	**0**
Environmental Management	29	0	17	6	1	**53**	**3**
Environmental Management (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Agribusiness (Inst. Agrar. Stream)	0	0	1	0	0	**1**	**0**
Land Reclamation (Land Use) (Land Use Inst .Agrar. Inst. Agrar. Stream)	0	0	0	2	0	**2**	**0**
Agronomy	21	0	5	4	3	**33**	**2**
Agronomy (Inst. Agrar. Stream)	0	0	0	2	0	**2**	**0**
Wildlife	95	0	1	14	0	**110**	**5**
BSc Veterinary Biology	113	0	0	0	0	**113**	**5**
Microbiology	31	0	18	14	6	**69**	**3**
Consumer Science	116	0	2	5	1	**124**	**6**
Biotechnology	44	0	25	7	5	**81**	**4**
Total	**1 411**	**59**	**242**	**275**	**52**	**2 039**	
Percentage (%)	**69**	**3**	**12**	**13**	**3**		**100**

Table 90 above indicates that Animal Science and Agricultural Science (Art and Science Streams) produced the highest number of graduates with 16% and 10% respectively. Other CESM constituted less than 10% of the total AET graduates produced at universities during the 2009 academic year.

4.4.3 Breakdown of AET graduates at universities by CESM in 2009

Graduates by CESM in Undergraduate Degree programmes at universities in 2009

A total number of 1 411 graduates were produced at Undergraduate Degree level during the 2009 academic year.

Table 91 below outlines a demographic breakdown of Undergraduate Degree graduates by CESM during the 2009 academic year.

Table 91: Demographic breakdown of Undergraduate Degree graduates by CESM at universities during the 2009 academic year

CESM (Undergraduate)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	23	13	**36**	0	0	**0**	6	0	**6**	0	0	**0**	**42**
Agricultural Economics (Art Stream)	6	6	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Agricultural Economics (Agribusiness)	4	6	**10**	0	0	**0**	6	4	**10**	0	0	**0**	**20**
Agricultural Science (Art Stream)	24	21	**45**	4	2	**6**	66	25	**91**	0	0	**0**	**142**

Table 91: Demographic breakdown of Undergraduate Degree graduates by CESM at universities during the 2009 academic year

CESM (Undergraduate)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Extension	6	0	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Agricultural Food Science	4	11	**15**	2	1	**3**	6	54	**60**	1	3	**4**	**82**
Animal Science	35	61	**96**	0	2	**2**	54	80	**134**	0	2	**2**	**234**
Plant Science	4	5	**9**	0	0	**0**	9	8	**17**	0	0	**0**	**26**
Soil Science	11	3	**14**	0	0	**0**	7	2	**9**	0	0	**0**	**23**
Forestry	19	14	**33**	3	1	**4**	24	2	**26**	1	0	**1**	**64**
Horticulture	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Renewable Natural Resources	0	1	**1**	0	2	**2**	24	12	**36**	0	0	**0**	**39**
Agricultural Management	84	37	**121**	0	0	**0**	26	2	**28**	0	0	**0**	**149**
Environmental Management	15	11	**26**	0	0	**0**	0	2	**2**	0	1	**1**	**29**
Wildlife	11	3	**14**	0	0	**0**	53	28	**81**	0	0	**0**	**95**
Consumer Science	3	19	**22**	1	0	**1**	1	91	**92**	0	1	**1**	**116**
Plant Science (Inst. Agrar. Stream)	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Agricultural Food Science (Inst. Agrar. Stream)	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
BSc Veterinary Biology	1	0	**1**	1	2	**3**	37	62	**99**	1	9	**10**	**113**
Biotechnology	3	8	**11**	0	1	**1**	12	18	**30**	1	1	**2**	**44**
Microbiology	4	4	**8**	0	0	**0**	7	16	**23**	0	0	**0**	**31**
Total	**284**	**250**	**534**	**11**	**12**	**23**	**386**	**446**	**832**	**4**	**18**	**22**	**1411**

Table 91 above shows that Animal Science, Agricultural Management and Agricultural Science (Art Stream) respectively accounted for 17%, 11% and 10% of Undergraduate Degree graduates. BSc Veterinary Biology, Consumer Science and Agricultural Science (Science Stream) each constituted 8% of the total Undergraduate Degree graduates at universities during the 2009 academic year. Other categories each produced less than 8% of the total Undergraduate Degree graduates during the 2009 academic year.

White and African graduates respectively constituted 58% and 38% of the total graduates at Undergraduate Degree level. Coloured and Asian graduates collectively accounted for 4% of the graduates at Undergraduate Degree level.

Post-graduate Diploma graduates by CESM at universities in 2009

A total number of 59 graduates were produced at Post-graduate Diploma level during the 2009 academic year.

Table 92 below outlines a demographic breakdown of Post-graduate Diploma graduates by CESM during the 2009 academic year.

Table 92: Demographic breakdown of Post-graduate Diploma graduates by CESM at universities during the 2009 academic year

CESM (Post-graduate Diploma)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Other Agricultural and Renewable Resources	13	7	**20**	1	0	**1**	0	2	**2**	0	0	**0**	**23**
Agricultural Food Science	2	7	**9**	0	0	**0**	1	19	**20**	1	2	**3**	**32**
Agricultural Extension	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Total	**18**	**15**	**33**	**1**	**0**	**1**	**1**	**21**	**22**	**1**	**2**	**3**	**59**

Agricultural Food Science and Other Agricultural and Renewable Resources respectively constituted 54% and 39% of the total number of Post-graduate Diploma graduates during the 2009 academic year. Agricultural Extension accounted for the other remaining 7%.

Honours Degree graduates by CESM at universities in 2009

A total number of 242 graduates were produced at Honours Degree level during the 2009 academic year.
Table 93 below outlines a demographic breakdown of Honours Degree graduates by CESM during the 2009 academic year.

Table 93: Demographic breakdown of Honours Degree graduates by CESM at universities during the 2009 academic year

CESM Category (Honours)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	10	2	**12**	0	0	**0**	4	1	**5**	0	0	**0**	**17**
Agricultural Economics (Art Stream)	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Agricultural Economics (BCom Stream)	0	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Agricultural Science (Art Stream)	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Agricultural Science (Science Stream)	0	5	**5**	1	0	**1**	4	4	**8**	0	0	**0**	**14**
Horticulture	0	0	**0**	0	0	**0**	3	2	**5**	0	0	**0**	**5**
Agricultural Food Technology	2	1	**3**	0	0	**0**	3	7	**10**	0	0	**0**	**13**
Animal Science	14	5	**19**	0	0	**0**	12	20	**32**	0	2	**2**	**53**
Plant Science	6	6	**12**	0	1	**1**	3	14	**17**	2	1	**3**	**33**
Soil Science	2	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Rural Development	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Environmental Management	2	6	**8**	0	0	**0**	2	2	**4**	1	4	**5**	**17**
Agricultural Management	0	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Agronomy	1	3	**4**	0	0	**0**	1	0	**1**	0	0	**0**	**5**
Microbiology	1	2	**3**	0	0	**0**	5	10	**15**	0	0	**0**	**18**
Biotechnology	0	3	**3**	0	0	**0**	11	6	**17**	3	2	**5**	**25**
Wildlife	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Consumer Science	0	1	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Forestry	1	0	**1**	0	0	**0**	7	3	**10**	0	0	**0**	**11**
Agribusiness (Inst. Agrar. Stream	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Plant Science (Inst. Agrar. Stream	4	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Agricultural Economics (Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**49**	**43**	**92**	**1**	**1**	**2**	**63**	**70**	**133**	**6**	**9**	**15**	**242**

Table 93 above depicts that Animal Science accounted for 22% of the total graduates at Honours level, followed by Plant Science and Biotechnology with 14% and 10% respectively. Other CESM recorded

the lowest number of graduates with less than 10% of the total number of Honours Degree graduates.

White graduates dominated Honours Degree graduates with 55%, followed by Africans with 38%. Asians constituted 6% of Honours graduates at universities during the 2009 academic year, while Coloureds constituted 1%.

Master's Degree graduates by CESM at universities in 2009

A total number of 275 graduates were produced at Master's level during the 2009 academic year.

Table 94 below outlines a demographic breakdown of Master's Degree graduates by CESM during the 2009 academic year.

Table 94: Demographic breakdown of Master's Degree graduates by CESM at universities during the 2009 academic year

CESM Category (Master's)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	6	0	**6**	0	0	**0**	2	0	**2**	0	0	**0**	**8**
Agricultural Science (Art Stream)	21	7	**28**	1	0	**1**	8	2	**10**	1	0	**1**	**40**
Agricultural Extension	1	2	**3**	0	0	**0**	0	1	**1**	0	0	**0**	**4**
Agricultural Food Technology	5	1	**6**	1	0	**1**	3	8	**11**	0	0	**0**	**18**
Animal Science	4	2	**6**	0	0	**0**	9	14	**23**	0	0	**0**	**29**
Horticulture	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Plant Science	3	7	**10**	1	0	**1**	2	5	**7**	0	0	**0**	**18**
Soil Science	4	0	**4**	0	0	**0**	1	1	**2**	0	0	**0**	**6**
Forestry	3	0	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Rural Development	2	1	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Agricultural Management	8	1	**9**	0	0	**0**	1	6	**7**	0	0	**0**	**16**
Other Agricultural and Renewable Resources	0	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
Environmental Management	2	3	**5**	0	0	**0**	0	1	**1**	0	0	**0**	**6**
Agronomy	2	0	**2**	0	0	**0**	2	0	**2**	0	0	**0**	**4**
Biotechnology	0	0	**0**	0	0	**0**	4	3	**7**	0	0	**0**	**7**
Microbiology	1	2	**3**	0	0	**0**	2	8	**10**	1	0	**1**	**14**
Wildlife	0	0	**0**	0	0	**0**	8	6	**14**	0	0	**0**	**14**
Consumer Science	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Plant Science (Inst. Agrar Stream)	1	1	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Horticulture (Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Land Reclamation (Land Use Inst Agrar. Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Agricultural Economics (Inst. Agrar. Stream)	0	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**	**1**
Agronomy (Inst. Agrar. Stream)	1	0	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Environmental Management (Inst. Agrar. Stream)	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**83**	**40**	**123**	**4**	**2**	**6**	**69**	**74**	**143**	**3**	**0**	**3**	**275**

Table 94 above indicates that Agricultural Science (Science Stream) dominated Master's Degree graduates with 23%, followed by Agricultural Science (Art Stream) with 15% and Animal Science with 11%. All other CESM represented less than 10% of the total Master's Degree graduates each.

Whites constituted the highest number of Master's Degree graduates with 52%, followed by Africans with 45%, while Coloureds represented the least graduates with 2%. Asians constituted 1% of the total number of graduates at Master's Degree during the 2009 academic year.

PhD graduates by CESM at universities in 2009

A total number of 52 graduates were produced at PhD level during the 2009 academic year.

Table 95 below presents a demographic breakdown of PhD Degree graduates by CESM at universities during the 2009 academic year.

Table 95: Demographic breakdown of PhD Degree graduates by CESM at universities during the 2009 academic year

CESM Category (PhD)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Art Stream)	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Agricultural Science (Science Stream)	2	0	**2**	0	0	**0**	1	3	**4**	0	0	**0**	**6**
Agricultural Science (Art Stream)	0	6	**6**	1	0	**1**	2	1	**3**	0	0	**0**	**10**
Agronomy	2	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	**3**
Biotechnology	1	0	**1**	0	0	**0**	2	1	**3**	0	1	**1**	**5**
Consumer Science	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Environmental Management	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Forestry	0	0	**0**	0	0	**0**	1	0	**1**	0		**0**	**1**
Rural Development	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agricultural Food Science	1	1	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**
Microbiology	0	0	**0**	0	0	**0**	2	4	**6**	0	0	**0**	**6**
Plant Science	2	1	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
Wildlife	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
Soil Science	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Total	**15**	**11**	**26**	**1**	**0**	**1**	**12**	**11**	**23**	**1**	**1**	**2**	**52**

The data in Table 95 above illustrates that Agricultural Science (Art Stream) dominated the PhD Degree graduates with 19%, followed by Agricultural Science (Science Stream) and Microbiology with 12% each. Other CESM constituted less than 12% of the total PhD graduates.

African, White and Asian graduates respectively accounted for 50%, 44% and 4% of the total number of PhD Degree graduates during the 2009 academic year. Coloureds accounted for 2% of PhD graduates during the 2009 academic year.

4.4.3.1 Agricultural Economics (Science Stream) graduates at universities in 2009

Sixty seven (67) graduates were produced in this CESM at universities during the 2009 academic year.

Table 96 below presents a demographic breakdown of Agricultural Economics (Science Stream) graduates by level of qualification during the 2009 academic year.

Table 96: Demographic breakdown of Agricultural Economics (Science Stream) graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	23	13	**36**	0	0	**0**	6	0	**6**	0	0	**0**	**42**
Honours	10	2	**12**	0	0	**0**	4	1	**5**	0	0	**0**	**17**
Master's	6	0	**6**	0	0	**0**	2	0	**2**	0	0	**0**	**8**
Total	**39**	**15**	**54**	**0**	**0**	**0**	**12**	**1**	**13**	**0**	**0**	**0**	**67**

Undergraduate Degree comprised 63% of the total number of graduates in this CESM, followed by Honours Degree with 25% and Master's Degree with 12%.

Forty two (42) graduates were produced at universities at Undergraduate Degree level during the 2009 academic year.

Figure 214: Racial breakdown of Undergraduate Degree graduates in Agricultural Economics (Science Stream)

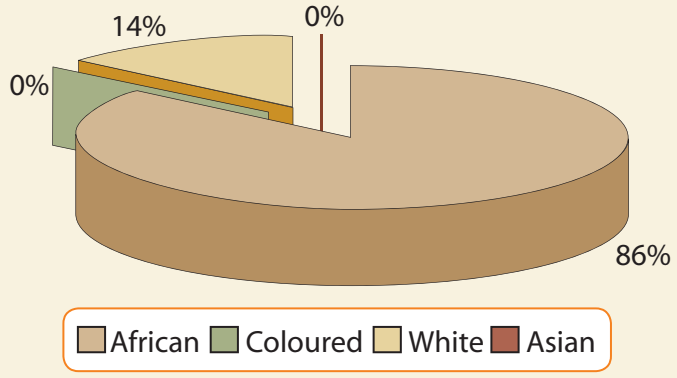
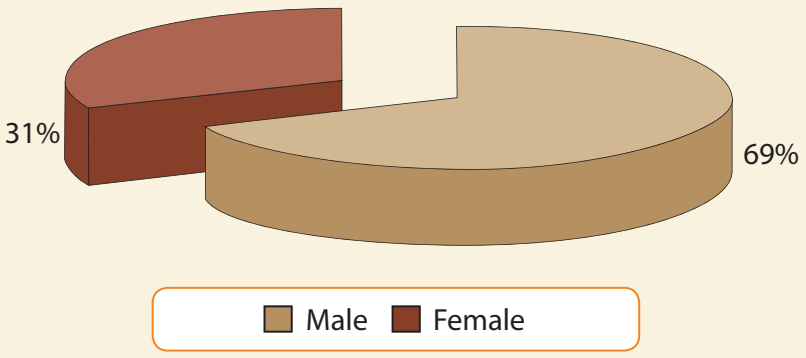


Figure 214 above portrays that Africans formed a majority of Undergraduate Degree graduates in this CESM with 86%, followed by Whites with 14%. Coloureds and Asians were not represented in this CESM at Undergraduate Degree during the 2009 academic year.

Figure 215: Gender breakdown of Undergraduate Degree graduates in Agricultural Economics (Science Stream)



As illustrated in Figure 215 above, males constituted the majority of Undergraduate Degree graduates in this CESM with 69%, while females accounted for 31%.

Seventeen (17) graduates were produced at universities in this CESM at Honours level during the 2009 academic year.

Figure 216: Racial breakdown of Honours Degree graduates in Agricultural Economics (Science Stream)

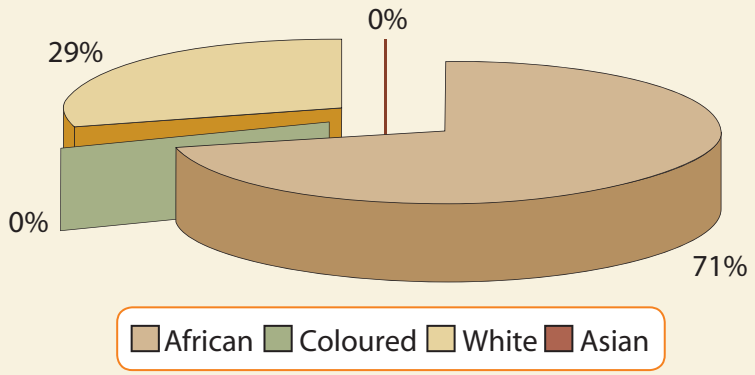
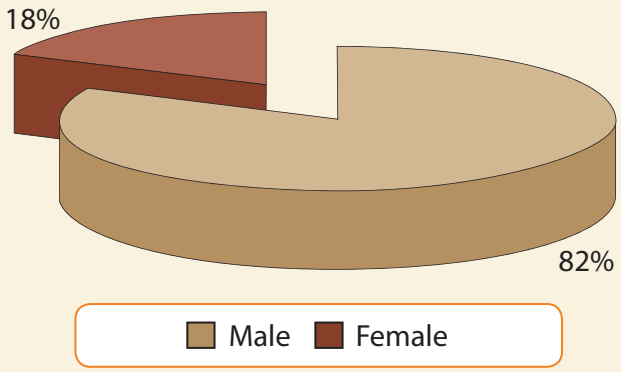


Figure 216 above indicated that Africans dominated the Honours Degree graduates in this CESM during the 2009 academic year with 71%, followed by Whites with 29%. No Asian or Coloured graduates were produced in this CESM at Honours level.

Figure 217: Gender breakdown of Honours Degree graduates in Agricultural Economics (Science Stream)



As illustrated in Figure 217 above, males constituted the majority of Honours Degree graduates in this CESM with 82%, while females accounted for 18%.

Eight (8) male graduates were produced at Master's level in this CESM at universities during the 2009 academic year; 6 were Africans and 2 were Whites.

4.4.3.2 Agricultural Economics (Art Stream) graduates at universities in 2009

Nineteen (19) African graduates were produced in Agricultural Economics (Art Stream) at universities during the 2009 academic year.

Table 97 below presents a demographic breakdown of Agricultural Economics (Art Stream) by level of qualification during the 2009 academic year.

Table 97: Demographic breakdown of Agricultural Economics (Art Stream) graduates at universities during 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	6	6	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Honours	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
PhD	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Total	**8**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**

Undergraduate Degree graduates amounted to 63% of the total number of graduates in this CESM, followed by Master's Degree with 26% and PhD with 11%.

Twelve (12) Africans graduated at Undergraduate Degree level in this CESM during the 2009 academic year; 6 were males and 6 were females.

Five (5) African graduates were produced at Honours level in this CESM; 3 were females and 2 were males.

Two (2) African female graduates were produced at PhD Degree level in this CESM during the 2009 academic year.

4.4.3.3 Agricultural Economics (BCom Stream) graduates at universities in 2009

Three (3) White male graduates were awarded Honours Degree in Agricultural Economics (BCom Stream) at universities during the 2009 academic year.

4.4.3.4 Agricultural Economics (Agribusiness) graduates at universities in 2009

Twenty (20) graduates were awarded Undergraduate Degree in Agricultural Economics (Agribusiness) at universities during the 2009 academic year.

Table 98 below presents a demographic breakdown of Agricultural Economics (Agribusiness) graduates during the 2009 academic year.

Table 98: Demographic breakdown of Agricultural Economics (Agribusiness) graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	6	**10**	0	0	**0**	6	4	**10**	0	0	**0**	**20**
Total	**4**	**6**	**10**	**0**	**0**	**0**	**6**	**4**	**10**	**0**	**0**	**0**	**20**

Figure 218: Racial breakdown of Undergraduate Degree graduates in Agricultural Economics (Agribusiness)

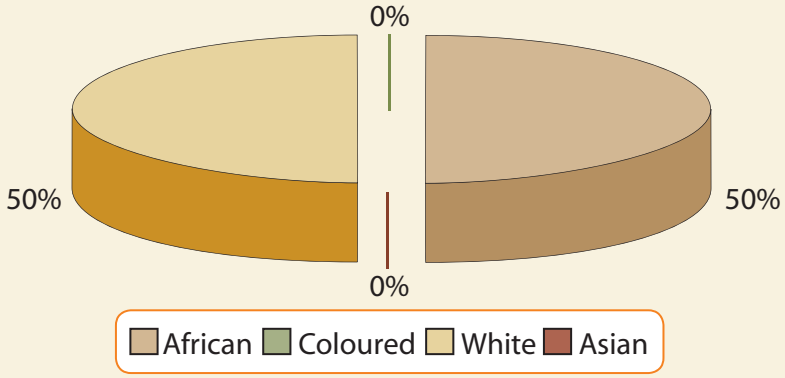
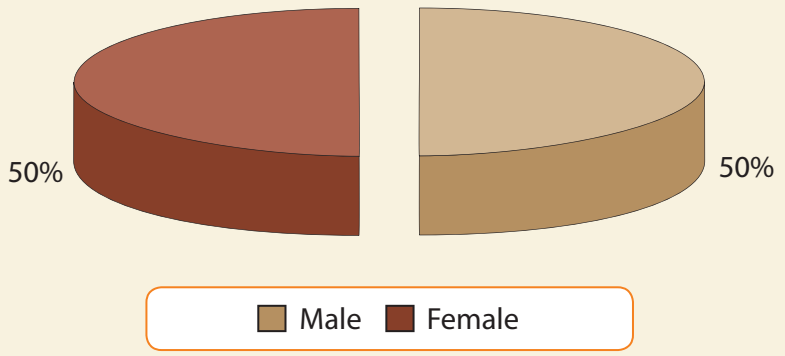


Figure 218 above depicts that Africans and Whites each accounted for 50% of the total number of graduates in this CESM at Undergraduate Degree level. Coloureds and Asians were not represented.

Figure 219: Gender breakdown of Undergraduate Degree graduates in Agricultural Economics (Agribusiness)



Gender classification in Figure 219 above depicts that males and females each accounted for 50% of the total number of graduates in this CESM at Undergraduate Degree level.

4.4.3.5 Agricultural Science (Art Stream) graduates at universities in 2009

One hundred and ninety six (196) graduates were produced in this CESM during the 2009 academic year.

Table 99 below presents a demographic breakdown of Agricultural Science (Art Stream) graduates by level of qualification during the 2009 academic year.

Table 99: Demographic breakdown of Agricultural Science (Art Stream) graduates at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	24	21	**45**	4	2	**6**	66	25	**91**	0	0	**0**	**142**
Honours	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Master's	21	7	**28**	1	0	**1**	8	2	**10**	1	0	**1**	**40**
PhD	0	6	**6**	1	0	**1**	2	1	**3**	0	0	**0**	**10**
Total	**48**	**35**	**83**	**6**	**2**	**8**	**76**	**28**	**104**	**1**	**0**	**1**	**196**

Undergraduate Degree accounted for the most graduates in this CESM with 73%, followed by Master's Degree and PhDs with 20% and 5% respectively. Honours graduates constituted the least number of graduates in this CESM with 2%.

One hundred and forty two (142) graduates were produced at Undergraduate Degree level in this CESM during the 2009 academic year.

Figure 220: Racial breakdown of Undergraduate Degree graduates in Agricultural Science (Art Stream)

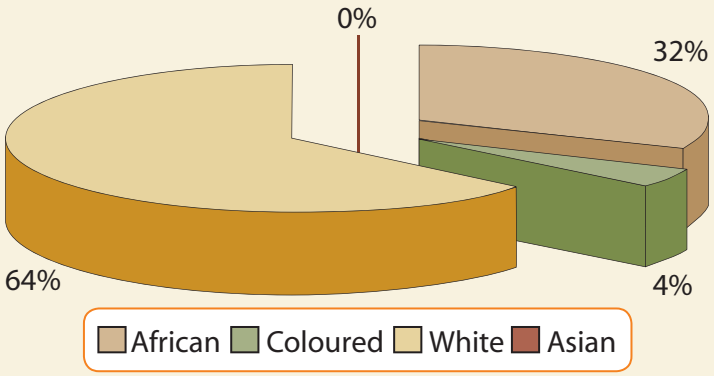
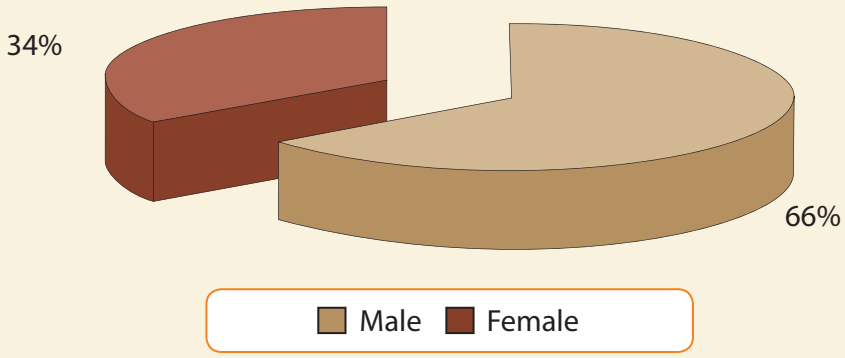


Figure 220 above depicts that Whites were dominant in this CESM at Undergraduate Degree level with 64%, followed by Africans with 32% and Coloureds with 4%. Asians were not enrolled in this CESM.

Figure 221: Gender breakdown of Undergraduate Degree graduates in Agricultural Science (Art Stream)



As shown in Figure 221 above, males were a majority in this CESM at Undergraduate Degree level with 66%, while females accounted for 34%.

Four (4) African graduates were produced at Honours Degree level in this CESM during the 2009 academic year; 3 were males and1 was female.

Forty (40) graduates were produced at Master's level in this CESM during the 2009 academic year.

Figure 222: Racial breakdown of Master's Degree graduates in Agricultural Science (Art Stream)

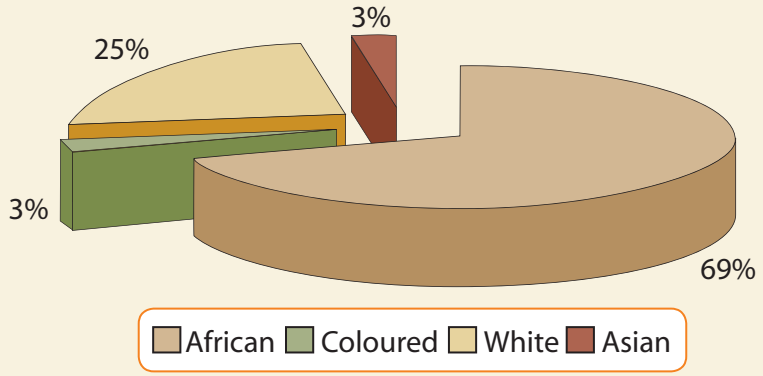
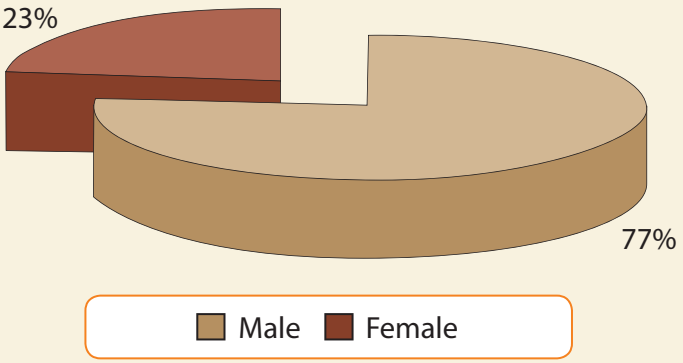


Figure 222 above depicts that Africans were dominant in this CESM at Master's Degree level with 69%, followed by Whites with 25%. Coloureds and Asians accounted for 3% each.

Figure 223: Gender breakdown of Master's Degree graduates in Agricultural Science (Art Stream)



As shown in Figure 223 above, males were a majority in this CESM at Master's Degree level with 77%, while females accounted for 23%.

Ten (10) graduates were produced in this CESM at PhD level during the 2009 academic year; 6 were African females, 2 were White males, 1 was a Coloured male and 1 was a White female.

4.4.3.6 Agricultural Science (Science Stream) graduates at universities in 2009

One hundred and ninety seven (197) graduates were produced in this CESM at universities during the 2009 academic year.

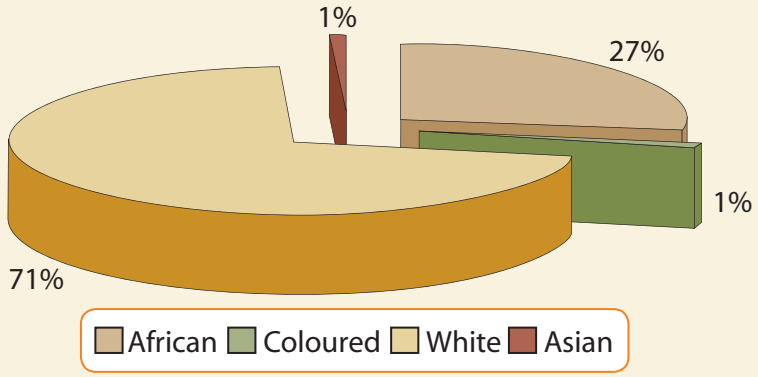
Table 100 below presents a demographic breakdown of Agricultural Science (Science Stream) graduates at universities during the 2009 academic year.

Table 100: Demographic breakdown of Agricultural Science (Science Stream) graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	16	15	**31**	0	1	**1**	42	38	**80**	0	1	**1**	**113**
Honours	0	5	**5**	1	0	**1**	4	4	**8**	0	0	**0**	**14**
Master's	14	8	**22**	1	0	**1**	24	16	**40**	1	0	**1**	**64**
PhD	2	0	**2**	0	0	**0**	1	3	**4**	0	0	**0**	**6**
Total	**32**	**28**	**60**	**2**	**1**	**3**	**71**	**61**	**132**	**1**	**1**	**2**	**197**

Undergraduate Degree produced 58% of the total number of graduates in this CESM, followed by Master's Degree with 32% and Honours Degrees with 7%. PhD graduates constituted the least graduates with 3% of the total number of graduates in this CESM during the 2009 academic year.

Figure 224: Racial breakdown of Undergraduate Degree graduates in Agricultural Science (Science Stream)



As portrayed in Figure 224 above, Whites were a majority in this CESM at Undergraduate Degree level with 71%, followed by Africans with 27% and Coloureds and Asians with 1% each.

Figure 225: Gender breakdown of Undergraduate Degree graduates in Agricultural Science (Science Stream)

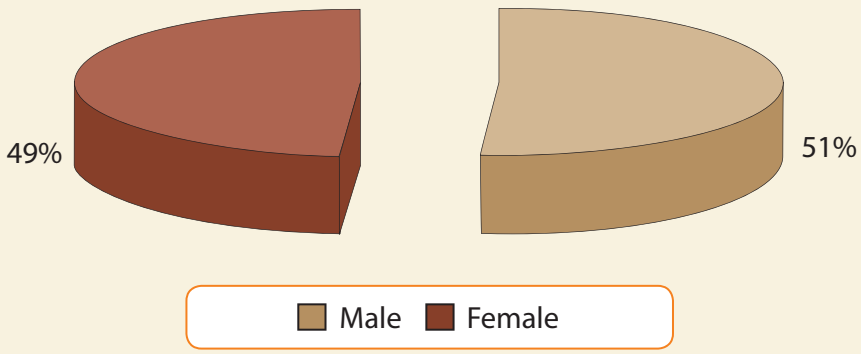


Figure 225 above depicts that males formed a majority in this CESM with 51% of the total number of graduates in Undergraduate Degree, while females accounted for 49%.

Fourteen (14) graduates were produced at Honours level in this CESM during the 2009 academic year; 5 were African females, 4 were White males, 4 were White females and 1 was a Coloured male.
Sixty four (64) graduates were produced at Master's level in this CESM during the 2009 academic year.

Figure 226: Racial breakdown of Master's Degree graduates in Agricultural Science (Science Stream)

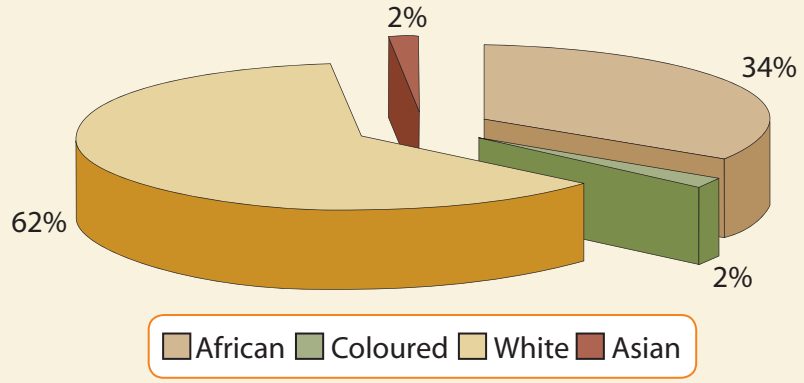
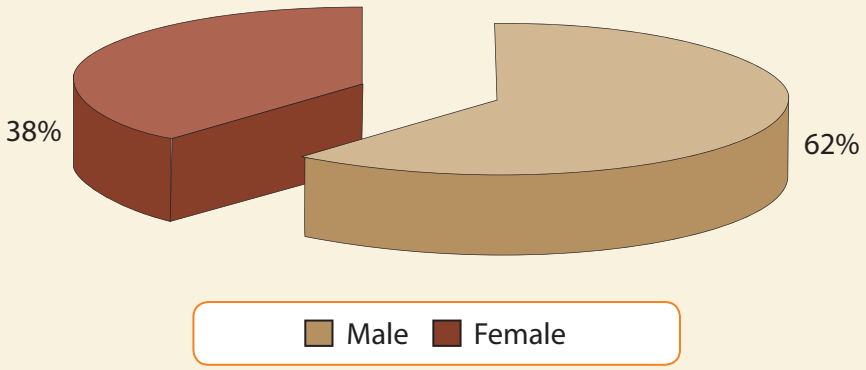


Figure 226 above depicts that Whites were dominant in this CESM at Master's Degree level with 62%, followed by Africans with 34%. Coloureds and Asians each accounted for 2%.

Figure 227: Gender breakdown of Master's Degree graduates in Agricultural Science (Science Stream)



As shown in Figure 227 above, males formed a majority in this CESM at Master's Degree level with 62%, while females accounted for 38%.

4.4.3.7 Agricultural Extension graduates at universities in 2009

Fourteen (14) graduates were produced in this CESM during the 2009 academic year.

Table 101 below presents a demographic breakdown of Agricultural Extension graduates by level of qualification during the 2009 academic year.

Table 101: Demographic breakdown of Agricultural Extension graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate Degree	6	0	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Post-graduate Diploma	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Master's	1	2	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Total	**10**	**3**	**13**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**14**

Undergraduate Degree represented 43% of the Agricultural Extension graduates produced at universities during the 2009 academic year, followed by Master's Degree and Post-graduate Diploma with 29% each.

Six (6) African male graduates were awarded Undergraduate Degree in this CESM during the 2009 academic year.

At Post-graduate Diploma level, 4 African graduates were produced in this CESM; 3 were males and 1 was female.

Four (4) graduates were awarded Master's Degree during the 2009 academic year; 2 were African females, 1 was African male and 1 was White male.

4.4.3.8 Agricultural Food Technology graduates at universities in 2009

One hundred and forty nine (149) graduates were produced in this CESM during the 2009 academic year.

Table 102 below presents a demographic breakdown of Agricultural Food Technology graduates by level of qualification during the 2009 academic year.

Table 102: Demographic breakdown of Agricultural Food Technology graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	11	**15**	2	1	**3**	6	54	**60**	1	3	**4**	**82**
Post-graduate Diploma	2	7	**9**	0	0	**0**	1	19	**20**	1	2	**3**	**32**
Honours	2	1	**3**	0	0	**0**	3	7	**10**	0	0	**0**	**13**
Master's	5	1	**6**	1	0	**1**	3	8	**11**	0	0	**0**	**18**
PhD	1	1	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**
Total	**14**	**21**	**35**	**3**	**1**	**4**	**14**	**89**	**103**	**2**	**5**	**7**	**149**

As illustrated in Table 102 above, 55% of the graduates in this CESM were produced at Undergraduate Degree level, followed by Post-graduate Diploma with 21%, Master's Degree with 12%, while Honours Degree and PhD accounted for 9% and 3% respectively.

Eighty two (82) graduates were produced at Undergraduate Degree level in Agricultural Food Technology during the 2009 academic year.

Figure 228: Racial breakdown of Undergraduate Degree graduates in Agricultural Food Technology

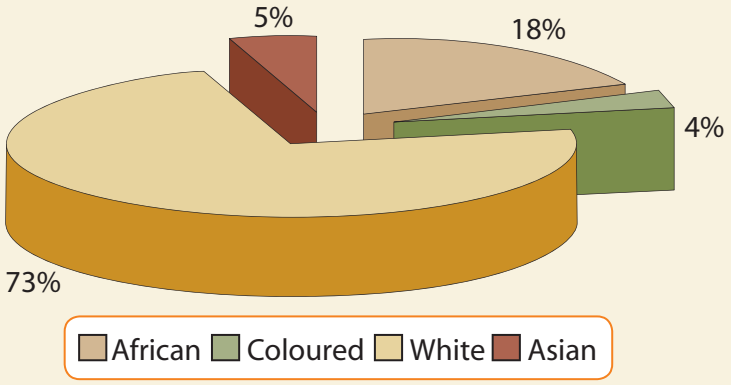
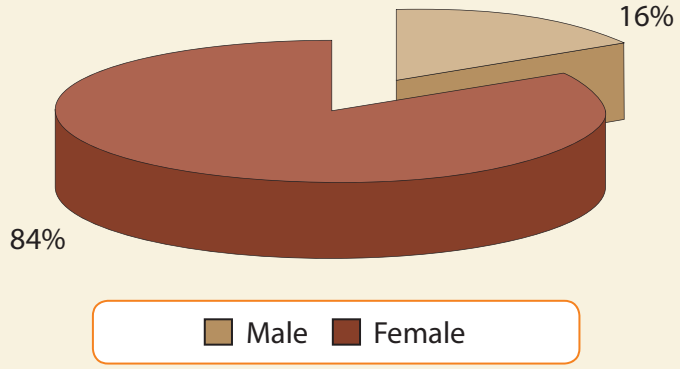


Figure 228 above shows that Whites dominated the Undergraduate Degree in this CESM with 73%, followed by Africans with 18%. Coloureds and Asians accounted for 5% and 4% respectively.

Figure 229: Gender breakdown of Undergraduate Degree graduates in Agricultural Food Technology



Gender breakdown in Figure 229 above depicts that females dominated this CESM at Undergraduate Degree level with 84%, while males amounted to 16%.

Thirty two (32) graduates were produced at Post-graduate Diploma level in this CESM during the 2009 academic year.

Figure 230: Racial breakdown of Post-graduate Diploma graduates in Agricultural Food Technology

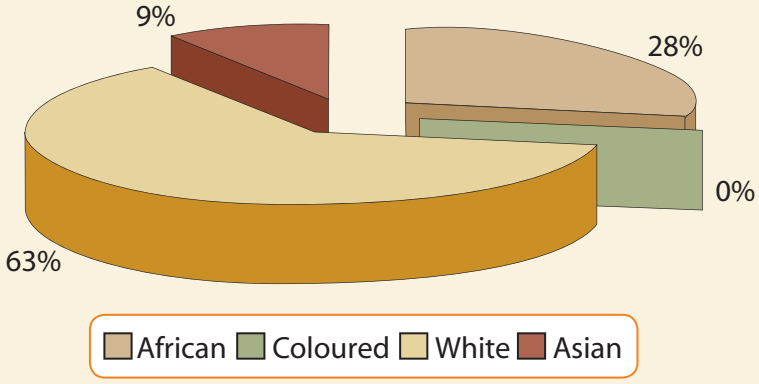
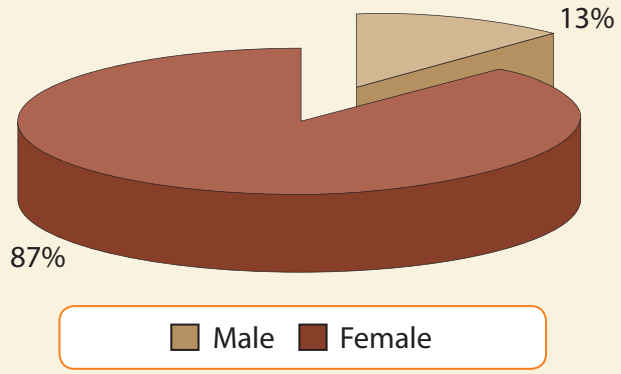


Figure 230 above depicts that Whites were dominant in this CESM at Undergraduate Degree with 63%, followed by Africans with 28% and Asians with 4%. Coloureds were not enrolled in this CESM.

Figure 231: Gender breakdown of Post-graduate Diploma graduates in Agricultural Food Technology



Gender breakdown in Figure 231 above, depicts that females dominated this CESM at Post-graduate Diploma level with 87%, while males amounted to 13%.

Thirteen (13) graduates were produced at Honours level in this CESM during the 2009 academic year; 3 were awarded to Africans and 10 were awarded to Whites.

Out of 18 graduates awarded Master's Degree in this CESM; 8 were White females, 5 were African males, 3 were White males, 1 was an African female and 1 was a Coloured male.

Four (4) graduates were awarded PhD Degree; 2 were Africans and 2 were Whites.

4.4.3.9 Animal Science graduates at universities in 2009

Three hundred and twenty one (321) graduates were produced in this CESM during the 2009 academic year.

Table 103 below presents a demographic breakdown of Animal Science graduates during the 2009 academic year academic year by level of qualification.

Table 103: Demographic breakdown of Animal Science graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	35	61	**96**	0	2	**2**	54	80	**134**	0	2	**2**	**234**
Honours	14	5	**19**	0	0	**0**	12	20	**32**	0	2	**2**	**53**
Master's	4	2	**6**	0	0	**0**	9	14	**23**	0	0	**0**	**29**
PhD	3	0	**3**	0	0	**0**	2	0	**2**	0	0	**0**	**5**
Total	**56**	**68**	**124**	**0**	**2**	**2**	**77**	**114**	**191**	**0**	**4**	**4**	**321**

Undergraduate Degree graduates accounted for 72% of the total number of graduates produced in this CESM, followed by Honours Degree with 17%. Master's Degree constituted 9% of the Animal Science graduates, while PhD comprised 2%.

Figure 232: Racial breakdown of Undergraduate Degree graduates in Animal Science

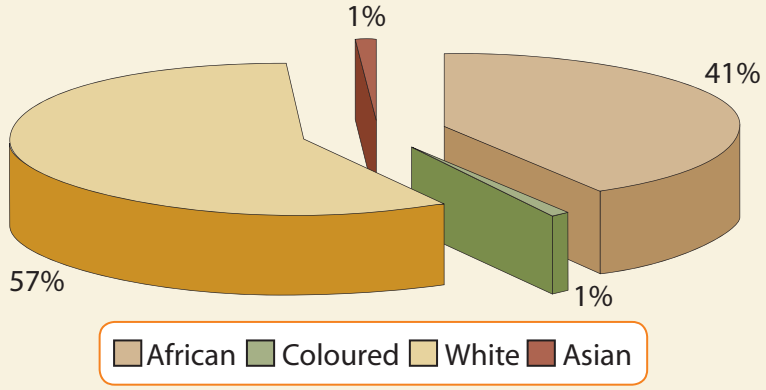


Figure 232 above illustrates that Whites dominated in this CESM at Undergraduate Degree level with 57%, followed by Africans with 41%. Coloureds and Asians accounted for 1% each.

Figure 233: Gender breakdown of Undergraduate Degree graduates in Animal Science

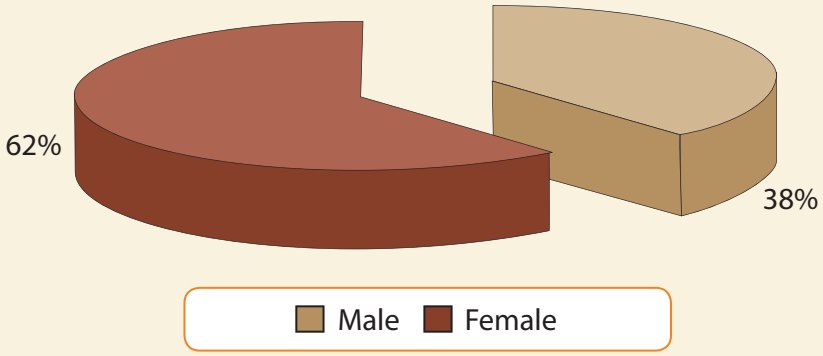
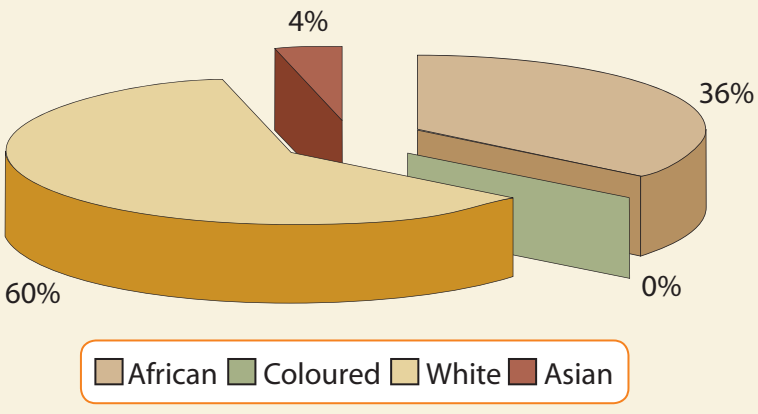


Figure 233 above portrays that female graduates dominated the Undergraduate Degree graduates in Animal Science with 62% and males accounted for 38%.

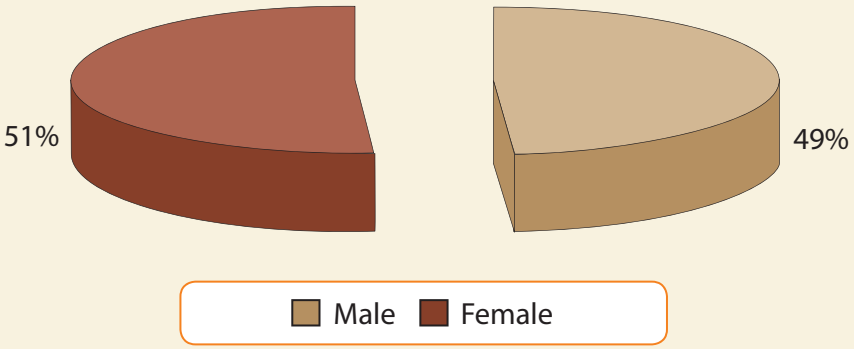
Figure 234: Racial breakdown of Honours Degree graduates in Animal Science



As portrayed in Figure 234 above, Whites formed a majority in this CESM at Honours level with 60%,

followed by Africans with 36% and Asians with 4%. Coloureds were not represented in this CESM at Honours level during the 2009 academic year.

Figure 235: Gender breakdown of Honours Degree graduates in Animal Science



Gender breakdown in Figure 235 above depicts that females accounted for 51% of Honours Degree graduates in this CESM and males amounted for 49%.

Figure 236: Racial breakdown of Master's Degree graduates in Animal Science

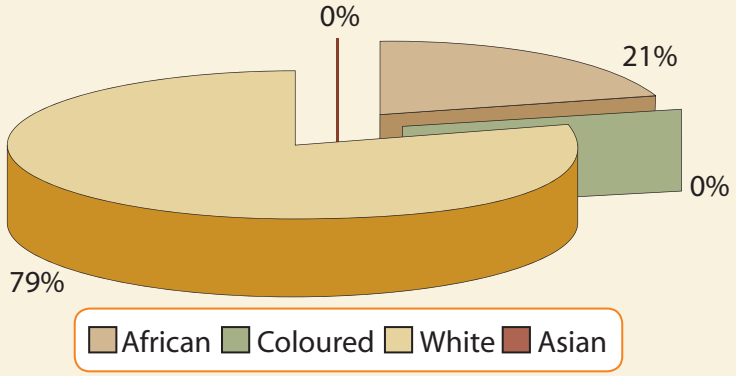
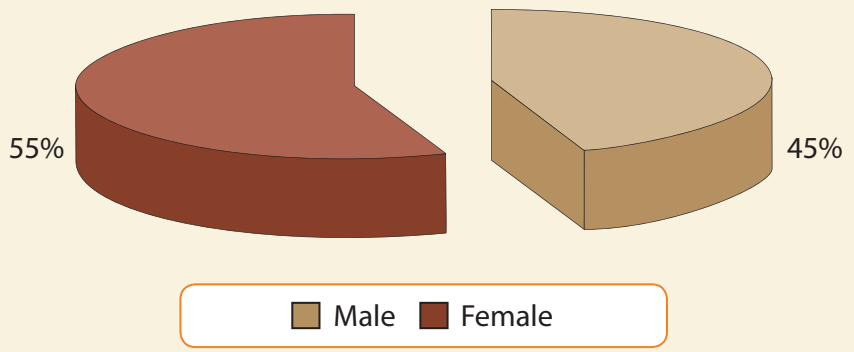


Figure 236 above illustrates that Whites dominated the graduates in this CESM at Master's Degree level with 79%, followed by Africans with 21%. Coloureds and Asians were not represented.

Figure 237: Gender breakdown of Master's Degree graduates in Animal Science



Gender breakdown in Figure 237 above depicts that females dominated graduates in this CESM at Master's Degree with 55%, while males amounted for 45%.

Five (5) male graduates were awarded PhD Degree in this CESM during the 2009 academic year; 3 were Africans and 2 were Whites.

4.4.3.10 Plant Science graduates at universities in 2009

Eighty two (82) graduates were produced in this CESM during the 2009 academic year.

Table 104 below presents a demographic breakdown of Plant Science graduates by level of qualification during the 2009 academic year.

Table 104: Demographic breakdown of Plant Science graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	5	**9**	0	0	**0**	9	8	**17**	0	0	**0**	**26**
Honours	6	6	**12**	0	1	**1**	3	14	**17**	2	1	**3**	**33**
Master's	3	7	**10**	1	0	**1**	2	5	**7**	0	0	**0**	**18**
PhD	2	1	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
Total	**15**	**19**	**34**	**1**	**1**	**2**	**15**	**28**	**43**	**2**	**1**	**3**	**82**

Honours Degree, Undergraduate Degree and Master's Degree respectively constituted 40%, 32% and 22% of the total number of graduates in this CESM, while PhD comprised 6%.

Twenty six (26) graduates were produced in this CESM at Undergraduate Degree level during the 2009 academic year.

Figure 238: Racial breakdown of Undergraduate Degree graduates in Plant Science

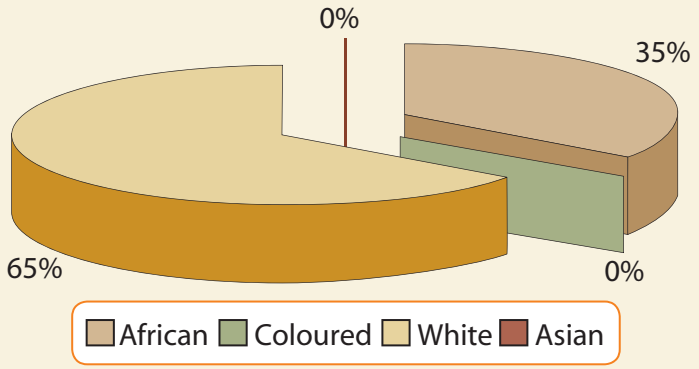
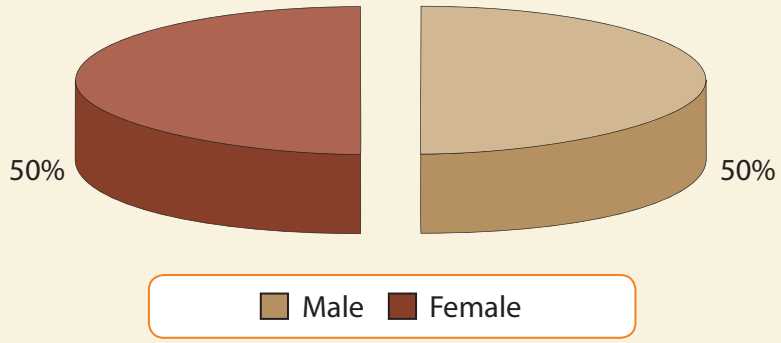


Figure 238 above illustrates that Whites dominated the Plant Science graduates at Undergraduate Degree level with 65%, followed by Africans with 35%. Coloureds and Asians were not represented.

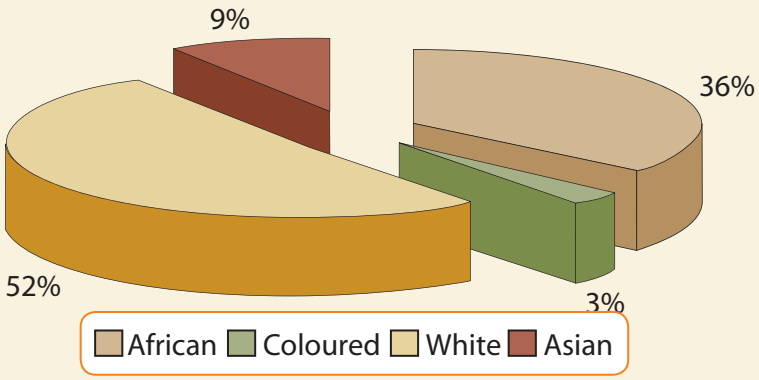
Figure 239: Gender breakdown of Undergraduate Degree graduates in Plant Science



Gender classification in Figure 239 above depicts that males and females each accounted for 50% of the total number of graduates in this CESM at Undergraduate Degree level.

Thirty three (33) graduates were produced in this CESM at Honours Degree level during the 2009 academic year.

Figure 240: Racial breakdown of Honours Degree graduates in Plant Science



As illustrated in Figure 240 above, Whites formed a majority of Honours Degree graduates in this CESM with 52%, followed by Africans with 36%. Asians and Coloureds respectively constituted 9% and 3% of the total number of graduates in this CESM.

Figure 241: Gender breakdown of Honours Degree graduates in Plant Science

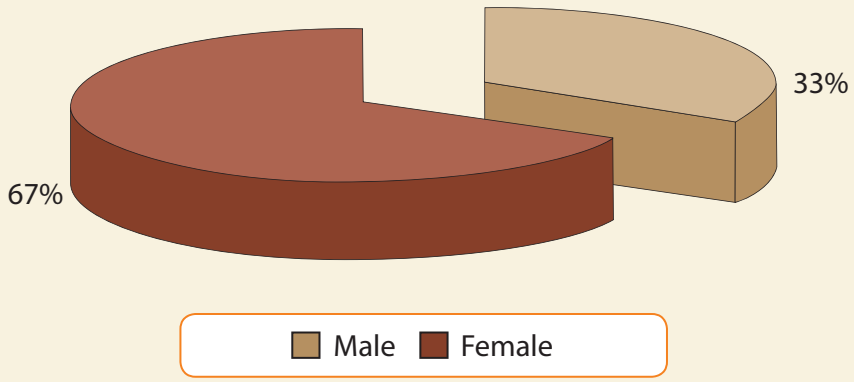


Figure 241 above portrays a female domination of graduates between the genders in this CESM at Honours Degree during the 2009 academic year; female graduates accounted for 67% and males accounted for 33%.

Eighteen (18) graduates were produced in this CESM at Master's Degree; 7 were African females, 5 were White females, 3 were African males and 2 were White males.

Five (5) graduates were produced in this CESM at PhD level; 2 were African males, 1 was an African female, 1 was a White male and 1 was a White female.

4.4.3.11 Soil Science graduates at universities in 2009

Thirty four (34) graduates were produced in this CESM at universities during the 2009 academic year.

Table 105 below presents a demographic breakdown of Soil Science graduates by level of qualification during the 2009 academic year.

Table 105: Demographic breakdown of Soil Science graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	3	**14**	0	0	**0**	7	2	**9**	0	0	**0**	**23**
Honours	2	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Master's	4	0	**4**	0	0	**0**	1	1	**2**	0	0	**0**	**6**
PhD	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Total	**19**	**3**	**22**	**0**	**0**	**0**	**9**	**3**	**12**	**0**	**0**	**0**	**34**

Undergraduate Degree graduates amounted to 68% of the total number of graduates in this CESM, followed by Master's Degree with 18%, Honours Degree with 9% and PhD with 6%.

Figure 242: Racial breakdown of Undergraduate Degree graduates in Soil Science

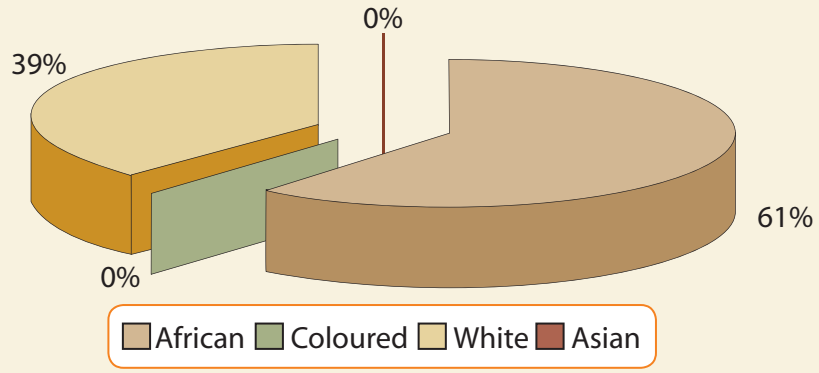
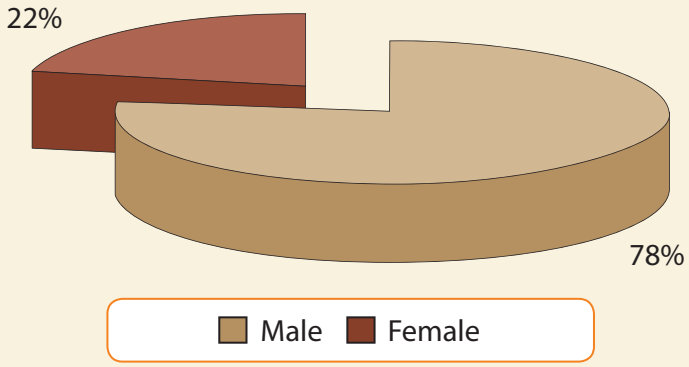


Figure 242 above illustrates that Africans dominated the Soil Science Undergraduate Degree graduates with 61%, followed by Africans with 39%. Coloureds and Asians were not represented.

Figure 243: Gender breakdown of Undergraduate Degree graduates in Soil Science



The gender breakdown in Figure 243 above depicts that males dominated this CESM at Undergraduate Degree with 78%, while females amounted to 22%.

Three (3) male graduates were awarded Honours Degree in this CESM during the 2009 academic year; 2 were Africans and 1 was White.

Six (6) graduates were awarded Master's Degree during the 2009 academic year; 4 were African males, 1 was a White male and 1 was a White female.

Two (2) African male graduates were awarded PhD Degree in this CESM during the 2009 academic year.

4.4.3.12 Forestry graduates at universities in 2009

Eighty (80) graduates were produced at universities in this CESM during the 2009 academic year.

Table 106 below presents a demographic breakdown of Forestry graduates by level of qualification during the 2009 academic year.

Table 106: Demographic breakdown of Forestry graduates at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	19	14	**33**	3	1	**4**	24	2	**26**	1	0	**1**	**64**
Honours	1	0	**1**	0	0	**0**	7	3	**10**	0	0	**0**	**11**
Master's	3	0	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
PhD	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Total	**23**	**14**	**37**	**3**	**1**	**4**	**33**	**5**	**38**	**1**	**0**	**1**	**80**

Undergraduate Degree constituted 80% of the total number of graduates in this CESM, followed by Honours with 14%, Master's Degree with 5% and PhD with 1%.

Figure 244: Racial breakdown of Undergraduate Degree graduates in Forestry

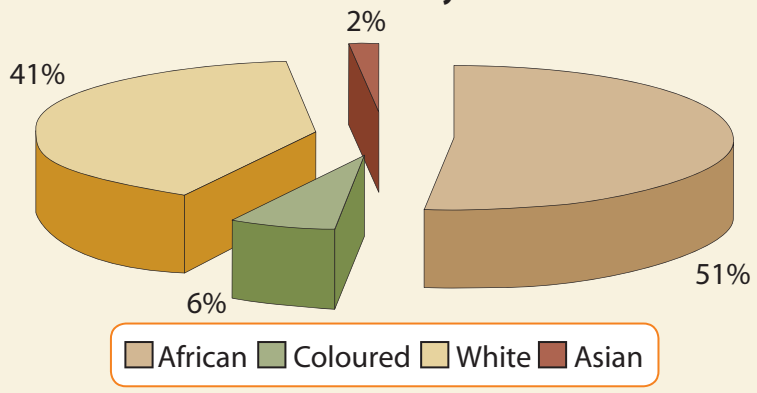
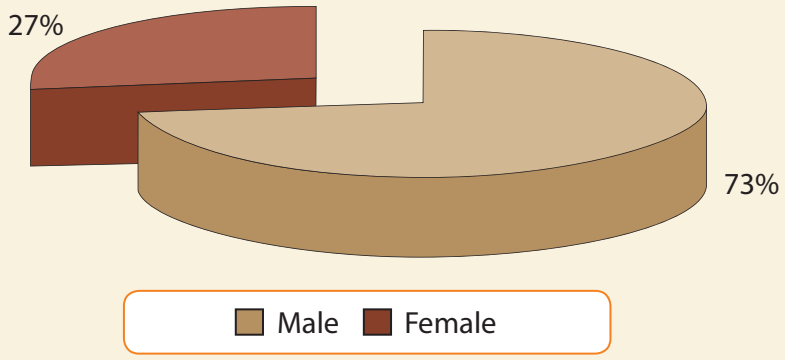


Figure 244 above illustrates that Africans dominated in this CESM at Undergraduate Degree level with 51%, followed by Whites with 41%, Coloureds with 6% and Asians with 2%.

Figure 245: Gender breakdown of Undergraduate Degree graduates in Forestry



Gender breakdown in Figure 245 above depicts that males dominated this CESM at Undergraduate Degree level with 73%, while females amounted to 27%.

4.4.3.13. Horticulture graduates at universities in 2009

Eleven (11) graduates were produced in this CESM during the 2009 academic year.

Table 107 below presents a demographic breakdown of Horticulture graduates at universities during the 2009 academic year.

Table 107: Demographic breakdown of Horticulture graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Honours	0	0	**0**	0	0	**0**	3	2	**5**	0	0	**0**	**5**
Master's	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Total	**2**	**2**	**4**	**0**	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**11**

Honours Degree graduates accounted for 46% of the total number of graduates in this CESM, followed by Undergraduate and Master's Degree with 27% each.

At Undergraduate Degree level, 3 graduates were produced;1 was an African male, 1 was an African female and 1 was a White female.

Five (5) White graduates were awarded Honours Degree during 2009; 3 were male and 2 were females.

Two (2) African graduates and 1 White graduate were awarded Master's Degree in this CESM during the 2009 academic year.

4.4.3.14. Renewable Natural Resources graduates at universities in 2009

Thirty nine (39) graduates were produced in this CESM at universities during the 2009 academic year.

Table 108 below presents a demographic breakdown of Renewable Natural Resources graduates at universities during the 2009 academic year.

Table 108: Demographic breakdown of Renewable Natural Resources graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	1	**1**	0	2	**2**	24	12	**36**	0	0	**0**	**39**
Total	**0**	**1**	**1**	**0**	**2**	**2**	**24**	**12**	**36**	**0**	**0**	**0**	**39**

Figure 246: Racial breakdown of Undergraduate Degree graduates in Renewable Natural Resources

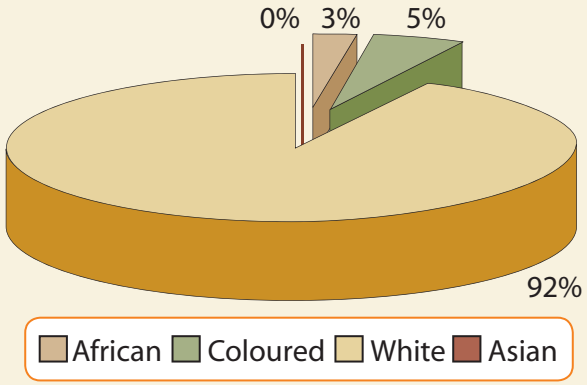


Figure 246 above illustrates that Whites were dominant in this CESM at Undergraduate Degree level with 92%, followed by Coloureds with 5% and Africans with 3%. Asians were not represented.

Figure 247: Gender breakdown of Undergraduate Degree graduates in Renewable Natural Resources

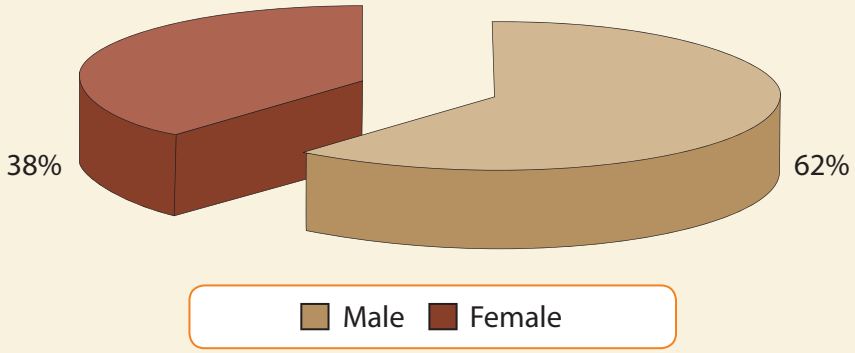


Figure 247 above portrays male domination of graduates in this CESM at Undergraduate Degree with 62%, while females accounted for 38%.

4.4.3.15. Other Agricultural and Renewable Resources graduates at universities in 2009

Twenty five (25) graduates were produced in this CESM at Post-graduate Diploma and Master's Degree levels during the 2009 academic year.

Table 109 below presents a demographic breakdown of Other Agricultural and Renewable Natural Resources graduates at universities during the 2009 academic year.

Table 109: Demographic breakdown of Other Agricultural and Renewable Natural Resources graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Post-graduate Diploma	13	7	**20**	1	0	**1**	1	1	**2**	0	0	**0**	**23**
Master's	0	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
Total	**13**	**7**	**20**	**1**	**1**	**2**	**1**	**2**	**3**	**0**	**0**	**0**	**25**

Twenty three (23) graduates were produced at Post-graduate Diploma level in this CESM.

Figure 248: Racial breakdown of Post-graduate Diploma graduates in Other Agricultural and Renewable Resources

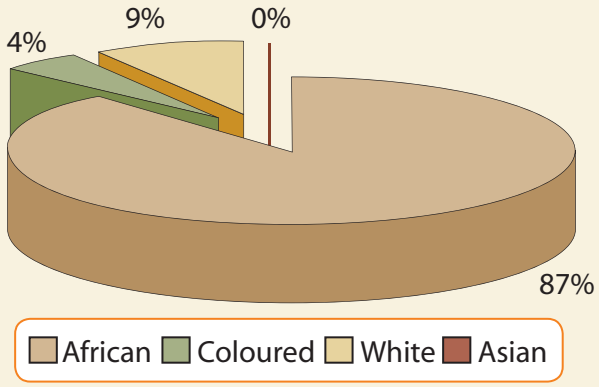


Figure 248 above depicts that Africans were dominant in this CESM at Post-graduate Diploma level with 87%, followed by Whites with 9% and Coloureds with 4%. Asians were not represented.

Figure 249: Gender breakdown of Post-graduate Diploma graduates in Other Agricultural and Renewable Resources

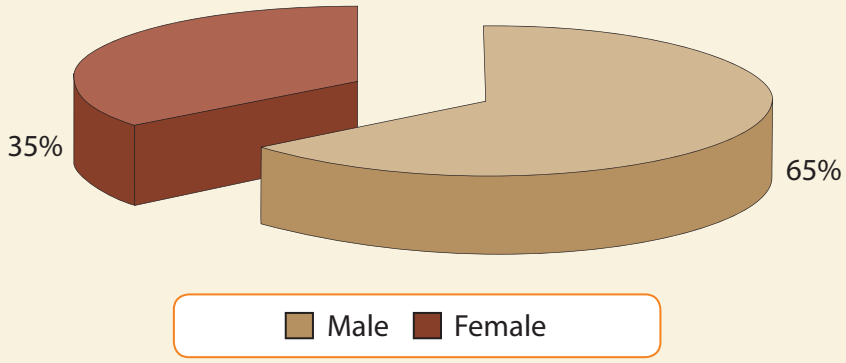


Figure 249 above portrays a male domination of graduates in this CESM at Post-graduate Diploma with 65%, while females accounted for 35%.

At Master's Degree level, 2 female graduates were produced; 1 was Coloured and 1 was white.

4.4.3.16 Agricultural Management graduates at universities in 2009

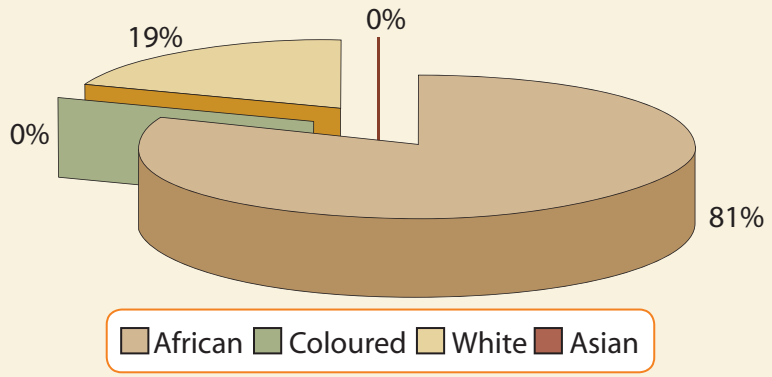
One hundred and sixty eight (168) graduates were produced during the 2009 academic year in this CESM.

Table 110 below presents a demographic breakdown of Agricultural Management graduates at universities during the 2009 academic year.

Table 110: Demographic breakdown of Agricultural Management graduates at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	84	37	**121**	0	0	**0**	26	2	**28**	0	0	**0**	**149**
Honours	0	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Master's	8	1	**9**	0	0	**0**	1	6	**7**	0	0	**0**	**16**
Total	**92**	**38**	**130**	**0**	**0**	**0**	**30**	**8**	**38**	**0**	**0**	**0**	**168**

Undergraduate Degree represented 88% of the total number of graduates in this CESM followed by Master's Degree with 10%. The least graduates were at Honours level with 2% of the total number of graduates in this CESM.

Figure 250: Racial breakdown of Undergraduate Degree graduates in Agricultural Management



As illustrated in Figure 250 above, Africans were majority of the Agricultural Management Undergraduate Degree graduates with 81%, followed by Whites with 19%. Coloureds and Asians were not enrolled in this CESM.

Figure 251: Gender breakdown of Undergraduate Degree graduates in Agricultural Management

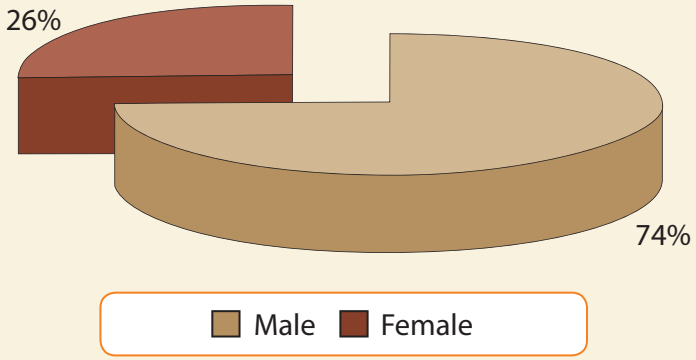


Figure 251 above depicts that males dominated the Undergraduate Degree in this CESM with 74%, while females amounted for 26%.

Three (3) White males were awarded Honours Degree in this CESM during the 2009 academic year.

Sixteen (16) graduates were awarded Master's Degree in this CESM during the 2009 academic year; 8 were African males, 6 were White females, 1 was an African female and 1 was a White male.

4.4.3.17 Environmental Management graduates at universities in 2009

Fifty three (53) graduates were produced in Environmental Management during the 2009 academic year.

Table 111 below presents a demographic breakdown of Environmental Management graduates at universities during the 2009 academic year.

Table 111: Demographic breakdown of Environmental Management graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	15	11	**26**	0	0	**0**	0	2	**2**	0	1	**1**	**29**
Honours	2	6	**8**	0	0	**0**	2	2	**4**	1	4	**5**	**17**
Master's	2	3	**5**	0	0	**0**	0	1	**1**	0	0	**0**	**6**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**20**	**20**	**40**	**0**	**0**	**0**	**2**	**5**	**7**	**1**	**5**	**6**	**53**

Undergraduate Degree graduates constituted 55% of the total number of graduates in this CESM, followed by Honours Degree graduates with 32%, Master's Degree graduates with 11% and PhD graduates with 2%.

Twenty nine (29) graduates were awarded Undergraduate Degree in this CESM during the 2009 academic year.

Figure 252: Racial breakdown of Undergraduate Degree graduates in Environmental Management

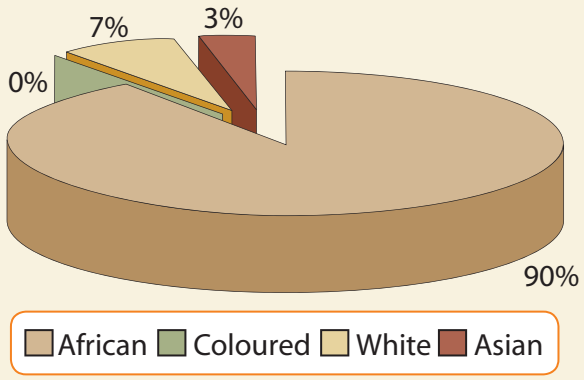


Figure 252 above depicts that Africans were dominant in this CESM at Undergraduate Degree with 90%, followed by Whites with 7% and Asians with 4%. Coloureds were not represented.

Figure 253: Gender breakdown of Undergraduate Degree graduates in Environmental Management

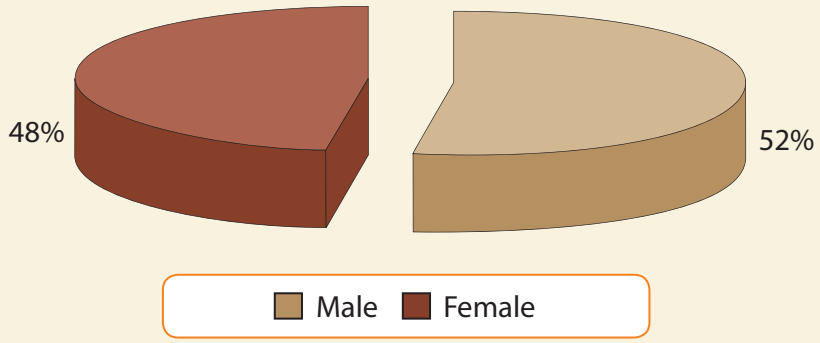


Figure 253 above depicts that males dominated the Undergraduate Degree in this CESM with 52%, while females accounted for 48%.

Seventeen (17) Honours Degree were awarded to 6 African females, 4 Asian females, 2 African males, 2 White males, 2 White females and 1 Asian male.

Six (6) Master's Degree were awarded to 3 African females, 2 African males and 1 White female.

One (1) African male graduate was awarded a PhD Degree in this CESM during the 2009 academic year.

4.4.3.18 Agronomy graduates at universities in 2009

Thirty three (33) graduates were produced in Agronomy at universities during the 2009 academic year.

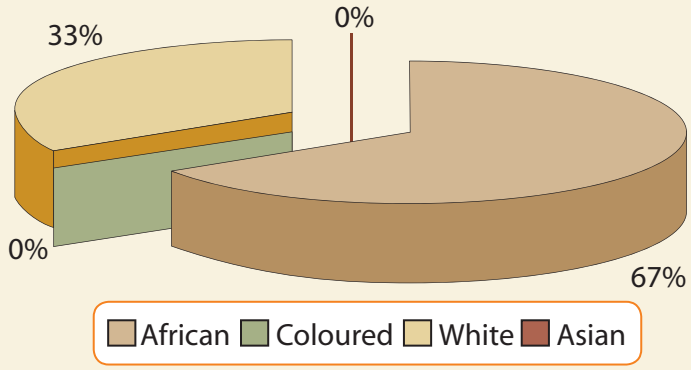
Table 112 below presents a demographic breakdown of Agronomy graduates at universities during the 2009 academic year.

Table 112: Demographic breakdown of Agronomy graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	7	7	**14**	0	0	**0**	6	1	**7**	0	0	**0**	**21**
Honours	1	3	**4**	0	0	**0**	1	0	**1**	0	0	**0**	**5**
Master's	2	0	**2**	0	0	**0**	2	0	**2**	0	0	**0**	**4**
PhD	2	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	**3**
Total	**12**	**10**	**22**	**0**	**0**	**0**	**9**	**1**	**10**	**1**	**0**	**1**	**33**

Undergraduate Degree graduates constituted 64% of the total number of graduates in this CESM, followed by Honours Degree graduates with 15%, Master's Degree graduates with 12% and PhD graduates with 9%.

Figure 254: Racial breakdown of Undergraduate Degree graduates in Agronomy



As illustrated in Figure 254 above, Africans were a majority among Undergraduate Degree graduates with 67%, followed by Whites with 33%. Coloureds and Asians were not enrolled in this CESM.

Figure 255: Gender breakdown of Undergraduate Degree graduates in Agronomy

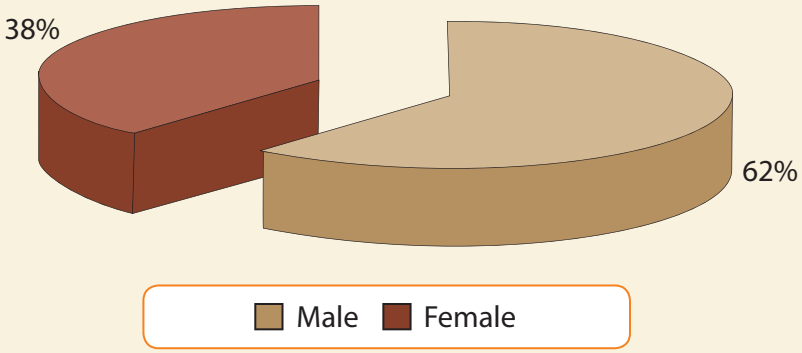


Figure 255 above depicts that males dominated the Undergraduate Degree graduates in this CESM with 62%, while females amounted for 38%.

Five (5) Honours Degree were awarded to 3 African females, 1 African male and 1 White male.

At Master's level, there were 4 male graduates produced in this CESM during the 2009 academic year; 2 were Africans and 2 were Whites.

Three (3) male graduates were awarded PhD Degree during the 2009 academic year; 2 were Africans and 1 was Asian.

4.4.3.19 Wildlife graduates at universities in 2009

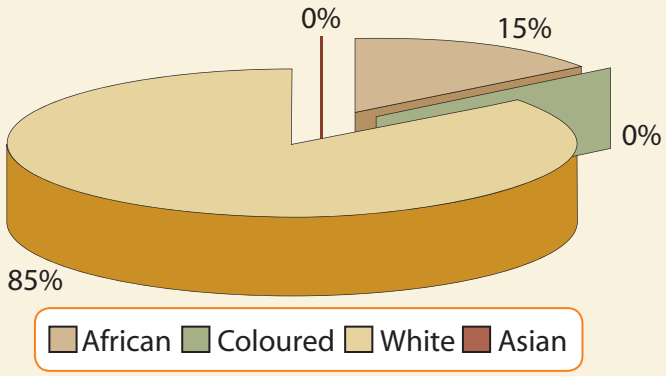
One hundred and ten (110) graduates were produced in this CESM at universities during the 2009 academic year.

Table 113 below presents a demographic breakdown of Wildlife graduates at universities during the 2009 academic year.

Table 113: Demographic breakdown of Wildlife Management graduates at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	11	3	**14**	0	0	**0**	53	28	**81**	0	0	**0**	**95**
Honours	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Master's	0	0	**0**	0	0	**0**	8	6	**14**	0	0	**0**	**14**
Total	**11**	**3**	**14**	**0**	**0**	**0**	**62**	**34**	**96**	**0**	**0**	**0**	**110**

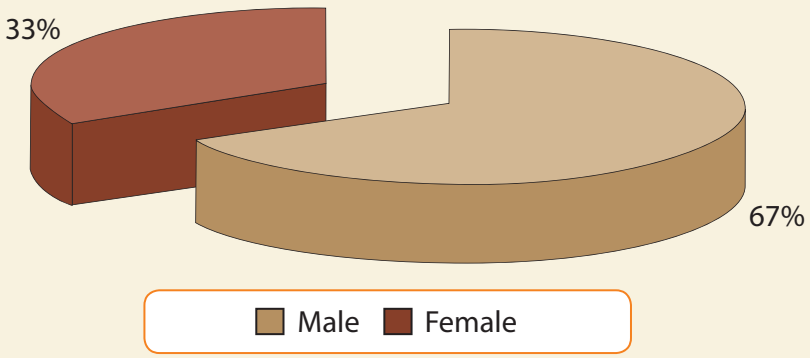
Undergraduate Degree graduates accounted for 86% of the total number of graduates in Wildlife Management, followed by Master's Degree with 13% and Honours with 1%.

Figure 256: Racial breakdown of Undergraduate Degree graduates in Wildlife Management



As illustrated in Figure 256 above, Whites were the majority of the Wildlife Management Undergraduate Degree graduates with 85%, followed by Africans with 15%. Coloureds and Asians were not enrolled in this CESM.

Figure 257: Gender breakdown of Undergraduate Degree graduates in Wildlife Management



Gender breakdown in Figure 257 above depicts that males dominated this CESM at Undergraduate Degree level with 67%, while females amounted for 33%.

One (1) White male graduate was awarded an Honours Degree in this CESM during the 2009 academic year.

At Master's Degree level, there were 14 White graduates produced; 8 were males and 6 were females.

4.4.3.20 Consumer Science graduates at universities in 2009

One hundred and twenty four (124) graduates were produced in this CESM during the 2009 academic year.

Table 114 below presents a demographic breakdown of Consumer Science graduates by level of CESM during the 2009 academic year.

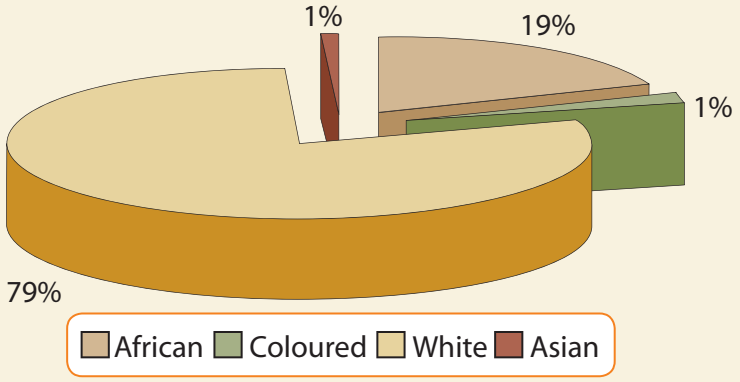
Table 114: Demographic breakdown of Consumer Science graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	19	**22**	1	0	**1**	1	91	**92**	0	1	**1**	**116**
Honours	0	1	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Master's	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
PhD	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**5**	**24**	**29**	**1**	**0**	**1**	**1**	**92**	**93**	**0**	**1**	**1**	**124**

Undergraduate Degree constituted 93% of the total number of graduates in this CESM, followed by Master's Degree with 4%. Honours and PhD Degree respectively accounted for 2% and 1% of the overall graduates in this CESM.

One hundred and sixteen (116) graduates received Consumer Science Undergraduate Degree during the 2009 academic year.

Figure 258: Racial breakdown of Undergraduate Degree graduates in Consumer Science



As portrayed in Figure 258 above, Whites formed a majority in this CESM at Undergraduate Degree level with 79%, followed by Africans with 19%. Coloureds and Asians accounted for 1% each.

Figure 259: Gender breakdown of Undergraduate Degree graduates in Consumer Science

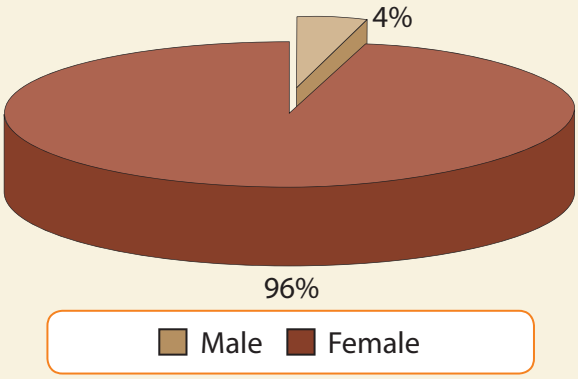


Figure 259 above depicts that females formed a majority of the total graduates in this CESM at Undergraduate Degree level with 96%, while males constituted only 4%.

At Honours level, 2 female graduates were produced in this CESM; 1 was African and 1 was White.

Five (5) African graduates were awarded Master's Degree in this CESM; 3 were females and 2 were males.

One (1) African male graduated at PhD Degree level in this CESM during the 2009 academic year.

4.4.3.21 BSc Veterinary Biology graduates at universities in 2009

One hundred and thirteen (113) graduates were produced in BSc Veterinary Biology during the 2009 academic year.

Table 115 below presents a demographic breakdown of Veterinary Biology graduates at universities during the 2009 academic year.

Table 115: Demographic breakdown of BSc Veterinary Biology graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	0	**1**	1	2	**3**	37	62	**99**	1	9	**10**	**113**
Total	**1**	**0**	**1**	**1**	**2**	**3**	**37**	**62**	**99**	**1**	**9**	**10**	**113**

As illustrated in Table 118 above, all the 113 graduates in this CESM were produced at Undergraduate level.

Figure 260: Racial breakdown of Undergraduate Degree graduates in BSc Veterinary Biology

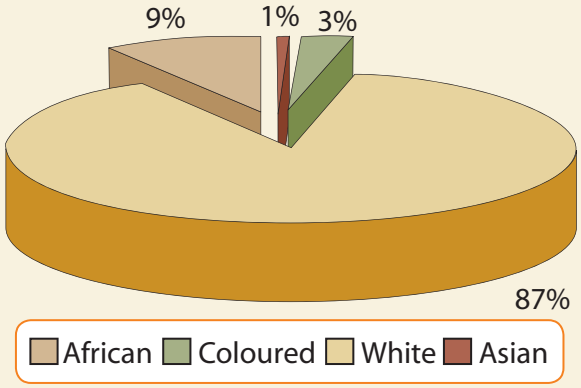


Figure 260 above shows that out of 113 graduates produced in this CESM at Undergraduate Degree, 87% were Whites, 9% were Africans and 3% were Coloureds. Asians contributed only 1% of the graduates in this CESM.

Figure 261: Gender breakdown of Undergraduate Degree graduates in BSc Veterinary Biology

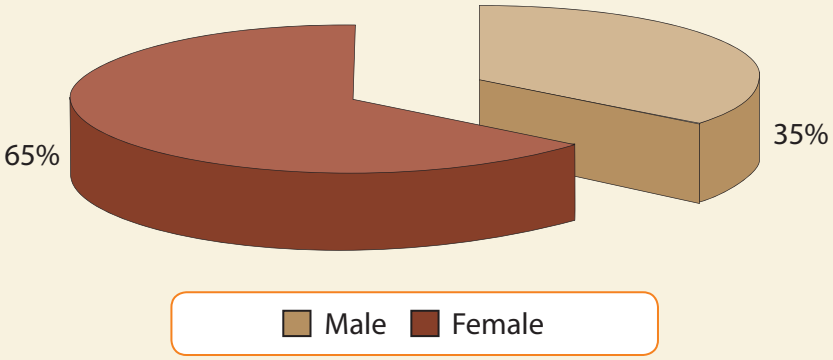


Figure 261 above depicts that females represented 65% of Undergraduate Degree graduates in this CESM, while males constituted 35%.

4.4.3.22 Biotechnology graduates at universities in 2009

Eighty one (81) graduates were awarded Biotechnology Degree during the 2009 academic year.

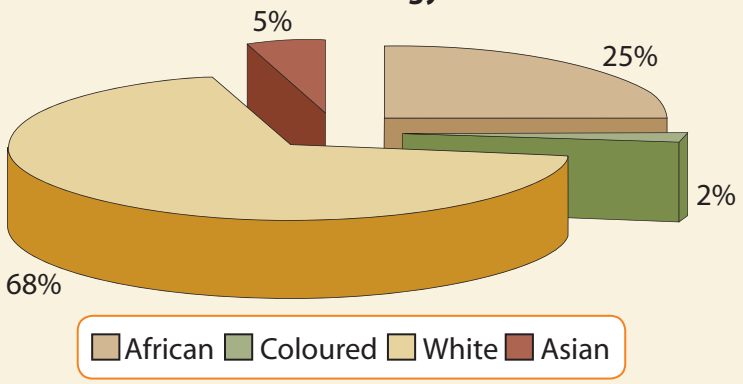
Table 116 below presents a demographic breakdown of Biotechnology graduates at universities during the 2009 academic year .

Table 116: Demographic breakdown of Biotechnology graduates at universities during the 2009 academic year													
Level	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	3	8	**11**	0	1	**1**	12	18	**30**	1	1	**2**	**44**
Honours	0	3	**3**	0	0	**0**	11	6	**17**	3	2	**5**	**25**
Master's	0	0	**0**	0	0	**0**	4	3	**7**	0	0	**0**	**7**
PhD	1	0	**1**	0	0	**0**	2	1	**3**	0	1	**1**	**5**
Total	**4**	**11**	**15**	**0**	**1**	**1**	**29**	**28**	**57**	**4**	**4**	**8**	**81**

Undergraduate Degree graduates constituted 54% of the total number of graduates in this CESM, followed by Honours Degree with 31%, Master's Degree with 9% and PhD with 6%.

Forty four (44) graduates were produced in Biotechnology at Undergraduate Degree level during the 2009 academic year.

Figure 262: Racial breakdown of Undergraduate Degree graduates in Biotechnology



In Figure 262 above, White graduates accounted for 68% of Undergraduate Degree graduates in this CESM, while Africans constituted 25%. Asian and Coloured graduates accounted for 5% and 2% respectively of Undergraduate Degree graduates in this CESM.

Figure 263: Gender breakdown of Undergraduate Degree graduates in Biotechnology

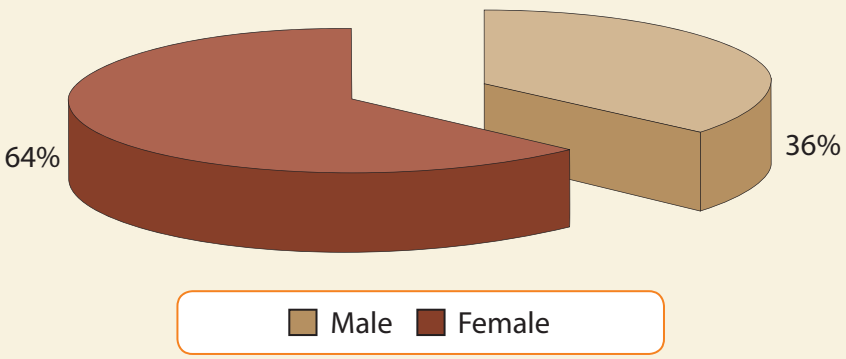
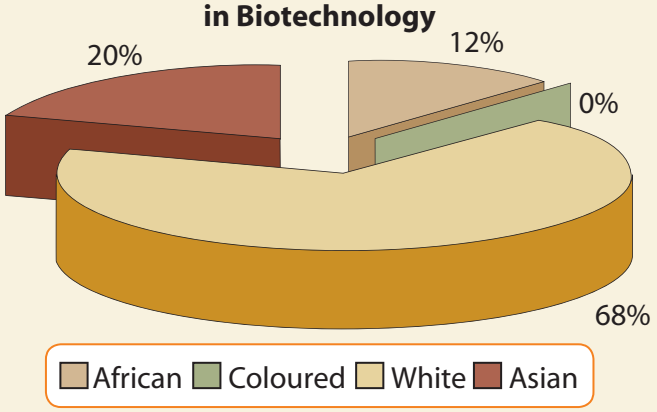


Figure 263 above portrays that females dominated Biotechnology graduates at Undergraduate Degree level with 64%, while males accounted for 36%.

Figure 264: Racial breakdown of Honours Degree graduates in Biotechnology



As illustrated in Figure 264 above, Whites formed a majority of Biotechnology Honours Degree graduates with 68%, followed by Asians with 20% and Africans with 12%. No Coloureds graduated in this CESM at Honours level.

Figure 265: Gender breakdown of Honours Degree graduates in Biotechnology

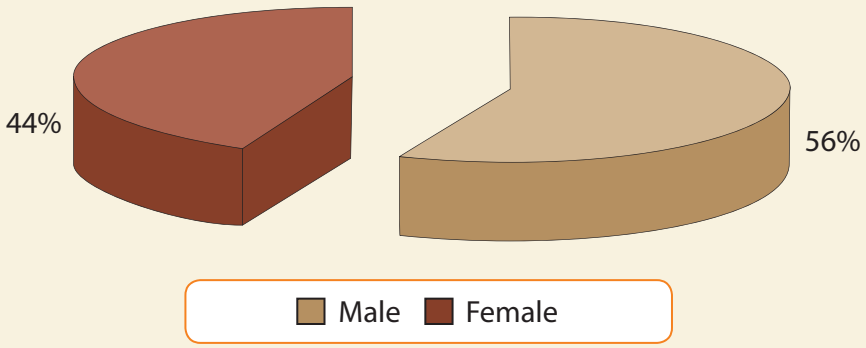


Figure 265 above depicts that males dominated Honours Degree graduates in this CESM with 56%, while females amounted to 44%.

Seven (7) White graduates were produced at Master's Degree level in this CESM; 4 were males and 3 were females.

Five (5) graduates were awarded PhD Degree in this CESM during the 2009 academic year; 3 were Whites, 1 was African and 1 was Asian.

4.4.3.23 Microbiology graduates at universities in 2009

Sixty nine (69) graduates were awarded Microbiology Degree during the 2009 academic year.

Table 117 below presents a demographic breakdown of Microbiology graduates at universities during 2009 academic year.

Table 117: Demographic breakdown of Microbiology graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	4	**8**	0	0	**0**	7	16	**23**	0	0	**0**	**31**
Honours	1	2	**3**	0	0	**0**	5	10	**15**	0	0	**0**	**18**
Master's	1	2	**3**	0	0	**0**	2	8	**10**	1	0	**1**	**14**
PhD	0	0	**0**	0	0	**0**	2	4	**6**	0	0	**0**	**6**
Total	**6**	**8**	**14**	**0**	**0**	**0**	**16**	**38**	**54**	**1**	**0**	**1**	**69**

Undergraduate Degree graduates constituted 44% of the total number of graduates in this CESM, followed by Honours Degree with 27%, Master's Degree with 21% and PhD with 8%.

Thirty one (31) graduates were awarded Undergraduate Degree in Microbiology during the 2009 academic year.

Figure 266: Racial breakdown of Undergraduate Degree graduates in Microbiology

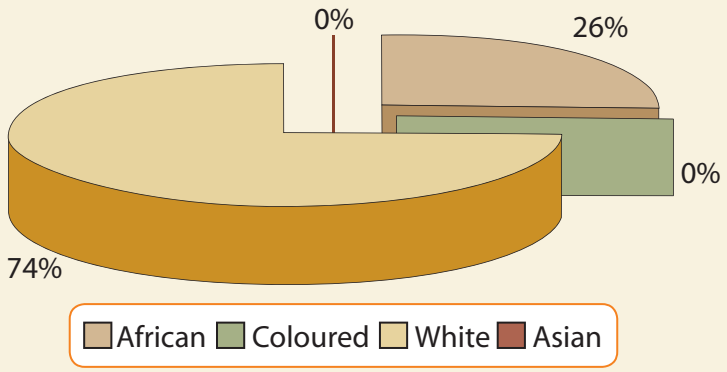


Figure 266 above indicates that White graduates accounted for 74% of Undergraduate Degree graduates in this CESM and Africans constituted 26%. No Asian or Coloured graduates were produced in this CESM at Undergraduate level during the 2009 academic year.

Figure 267: Gender breakdown of Undergraduate Degree graduates in Microbiology

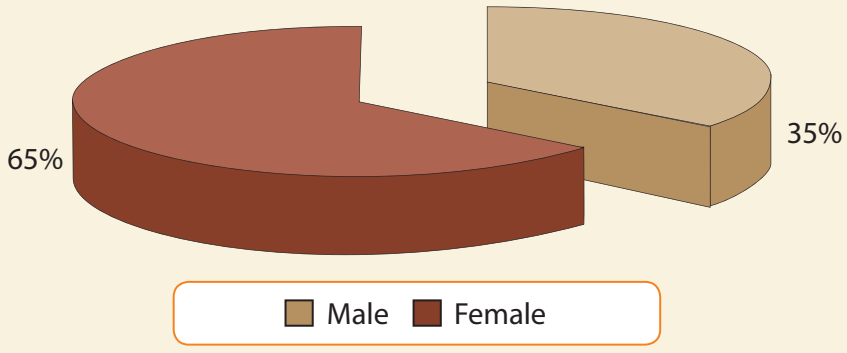


Figure 267 above depicts that females represented 65% of Undergraduate Degree graduates in this CESM, while males constituted 35%.

Figure 268: Racial breakdown of Honours Degree graduates in Microbiology

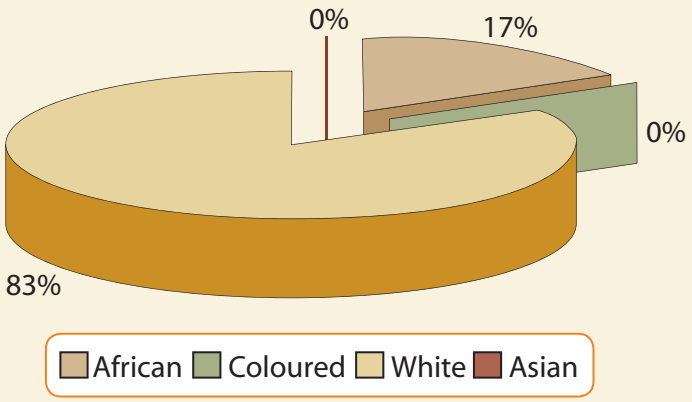


Figure 268 above indicates that White graduates accounted for 83% of Honours Degree graduates in this CESM, while Africans constituted 17%. No Asian or Coloured graduates were produced in this CESM at Honours level during the 2009 academic year.

Figure 269: Gender breakdown of Honours Degree graduates in Microbiology

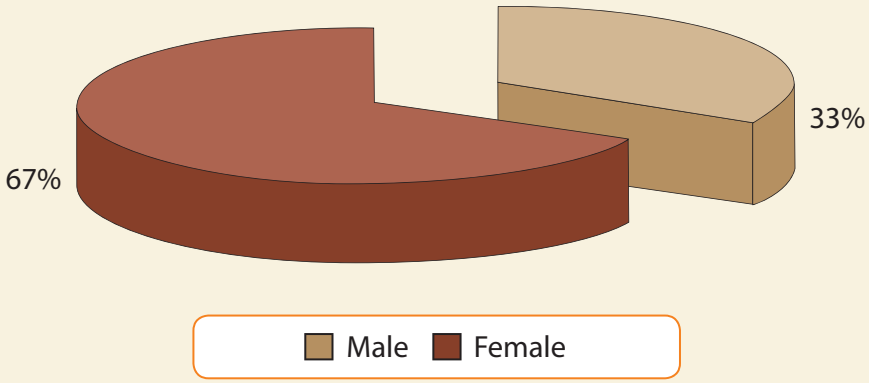
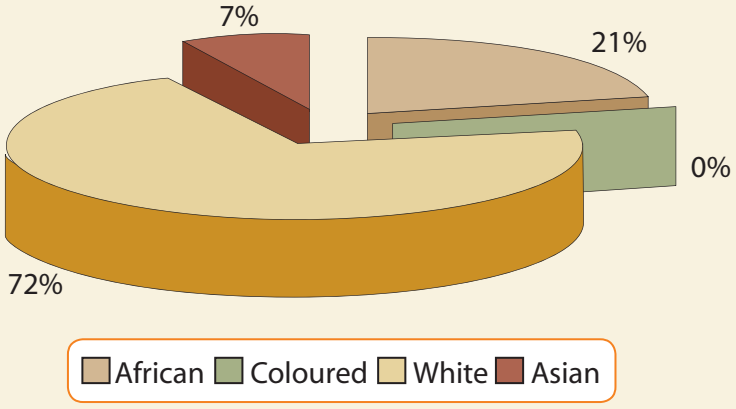


Figure 269 above depicts that females represented 67% of Honours Degree graduates in this CESM, while males constituted 33%.

Figure 270: Racial breakdown of Master's Degree graduates in Microbiology



As illustrated in Figure 270 above, Whites formed a majority of Microbiology Master's Degree graduates with 72%, followed by Africans with 21% and Asians with 7%. No Coloureds graduated in this CESM at Master's level.

Figure 271: Gender breakdown of Master's Degree graduates in Microbiology

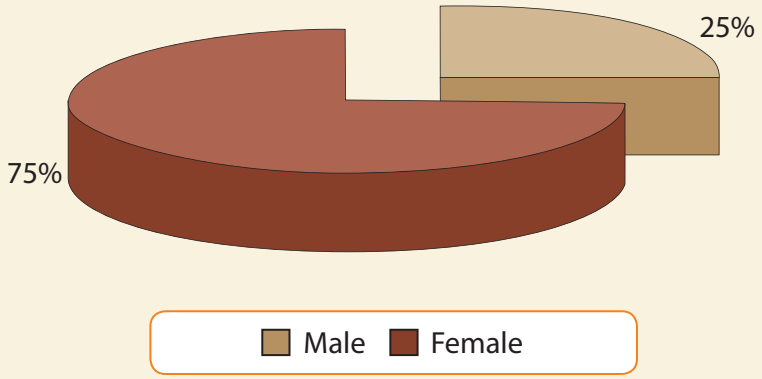


Figure 271 above depicts that females dominated Master's Degree in this CESM with 75%, while males amounted to 25%. White females constituted a majority of the female graduates with 83%, followed by African females with 17%.

At PhD Degree level, 6 White graduates were produced; 4 were females and 2 were males.

4.4.3.24 Rural Development graduates at universities in 2009

Six (6) Africans were awarded Rural Development Degree during the 2009 academic year.

Table 118 below presents a demographic breakdown of Rural Development graduates at universities during the 2009 academic year.

Table 118: Demographic breakdown of Rural Development graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Master's	2	1	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Total	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**

Out of the 6 Rural Development graduates produced during the 2009 academic year; 3 were at Master's Degree level, 2 were at Honours Degree level and 1 was at PhD level.

4.4.4. Inst. Agrar. Stream Programmes

4.4.4.1 Land Reclamation (Land Use Inst. Agrar. Stream) graduates in 2009

Two (2) male graduates were produced in this CESM during the 2009 academic year; 1 was African and 1 was White.

4.4.4.2 Plant Science (Inst. Agrar. Stream) Graduates in 2009

Eleven (11) graduates were produced in this CESM during the 2009 academic year.

Table 119 below presents a demographic breakdown of Plant Science (Inst. Agrar. Stream) graduates at universities during the 2009 academic year.

Table 119: Demographic breakdown of Plant Science (Inst. Agrar. Stream) graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Honours	4	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Master's	1	1	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Total	**6**	**4**	**10**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**11**

Two (2) African graduates were produced in this CESM at Undergraduate level; 1 was male and 1 was female.

Six (6) African graduates were awarded Honours Degree in this CESM; 4 were males and 2 were females.

Three (3) graduates were awarded Master's Degree in this CESM during the 2009 academic year; 2 were Africans and 1 was White.

4.4.4.3 Agricultural Economics (Inst. Agrar Stream) graduates in 2009

Two (2) graduates were produced in this CESM at Master's level during the 2009 academic year; 1 was African and 1 was Coloured.

4.4.4.5 Horticulture (Inst. Agrar) graduates in 2009

One (1) African male received an Undergraduate Degree in this CESM during the 2009 academic year.

4.4.4.6 Food Science (Inst. Agrar) graduates in 2009

Five (5) African graduates were awarded Undergraduate Degree in this CESM during the 2009 academic year; 3 were females and 2 were males.

4.4.4.7 Land Reclamation (Inst. Agrar) graduates in 2009

Two (2) male graduates were awarded Undergraduate Degree in this CESM during the 2009 academic year; 1 was African and 1 was White.

4.5 Conclusion

A total number of 4 477 students registered for AET programmes at universities in 2009. Enrolments far outweigh graduate figures in the 2009 at universities. Of the 4 477 students enrolled in the AET programmes in 2009, only 2 039 graduated, which constitutes approximately 46% of the total number of enrolments.

A trend found at universities is that the number of enrolments at Undergraduate level is very high as compared to the enrolments figures at Post-graduate level. This is a cause for concern. For example, in the 2009 academic year, the Undergraduate level constituted 77% of the total number of enrolments at universities, while Master's, Honours and PhD Degree constituted 11%, 8% and 2% respectively. The least enrolments were recorded at Post-graduate Diploma level with 1% of the total enrolments at universities.

The same situation applies to graduate outputs, where Undergraduate Degree comprised 69% of the total graduate output at universities followed by Master's Degree and Honours Degree, with 13% and 12% respectively. PhD and Post-graduate Diploma accounted for 3% each of the total graduates at universities.

Agricultural Science (Science Streams) recorded the highest enrolments figures at universities during the 2009 academic year with 762 students, followed by Agricultural Management with 596 students, Animal Science with 501 and BSc Veterinary Biology with 329.

Graduates produced at universities during the 2009 academic year were dominated by Animal Science with 16%, followed by of Agricultural Science (Art and Science Streams) with 10% each and Agricultural Management with 8%. The lowest graduate output was recorded at Rural Development and Agricultural Economics (BCom Stream) with ten and eight students registered.

Only 23 students registered for Inst. Agrar. programmes during the 2009 academic year. It is the conclusion of this study that the insignificance of the Inst. Agrar. programmes representation is due to the fact that, in South Africa, Inst. Agrar. programmes are offered only by the University of Pretoria.

University of Pretoria enjoys a distinct bigger share of both the enrolments and graduates during the 2009 academic year. This may be attributed to the fact that University of Pretoria offers many agricultural programmes as compared to other universities such as Venda and Zululand. For example, University of Pretoria constituted 32% of the overall universities enrolments, while University of Zululand contributed less than 1%. The same situation applies also to the graduates; University of Pretoria produced a high number of graduates with 36% of the overall graduates produced at universities while University of Zululand produced only 1%.

Generally, Africans continued to dominate in most of the agricultural programmes in universities in terms of enrolments and graduates. It is worth noting, however, that Whites have also dominated in some programmes, such as BSc Veterinary Science, Agricultural Food Technology, Renewable Natural Resources and Consumer Science. As is the case in enrolments, African graduates also dominated the other racial groups in almost all the programmes. There is a great underrepresentation of Coloureds and Asian students in almost all programmes at universities; this is prevalent even in institutions that are in provinces where these racial groups are largely represented socially, such as Western Cape and KwaZulu-Natal.

In the 2009 academic year, females dominated enrolments with 54% and males contributed 46% of the total enrolments figures at universities. It is also worth noting that females dominated in programmes such as Agricultural Science (Science Stream), Agricultural Food Technology and Consumer Science. The same situation applies to the graduates; females dominated the overall number of graduates produced at universities in 2009 with 55%, while male graduates accounted for 45%.

The findings indicate a continuing trend in the universities where White students dominated in programmes such as Agricultural Food Technology, Agricultural Science (Science Stream), BSc Veterinary Biology and Horticulture. On the other hand, Africans dominated significantly in programmes such as Agricultural Economics, Agricultural Extension, Animal Science, Plant Science, Soil Science, Agricultural Management and Inst. Agrar. programmes.

CHAPTER 5

ENROLMENTS AND GRADUATES FOR SCARCE SKILLS PROGRAMMES IN AGRICULTURE

CHAPTER 5

ENROLMENTS AND GRADUATES FOR SCARCE SKILLS PROGRAMMES IN AGRICULTURE

5.1 Introduction

This chapter presents data on enrolments and graduates in scarce skills programmes.Veterinary Science, Agricultural Engineering, Viticulture and Oenology, Food Science and Technology and Biotechnology are regarded scarce skills by the Department of Agriculture, hence they are discussed separately from other CESM.

5.2 Breakdown of scarce skills enrolments per institutions during 2009

Four hundred and forty five (445) students were enrolled in scarce skills programmes during the 2009 academic year.

Table 120 below presents a breakdown of scarce skills enrolments by institution and field of study.

Table 120: Enrolments of the scarce skills programmes per institution during the 2009 academic year

Name of Institution	Study field	Number of enrolled students in 2009		%
		Sub-Total	Total	
CIAT: Elsenburg	BSc Viticulture & Oenology	90	**90**	**20**
University of Western Cape	Biotechnology	23	**23**	**5**
University of KwaZulu-Natal	Agricultural Engineering	33	**33**	**7**
University of Pretoria	Veterinary Science	235	**235**	**53**
University of Johannesburg	Food Technology	36	**36**	**8**
University of Stellenbosch	Food Technology	2	**28**	**6**
	BSc Viticulture & Oenology	26		
Total			**445**	**100**

Figure 272: Enrolments of scarce skills programmes per institution

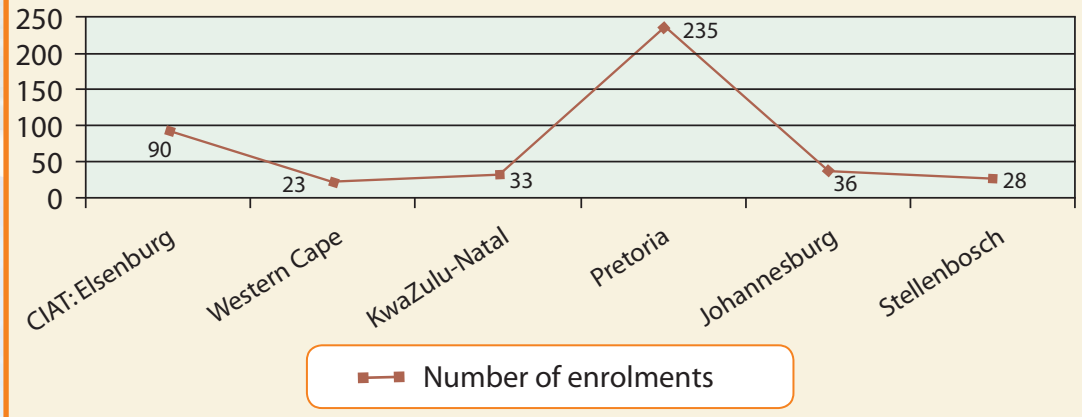


Table 120 and Figure 272 above shows that University of Pretoria dominated the number of enrolments in the scarce skills category with 53%, followed by CIAT: Elsenburg with 20%. The lowest enrolment numbers were recorded at University of Stellenbosch and University of the Western Cape with 6% and 5% respectively.

5.3 Breakdown of scarce skills enrolments during the 2009 academic year

5.3.1 Demographic breakdown of scarce skills enrolments by gender and race

Table 121 below presents a demographic breakdown of scarce skills enrolments by gender and race during the 2009 academic year.

Table 121: Demographic breakdown of scarce skills enrolments by gender and race during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	10	8	**18**	0	0	**0**	9	0	**9**	4	2	**6**	**33**	**7**
BSc Biotechnology	8	7	**15**	3	3	**6**	1	1	**2**	0	0	**0**	**23**	**5**
Food Science and Technology	6	26	**32**	0	1	**1**	0	2	**2**	0	3	**3**	**38**	**9**
BSc Viticulture and Oenology	1	2	**3**	12	11	**23**	66	24	**90**	0	0	**0**	**116**	**26**
Veterinary Science	14	14	**28**	2	5	**7**	57	123	**180**	2	18	**20**	**235**	**53**
Total	**39**	**57**	**96**	**17**	**20**	**37**	**133**	**150**	**283**	**6**	**23**	**29**	**445**	**100**

Figure 273: Racial breakdown of Scarce Skills enrolments

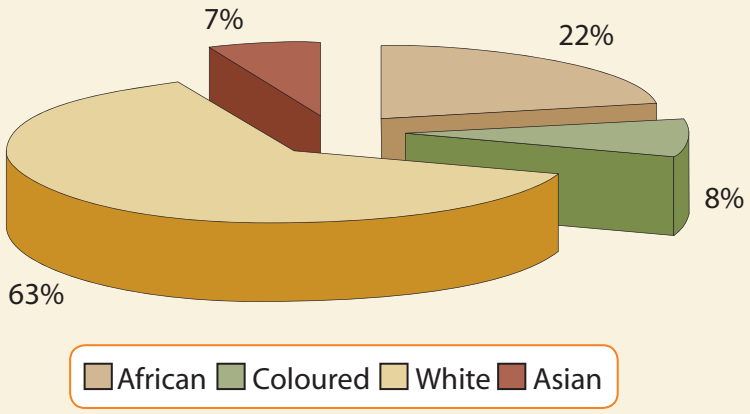


Table 121 and Figure 273 above indicates that White and African students have higher enrolment figures constituting 63% and 22% respectively. Coloured and Asian students respectively constituted 8% and 7% of the total number of scarce skills enrolments.

Figure 274: Gender breakdown of Scarce Skills enrolments

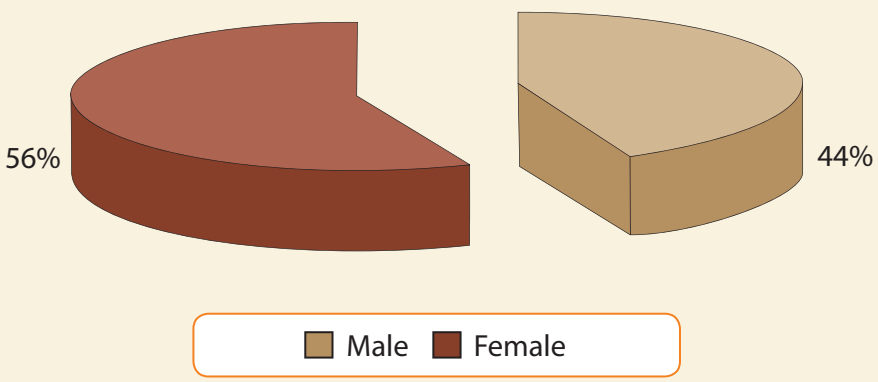


Figure 274 above indicates that female students constituted 56% of the total number of scarce skills enrolments and male students accounted for 44%.

Figure 275: Racial breakdown of Scarce Skills male enrolments

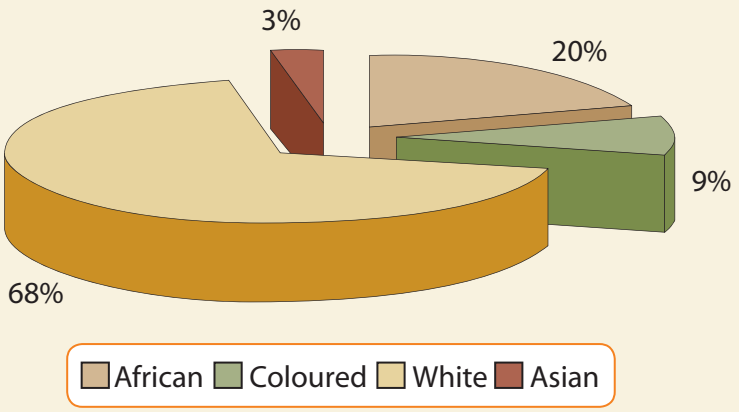


Figure 275 above indicates that White male students constituted the highest number of male enrolments in scarce skills programmes with 68%, followed by Africans with 20%. Coloured and Asian male students accounted for 9% and 3% respectively.

Figure 276: Racial breakdown of Scarce Skills female enrolments

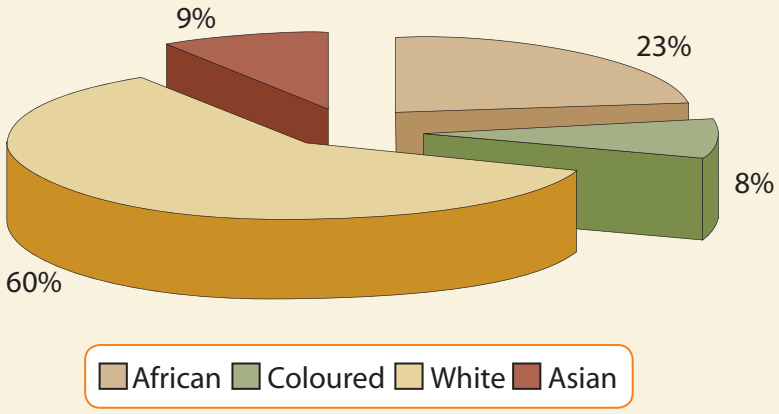


Figure 276 above depicts that White females dominated female enrolments in scarce skills programmes with 60%, followed by Africans with 23%. Asian and Coloured female students contributed 9% and 8% of the enrolments respectively.

5.3.2 Breakdown of scarce skills enrolments by levels of qualification during the 2009 academic year

Table 122: Breakdown of scarce skills enrolments by levels of qualifications during the 2009 academic year

CESM	Undergraduate	Honours	Master's	PhD	Total	%
BSc Agricultural Engineering	33	0	0	0	**33**	**7**
B.Agric Viticulture	0	0	0	0	**0**	**0**
Veterinary Science	185	11	32	7	**235**	**53**
BSc Biotechnology	0	7	4	12	**23**	**5**
BSc Viticulture and Oenology	109	2	4	1	**116**	**26**
Food Science and Technology	38	0	0	0	**38**	**9**
Total	**365**	**20**	**40**	**20**	**445**	
Percentage	**82**	**4**	**9**	**4**		**100**

Table 122 above indicates that Undergraduate dominated the scarce skills enrolments during the 2009 academic year with 82%, followed by Master's Degree enrolments with 9%. PhD and Honours enrolments each constituted 4% of the overall scarce skills enrolments during the 2009 academic year.

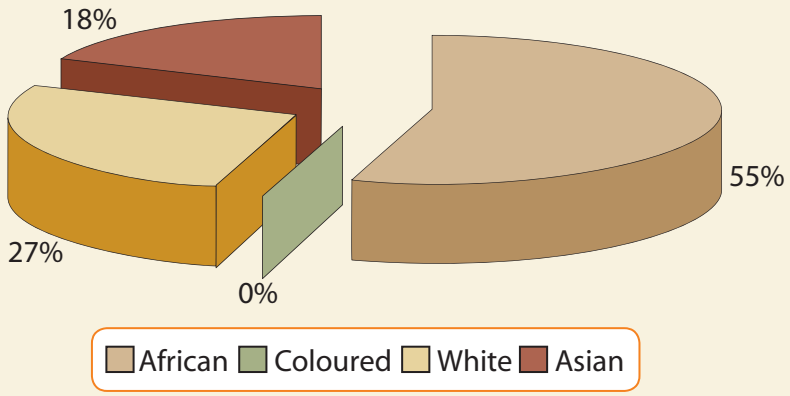
5.3.3 Demographic breakdown of BSc Agricultural Engineering enrolments during the 2009 academic year

Table 123: Demographic breakdown of BSc Agricultural Engineering enrolments during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	10	8	**18**	0	0	**0**	9	0	**9**	4	2	**6**	**33**	**100**
Total	**10**	**8**	**18**	**0**	**0**	**0**	**9**	**0**	**9**	**4**	**2**	**6**	**33**	**100**

Thirty three (33) students enrolled for BSc Agricultural Engineering during the 2009 academic year.

Figure 277: Racial breakdown of BSc Agricultural Engineering enrolments



As depicted in Figure 277 above, the BSc Agricultural Engineering Degree enrolments were dominated by Africans with 55%, followed by Whites with 27% and Asians with 18%. No Coloured students were enrolled in this programme during the 2009 academic year.

Figure 278: Gender breakdown of BSc Agricultural Engineering enrolments

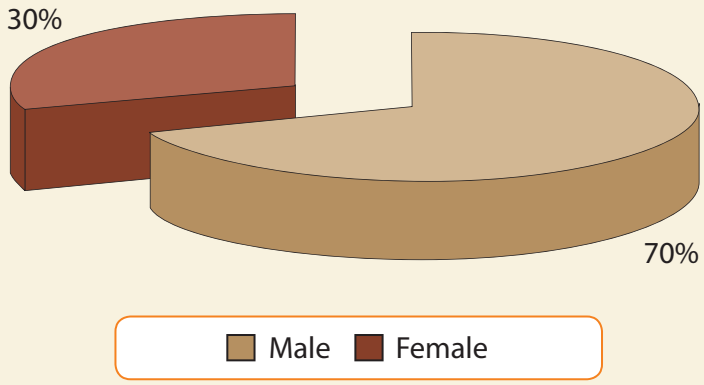


Figure 278 above indicates that male students dominated BSc Agricultural Engineering Degree enrolments during the 2009 academic year with 70% and female students amounted to 30%.

5.3.4 Demographic breakdown of BSc Viticulture and Oenology enrolments during the 2009 academic year

The BSc Viticulture (Science Stream) is offered by University of Stellenbosch and CIAT: Elsenburg. The Viticulture (Science Stream) is offered from Degree to a PhD level.

Table 124 below presents a demographic breakdown of BSc Viticulture and Oenology enrolments during the 2009 academic year.

Table 124: Demographic breakdown of BSc Viticulture and Oenology enrolments during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	1	2	**3**	11	10	**21**	63	22	**85**	0	0	**0**	**109**	**94**
Honours	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	**2**	**2**
Master's	0	0	**0**	1	1	**2**	1	1	**2**	0	0	**0**	**4**	**3**
PhD	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**	**1**
Total	**1**	**2**	**3**	**12**	**11**	**23**	**66**	**24**	**90**	**0**	**0**	**0**	**116**	**100**

One hundred and sixteen (116) students were enrolled at BSc Viticulture and Oenology during the 2009 academic year. Ninety four percent (94%) of these students were Undergraduate students, 3% were Master's Degree students and 2% were Honours Degree students. PhD students accounted for 1% of all students in this CESM.

Figure 279: Racial breakdown of Undergraduate Degree enrolments in Viticuture and Oenology

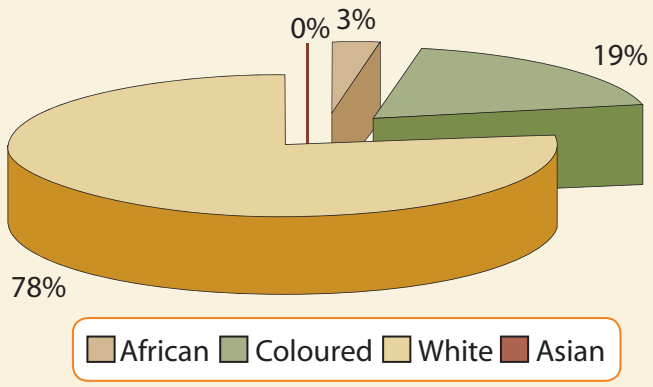


Figure 279 above depicts that White students dominated the total number of BSc Viticulture annrolments at Undergraduate level with 78%, followed by Coloureds with 19% and Africans with 3%. Asian students were not represented in this CESM at Undergraduate level.

Figure 280: Gender breakdown of Undergraduate Degree enrolments in Viticuture and Oenology

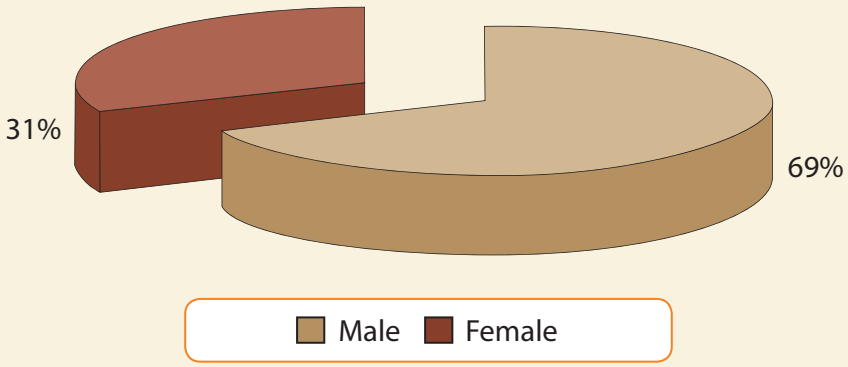


Figure 280 shows that male students dominated Undergraduate enrolments in BSc Viticulture and Oenology during the 2009 academic year with 69% and female students amounted to 31%.

Two (2) White male students enrolled in this CESM at Honours level at universities during the 2009 academic year.

Four (4) students enrolled in this CESM at Master's level at universities during the 2009 academic year; 1 was a Coloured male, 1 was a Coloured female, 1 was a White male and 1 was a White female.

One (1) White male student registered for PhD Degree in this CESM during the 2009 academic year.

5.3.5 Demographic breakdown of Food Science and Technology enrolments during the 2009 academic year

Food Science and Technology programmes in the scarce skills category are offered by Universities of Stellenbosch, Pretoria and Johannesburg.

Table 125 below presents a demographic breakdown of Food Science and Technology enrolments during the 2009 academic year.

Table 125: Demographic breakdown of Food Science and Technology enrolments during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	6	26	**32**	0	1	**1**	0	2	**2**	0	3	**3**	**38**	**100**
Total	**6**	**26**	**32**	**0**	**1**	**1**	**0**	**2**	**2**	**0**	**3**	**3**	**38**	**100**

Thirty eight (38) students were enrolled for Food Science and Technology during the 2009 academic year.

Figure 281: Racial breakdown of Undergraduate Degree enrolments in Food Science and Technology

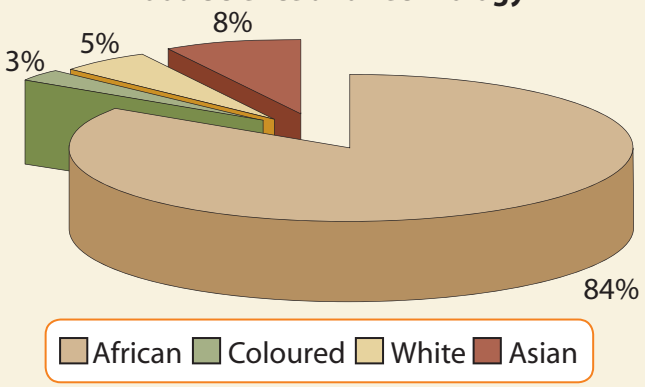


Figure 281 above illustrates that African students dominated Undergraduate Degree in Food Science and Technology enrolments during the 2009 academic year with 84%, followed by Asians with 8%, Whites with 5% and Coloureds with 3%.

Figure 282: Gender breakdown of Undergraduate Degree enrolments in Food Science and Technology

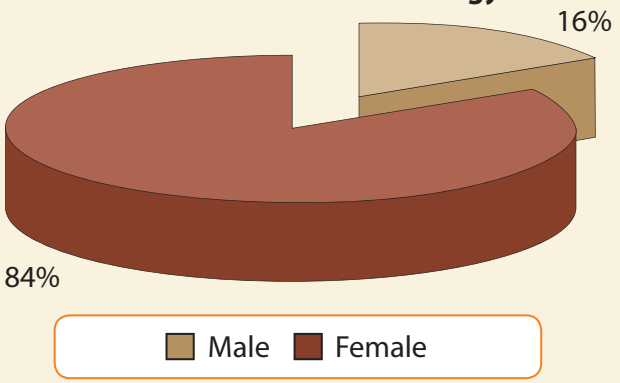


Figure 282 above shows that female students dominated Undergraduate Degree in Food Science and Technology enrolments with 84% and male students constituted 16%.

5.3.6 Demographic breakdown of BSc Biotechnology enrolments during the 2009 academic year

BSc Biotechnology programmes in scarce skills are offered by the University of the Western Cape.

Table 126: Demographic breakdown of BSc Biotechnology enrolments during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Honours	1	3	**4**	0	3	**3**	0	0	**0**	0	0	**0**	**7**	**30**
Master's	3	0	**3**	1	0	**1**	0	0	**0**	0	0	**0**	**4**	**17**
PhD	4	4	**8**	2	0	**2**	1	1	**2**	0	0	**0**	**12**	**52**
Total	**8**	**7**	**15**	**3**	**3**	**6**	**1**	**1**	**2**	**0**	**0**	**0**	**23**	**100**

Twenty three (23) students were enrolled for BSc Biotechnology during the 2009 academic year.

Figure 283: Racial breakdown of Honours Degree enrolments in Biotechnology

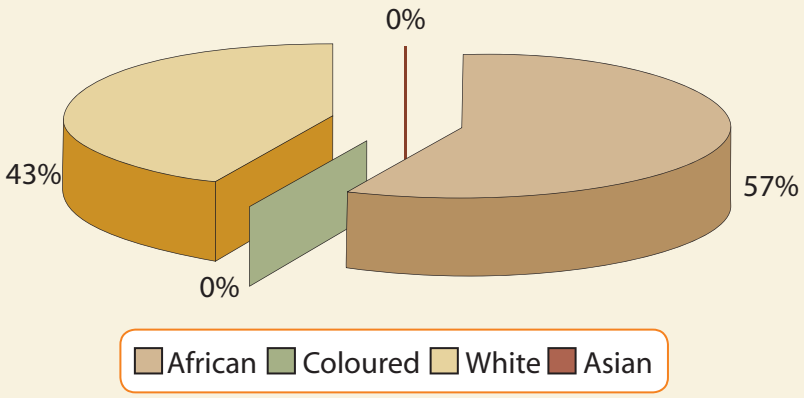


Figure 283 above illustrates that African students dominated BSc Biotechnology enrolments during the 2009 academic year with 57%, followed by Coloured students with 43%. White and Asian students were not represented in this CESM.

Figure 284: Gender breakdown of Honours Degree enrolments in Biotechnology

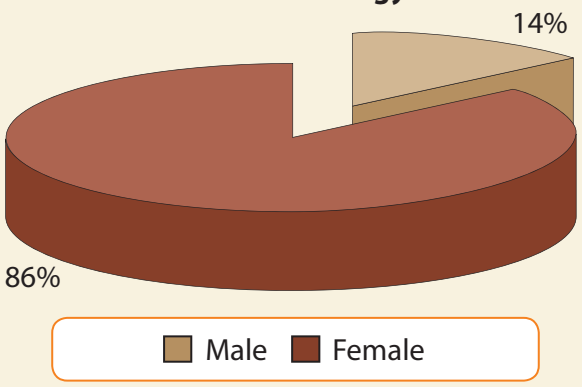


Figure 284 above shows that female students dominated BSc Biotechnology enrolments during the 2009 academic year with 86% and male students constituted 14%.

Figure 285: Racial breakdown of PhD enrolments in Biotechnology

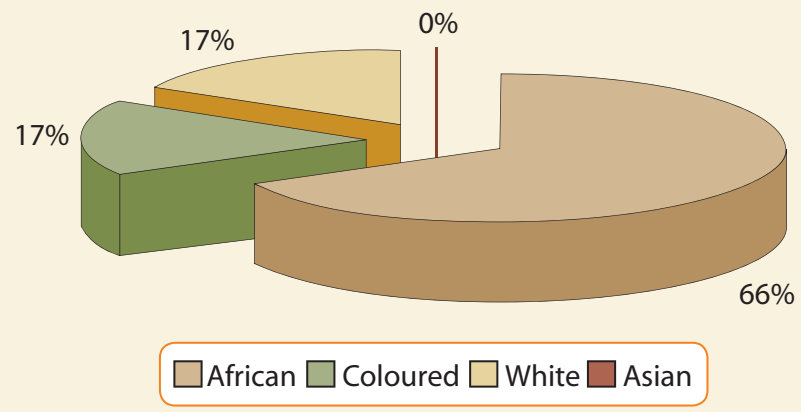


Figure 285 above depicts that African students dominated the total number of Biotechnology enrolments at PhD level with 66%, followed by Coloured and White students with 17% each. Asian students were not represented in this CESM at PhD level.

Figure 286: Gender breakdown of PhD enrolments in Biotechnology

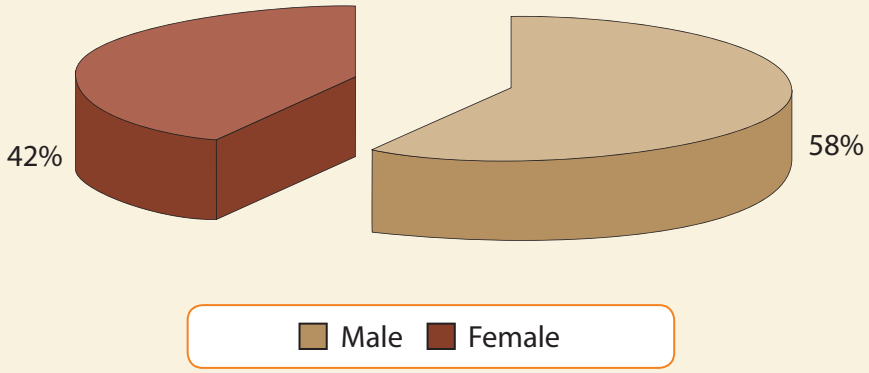


Figure 286 above shows that male students dominated PhD in Biotechnology enrolments with 58% and female students constituted 42%.

5.3.7 Enrolments in Veterinary Science Degree during the 2009 academic year

Veterinary Science Degree is offered only by University of Pretoria at Undergraduate to Post-graduate levels.

Table 127 below presents a demographic breakdown of Veterinary Science Degree enrolments during the 2009 academic year.

Table 127: Demographic breakdown of Veterinary Science Degree enrolments during the 2009 academic year														
Level	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Undergraduate (BVSc)	6	1	**7**	1	5	**6**	46	110	**156**	2	14	**16**	**185**	**79**
Honours	0	1	**1**	0	0	**0**	4	5	**9**	0	1	**1**	**11**	**5**
Master's	7	9	**16**	1	0	**1**	6	7	**13**	0	2	**2**	**32**	**14**
PhD	1	3	**4**	0	0	**0**	1	1	**2**	0	1	**1**	**7**	**3**
Total	**14**	**14**	**28**	**2**	**5**	**7**	**57**	**123**	**180**	**2**	**18**	**20**	**235**	**100**

Two hundred and thirty five (235) students enrolled for the Veterinary Science Degree during the 2009 academic year.

Figure 287: Racial breakdown of BVSc enrolments in Veterinary Science

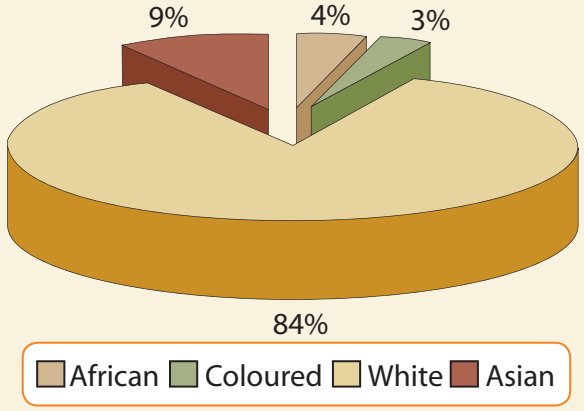
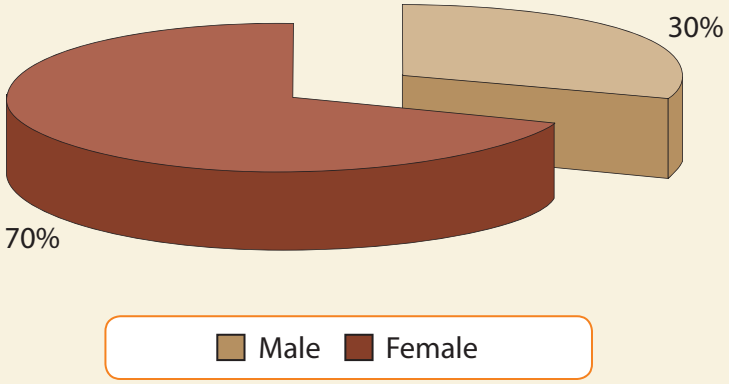


Figure 287 above outlines the racial breakdown of Undergraduate Degree enrolments in Veterinary Science during the 2009 academic year. White students dominated Undergraduate Degree enrolments in this programme with 84%, followed by Asian and African students with 9% and 4% respectively. Coloured students comprised 3% of the Undergraduate Degree enrolments during the 2009 academic year.

Figure 288: Gender breakdown of BVSc enrolments in Veterinary Science



Gender breakdown in Figure 288 above depicts that female students constituted 70% of BVSc students in this programme during the 2009 academic year and male students accounted for 30%.

Figure 289: Racial breakdown of Honours Degree enrolments in Veterinary Science

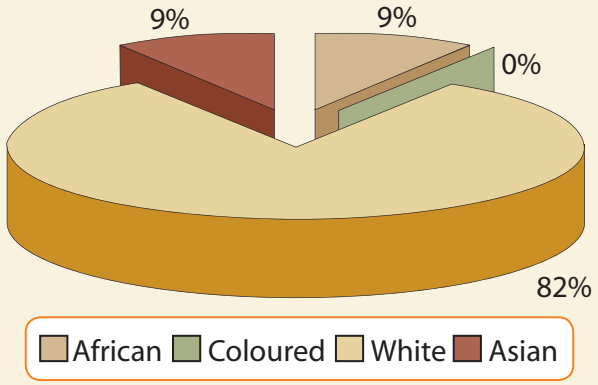


Figure 289 above depicts that White students dominated total number of Veterinary Science enrolments at Honours level with 88%, followed by African and Asian students with 9% each. Coloured students were not represented in this CESM at Honours level.

Figure 290: Gender breakdown of Honours Degree enrolments in Veterinary Science

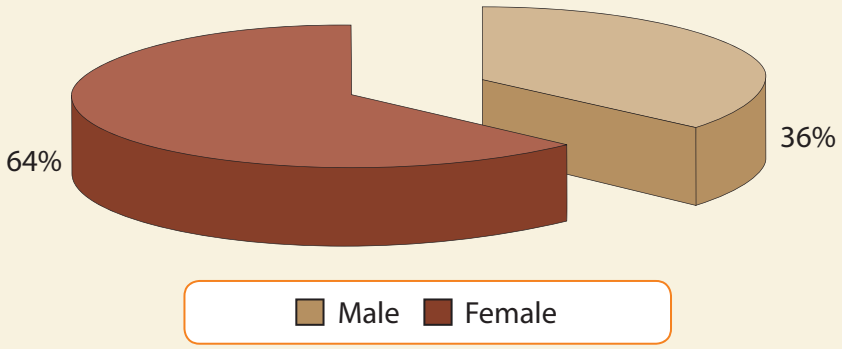


Figure 290 above shows that female students dominated Honours enrolments with 64% and male students constituted 36%.

Figure 291: Racial breakdown of Master's Degree enrolments in Veterinary Science

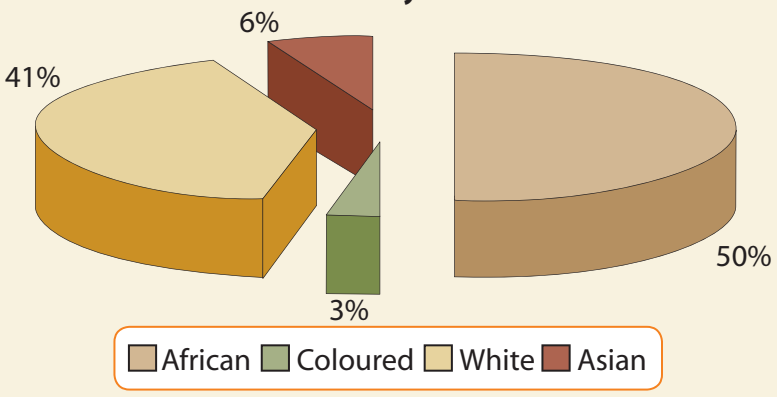


Figure 291 above outline the racial breakdown of Master's Degree enrolments in this CESM during the 2009 academic year. African students accounted for 50% of Master's Degree enrolments in this programme, followed by White students with 41%. Asian and Coloured students comprised 6% and 3% respectively of the Master's Degree enrolments in this CESM.

Figure 292: Gender breakdown of Master's Degree enrolments in Veterinary Science

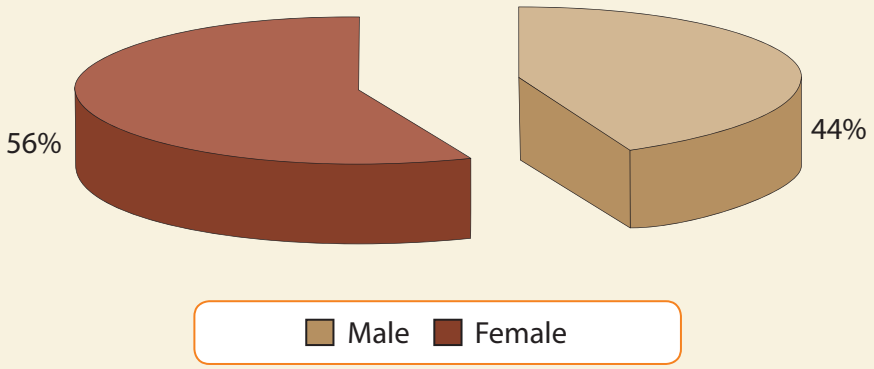


Figure 292 above shows that female students dominated Master's enrolments with 56% and male students constituted 44%.

Figure 293: Racial breakdown of PhD enrolments in Veterinary Science

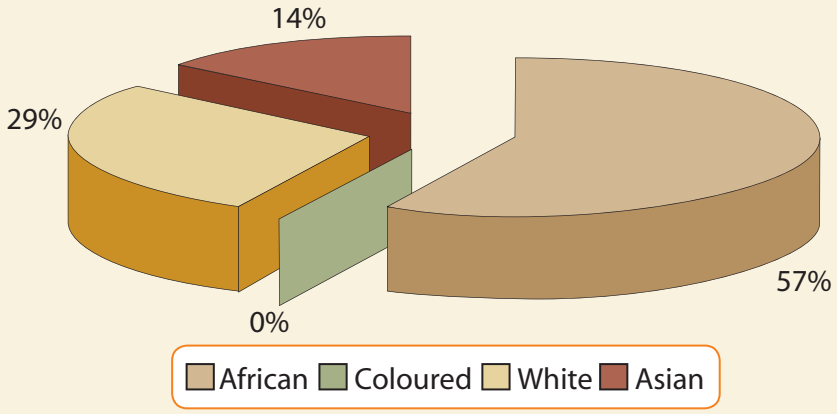


Figure 293 above depicts that African students dominated total number of Veterinary Science enrolments at PhD level with 57%, followed by White students with 29% and Asian students with 14%. Coloured students were not represented in this CESM at PhD level.

Figure 294: Gender breakdown of PhD enrolments in Veterinary Science

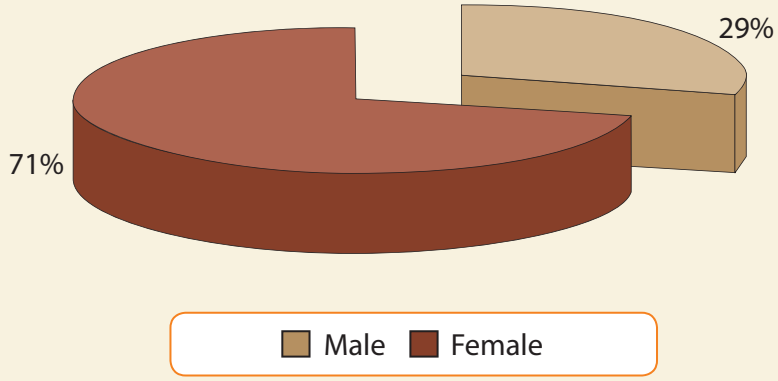


Figure 294 above shows that female students dominated PhD enrolments with 71% and male students constituted 29%.

5.4 Breakdown of scarce skills graduates during 2009

5.4.1 Demographic breakdown of scarce skills graduates by gender and race

Table 128 below presents the breakdown of scarce skills graduates by gender and race during the 2009 academic year.

Table 128: Demographic breakdown of scarce skills graduates by gender and race during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	2	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**	**2**
B.Agric Viticulture	2	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**	**27**
Food Science and Technology	15	35	**50**	3	1	**4**	5	32	**37**	0	1	**1**	**92**	**24**
BSc Viticulture and Oenology	2	1	**3**	1	0	**1**	18	18	**36**	0	0	**0**	**40**	**11**
Veterinary Science	11	9	**20**	0	0	**0**	42	75	**117**	0	3	**3**	**140**	**37**
Total	**32**	**51**	**83**	**9**	**2**	**11**	**130**	**151**	**281**	**1**	**4**	**5**	**380**	**100**

Three hundred and eighty (380) graduates were produced in scarce skills programmes during the 2009 academic year.

Figure 295: Racial breakdown of graduates in Scarce Skills

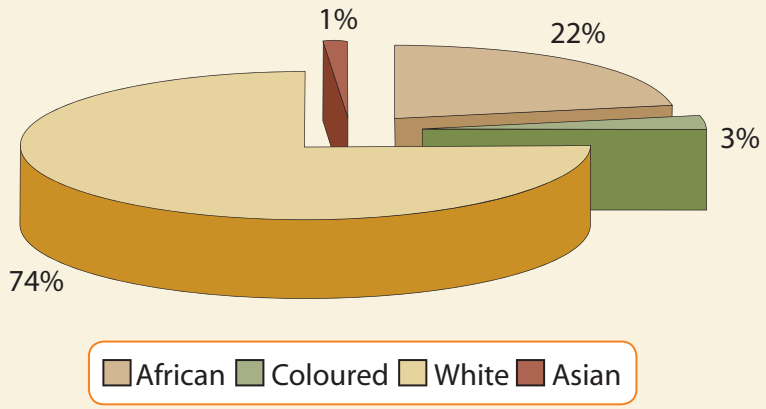


Table 127 and Figure 295 above indicate that White graduates dominated scarce skills graduates with 74%, followed by African graduates with 22%. Coloured and Asian graduates accounted for 3% and 1% of the overall scarce skills graduates respectively.

Figure 296: Gender breakdown of graduates in Scarce Skills

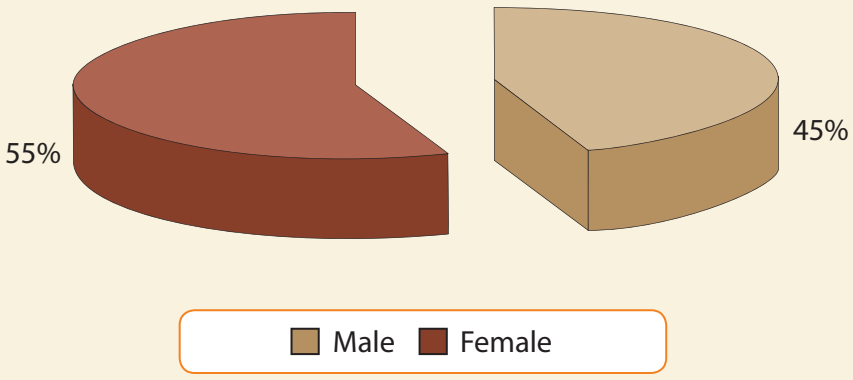


Figure 296 above indicates that female graduates constituted 55% of the overall scarce skills graduates and male graduates accounted for 45%.

Figure 297: Racial breakdown of Scarce Skills of male graduates

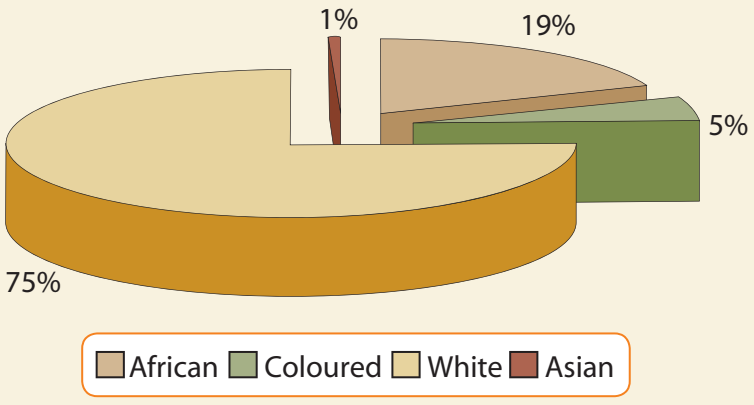
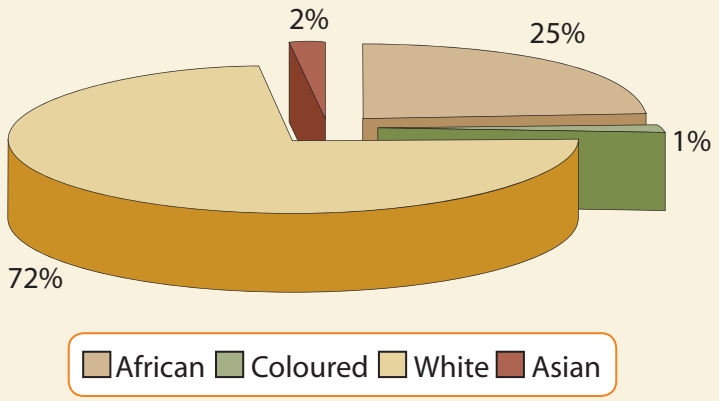


Figure 297 above shows that White male graduates dominated male graduates in scarce skills programmes with 75%, followed by African males with 19%, Coloured males with 5% and Asian males with 1%.

Figure 298: Racial breakdown of Scarce Skills of female graduates



As depicted in Figure 298 above, White females accounted for 72% of the overall scarce skills female graduates. African and Asian females constituted 25% and 2% respectively of all female graduates in scarce skills programmes and Coloured females contributed the remaining 1%.

5.4.2 Breakdown of scarce skills graduates by levels of qualification during the 2009 academic year

Table 129 below presents a breakdown of scarce skills graduates by levels of qualification during the 2009 academic year.

Table 129: Scarce skills graduates by level of qualification during the 2009 academic year

CESM	Undergraduate	Honours	Master's	PhD	Total
Agricultural Engineering	7	0	0	0	**7**
B.Agric Viticulture	101	0	0	0	**101**
BSc Viticulture and Oenology	34	6	0	0	**40**
Veterinary Science	97	8	33	2	**140**
Food Science and Technology	78	0	13	1	**92**
Total	**317**	**14**	**46**	**3**	**380**

Undergraduate Degree graduates dominated scarce skills graduates produced during the 2009 with 84%, followed by Master's Degree graduates with 12% and Honours Degree graduates with 3%. PhD graduates constituted less than 1% of the total number of scarce skills graduates produced during the 2009 academic year.

5.4.3 Graduate outputs in B.Agric Viticulture in 2009

Table 130 below presents a demographic breakdown of B. Agric Viticulture Degree graduates at CIAT: Elsenburg during the 2009 academic year.

Table 130: Demographic breakdown of B.Agric Viticulture graduates during the 2009 academic year													
Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**
Total	**2**	**2**	**4**	**5**	**1**	**6**	**65**	**26**	**91**	**0**	**0**	**0**	**101**

One hundred and one (101) graduates were produced in B.Agric Viticulture Degree during the 2009 academic year.

Figure 299: Racial breakdown of B. Agric Viticulture Degree graduates

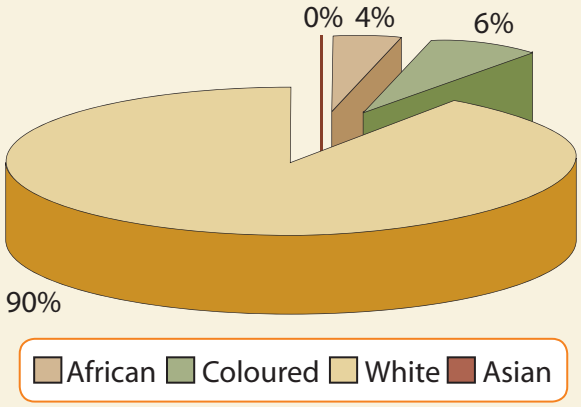


Figure 299 above indicates that Whites dominated B.Agric Viticulture Degree graduates during the 2009 academic year with 90%, followed by Coloureds with 6% and Africans with 4%. No Asians graduated in this programme during the 2009 academic year.

Figure 300: Gender breakdown of B. Agric Viticulture Degree graduates

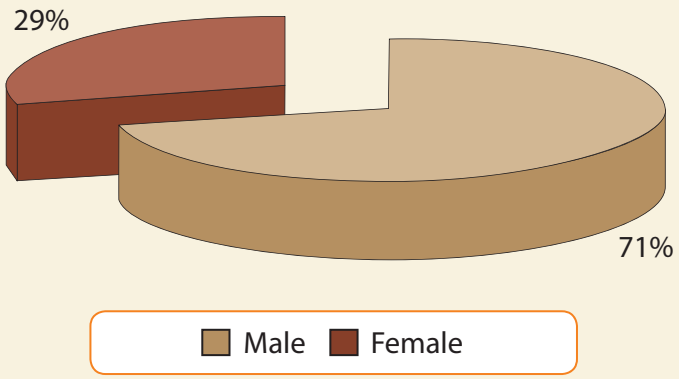


Figure 300 above shows that male graduates accounted for 71% of B.Agric Viticulture Degree graduates and females constituted 29%.

5.4.4 Graduate outputs for BSc Viticulture and Oenology in 2009

Forty (40) graduates were produced in BSc Viticulture and Oenology during the 2009 academic year.

Table 131 below illustrates the demographic breakdown of BSc Viticulture and Oenology graduates during the 2009 academic year.

Table 131: Demographic breakdown of BSc Viticulture and Oenology graduates during the 2009 academic year

Level	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	1	1	**2**	0	0	**0**	17	15	**32**	0	0	**0**	**34**	**85**
Honours	1	0	**1**	1	0	**1**	1	3	**4**	0	0	**0**	**6**	**15**
Total	**2**	**1**	**3**	**1**	**0**	**1**	**18**	**18**	**36**	**0**	**0**	**0**	**40**	**100**

Table 130 above illustrates that 85% of the total number of BSc Viticulture and Oenology graduates were Undergraduates and 15% were Honours graduates.

Figure 301: Racial breakdown of Undergraduate Degree graduates in Viticulture and Oenology

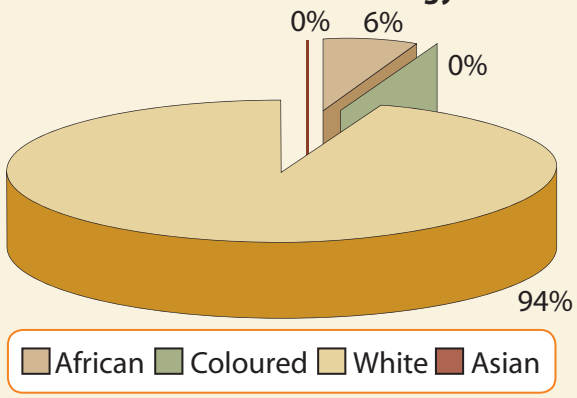


Figure 301 above depicts that White students dominated total number of BSc Viticulture and Oenology enrolments with 94%, followed by African graduates with 6%. No Coloured or Asian graduates were produced at Undergraduate Degree level in this programme.

Figure 302: Gender breakdown of Undergraduate Degree graduates in Viticulture and Oenology

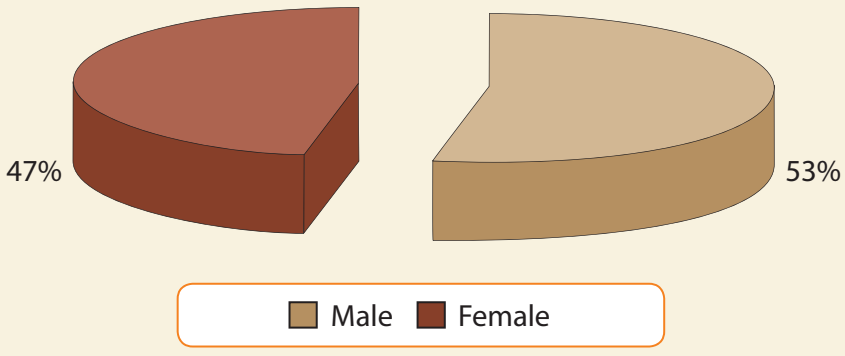


Figure 302 above indicates that male graduates dominated Undergraduate Degree graduates in BSc Viticulture and Oenology during the 2009 academic year with 53% and female graduates amounted to 47%.

5.4.5 Graduate outputs in Veterinary Science during the 2009 academic year

Table 132 below presents a demographic breakdown of Veterinary Science graduates during the 2009 academic year.

Table 132: Demographic breakdown of Veterinary Science graduates during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate (BVSc)	3	0	**3**	0	0	**0**	33	59	**92**	0	2	**2**	**97**
Honours	0	0	**0**	0	0	**0**	4	4	**8**	0	0	**0**	**8**
Master's	7	9	**16**	0	0	**0**	4	12	**16**	0	1	**1**	**33**
PhD	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Total	**11**	**9**	**20**	**0**	**0**	**0**	**42**	**75**	**117**	**0**	**3**	**3**	**140**

One hundred and forty (140) graduates were produced in Veterinary Science during the 2009 academic year.

Figure 303: Racial breakdown of BVSc graduates in Veterinary Science

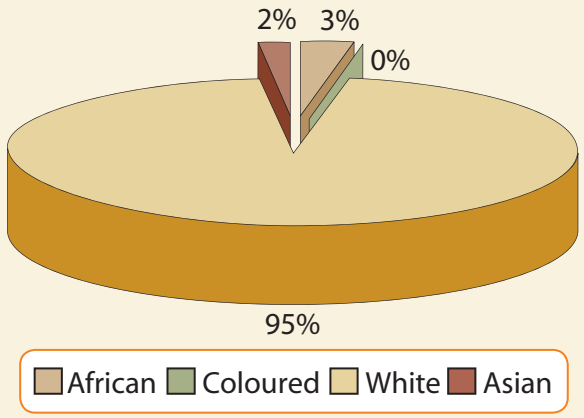


Figure 303 above depicts that White graduates constituted 95% of BVSc graduates during the 2009 academic year, followed by African graduates with 3%, Asian graduates with 2%. No Coloured graduates were produced in this CESM at Undergraduate level during the 2009 academic year.

Figure 304: Gender breakdown of BVSc graduates in Veterinary Science

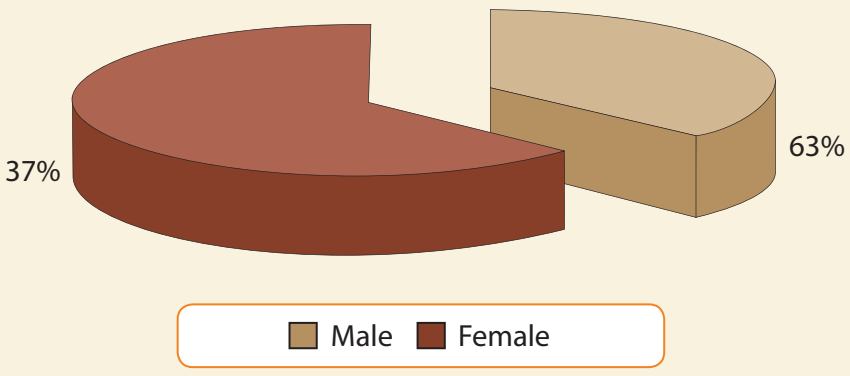


Figure 304 above indicates that females dominated BVSc graduates with 63% and male graduates accounted for 37%.

Figure 305: Gender breakdown of Honours Degree graduates in Veterinary Science

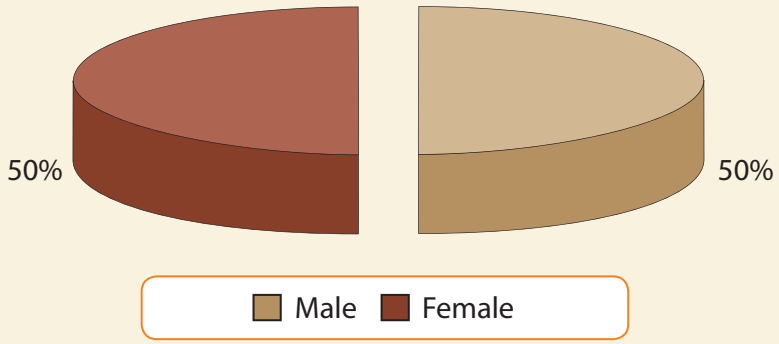


Figure 305 above indicates that both male and female graduates shared an equal percentage of Honours graduates with 50% each.

Figure 306: Racial breakdown of Master's Degree graduates in Veterinary Science

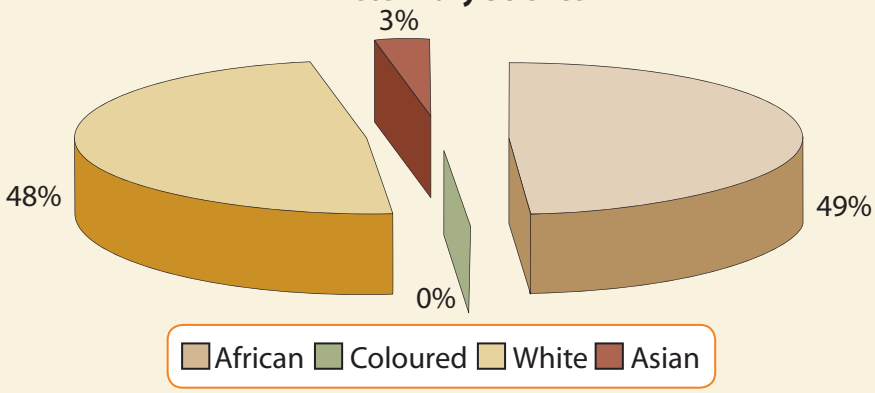


Figure 306 above depicts that African graduates constituted 49% of Master's in Veterinary Science graduates during the 2009 academic year, followed by White graduates with 48% and Asian graduates with 3%. No Coloured graduates were produced in this CESM at Master's level during the 2009 academic year.

Figure 307: Gender breakdown of Master's Degree graduates in Veterinary Science

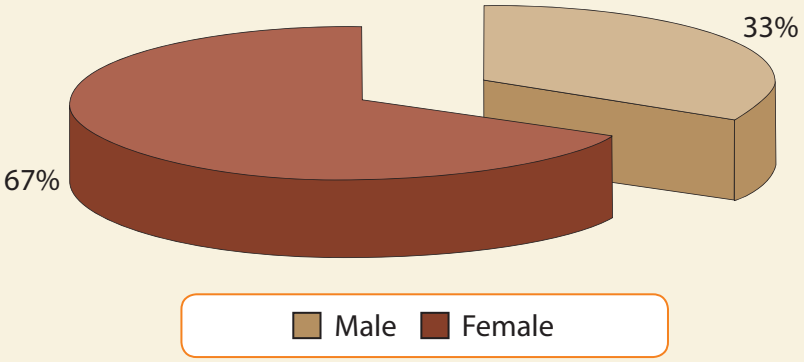


Figure 307 above indicates that female graduates dominated Master's Degree graduates with 67% and male graduates accounted for 33%.

5.4.6 Graduate outputs in Food Science and Technology in 2009

Ninety two (92) graduates were produced in Food Science and Technology during the 2009 academic year.

Table 133 below illustrates the demographic breakdown of Food Science and Technology graduates during the 2009 academic year.

Table 133: Demographic breakdown of Agricultural Food Technology graduates at universities during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	12	35	**47**	2	1	**3**	3	24	**27**	0	1	**1**	**78**
Master's	3	0	**3**	1	0	**1**	2	7	**9**	0	0	**0**	**13**
PhD	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Total	**15**	**35**	**50**	**3**	**1**	**4**	**5**	**32**	**37**	**0**	**1**	**1**	**92**

As illustrated in Table 133 above, 85% of the graduates in this CESM were produced at Undergraduate level followed by Master's Degree with 14% and PhD with 1%.

Figure 308: Racial breakdown of Undergraduate Degree graduates in Food Science and Technology

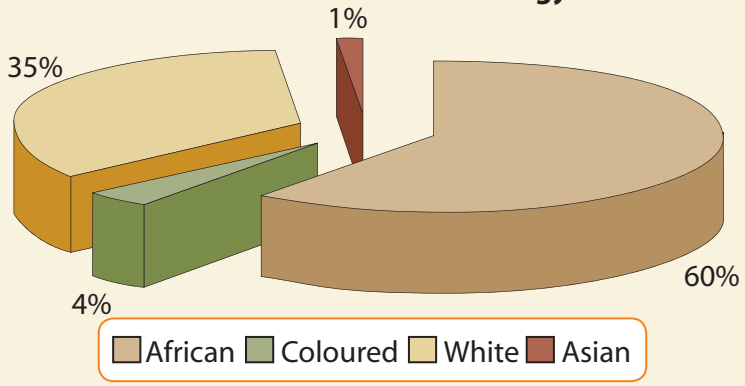


Figure 308 above illustrates that during the 2009 academic year, Africans dominated the Undergraduate in Food Science and Technology graduates with 60%, followed by White graduates with 35% and Coloured and Asian graduates with 4% and 1% respectively.

Figure 309: Gender breakdown of Undergraduate Degree graduates in Food Science and Technology

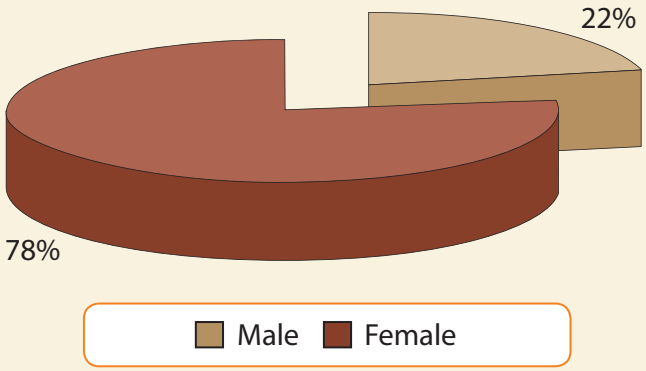


Figure 309 above shows that female graduates dominated Undergraduate Degree graduates in Food Science and Technology graduates with 78% and male graduates constituted 22%.

Figure 310: Racial breakdown of Master's Degree graduates in Food Science and Technology

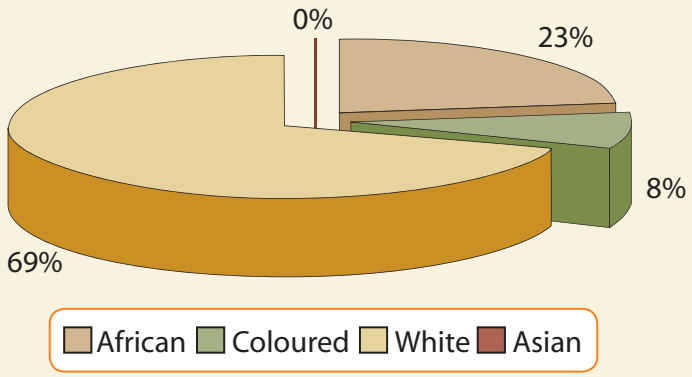


Figure 310 above illustrates that White graduates dominated Master's Degree graduates in Food Science and Technology during the 2009 academic year with 69%, followed by African graduates with 23% and Coloured graduates with 8%. No Asian graduated in this programme during the 2009 academic year.

Figure 311: Gender breakdown of Master's Degree graduates in Food Science and Technology

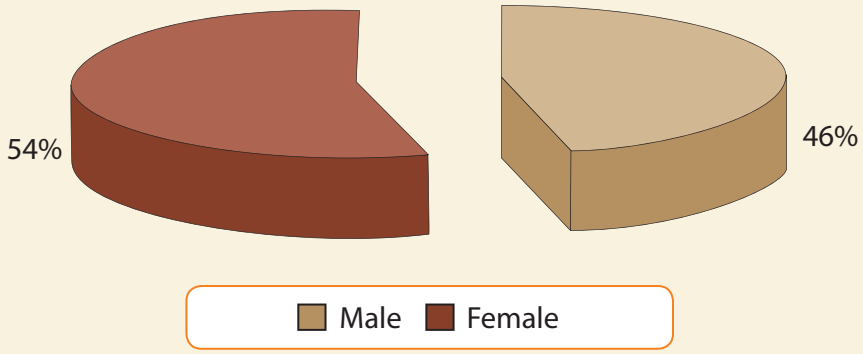


Figure 311 above shows that female graduates dominated Master's graduates in Food Science and Technology with 54% and male graduates constituted 46%.

5.4.7 Graduate outputs for BSc Agricultural Engineering in 2009

BSc Agricultural Engineering produced 7 graduates during the 2009 academic year.

Table 134 below presents a demographic breakdown of Agricultural Engineering graduates during the 2009 academic year.

Table 134: Demographic breakdown of BSc Agricultural Engineering graduates during the 2009 academic year

Level	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**
Total	**2**	**4**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**7**

Table 133 above indicates that only 7 graduates were produced in BSc Agricultural Engineering during the 2009 academic year; 6 were African graduates and 1 was White.

5.5 Conclusion

Generally, White females dominated both the enrolments and graduates figures in the scarce skills programmes in agriculture. Four hundred and forty five (445) students enrolled and 380 graduated in the scarce skills categories, which constitutes approximately 85% of the total number of enrolments. Whites still accounted for the highest enrolment figures with 63% compared to other racial groups and 74% of the graduates.

Out of 445 students enrolled in these programmes for the 2009 academic year, 63% were White, 22% were African, 8% were Coloureds and 7% were Asian students.

One would expect that Africans would dominate in all the programmes, including scarce skills categories, as they are the majority in terms of the country's demographics. But it needs to be indicated that Africans and Coloureds have shown a great improvement in terms of enrolments and graduates in the scarce skills programmes compared to the previous years.

Veterinary Science recorded the highest enrolment figures at higher institutions in the 2009 academic year with 235 students, followed by BSc Viticulture and Oenology with 116 students and Food Science and Technology with 38 students. The lowest intakes were recorded at BSc Agricultural Engineering and BSc Biotechnology with 33 and 23 students registered respectively.

Out of 380 graduates produced in scarce skills programmes during the 2009 academic year; 74% were Whites, 22% were Africans, 3% were Coloureds and 1% was Asians.

The highest graduate figures were recorded at Veterinary Science with 140 graduates, followed by B.Agric Viticulture with 101 graduates, Food Science and Technology with 92 graduates and BSc Viticulture and Oenology with 40 graduates. The lowest numbers of graduates were again recorded at BSc Agricultural Engineering with only 7 graduates during the 2009 academic year.

CHAPTER 6

ANALYSIS AND RECOMMENDATIONS

CHAPTER 6

ANALYSIS AND RECOMMENDATIONS

6.1. Analysis of agricultural graduate outputs and enrolments during the 2009 academic year

The overall number of enrolments in all AET programmes during the 2009 academic year at colleges of agriculture, universities of technology and universities is 820, 1 520 and 4 477 respectively. The number of graduates produced at colleges of agriculture, universities of technology and universities is 744, 816 and 2 039 respectively which therefore added up to 3 599 graduates produced in these institutions in 2009.

An observed trend in this study indicates that, as it has been the case in previous academic years, Africans and Whites are largely dominant on both enrolments and graduate figures in all the agricultural programmes, except in the case of scarce skills programmes that are dominated exclusively by whites. Similarly, these two racial groups together represent a major portion of the total population in terms of the country's demographics. Generally the number agricultural enrolments and graduates for Coloureds and Asians are very insignificant and in some cases these two racial groups do not feature at all. African and White males dominated most of the agricultural programmes.

Cedara, CIAT: Elsenburg, Grootfontein and Potchefstroom continued to be the only colleges that attract students from diverse racial groups, while other colleges still enrol students from one racial group only. Madzivhandila, Tompi Seleka and Tsolo have introduced skills programmes and have phased out the HET curricula.

The short course programmes introduced by colleges, in addition to the Diploma and Higher Certificate Programmes were widely offered in the agricultural colleges in 2009 at General Education and Training (GET) and Further Education and Training (FET) levels. Short course programmes offered by the colleges are more demand-driven and are aimed at addressing the needs of the farming community and LRAD beneficiaries in their respective locations and other projects. Some of the short courses are accredited while others are not. The non-accredited programmes are offered in the form of short courses that are based upon information sharing rather than on competency and as such the participants receive Certificates of attendance only.

Racial composition of the short courses has not changed, many of the beneficiaries and participants are Africans and very few participants are from other racial groups. Some colleges have reported that they did not keep statistics of the trainees who participated on these programmes and others have statistics but no demographic breakdown of the participants in the short courses. It is therefore advised that all the colleges keep a database of the beneficiaries and participants in these programmes in order to be able to evaluate the impact of the programmes to the socio-economic situation of the beneficiaries at a later stage.

It is evident from the findings that Africans generally dominate both the enrolments and graduate figures in the universities of technology and this trend also continues from previous academic years.

From 1 520 students registered at universities of technology, 79% are Africans and out of 816 graduates 64% are Africans. Some of programmes that were hugely dominated by Whites in the past four series of reports are now being dominated by Africans. For example in Animal Science, 192 Africans enrolled and 158 graduated, compared to 32 Whites who enrolled and 21 who graduated. Nonetheless, in Agricultural Biotechnology, the dominance of Asians is still prevalent; in 2009, 26 Asians enrolled and 42 graduated, compared to 24 Africans who enrolled and 31 who graduated. A major improvement was witnessed with regard to Asian enrolments and graduates. From the findings, Coloured enrolments and graduates are still insignificant in all agricultural programmes offered by universities of technology.

In almost all of the programmes, males dominate enrolments and graduates across all race groups. In only four cases, namely in Animal Science, Agricultural Food Technology, Agricultural Biotechnology and Veterinary Technology, females outweigh the number of males enrolled. The general trend is that males, particularly African and White males constitute a higher number of graduates and enrolments, with African males dominating.

Continuously, the general trend is that the majority of the enrolments and graduates in the universities of technology are recorded at Diploma level, for instance 86% of enrolments are Diploma students and 73% of graduates are Diploma graduates. MTech and DTech enrolments generally are at a low, representing just less than 3% of the total enrolments in 2009. On the other hand MTech graduates accounted for 3% of the total graduates while no DTech graduates was produced and this is prevalent to all racial groups.

The lower enrolment and graduate figures at Post-graduate level is also a cause for concern, considering that research scientists have been identified as some of the critical skills required in the sector. There is a need to investigate factors influencing the trends in order to implement interventions, which will reverse the situation.

A total of 4 477 students registered for AET programmes during the 2009 academic year. Enrolments far outweighed graduate figures at universities in 2009 as has been the trend in previous academic years.

Agricultural Science (Science Streams) comprised 17% of the total enrolments in 2009 while Agricultural Management comprised significant enrolment figures with 13 % and Animal Science with 11%. Rural Development (Inst. Agrar. Stream), Agribusiness (Inst. Agrar. Stream), Horticulture (Inst. Agrar. Stream) and Agronomy (Inst.Agrar. Stream) enrolments were the lowest, wherein only 1 student registered.

Graduates produced in Animal Science were the highest at 16% of the total graduates followed by Agricultural Science both Science and Art streams with 10% each and Agricultural Management with 8%. The lowest graduate output was recorded in Agricultural Economics Agribusiness (Inst. Agrar. Stream), Environmental Management (Inst. Agrar. Stream) and Horticulture (Inst. Agrar. Stream).

Twenty three (23) students enrolled in Inst. Agrar. programmes during 2009 academic year. It is the conclusion of this study that the insignificance of the Inst. Agrar. programmes representation is due to the fact that Inst. Agrar. programmes are offered only by University of Pretoria in South Africa. The outlook of these programmes is therefore subject to the influences and dynamics in that institution such as students fees hike.

University of Pretoria enjoys a distinct bigger share of both the enrolments and graduates during the 2009 academic year. Enrolments and graduates were the lowest at Universities of Zululand and Western Cape. It is important to note that these institutions offer relatively very fewer programmes compared to institutions that have had significant enrolments and graduate outputs, e.g. Stellenbosch, UNISA and Pretoria.

As the larger population group, Africans continued to represent bigger numbers of enrolments, however, Whites recorded proportionally larger figures. White students were even more dominant in all scarce skills and other AET categories such as Agricultural Science (Science Stream), Consumer Science and Veterinary Biology, which leads to Veterinary Science. As is the case in enrolments, African graduates dominated every racial group in almost all AET programmes with the exception of scarce skills. There is a great underrepresentation of Coloureds and Asian students in almost all programmes in the HET institutions; this is prevalent even in institutions in provinces where these racial groups are largely represented such as Stellenbosch and the Western Cape.

In 2009, males dominated the enrolments and graduates in almost all the programmes except in the case of Agricultural Food Technology, Veterinary Biology and Consumer Science where females outweigh the number of male enrolments.

African males and White males comprised 57% and 40% respectively of the total male enrolments and in the case of graduates outputs for the most part there are two programmes where female dominance is prevalent and these are Agricultural Food Technology and Consumer Science.

A concerning factor is that the Undergraduate Degree continues to record the most enrolments and graduates outputs compared to Post-graduate Degrees as in previous academic years. In the 2009 academic year Undergraduate degree enrolments represented 77% of the total enrolments at universities followed by Master's Degree with 11% and Honours Degree and Post-graduate Diplomas with 9% and 2% respectively. The least enrolments were recorded in PhD with 1% of the total enrolments at universities. The same applies to graduate outputs where Undergraduate Degree comprised 70% of the total graduate output at universities followed by Honours and Master's Degree with 14% and 13% respectively. PhD and Post-graduate Diploma accounted for 3% and 1% respectively of the total graduates at universities for the 2009 academic year.

As the agricultural sector is expected to play a decisive role in the future of the bio-fuels a critical evaluation by institutions of relevant study programmes will have to be intensified to ensure a proper contribution by these institutions. Also there is still a need cut down on AET programmes that are less relevant in addressing the needs of the sector, with more emphasis on programmes with high enrolments and graduates to ensure that there is no overproduction of skills in some of the programmes which leads to unemployed agricultural graduates and a negative imbalance on supply and demand of on agricultural skills in the labour market. It will also be essential, that the sector together with institutions of higher learning review the content of the curriculum to ensure that it prepares students for the world of work.

Generally, White males dominated both the enrolments and graduate figures in the scarce skills programmes in agriculture. Four hundred and forty five (445) students enrolled in the scarce skills categories, Whites still accounted for the highest enrolment figure compared to other racial groups with

64% of all the enrolments in scarce skills. Three hundred and eighty (380) graduates were produced in the scarce skills programmes during the 2009 academic year, 74% were White with other racial groups constituting the remaining 26%.

Out of 445 students enrolled in these programmes during the 2009 academic year, 34% were White females, 30% were White males and 13% were African males. Likewise, White females who graduated in scarce skills programmes constituted 72% of the female graduates in scarce skills programme followed by African females 25%. White males dominated the male graduates with 75%, followed by African males with 43%, Coloureds with 5% and Asians with 1%.

One would expect that Africans would dominate in all the programmes including scarce skills categories as they are the majority in terms of the country's demographics. It needs to be indicated, however, that Africans and Coloureds have shown a great improvement in terms of enrolments and graduates in the scarce skills programmes compared to the previous years.

The very low numbers of Blacks (Africans, Coloureds and Asians) in all the scarce skills categories might be attributed to several factors, which might include among others, the lack of interest by Non-Whites in the agricultural scarce skills programmes and/or admission requirements for pursuing studies in the scarce skills categories, which the majority of Africans might not meet. The contribution of the universities offering scarce skills programmes with regard to their efforts in attracting African students in these programmes could also be a contributing factor.

The highest enrolment figures were registered in Viticulture and Oenology and it has enrolled 53 students followed by Veterinary Science with 26. The highest graduate figures were recorded in Veterinary Science with 140 graduates, followed by B.Agric Viticulture with 101 graduates, Food Science and Technology with 92 graduates and Viticulture and Oenology with 40 graduates. The lowest numbers of graduates were recorded by BSc Agricultural Engineering with only 7 graduates during the 2009 academic year.

There are still very low numbers of graduates in Agricultural Engineering across all racial groups. Many Africans register for BSc Agricultural Engineering compared to other racial groups, but the graduate output is very low. From the trends it seems that although enrolments figures for Africans have increased every year since 2003, the graduate figures decline every year. In the cases of both Veterinary Science and BSc Agricultural engineering, although there is an increase in the number of Africans enrolments, the number of Africans graduating in the two programmes is very insignificant and the figures continue to drop every year

This situation has a negative impact on employment equity in the sector and it is essential, therefore, that interventions aimed at marketing scarce skills in agriculture be focused on schools which are predominantly African, Coloured and Asian. It is also essential that all factors influencing this situation be investigated in order to make evidence-based decisions that will eliminate the skewed participation of Africans to ensure equity in the agricultural sector.

6.2 Recommendations

6.2.1 Reducing overproduction of graduates in programmes that are not in demand in the agricultural sector

From the findings it is evident that some institutions produce many graduates and enrol more students in programmes that are not in demand in the agriculture sector. Such overproduction and over enrolment in certain programmes are attributed to the fact that institutions do not have information about market demands and the rate of employment for their graduates. It also is a known fact that graduates in certain programmes and from certain institutions have higher employment rates than others. It is necessary, therefore, to investigate the reasons for these trends. To curb this problem it is crucial that all the institutions should develop systems that will track the employability of their graduates in the various programmes, in order to decrease overproduction of skills that are not in demand in the agricultural sector. Funding formulae for universities should be drawn up in terms of the relevance, type of programmes offered and according to the demand within the agricultural sector.

There are challenges in agriculture and the curricula need to be responsive and aligned to the needs of the agricultural sector, by increasing the supply of graduates in fields of demand. HET institutes need to involve themselves in alumni studies to determine the employability of their graduates and to adapt the programmes accordingly.

Career guidance, career awareness at school levels and the marketing of the Higher Education and Training Institutes must include scarce skills and programmes that are in demand in the agricultural sector. Senior lecturers of Higher Education and Training institutes can be involved at school level, to assist in the training of Agricultural Science subjects, in order to promote agriculture as a career.

6.2.2 Effective participation of the agricultural sector in agricultural curriculum reviews and development of higher and further education institutions

The National Agricultural Education and Training Forum was established in terms of the Agricultural Education and Training Strategy (2005) and should play a major role in curriculum-review meetings of higher education institutions as well as during the development and reviews of the agricultural curriculum for General Education and Training and Further Education and Training bands. This will ensure that agricultural curricula at all levels of the education system address the needs of the agriculture sector.

This study also recommends that DoA Directorates play a major role in determining the agricultural curricula, i.e. directly influence the curricula for respective departments at universities e.g. Directorate of Animal Health should liaise with Animal Health departments at various universities about what the labour market requires in terms of skills required, e.g. Animal Health Technicians.

6.2.3 Quality benchmarking of similar agricultural programmes in all the higher education institutions

The perception that the quality of programmes varies from one institution to the other in terms of content is also a cause for concern. For instance, a BSc in Agriculture does not offer the same content in

all the institutions offering the programme and admission requirements for similar programmes vary. It is therefore necessary that the Department of Agriculture, in collaboration with the Department of Education, investigate the quality of programmes in each institution and establish quality benchmarks for same programmes in higher education institutions.

Higher Education and Training Institutes that present AET need to review the alignment of the AET curricula at all Higher Education and Training levels, to support the development of an effective, harmonized, mobile and articulated AET curriculum.

6.2.4 Encouraging undergraduates to pursue post-graduate studies in specialised fields in agriculture in order to enlarge the pool of agricultural scientists

From the findings the general trend deduced is that there is an increasing number of entrants into agriculture at undergraduate level, for instance high numbers of Africans are enrolling for agricultural programmes at undergraduate level. However, this is not addressing the needs of the rapidly changing landscape as well as the skills demands in the sector. It is also evident from the findings that there are a limited number of agricultural enrolments and graduates at Post-graduate level, particularly at Master's and PhD levels. It is recommended therefore, that graduates with undergraduate qualifications outside of the identified scarce skills programmes including those with undergraduate qualifications in agricultural economics pursue higher education programmes and be specialists in Certification fields of agriculture. This will establish a strong scientific research base for the sector.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonized, mobile and articulated AET curriculum.

Regular studies to investigate the challenges and needs of the agricultural sector, to adapt the curricula and encourage research into the needs identified.

6.2.5 Marketing agricultural careers to Indians and Coloureds

From the findings it is evident that an insignificant number of Indians and Coloureds are enrolling for and graduating in and enrolling for agricultural programmes. It is necessary to target Indian and Coloured dominated schools to market agriculture as a career to Indian and Coloured youth.

6.2.6 Recruiting female learners to register for scarce skills programmes in agriculture

The general trend is that there are a lower number of Black (Coloured, Indian and African) female enrolments and graduates in scarce skills categories. To recruit females into the agricultural scarce skills professions it is important to work in collaboration with the Provincial Departments of Education and to liaise with Female-Learner coordinators to market agricultural scarce skills careers to female learners. Female–Learner Coordinators in the various PDEs can also provide a platform for providing guidance to females in terms of the correct subject combinations at the General Education and Training levels to pursue scarce skills in agriculture.

6.2.7 Increasing the number of African students enrolling for and graduating in scarce skills programmes in agriculture

Massive career awareness campaigns in schools targeting learners before entry into FET (Grade 10) phase so that they can choose correct subject combinations required to pursue studies in agricultural scarce skills earlier in the FET phase. The target group will be learners from the African, Coloured and Indians communities. White females should also be targeted for agricultural engineering and other scarce skills. This will be a collaborative venture with Public Relations Departments of the Universities and managers of girl learner educational programmes from Provinces.

It is necessary that agricultural engineering courses be offered in the agricultural colleges and produce agricultural engineering technicians. This will provide basic skills and knowledge of agricultural engineering for those with Mathematics and Science at Senior Certificate level but do not meet the admission requirements for a Degree in Agricultural Engineering. The engineering technician qualification obtained from agricultural colleges might provide skills and knowledge required, as well as encouragement to pursue an Agricultural Engineering Degree at University level. This will then require systems that will allow easy progression and mobility from the agricultural college sector to the University or University of Technology, as well as effective Recognition of Prior Learning (RPL) systems.

6.2.8 Introduction of Veterinary Science studies by another university

Given the failure of University of Pretoria to produce African, Coloured and Asian veterinarians meeting the labour market demand, this study highly recommends that another university should introduce in its agricultural curricula the veterinary science studies. Secondly, a variety in this field of study is highly envisaged as it is impossible for one institution to successfully and sustainably provide the whole country's labour market with enough veterinarians. Moreover, this shortage of veterinarian is further aggravated by the fact that a significant number of veterinarians leave the country though brain drain, preferring overseas countries such as the United Kingdom.

6.2.9 Partnership between the Department of Agriculture and Faculties of Agriculture at HET and Colleges of Agriculture

The Department of Agriculture should develop relations with all the faculties of agriculture in Higher Education Institutions, whereby the DoA officials will get a platform to communicate the skilled people the agricultural labour market is looking for in terms of relevant skills, knowledge and behaviour. Secondly, elites in the agricultural business such as CEOs and other senior managers of private companies should be invited for lectures on an ongoing basis as it is being done by institutions.

An indication will be given as to what exactly should be the focus of the curricula in the institutions of higher learning with regards to AET. This will not only give confidence to the students completing their qualifications but will ensure that by the time graduates get to the labour market they will be ready to take on tasks assigned to them and will possess the skills currently required in the labour market.

6.2.10 Task team formulation to look at the progression of Non-White individuals in scarce skills programmes, such as, particularly Veterinary Science

Factors contributing to Africans not progressing in the scarce skills need to be investigated, especially in light of the fact that from 2004, to 2009 there has not been significant representation of Africans in these programmes. The skills shortage impact is twofold; first it cripples the economic growth due to poor contribution to the GDP by the agricultural sector secondly politically efforts towards fair distribution of opportunities in the agricultural economic division such as employment equity take a setback, as there are relatively very few professionals in these fields of study.

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

1	Agricultural Broad-Based African Economic Empowerment	(AgriBee)
2	Agricultural Education and Training	(AET)
3	Association of Principals of Agricultural Colleges	(APAC)
4	Bachelor of Technology	(BTech)
5	Bachelor of Veterinary Science	(BVSc)
6	Cape Peninsula University of Technology	(CPUT)
7	Categorization of Education Subject Matter	(CESM)
8	Central University of Technology	(CUT)
9	Department of Agriculture	(DoA)
10	Doctor of Technology	(DTech)
11	Durban University of Technology	(DUT)
12	Education, Training and Extension Services	(ETES)
13	Central University of Technology, (Free State)	(CUT,FS)
14	Further Education and Training	(FET)
15	Higher Education	(HE)
16	Higher Education Quality Committee	(HEQC)
17	Higher Education and Training	(HET)
18	Land Reform & Agricultural Development	(LRAD)
19	Master of Technology	(MTech)
20	Mangosuthu University of Technology	(MUT)
21	National Education and Training Forum	(NAETF)
22	Nelson Mandela Metropolitan University	(NMMU)
23	National Qualification Framework	(NQF)
24	Recognition of Prior Learning	(RPL)
25	Sector Education and Training Authority	(SETA)
26	Standard Generating Bodies	(SGB)
27	Tshwane University of Technology	(TUT)
28	University of South Africa	(UNISA)