ANNUAL REPORT ON AGRICULTURAL PROGRAMMES, GRADUATE OUTPUTS AND ENROLMENTS AT PUBLIC HIGHER EDUCATION INSTITUTIONS AND COLLEGES OF AGRICULTURE FOR 2004.

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ANNUAL REPORT ON AGRICULTURAL PROGRAMMES, GRADUATE OUTPUTS AND ENROLMENTS AT PUBLIC HIGHER EDUCATION INSTITUTIONS AND COLLEGES OF AGRICULTURE FOR 2004

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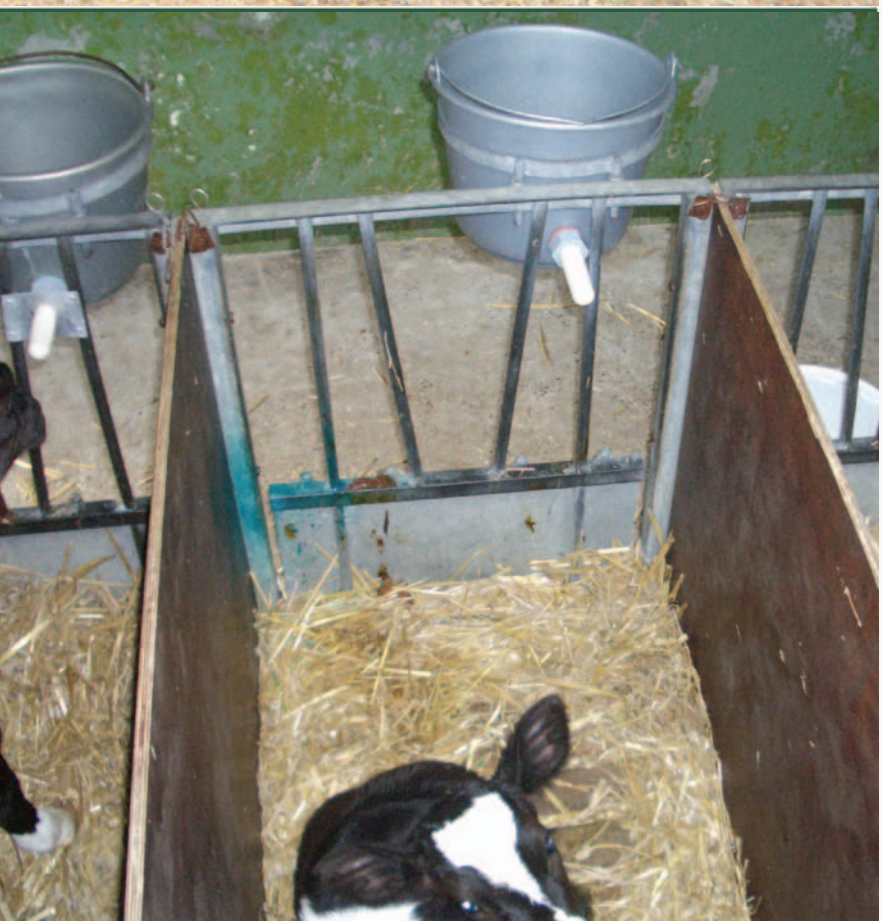


EXECUTIVE SUMMARY

Foreword by the Director General

I am pleased to present the 2004 Annual Report on Agricultural Programmes, Graduate Outputs and Enrolments in Public Higher Education Institutions and Colleges of Agriculture. This is the first 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 progammes offered by these institutions on an annual basis. This follows the 10 year HRD Review report which was released in 2006 covering the period 1993 to 2003.

The 2004 Annual Report on Agricultural Graduate Outputs and Enrolments emanates from a data collection process by the Department of Agriculture on the supply of intermediate and high level skills for the agricultural sector. The purpose of the study was 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 biggest suppliers of agricultural graduates in the country. The study was also aimed at investigating and identifying agricultural fields of study which have oversupply and those with undersupply of graduates. The focus of the study was therefore 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 2004 academic year.

it is generally known that there is a shortage of certain critical skills in certain fields of agriculture. In light of these skills shortages in the sector, the Department of Agriculture has made an effort with regards to human capital development for the entire agricultural sector by the development and implementation of the Agricultural Education and Training (AET) strategy fo 2005. The strategy has indicated that there are poor linkages between the agricultural education providers and skills demand by agricultural industry which results in oversupply of certain skills and scarcity of other skills in the South African labour market.

I believe that this report will make a genuine contribution in the implementation of the 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 Aftrican economy in general. It is therefore my conviction that this report shall provide a very strong and informed basis for decision making in agricultural education and training.

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

Masiphula Mbongwa
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 2004 academic year. The 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 2004 report is the first 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.

2. Objectives of the project

The primary objective of the study is to observe the trends in terms of skills supply for the agriculture sector by the HE institutions and the 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 policy decisions 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 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 and Universities of Technology offering AET programmes. The study was conducted from November 2005 to March 2006.

Data collection for the study focused on number of AET enrolments and graduates from Undergraduate to postgraduate levels focusing on all the agricultural disciplines. It also focused on the types of programmes 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 the 11 colleges of agriculture. The questionnaires were completed and returned to the Directorate in the same way.

The study only focused on those public institutions that were offering higher education and training programmes. Since Tsolo College as one of the colleges of agriculture lost its accreditation from the Higher Education Quality Committee, it has not been offering any further education and higher education programmes. This report therefore excludes Tsolo Agricultural College.

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 report indicates how the qualifications were classified per CESM.

4. Limitations

The study is mostly quantitative in nature and therefore it 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 different scarce skills within the CESM not clearly indicated e.g. entomology, which is a scarce skill is included under plant health. This was due to the fact

that institutions do could not provide the information per field of specialisation within the CESM.

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

The other limitation of the study is that the Faculty of Veterinary Science at the University of Pretoria could not provide the data on graduate outputs and enrolments at postgraduate level. This problem also applies in the case of agricultural engineering. The study therefore does not give indication of the number of graduates and enrolments in veterinary and agricultural engineering at postgraduate level.

5. Findings

5.1. Agricultural Education and Training at Colleges of Agriculture

There are eleven (11) Public Colleges of Agriculture offering qualifications in the Higher Education and Training (HET) band up to the BTech degree level, and the programmes are offered at colleges on an annual basis.

5.1.1 AET Programmes offered by the Colleges of Agriculture in 2004

All the Colleges of Agriculture have their qualifications registered into the National Qualifications Framework (NQF). In the 2004 academic year, all the colleges offered programmes ranging from NQF level 1 to NQF level 6. The common qualifications offered in all 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 Higher Certificate in Agriculture. All the higher certificates are offered on a two-year programme of 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 and 4 are not yet accredited.

All the colleges of agriculture offered NQF level 5 qualifications, i.e. Higher education programmes. Seven (64%) of the 11 colleges offered NQF level 6 programmes in 2004. Madzivhandila and Tompi Seleka have phased out the NQF level 5 programmes in 2004 and are presently concentrating on learnerships.

5.1.2. Agricultural Education and Training Enrolment figures at Colleges of Agriculture in 2004

A breakdown of enrolments by gender and race at Colleges of Agriculture is presented in table below.

Breakdown of enrolments by gender and race

Name of the College	African			Coloured			White			Indian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
1. Cedara	36	35	71	1	0	1	73	12	85	2	0	2	159	11
2. Elsenburg	3	4	7	30	5	35	90	35	125	0	0	0	167	11
3. Fort Cox	181	73	254	0	0		0	0	0	0	0	0	254	17
4. Glen	109	41	150	1	0	1	0	0	0	0	0	0	151	10
5. Grootfontein	2	2	4	4	0	4	50	5	55	0	0	0	63	4
6. Lowveld	83	50	133	0	0	0	77	2	79	0	0	0	212	15
7. Madzivhandila	24	19	43	0	0	0	0	0	0	0	0	0	43	3
8. Owen Sitole	26	28	54	0	0	0	0	0	0	0	0	0	54	4
9. Potchefstroom	38	20	58	2	0	2	173	11	184	0	0	0	244	17
10. Taung	76	38	114	0	0	0	0	0	0	0	0	0	114	8
11. Tompi Seleka	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**578**	**310**	**888**	**38**	**5**	**43**	**463**	**65**	**528**	**2**	**0**	**2**	**1461**	**100**

A total number of 1461 students were enrolled in 2004 at all the Agricultural Colleges. Tompi Seleka College did not enroll new students for the 2004 academic year due to the change in their curriculum, i.e. phasing out the NQF level 5 programmes, and focusing on short courses, learnerships and FET programmes. Colleges of agriculture combined have total enrolment figures of less than 2000, which is a required norm to determine an institution to operate at higher education level.

Fort Cox College had a high number of enrolments with 254 students, followed by Potchefstroom with 244 students and Lowveld College with 212 students and the lowest enrolments were registered at Grootfontein and Owen Sitole with 63 students and 54 students respectively and Madzivhandila with 43 students of the total enrolment figures for the 2004 academic year.

African students dominated the enrolments with 61% (888) followed by White students with 36% (528). The other population groups enrolled less than 5 % of the total enrolments at Colleges in 2004.

Male enrolments constitute 74% (1081) of the total number of enrolled students in 2004 and female enrolments constitute 26% (380). African males dominate with 40%; followed by white males with 32%. Coloured and Indian students constitute very low records of the total enrolments for the 2004 academic year, and Indian students are almost non-existent. This high gender imbalances calls for a further review of student recruitment strategies from the colleges of agriculture

5.1.3. Agricultural Education and Training Graduate figures at Colleges of Agriculture in 2004

A breakdown of graduates by gender and race at Colleges of Agriculture is presented in table below.

Breakdown of graduates by gender and race

Name of the College	African			Coloured			White			Indian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
1. Cedara	8	9	17	0	0	0	19	4	23	0	0	0	40	6
2. Elsenburg	2	0	2	21	3	24	87	18	105	0	0	0	131	20
3. Fort Cox	26	15	41	0	0	0	0	0	0	0	0	0	41	6
4. Glen	25	11	36	2	0	2	0	0	0	0	0	0	38	6
5. Grootfontein	2	2	4	3	0	3	44	6	50	0	0	0	57	9
6. Lowveld	25	12	37	0	0	0	27	11	38	0	0	0	75	11
7. Madzivhandila	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8. Owen Sitole	39	48	87	0	0	0	0	0	0	0	0	0	87	13
9. Potchefstroom	16	4	20	0	0	0	78	5	83	0	0	0	103	15
10. Taung	54	28	82	0	0	0	0	0	0	0	0	0	82	12
11. Tompi Seleka	2	12	14	0	0	0	0	0	0	0	0	0	14	2
TOTAL	**199**	**141**	**340**	**26**	**3**	**29**	**255**	**44**	**299**	**0**	**0**	**0**	**668**	**100**

In 2004, 668 students graduated at Colleges of Agriculture, but the total number of graduates completing the Higher Certificate (2 years) and the Diploma (3 years) from the Colleges of Agriculture who are considered as labour market entrants are 634. Madzivhandila did not have graduates, because they had a break during the past two years and no registrations took place during that period due to the process of changing their curriculum, i.e. phasing out the NQF level 5 programmes, and focusing on short courses, learnerships and FET programmes. Elsenburg had a high number of graduates with 20% (131), followed by Potchefstroom College with 15% (103) and Owen Sitole with 13% (87).

African graduates were the largest group of graduates with 51% followed by White students with 45% and the other racial groups constitute the remaining 4%. Male graduates and enrolments consistently outnumber female graduates on a ratio of about 1 to 3.

The data in above table depicts that female graduates constitute 28% (188) of the total number of graduates and male graduates constitute 72% (480). African females dominate the female graduate population. There were no Indian graduates for the 2004 academic year. Table above indicates that the African females continue the trend of being the most represented among females. White males dominate with 53% (255), followed by African males with 42% (199) and Coloured males with 5% (26).

5.2. Agricultural Education and Training at Universities of Technology in 2004

There are 6 Universities of Technology offering AET programmes in South Africa namely; Cape Peninsula University of Technology (CPUT), Central University of Technology Free State (CUT), Mangosuthu Technikon (Mantec), Nelson Mandela Metropolitan University (NMMU), University of South Africa (UNISA) 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 Agriculture Management from Diploma level to BTech level, with the exception of TUT. Most of the historically disadvantaged institutions do not offer programmes in the scarce skills category like Viticulture, BVSc Veterinary Science 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 2004

Table below presents a demographic of AET enrolments at universities of technology for the 2004 academic year.

Demographic breakdown of AET enrolments in universities of technology for the 2004 academic year

University of Technology	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	5	3	8	5	2	7	87	10	97	0	0	0	112
CUT	52	16	68	3	0	3	22	2	24	0	0	0	95
Mantec	265	184	449	0	0	0	0	0	0	0	0	0	449
NMMU	81	41	122	3	1	4	13	0	13	0	0	0	139
TUT	695	398	1093	4	3	7	388	233	621	4	2	6	1727
UNISA	140	55	195	5	5	10	12	20	32	3	0	3	240
TOTAL	**1238**	**697**	**1935**	**20**	**11**	**31**	**522**	**265**	**787**	**7**	**2**	**9**	**2762**

A total number of 2762 students were enrolled in 2004 at all the Universities of Technology. TUT enrolled 63% (1727) of the total enrolments followed by Mantec with 16% (449) and UNISA with 9% (240). NMMU, CPUT and CUT all enrolled the lowest with 5% (139), 4% (112) and 3% (95) respectively.

African students dominate the Universities of Technology enrolments with 71% (1787), followed by White students with 28% (787). Coloured and Indian students constitute very low enrolments for 2004 academic year. Coloured students registered 1% and Indian students less than 1% of the overall enrolments in 2004. Male students constitute 65% (1787) of the total enrolments at Universities of Technology and females constitute 35% (975).

5.2.2 Agricultural Education and Training Enrolments at Universities of Technology by Level of Qualifications & CESM in 2004

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

CESM	DIPLOMA	BTECH	MTECH	DTECH	TOTAL	%
Animal Science	1058	86	0	1	1145	41
Horticulture	118	53	0	0	171	6
Plant Science	190	0	0	0	190	7
Land Reclamation	79	46	0	0	125	5
Renewable Natural Resources	501	32	25	2	560	20
Agric. Management	178	0	0	0	178	6
Other Agric. and Renewable Resources	84	0	0	0	84	3
Wildlife	134	0	0	0	134	5

Agricultural enrolments at universities of technology by CESM & levels of qualification						
CESM	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**TOTAL**	**%**
Agric. Science	0	101	21	3	125	5
Agric. Extension	0	50	0	0	50	2
TOTAL	**2342**	**368**	**46**	**6**	**2762**	**100**

Animal Science and Renewable Natural Resources have the highest enrolment figures with 1145 (41%) and 560 (20%) respectively. Other CESM's have registered less than 10% enrolments each. Diploma enrolments constitute 85% (2342) of the total enrolments at Universities of Technology in 2004 followed by BTech enrolments with 13% (368). Postgraduate (MTech and DTech) enrolments constitute 1% (52) of the total enrolments at Universities of Technology in 2004.

5.2.3 Agricultural Education and Training Graduate figures at Universities of Technology in 2004

Table below presents a demographic breakdown of universities of technology graduates by gender and race.

Breakdown of graduates by gender and race													
Name of the University	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
CPUT	10	3	13	4	2	6	35	4	39	0	0	0	58
CUT	30	14	44	1	1	2	15	1	16	0	0	0	62
Mantec	33	26	59	0	0	0	0	0	0	0	0	0	59
NMMU	20	18	38	1	0	1	3	0	3	0	0	0	42
TUT	231	148	379	0	0	0	90	64	154	1	0	1	534
UNISA	17	9	26	0	0	0	1	1	2	0	0	0	28
TOTAL	**341**	**218**	**559**	**6**	**3**	**9**	**144**	**70**	**214**	**1**	**0**	**1**	**783**

A total number of 783 graduates were produced in 2004 at all Universities of Technology. TUT has produced 68% of the overall graduates at Universities of Technology in 2004. The other Universities of Technology together produced the remaining 32% of the overall graduates in 2004.

African graduates constitute 72% of all the AET graduates at Universities of Technology in 2004, followed by White graduates with 27%. Coloured graduates comprise 1% of the total graduates produced by Universities of Technology in 2004. Male graduates constitute 63% of the overall AET graduates at Universities of Technology in 2004 and female graduates account for 37%.

5.2.4 Agricultural Education and Training Graduate figures at Universities of Technology by Level of Qualification and CESM in 2004

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 & level of qualification						
CESM	**CERTIFICATE**	**DIPLOMA**	**BTECH**	**MTECH**	**TOTAL**	**%**
Agric. Management	21	108	71	0	200	26
Animal Science	2	187	35	0	224	28
Horticulture	8	28	16	0	52	7
Plant Science	0	59	0	0	59	8
Land Reclamation	1	17	1	0	19	2
Renewable Natural Resources	0	87	0	0	87	11
Other Agric. & Renewable Resources	4	0	15	0	19	2
Wildlife	8	0	0	4	12	2
Agric. Science	0	43	0	0	43	5
Agric. Extension	0	22	41	5	68	9
Total	**44**	**551**	**179**	**9**	**783**	**100**

Animal Science, Agriculture Management and Renewable Natural Resources have high graduate figures with 224 (28%), 200 (26%) and 87 (11%) respectively. Other CESM categories have less than 10% of the graduates each.

Diploma graduates dominate the AET graduates at Universities of Technology produced in 2004 with 551(70%) followed by BTech graduates with 179 (23%). Certificates and MTech graduates constitute 44 (6%) and 9 (1%) of the total graduates at Universities of Technology in 2004 respectively.

5.3. Agricultural Education and Training at Universities in 2004

There are 8 Universities offering AET programmes in South Africa. 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 the Universities offer various agricultural programmes and they vary in terms of scope. For instance University of Stellenbosch, University of Pretoria, University of KwaZulu Natal, University of Free State and University of Fort Hare, all consist of many programmes in their agricultural curricula.

5.3.1 Agricultural Education and Training Enrolment figures at Universities in 2004

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

Breakdown of enrolments by gender and race per university

Name of the University	African			Coloured			White			Indian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Fort Hare University	221	139	360	0	0	0	2	0	2	0	0	0	362	7
North West University	388	468	856	0	0	0	0	0	0	0	0	0	856	16
University of Free State	230	82	312	6	3	9	392	105	497	3	2	5	823	15
University of KwaZulu Natal	192	74	266	6	2	8	98	71	169	16	15	31	474	9
University of Limpopo	325	216	541	1	0	1	2	0	2	0	0	0	544	10
University of Pretoria	262	158	420	5	5	10	198	161	359	7	7	14	803	15
University of Stellenbosch	61	41	102	30	29	59	551	400	951	4	0	4	1116	21
University of Venda	217	172	389	0	0	0	0	0	0	0	0	0	389	7
Total	**1896**	**1350**	**3246**	**48**	**39**	**87**	**1243**	**737**	**1980**	**30**	**24**	**54**	**5367**	**100**

A total number of 5367 students were enrolled in 2004 at all the Universities. University of Stellenbosch constitutes 21% (1116) of the overall enrolments for the 2004 academic year. North West University enrolled 16% (856) followed by University of Pretoria and University of Free State with 15% each of the overall University enrolments for 2004 academic year. University of Limpopo enrolled 10 % (544) of the overall enrolments at Universities. Fort Hare, University of KwaZulu Natal, and University of Venda all enrolled less than 10% of the overall enrolments at Universities in 2004.

African students account for 60% of the overall AET enrolments at Universities followed by White students with 37%. Coloured and Indian students together constitute less than 5% of the AET enrolments in the 2004 academic year. Male students constitute 60% and female students comprise 40% of total enrolments in the 2004 academic year

5.3.2 Agricultural Education and Training Enrolments at Universities by Level of Qualifications & CESM in 2004

Table below presents agricultural enrolments at universities by CESM and levels of qualifications.

Agricultural enrolments at universities in 2004 by CESM and academic level.						
CESM	**Undergraduate**	**Honours**	**Masters**	**PhD**	**TOTAL**	**%**
Agricultural Economics	26	39	43	0	108	2
Agricultural Eco. (AgriBusiness)	12	0	6	27	45	1
Agricultural Science (B.Agric Stream)	502	10	25	310	847	16
Agricultural Science (Science Stream)	912	6	524	0	1442	27
Agric. Extension (InstAgrar Stream)	0	0	8	0	8	0
Agric. Extension science stream	159	23	59	10	251	5
Agric. Food Technology	170	4	35	24	233	4
Animal Science	906	33	47	10	996	19
Horticulture	16	0	28	15	59	1
Plant Science	81	8	23	13	125	2
Soil Science	38	2	8	9	57	1
Forestry	47	1	24	14	86	2
Renewable Natural Resources	122	0	6	0	128	2
Agric. Management	336	74	92	0	502	9
Other Agric. and Renewable Resources	5	0	46	3	54	1
Agric. Food Tech (InstAgrar Stream)	34	4	6	0	44	1
Agric. Man. (InstAgrar Stream)	0	39	0	0	39	1
Animal Sc. (InstaAgrar Stream)	12	0	12	0	24	0
Horticulture (InstAgrar Stream)	35	7	16	0	58	1
Land Rec.(Land use InstAgrar Stream)	9	3	4	0	16	0
Rural Dev. (InstAgrar Stream)	45	0	13	0	58	1
Agric. Econ. (InstAgrar Stream)	0	13	23	0	36	1
Environ. Man. (InstAgrar Stream)	0	0	7	0	7	0
Land Reclamation	0	54	0	0	54	1
Agronomy (InstAgrar Stream)	0	0	6	0	6	0
Wildlife	76	5	3	0	84	2
TOTAL	3543	325	1064	435	5367	100

Agricultural Science (Science Stream) and Animal Science enrolled the highest number of students at Universities with 27% (1442) and 19% (996) respectively. Agricultural Science (Art Stream) enrolled 16% (847) of the overall enrolments in the 2004 academic year at Universities. All other CESM enrolled less than 10% of the overall enrolments at Universities in the 2004 academic year.

The Undergraduate enrolments account for 66% (3543) of the total enrolments at Universities in 2004 followed by Honours enrolments with 6% (325). Masters and PhD level contributed 20% (1064) and 8% (435) of the total enrolments at Universities in 2004 respectively.

5.3.3 Agricultural Education and Training Graduate figures at Universities in 2004

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

Demographic breakdown of AET graduates by universities in 2004.

Name of the University	African			Coloured			White			Indian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Fort Hare University	27	17	**44**	0	0	**0**	0	0	**0**	0	0	**0**	44	5
North West University	76	113	**189**	0	0	**0**	0	0	**0**	0	0	**0**	189	21
University of Free State	38	9	**47**	1	0	**1**	68	23	**91**	1	1	**2**	141	16
University of KwaZulu Natal	9	22	**31**	0	0	**0**	17	11	**28**	1	0	**1**	60	7
University of Limpopo	38	28	**66**	0	0	**0**	0	0	**0**	0	0	**0**	66	7
University of Pretoria	53	32	**85**	1	0	**1**	35	37	**72**	2	0	**2**	160	18
University of Stellenbosch	13	9	**22**	3	1	**4**	95	77	**172**	2	0	**2**	200	22
University of Venda	8	26	**34**	0	0	**0**	0	0	**0**	0	0	**0**	34	4
TOTAL	**262**	**256**	**518**	**5**	**1**	**6**	**215**	**148**	**363**	**6**	**1**	**7**	**894**	**100**

Eight hundred and ninety four (894) graduates were produced in 2004 at all the Universities. University of Stellenbosch has produced 22 % (200) of the total graduates in the 2004 academic year followed by North West University with 21% (189). University of Pretoria account for 18% (160) of the total graduates in Universities in the 2004 academic year and University of Free State produced 16% (141) of the total graduates for the 2004 academic year at Universities. All other Universities each produced less than 10% of the graduates figure.

African graduates account for 57% and White graduates constitute 41% of the total Universities graduates for the 2004 academic year. Coloured and Indian graduates together constitute 2% of the total graduates at Universities for the 2004 academic year. Gender breakdown indicates that male graduates dominate the Universities graduates with 55% and female graduates constitute only 45% of the total graduates for the 2004 academic year at Universities.

5.3.4 AET Graduates at Universities by Level of Qualifications & CESM in 2004

Table below presents a breakdown of universities graduates by level of qualification and CESM categories.

Agricultural graduates at universities by CESM and level of qualification

CESM	Undergraduate	Honours	Masters	PhD	Total	%
Agric. Economics	17	49	7	0	73	7
Agriculture Science (Art Stream)	74	6	3	35	118	13
Agricultural Science (Science Stream)	119	6	113	0	238	28
Agricultural Extension	16	12	5	2	35	5
Agricultural Food Technology	29	4	9	3	45	5
Animal Science	173	17	6	1	197	22
Plant Science	9	9	2	0	20	2
Horticulture	5	0	4	4	13	2
Soil Science	3	2	3	1	9	1
Forestry	8	1	2	1	12	1
Land Reclamation	2	0	0	0	2	0

Agricultural graduates at universities by CESM and level of qualification						
CESM	**Undergraduate**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Agric. management	19	15	15	0	49	5
Renewable Natural Resources	0	0	2	0	2	0
Agric. food Tech. (InstAgrar Stream)	1	0	0	0	1	0
Animal Science (InstAgrar Stream)	5	0	0	0	5	1
Horticulture (InstAgrar Stream)	3	5	0	0	8	1
Rural Development (InstAgrar Stream)	8	2	0	0	10	1
Wildlife	0	2	0	0	2	0
Land Reclamation (InstAgrar Stream)	0	1	0	0	1	0
Other Agric. and Renewable Resources	0	0	30	0	30	3
Agric. Economics (InstAgrar Stream)	0	6	0	0	6	1
Agribusiness Management (InstAgrar Stream)	0	16	0	0	16	2
Agric. Extension (InstAgrar Stream)	0	2	0	0	2	0
TOTAL	**491**	**155**	**201**	**47**	**894**	**100**

Agricultural Science (Science Stream), Animal Science and Agricultural Science (Art Stream) produced 28% (238), 22% (179) and 13% (118) respectively. Other CESM constitute less than 10% of the total AET graduates produced in 2004 at Universities.

The Undergraduate graduates account for 56% (491) of the total enrolments at Universities in 2004 followed by Masters graduates with 22% (201). Honours and PhD level contributed 17% (155) and 5% (47) of the total graduates at Universities in 2004 respectively.

5.4. Enrolments and Graduate Outputs for Scarce Skills in Agriculture

Veterinary Science (BVSc) and Agricultural Engineering are regarded as scarce skills in the agricultural sector; hence they are discussed separately from other CESM. University of Pretoria is the only institution in South Africa offering Veterinary Science from BVSc Degree up to Postgraduate level and University of KwaZulu Natal is also the only institution offering BSc Agricultural Engineering.

5.4.1 Enrolments for Scarce Skills in Agriculture

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

Demographic breakdown of scarce skills enrolments in 2004													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Diploma Veterinary Nursing		2	6	0	0	0	1	77	78	0	0	0	84
Diploma Pomology		0	0	0	0	0	2	0	2	0	0	0	2
Veterinary Science (BVSc) Degree		0	9	0	1	1	26	61	87	3	4	7	104
B Sc Agricultural Engineering Degree		8	26	0	0	0	27	2	29	2	1	3	58
Viticulture		6	10	12	6	18	160	92	252	0	0	0	280
Oenology		0	1	0	1	1	15	18	33	0	0	0	35
TOTAL		**16**	**52**	**12**	**8**	**20**	**231**	**250**	**481**	**5**	**5**	**10**	**563**

Five hundred and fifty seven (563) students were enrolled in the scarce skills programmes in 2004 of which 51% were Viticulture students and 18% were BVSc Degree students.

White students dominate the total enrolments in these programmes with 85% followed by African students with 9%. Coloured students constituted only 4% of the total enrolment in these programmes. Indian students constituted 2% of the total number of enrolled students in the scarce skills programmes in the 2004 academic year.

Gender breakdown indicates that there was an equal distribution of enrolments with male and female students accounting for 50% each of the scarce skills enrolments in the 2004 academic year, males constituted 284 and females amounted to 279. It should be noted however that it is only from 2004 that the DoA started to offer bursaries to redress issues of inequity in the sector.

5.4.2 Graduates for Scarce Skills in Agriculture

Table below presents a demographic breakdown of scarce skills graduates at universities.

Demographic breakdown of scarce skills graduates in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma in Veterinary Nursing	2	1	3	0	0	0	0	29	29	0	0	0	32
Veterinary Science (BVSc) Degree	0	1	1	0	1	1	28	50	78	0	3	3	83
B Sc Agricultural Engineering Degree	4	3	7	0	0	0	11	2	13	2	0	2	22
Viticulture	0	1	1	1	0	1	21	22	43	0	0	0	45
Oenology	0	0	0	0	0	0	4	3	7	0	0	0	7
TOTAL	**6**	**6**	**12**	**1**	**1**	**2**	**64**	**106**	**170**	**2**	**3**	**5**	**189**

Hundred and eighty nine (189) graduates were produced in the scarce skills programmes at Universities in 2004 of which 43% were for BSc Veterinary Science and 24% were for Viticulture.

White graduates dominate the total number of graduates in the scarce skills programmes with 90% followed by African graduates with 6%. Indian graduates constitute 3% of the total number graduates in these programmes. Coloured graduates constitute 1% of the total number of graduates in the scarce skills programmes in the 2004 academic year. Female graduates dominate the scarce skills graduates with 61% and male graduates constitute 43% of the overall graduates in these programmes at Universities in 2004.

5.5 Total AET provision in 2004

In comparison a total of 9627 students enrolled for AET programmes in 2004. One thousand four hundred and sixty-one (1461) were from colleges, 2762 were from universities of technology and 5 404 were from the traditional universities. In terms of race Africans were in majority with 3246, followed by Whites with 1980. In terms of gender males dominated with 6085 and females with 3505.

In terms of graduate output a total of 2345 graduates were produced. This represents 14% of the total population of employees in the sector with intermediate to higher level skills as indicated in the labour force survey 2003. In terms of race Blacks were in majority with 1417, followed by White with 876 and in terms of gender males dominated with 1460.

In terms of enrolments within the main scarce skills categories namely Veterinary and Agricultural Engineering; 162 students were registered. In terms of race Whites were 481 followed by Africans with 52. In terms of gender females dominated with 279 and males were 284.

Total scarce skills graduates produced were 189. Veterinary Science dominated the total number of scarce skills graduates with 83 and Viticulture produced 45 graduates. In terms of race, Whites were 190 followed Africans with 12. In terms of gender females were 116 and males were 73. Coloured and Indian graduates together produced 7 graduates.

6 RECOMMENDATIONS

Through the implementation of the Agricultural Education and Training Strategy and the work of both the National and Provincial Agricultural Education and Training Forums the following is recommended:

6.1 Commission work to establish the extent to which institutions of higher learning enroll and produce graduates in the agricultural study programmes which are not market related as preliminarily indicated by the findings of this study. The work must further establish reasons for this practice and the impact this practice has on employment opportunities for those qualifying in these fields of study.

6.2 Deal as a matter of urgency with issues of curricula reviews for the purposes of coherence, relevance and harmonization including the broadening access to agricultural education and training in particular in the category of scarce agricultural skills and the standardization of the application of quality measures in agricultural education and training.

6.3 Develop and recommend strategies for identifying and encouraging under graduates to pursue post graduate studies in specialized fields relevant to the requirements of both the national and provincial Departments of Agriculture and to increase a pool of agricultural scientists. This is based on the preliminary findings of this study that there is a limited number of enrolments and graduation at Masters and PhD level.

6.4 Develop and recommend strategies for marketing agriculture as a career of choice, targeting in particular, black youth who seem to miss out in terms of studying programmes within the scarce skills categories. This is based on the preliminary findings of this study which indicate an insignificant number of Coloureds and Indians enrolled and graduating in agriculture. Such strategies must also encourage Black females to enroll for agricultural studies, particularly in the category of scarce skills.

6.5 Develop and recommend agricultural skills financing strategies targeting Black learners with the potential for scarce agricultural skills. These strategies must incorporate massive career awareness campaign targeting school going learners with a subject combination of mathematics and Physical Science. In this regard the strategies must recommend ways and means of enforcing collaboration among the various stakeholders such as Departments of Agriculture and Education, the universities, colleges and universities of technology.
There is a further need to increase invest in the form of bursaries if we are aiming to meet the skills needs of agriculture in the long term. Such schemes should encourage learners to go beyond Undergraduate studies to post graduate.

6.6 Initiate projects to develop new qualification which are NQF aligned in pertinent areas of agriculture, including qualifications for agricultural science teachers. This should be done in cooperation with the agricultural line function SETAs, the SGBs and institutions of learning. New qualification for the agricultural science teachers in particular will help rebuild the image of agriculture at primary and secondary school level.

6.7 Engage with FET and HE structures (Higher Education South Africa and APAC) to facilitate the design of new AET programmes for the retraining of unemployed agricultural graduates which are made of graduates mainly from the black communities whom have a tendency to study programmes which are in less demand at the moment.

6.8 There is a need to encourage the institutions to increase the number of female learners and to begin to enroll learners with disabilities.

6.9 The National Agricultural Education and Training Forum (NAETF) and its Executive Committee (NAETF EXCO) should play a key role in designing appropriate interventions and engaging the HE sector where there is an oversupply and undersupply of skills by the various higher education institutions and agricultural colleges in the report.

CHAPTER 1

INTRODUCTION

CHAPTER 1

1.1 Introduction

This report is based on a study conducted on the agricultural enrolments, graduate outputs and AET programmes offered by various agricultural colleges and higher education institutions for the 2004 academic year. The DoA collects data on the types of programmes offered in the Colleges of agriculture and Higher Education (HE) institutions, number of enrolments and number graduates in all the Agricultural programmes offered by these institutions on an annual basis. The 2004 report is the first 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 the 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 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 agriculture sector.

1.3 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 and Universities of Technology offering AET programmes. The study was conducted from November 2005 to March 2006.

Data collection for the study focused on number of AET enrolments and graduates from Undergraduate to postgraduate levels focusing on all the agricultural disciplines. It also focused on the types of programmes 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 the 11 colleges of agriculture. The questionnaires were completed and returned to the Directorate in the same way.

The study only focused on those public institutions that were offering higher education and training programmes.

Since Tsolo College as one of the colleges of agriculture lost its accreditation from the Higher Education Quality Committee, it has not been offering any further education and higher education programmes. This report therefore excludes Tsolo Agricultural College.

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. 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 B.A. Animal Production, B.A.(Hons) Animal Production, M.A. 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
Horticulture	Diploma Horticulture, BTech Horticulture, MTech Horticulture, DTech Horticulture BSc Horticulture, BSc (Hons) Horticulture, MSc Horticulture, PhD Horticulture

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Plant Science	Diploma Crop Production, BTech Crop Production, MTech Crop Production, DTech Crop 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 B.A. Crop Production Management, B. A. (Hons) Crop Production Management, M .A. Crop Production Management, PhD Crop Production Management 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
Land Reclamation	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	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
Wildlife	Diploma Game Ranch Management, BTech Game Ranch Management, MTech Game Ranch Management, DTech Game Ranch Management
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

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Agricultural Science (Art Stream)	B.Agric. Science, B.A. (Hons) Agricultural Science, M .A. Agricultural Science, PhD :Agricultural Science
Agricultural Science (Science Stream)	BSc Agricultural Science, BSc (Hons) Agricultural Science, MSc Agric. Science, PhD Agricultural Science
Agriculture Extension	Diploma Agricultural Rural Development, BTech Agricultural Rural Development, MTech Agricultural Rural Development, DTech Agricultural Rural Development B.Agric. Extension, B. (Hons) Agricultural Extension, M. Agricultural Extension, PhD Agricultural Extension
Agricultural Economics	B. Agricultural Economics, B. (Hons) Agricultural Economics, M.A. 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, PhD: 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, M Sc 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
Soil Science	BSc Agric. Soil Science, BSc (Hons) Agric. Soil Science, MSc Agric. Soil Science, PhD Agric. Soil Science
Forestry	BSc Forestry, BSc (Hons) Forestry, MSc Forestry, PhD Forestry
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,

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Animal Science (Inst.Agrar. Stream)	B. Inst.Agrar. Animal Science. B. (Hons) Inst.Agrar. 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,
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 categorized into the Art. Stream, Inst.Agrar. stream and the B.Sc. stream. The Agricultural Economics stream was also further sub-categorized into the Science stream (B.Sc. Agricultural Economics, B.Sc. Hons and M.Sc. Agricultural Economics) and the B.Agric. Stream (B. Agricultural Economics, B.A. Honours in Agricultural Economics and M.A. Agricultural Economics / MPhil Agricultural Economics).

Owing to the fact that Agricultural Engineering, Veterinary, Oenology, Pomology and Viticulture were identified as scarce skills in the agriculture sector, these programmes were discussed separately from the other programmes.

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

Chapter 1 presents the introduction of this study. Chapter 2 presents 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

The study is mostly quantitative in nature and because the study is not qualitative, it does not go into depth with regard 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 which resulted into the different scarce skills within a CESM not clearly indicated e.g. entomology which is a scarce skill is included under plant health. This was due to the fact that institutions could not provide the information per field of specialization within the CESM.

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

The other limitation of the study is that the Faculty of Veterinary Science at the University of Pretoria could not provide the data on graduate outputs and enrolments at postgraduate level. This problem also applies in the case of agricultural engineering. The study therefore does not give indication of the number of graduates and enrolments in veterinary and agricultural engineering at postgraduate level.

CHAPTER 2

TRENDS IN AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2004 ACADEMIC YEAR

CHAPTER 2

TRENDS IN AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2004 ACADEMIC YEAR

2.1 Introduction

There are 12 colleges of agriculture in the country. Nine of the colleges offer programmes in the HET band, GET and FET bands. The GET and FET courses are offered in the form of short courses. Two of the colleges, namely, Madzivhandila and Tompi Seleka phased out programmes in the HET band (Diploma and Higher Education Certificate programmes) in 2004 and only offer FET and GET agricultural programmes. Tsolo College like Madzivhandila and Tompi Seleka is currently offering short courses on agriculture, entrepreneurial and community development.

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

2.2 Curriculum and Programme offerings at the Colleges of Agriculture

There are eleven colleges of agriculture offering qualifications in the HET band up to BTech degree level. All the colleges of agriculture have their qualifications aligned with the National Qualifications Framework (NQF). During the 2004 academic year, all the colleges offered programmes ranging from NQF levels 1 to 6 except Tsolo College which offers short courses only. 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 Higher Certificate in Agriculture. All the higher certificates are offered as a two-year programme. A further year of study will lead to the candidate acquiring a diploma

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

Others have begun to work in collaboration with other local education institutions. For example, Elsenberg College is linked with the University of Stellenbosch in providing a degree programme related to local industrial needs in the Western Cape. The Taung College of Agriculture has initiated a partnership with the North West Province's Vuselela FET College, specifically its branch in Pudimoe, Taung. Under their agreement, the College is teaching the FET College N1-N6 programme having started with the first N1 group in 2003. The idea is for students to begin with the N1 to N3 programmes and then feed into the traditional agricultural college programmes based on the Certificate, Higher Certificate and Diploma requirements. All students at Taung who are doing FET courses are counted in the FET dataset operated by the National Department of Education.

Further more, some Colleges are working hard to provide support for small and emerging farmers in the province in which they are located. These factors have brought about marked differentiation between the colleges in their programme mix.

In 2004, 668 students passed the examinations at Colleges of Agriculture (Table 8). For the purposes of this report, the output of qualified people who have begun job seeking will be based on those who completed the Higher Certificate and the Diploma only (572), because the first year leads directly to the Higher Certificate year.

Unlike the FET colleges, the colleges of agriculture do not provide highly standardised programmes. There is flexibility because the Colleges of Agriculture orient their courses towards supporting the agricultural activities that are practised in their region. For example: Cedara focuses on forestry and horticulture; Lowveld focuses on sugar cane, tobacco and horticulture as well as cotton to attract students from other regions; Potchefstroom focuses on mixed farming as carried out in the Highveld and adjacent regions; and Elsenberg has set itself the aim of specialising in agribusiness.

Even though the curriculum at 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 offered by the FET college curriculum: plant production, animal production, agricultural management and agricultural engineering.

Table 2: Knowledge fields and courses where agricultural subject matter is offered by the colleges of agriculture			
General courses	**Courses covering specific sub-fields**	**More specialized courses within sub-fields**	**Specific product courses include:**
Plant Production	Agronomy (Grain crops)	Crop protection	E.g.: Vegetable, fruit production, viticulture, sugar cane etc. Also: green house management, Forestry
	Crop production	Pasture Management	
	Horticulture		
	Soil science		
Animal Production	Animal breeding	Artificial insemination	E.g.: Beef cattle, dairy cattle, fish, mutton, pig, poultry, wool 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		
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	
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 'Artificial Insemination' are offered. Likewise, in crop production more advanced courses like '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 with the college programmes is considered to be important. Broadly, the curricula comprise a 55-60% theoretical component and a 40-45% practical application. This is not necessarily the case for higher education.

Some colleges also offer non-formal training programmes, typically short courses for the further education and training (FET) sector.

The agricultural college is the only institutional type that offers exclusively agricultural programmes. This means that student choice of courses is restricted to what is offered by the institution. Therefore, Colleges of Agriculture are 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 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 offer more open programmes which offer a wide variety. This means that it is possible for university and university of technology programmes to support higher levels of specialisation than in the colleges of agriculture.

Agricultural programmes at the colleges of agriculture have a clearly defined structure 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.

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.

All the colleges of agriculture offer NQF level 5 qualifications, i.e. Higher education programmes. Seven (63, 6%) of the 11 colleges offered NQF level 6 programmes in 2004. Madzivhandila and Tompi Seleka have phased out the NQF level 5 programmes, and the two colleges are currently offering NQF levels 1 to 4 qualifications only.

Table 3 below indicates the types of programmes offered in the individual colleges, the NQF levels, duration of and accrediting bodies for the different programmes.

Table 3: Programmes offered by the colleges of agriculture

College	Programme	NQF level	Duration	Accrediting body
1. Cedara	1. Higher Certificate in Agriculture.	5	2 years Full-Time (FT)	HEQC
	2. Diploma in Agriculture.	6	3 years FT	HEQC
2. Elsenburg	1.National Certificate	1 & 4	Variable (Short courses)	AgriSETA
	2 Higher Cert in Agriculture.	5	2 years FT	HEQC
	3. Dip in Agriculture: Cellar Technology.	5	1 year FT	HEQC
	4. Diploma in Agriculture.	5	1 year FT	HEQC
	5. B Agric	6	3 years FT	HEQC

Table 3: Programmes offered by the colleges of agriculture				
College	**Programme**	**NQF level**	**Duration**	**Accrediting body**
3. Fort Cox	1. Diploma in Social Forestry.	5	3 years FT	HEQC
	2. Diploma in Agriculture: Animal Production.	5	3 years FT	HEQC
	3. Diploma in Agriculture: Crop Production.	5	3 years FT	HEQC
	4. Diploma in Agriculture: Agribusiness	5	3 years FT	HEQC
4. Glen	1. National Certificate	5	2 years FT	HEQC
	2. N Dip in Agriculture.	6	1 year (Post Cert)	HEQC
5. Grootfontein	1. Higher Certificate in Agriculture.	5	2 years FT	HEQC
	2. Diploma in Agriculture.	6	3 years FT	HEQC
6. Lowveld	1. Higher Certificate.	5	2 years FT	HEQC
	2. Diploma Plant Production	6	1 year FT (post certificate)	HEQC
7. Madzivhandila	1.N. Certificate	1	1 years FT	AgriSETA
	2. Diploma in Agriculture: Animal Production.	5	3 years FT	HEQC
	3. Diploma in Agriculture: Plant Production.	5	3 years FT	HEQC
8. Owen Sithole	1. Higher Certificate in Agriculture.	5	2 years FT	HEQC
	2. Diploma in Agriculture	6	3 years	HEQC
	3. Higher Certificate in Home Economics	5	2 years	HEQC
	4. Dip in Agriculture: Home Economics.	6	3 years	HEQC
9. Potchefstroom	1. Higher Certificate in Agriculture.	4	2 years	HEQC
	2. Dip in Agriculture.	5	3 years	HEQC
10. Taung	1. N4 Certificate in Farming Management.	4	1 year	Umalusi
	2. N5 Certificate in Farming Management.	4	2 years	Umalusi
	3. N6 Certificate in Farming Management.	5 (after completion of 18 months experiential training)	3 years	Umalusi
11. Tompi Seleka	1. Diploma in Animal Production.	6	3 years	HEQC
	2. Diploma in Community Extension.	6	3 years	HEQC
	3. Diploma in Plant Production.	6	3 years	HEQC
	4. Diploma in Resource Utilisation.	6	3 years	HEQC
12. Tsolo	Short Courses	N/A	N/A	N/A

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 following the N-stream that is used by technical colleges. After the completion of N6 certificate, the students in this college may enroll 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 agricultural-related workplace.

Elsenburg and Potchefstroom Colleges have entered into a partnership with the University of Stellenbosch and Tshwane University of Technology (TUT) respectively. Elsenburg College offers a Bachelor of Agriculture based on an alliance with the University of Stellenbosch. The students from Potchefstroom College may register for BTech Agriculture with TUT after completion of their diplomas.

2.3 Enrolment figures at Colleges of Agriculture

A total number of 1461 students were enrolled in 2004 at all agricultural colleges. Tompi Seleka College enrolled no new students during the 2004 academic year, but continued with the second-year students due to the change in their curriculum, i.e. phasing out the NQF level 5 programmes, and focusing on short courses, learnerships and FET programmes. Colleges of Agriculture combined have total enrolments figures of less than 2000, which is a required norm to determine an institution to operate at higher education level.

Table 4 below presents the enrolment figures per college of agriculture during the 2004 academic year.

Table 4: Enrolments per college of agriculture

Name of the college	Number of enrolled students in 2004	Percentage (%)
1. Cedara College of Agriculture	159	11
2. Elsenburg College of Agriculture	167	11
3. Fort Cox College of Agric & Forestry	254	17
4. Glen College of Agriculture	151	10
5. Grootfontein Agricultural Development Institute.	63	4
6. Lowveld College of Agriculture	212	15
7. Madzivhandila College of Agriculture	43	3
8. Owen Sitole College of Agriculture	54	4
9. Potchefstroom College of Agriculture	244	17
10 Taung College of Agriculture	114	8
11 Tompi Seleka College of Agriculture	0	0
TOTAL	**1461**	**100**

Fort Cox College had a high number of enrolments with 254 students, followed by Potchefstroom with 244 students and Lowveld College with 212 students. The lowest enrolments were registered at Owen Sitole and Grootfontein with 54 students each and Madzivhandila with 43 students of the total enrolment figures during the 2004 academic year.

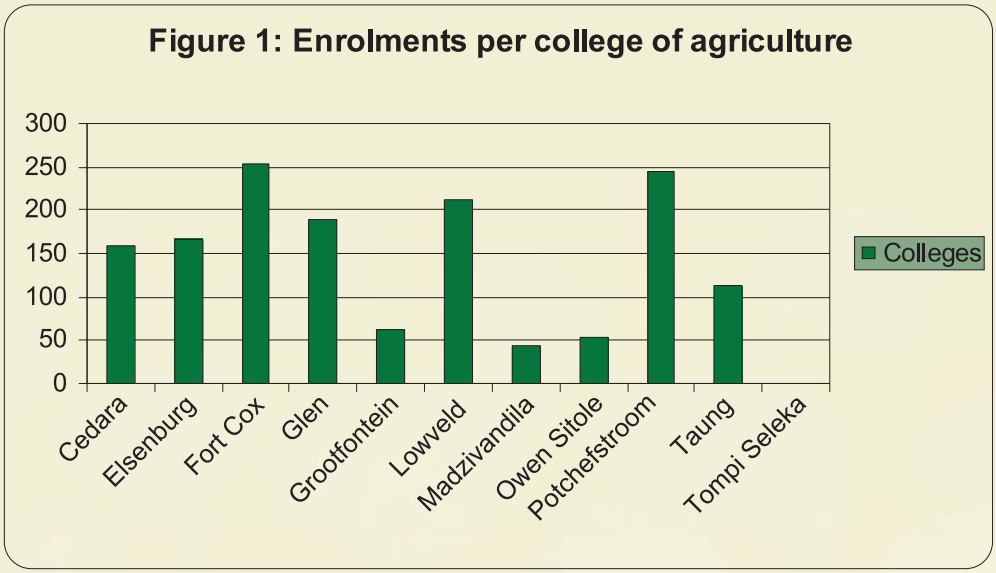


Figure 1 depicts that for 27% of the colleges there were less than 100 students enrolled and none of the colleges have enrolments of more than 300, with only 2 colleges having enrolments of more than 190 during the 2004 academic year.

A breakdown of enrolments by gender and race at Colleges of Agriculture is presented in Table 5 below.

Table 5: Breakdown of enrolments by gender and race

Name of the College	African			Coloured			White			Indian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
1. Cedara	36	35	71	1	0	1	73	12	85	2	0	2	**159**	11
2. Elsenburg	3	4	7	30	5	35	90	35	125	0	0	0	**167**	11
3. Fort Cox	181	73	254	0	0	-	0	0	0	0	0	0	**254**	17
4. Glen	109	41	150	1	0	1	0	0	0	0	0	0	**151**	10
5. Grootfontein	2	2	4	4	0	4	50	5	55	0	0	0	**63**	4
6. Lowveld	83	50	133	0	0	-	77	2	79	0	0	0	**212**	15
7. Madzivhandila	24	19	43	0	0	-	0	0	-	0	0	0	**43**	3
8. Owen Sitole	26	28	54	0	0	-	0	0	-	0	0	0	**54**	4
9. Potchefstroom	38	20	58	2	0	2	173	11	184	0	0	0	**244**	17
10. Taung	76	38	114	0	0	-	0	0	-	0	0	0	**114**	8
11. Tompi Seleka	0	0	-	0	0	-	0	0	-	0	0	0	**0**	0
TOTAL	**578**	**310**	**888**	**38**	**5**	**43**	**463**	**65**	**528**	**2**	**0**	**2**	**1461**	**100**

Table 5 indicates that 7 of the 11 colleges are predominantly Black, with no White students enrolled. These colleges are Fort Cox, Glen, Madzivhandila, Tompi Seleka, Taung and Owen Sithole.

The data in Table 5 depict that male enrolments constituted 74% of the total number of enrolled students in 2004 and female enrolments constituted 26%. African males dominated with 40%, followed by white males with 32%. Coloured and Indian students represent very low percentages of the total enrolments during the 2004 academic year, and Indian students are almost non-existent. This high gender imbalances calls for a further review of student recruitment strategies from the colleges of agriculture.

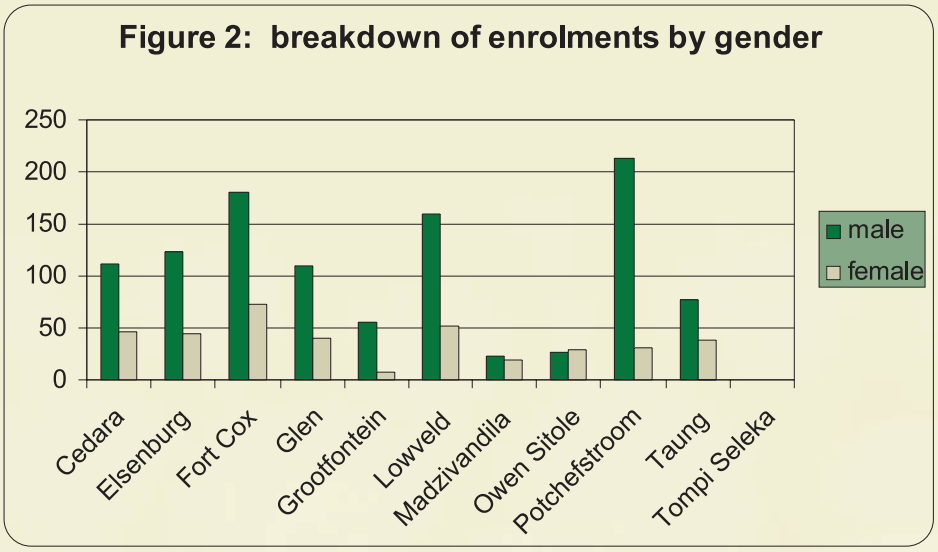


Figure 2 indicates that the difference in numbers between male and female enrolments in some colleges has been very high. For instance, there is a significant difference between male and female students in Potchefstroom, Fort Cox, Lowveld and Glen. However, for Madzivhandila and Owen Sithole, the ratio of enrolments between female and male students is similar.

The trends in Figure 2 above indicate that the number of male enrolments in the agricultural colleges is generally higher than that of female enrolments. The figures also depict that the colleges that are regarded as historically Black colleges in terms of their student attraction have enrolled a significant number of Black female students, for instance, Fort Cox has enrolled 73 African female students, Madzivhandila 19 female students, Owen Sithole 28 female students and Taung has 38 female students.

Table 6: Breakdown of enrolments per programme

COLLEGES	NUMBER OF ENROLMENTS						
	NQF 1-4 (Including N1-N2)	CERTIFICATE (Including N3)	HEC (Including N4-N5)	DIPLOMA	DEGREE	TOTAL	%
Cedara			131	28		**159**	11
Elsenburg	26		103	38		**167**	11
Fort Cox				254		**254**	17
Glen			116	35		**151**	10
Grootfontein			36	27		**63**	4
Lowveld			174	38		**212**	15
Madzivhandila				43		**43**	3
Owen Sitole			28	26		**54**	4
Potchefstroom			199	34	11	**244**	17
Taung			73	41		**114**	8
TOTAL	**26**		**860**	**564**	**11**	**1461**	**100**

The data in Table 6 depict that Higher Education Certificates constitute 59% of the total number of enrolled students per programme in 2004 and the degree programme represents very low numbers of enrolled students per programme with 1%.

2.4 Graduate Outputs at Colleges of Agriculture

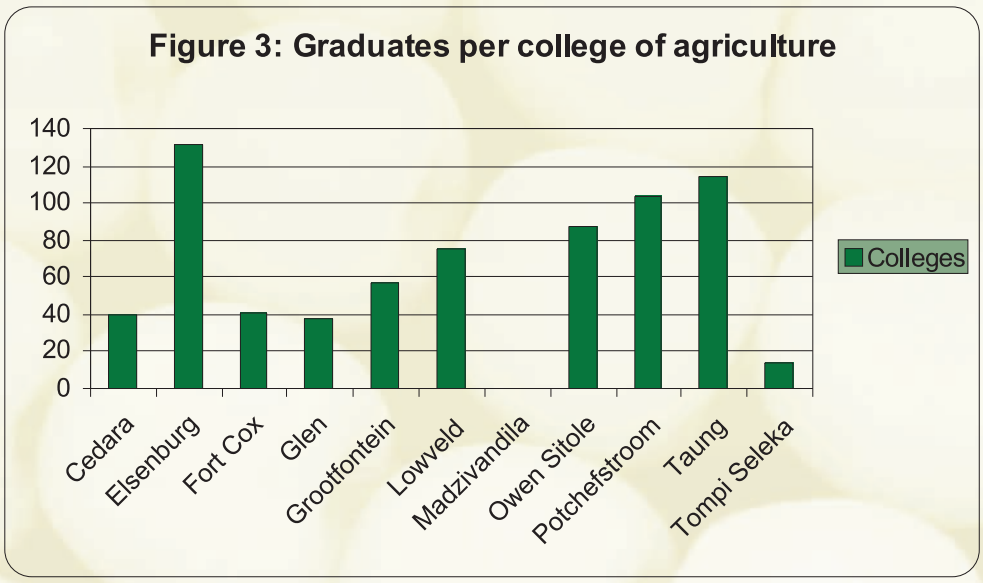
In 2004, 668 students graduated from the agricultural colleges. African students were the largest group of graduates and comprised 51%. White students constituted 45% of the total graduates and the other racial groups constituted the remaining 4%. Male graduates outnumbered female enrolments and graduates on a ratio of about 1 to 3.

Madzivhandila did not have graduates because they had a break during the past two years and no registrations took place during that period due to the process of changing their curriculum, i.e. phasing out the NQF level 5 programmes, and focusing on short courses, learnerships and FET programmes.

Table: 7 Graduates per college of agriculture.

Name of the college	Number of graduates	Percentage (%)
1. Cedara College of Agriculture	40	6
2. Elsenburg College of Agriculture	131	20
3. Fort Cox College of Agric & Forestry	41	6
4. Glen College of Agriculture	38	6
5. Grootfontein Agricultural Development Institute.	57	9
6. Lowveld College of Agriculture	75	11
7. Madzivhandila College of Agriculture	Students graduated in September 2005	
8. Owen Sitole College of Agriculture	87	13
9. Potchefstroom College of Agriculture	103	15
10 Taung College of Agriculture	82	12
11 Tompi Seleka College of Agriculture	14	2
TOTAL	**668**	**100**

The expectations are that colleges that enroll large number of students produce at least a significant number of graduates when compared to those that enrolled a few students. This is not the case at all colleges because when looking at Figure 3 below in comparison to Figure 1 above, Elsenburg has produced 131 graduates, which is the highest number when compared to other colleges. None of the three colleges, namely; Fort Cox, Lowveld and Glen which had the highest enrolment figures managed to produce more than 100 graduates.



However, it should also be noted that the throughput rates will best be calculated out of the total number of the 2002 diploma and 2003 Higher Certificate enrolments. This is because the diploma and higher certificate students who registered

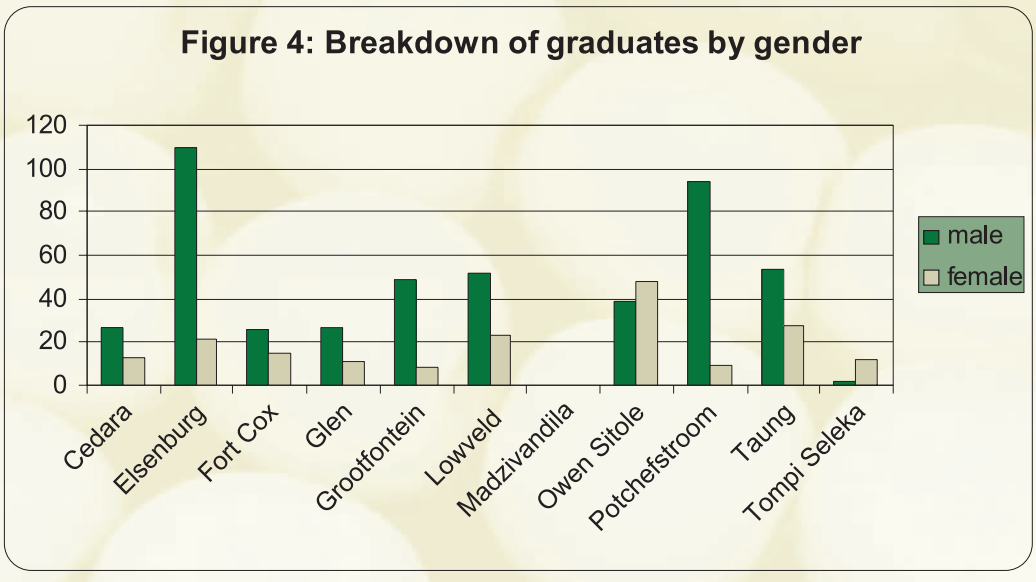
in 2002 and 2003 respectively will graduate in 2004. The throughput rates for the various colleges of agriculture are presented in 2.4.

Table 8: Breakdown of graduates by gender and race

Name of the college	African			Coloured			White			Indian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
1. Cedara	8	9	**17**	0	0	**0**	19	4	**23**	0	0	**0**	40	6
2. Elsenburg	2	0	**2**	21	3	**24**	87	18	**105**	0	0	**0**	131	20
3. Fort Cox	26	15	**41**	0	0	**0**	0	0	**0**	0	0	**0**	41	6
4. Glen	25	11	**36**	2	0	**2**	0	0	**0**	0	0	**0**	38	6
5. Grootfontein	2	2	**4**	3	0	**3**	44	6	**50**	0	0	**0**	57	9
6. Lowveld	25	12	**37**	0	0	**0**	27	11	**38**	0	0	**0**	75	11
7. Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0
8. Owen Sitole	39	48	**87**	0	0	**0**	0	0	**0**	0	0	**0**	87	13
9. Potchefstroom	16	4	**20**	0	0	**0**	78	5	**83**	0	0	**0**	103	15
10. Taung	54	28	**82**	0	0	**0**	0	0	**0**	0	0	**0**	82	12
11. Tompi Seleka	2	12	**14**	0	0	**0**	0	0	**0**	0	0	**0**	14	2
TOTAL	**199**	**141**	**340**	**26**	**3**	**29**	**255**	**44**	**299**	**0**	**0**	**0**	**668**	**100**

The data in Table 8 depict that female graduates constituted 28% of the total number of graduates and male graduates constituted 72%. African females dominated the female graduate population.

There were no Indian graduates during the 2004 academic year. Table 8 indicates that the African females continued the trend of being the most represented among females. White males dominated with 53%, followed by African males with 42% and Coloured males with 5%.



From figure 4 above, it is evident that 4 of the colleges that have the highest number of graduates have their graduation figures dominated by males and these are Elsenburg, Potchefstroom, Taung and Lowveld.

Table 9: Breakdown of graduates per programme						
College	Number of graduates					
	NQF 1-4 (including N1-N2	Cert (including N3	HEC (including N4-N5)	Diploma (including N6	Degree	Total
1. Cedara	0	0	20	20	0	40
2. Elsenburg	18	0	80	33	0	131
3. Fort Cox	0	0	0	41		41
4. Glen	0	0	22	16	0	38
5. Grootfontein	0	0	31	26	0	57
6. Lowveld	0	0	44	31	0	75
7. Madzivhandila	0	0	0	0	0	0
8. Owen Sithole	0	0	34	45	0	79
9. Potchefstroom	0	0	75	20	8	103
10. Taung	0	0	42	40	0	82
11. Tompi Seleka	0	0	0	14	0	14
TOTAL	**18**	**0**	**348**	**286**	**8**	**660**

The data in Table 9 depict that Higher Education Certificates constituted 53% of the total number of graduates per programme in 2004, followed by the diploma with 43%. NQF 1 to 4 and Degree constituted very low numbers of student enrolments per programme with 3% and 1% respectively. The table above excludes the Home Economics Diploma graduates from Owen Sitole College of Agriculture.

2.5 Throughput Rates of the Colleges of Agriculture

Throughput is a key indicator of efficiency of educational institutions and reveals the extent to which students complete the programmes for which they enrolled in the optimal allocated time.

To calculate the throughput rates of the individual colleges of agriculture, the enrolments figures for the 2002 academic year for the various programmes offered by the colleges were collected, and the table below presents the throughput rates per college and per programme offering. In an ideal situation where students will graduate in record time, it is expected that diploma students who registered in 2002 will graduate in 2004 and HE Certificate students who registered in 2003 will graduate in 2004, based on the duration of the three programmes. The following Table presents the throughput rates for these two categories.

Table 10: Throughput rates of Diploma and Higher Education Certificate students registered in 2002 and 2003			
Qualification	No. registered in 2003/2002	No graduated in 2004	Throughput rate
HE Certificate in Agric	479	348	72,7 %
Diploma in Agriculture	292	286	97,9 %

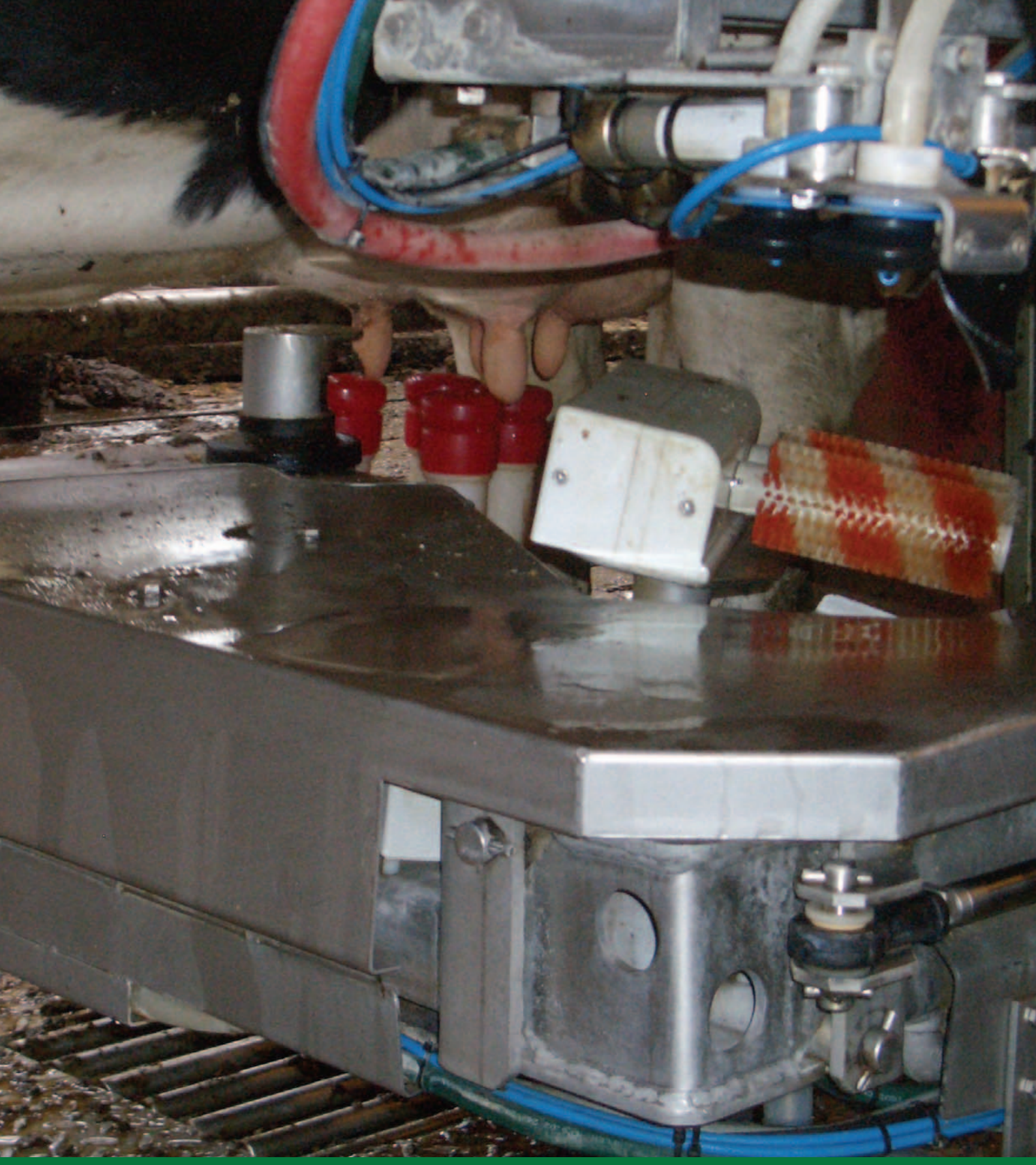
From this table it can be concluded that in the 2002 to 2004 cycle the throughput rate for Higher Education Certificate and Diploma is very high. Strategically, this might be a positive or a negative sign depending on the market demand of agricultural graduates from the colleges of agriculture, which could be confirmed by a study on the employment rates of agricultural college graduates

2.6 Conclusion

Africans constitute more than half of all the enrolments and graduate outputs in all the colleges of agriculture. Previously white dominated and African dominated colleges are still significantly white and African dominated, with the exception of Cedara and Lowveld which have an equitable distribution of enrolments and graduates between Africans and Whites.

The expectations are that colleges that enroll large number of students produce a significant number of graduates when compared to those that enrolled few students. This is not the case at all the colleges because Elsenburg produced the highest number of graduates than any other college.

In addition to the Diploma and Certificate programmes offered by agricultural colleges, all the colleges are currently offering FET programmes which in some cases are accredited and in others not accredited. This is to address the needs of the farming community in their respective locations. The non-accredited programmes are offered in the form of short courses which is more of information sharing rather than competency based and as such the participants receive certificates of attendance only. Data on the participants in these programmes is not available and it is crucial that a database in this regard is developed. This is a good practice because the training is totally demand driven, and it is a major role played by the colleges in building capacity of beneficiaries of Land reform through training.



CHAPTER 3

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2004 ACADEMIC YEAR

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AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2004 ACADEMIC YEAR

3.1 Introduction

There are 6 universities of technology offering the AET programmes in South Africa namely; Cape Peninsula University of Technology (CPUT), Central University of Technology Free State (CUT), Mangosuthu Technikon (Mantec), Nelson Mandela Metropolitan University (NMMU), University of South Africa (UNISA) 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). This chapter presents the programmes offered at higher education institutions and the demographic breakdown of agricultural enrolments and graduates.

3.2. AET Programmes and National Qualification Framework offered at Universities of Technology in 2004

Table 11: Agricultural Programmes offered at universities of technology

	Cape Peninsula University of Technology	Central University of Technology Free State	Nelson Mandela Metropolitan	Mangosuthu Technikon	Tshwane University of Technology	UNISA (former Technikon SA)
National Certificate programmes						
N.Certificate Agriculture Animal Production					X	
N.Certificate Agriculture Crop Science					X	
N.Certificate Agricultural Management Crop Science					X	
N.Certificate Game Ranch Management					X	
N.Certificate Horticulture					X	
N.Certificate Nature Conservation					X	
N.Certificate Landscape Technology					X	
N.Certificate Turfgrass Management					X	
National Higher Certificate Programmes						
N.H.Certificate Agriculture Animal Production					X	
N.H.Certificate Agriculture Crop Science					X	
N.H.Certificate Agricultural Management Crop Science					X	
N.H.Certificate Game Ranch Management					X	
N.H.Certificate Nature Conservation					X	
National Diploma programmes						
NDip. Agriculture	X				X	
NDip. Animal Health						X
NDip. Agriculture Crop Production					X	
NDip. Agriculture Crop Science					X	

Table 11: Agricultural Programmes offered at universities of technology						
	Cape Peninsula University of Technology	Central University of Technology Free State	Nelson Mandela Metropolitan	Mangosuthu Technikon	Tshwane University of Technology	UNISA (former Technikon SA)
NDip. Agriculture Mixed Farming					X	
NDip. Agriculture Rural Development					X	
NDip. Agricultural Management	X	X	X		X	X
NDip. Agriculture Animal Production				X	X	
NDip. Agriculture Plant Production				X		
NDip. Agriculture Equine Science					X	
NDip. Agriculture Horticulture					X	
NDip. Landscape Technology					X	
NDip. Nature Conservation					X	
NDip. Turfgrass Management					X	
National Higher Diploma programmes						
N.H.Dip. Pig Production					X	
BTech. Programmes						
BTech. Agriculture	X	X			X	
BTech. Agricultural Management			X		X	X
BTech. Agricultural Science						X
BTech. Agriculture Animal Production					X	
BTech. Agriculture Crop Production					X	
BTech. Agriculture Mixed Farming					X	
BTech. Agriculture Rural Development					X	
BTech. Agriculture Animal Health						X
BTech. Game Ranch Management					X	
BTech. Agriculture Horticulture					X	
BTech. Landscape Technology					X	
BTech. Nature Conservation					X	
BTech. Turfgrass Management					X	
MTech. Programmes						
MTech. Agriculture					X	
MTech. Nature Conservation					X	
DTech. programmes						
DTech. Agriculture					X	
DTech. Agriculture Animal Production					X	
DTech. Nature Conservation					X	

All the universities of technology offer few agricultural programmes such as Agriculture Management from Diploma level to BTech. level, with the exception of TUT. Historically Black institutions have curricula focused on skills that are less marketable in the agricultural labour market. i.e. general agriculture and agriculture management qualifications with no focus on agricultural scarce skills such as Agricultural Economics, Agricultural Engineering, Viticulture, Veterinary Science.

There is a high probability that graduates qualifying in these programmes might not get employment. However, in the private sector the situation with regard to the demand for agricultural graduates with these qualifications might be different since research in this area was never conducted before.

Table 11 indicates the types of agricultural programmes offered by individual universities of technology. As depicted in table 10, TUT offers a wide range of agricultural programmes on a broad curriculum that is divided into four main streams namely Horticulture, Crop Science, Nature Conservation and Animal Science.

Table 12: 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 below 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 between NQF level 5 which is a higher certificate, to NQF level 8 which is the DTech.

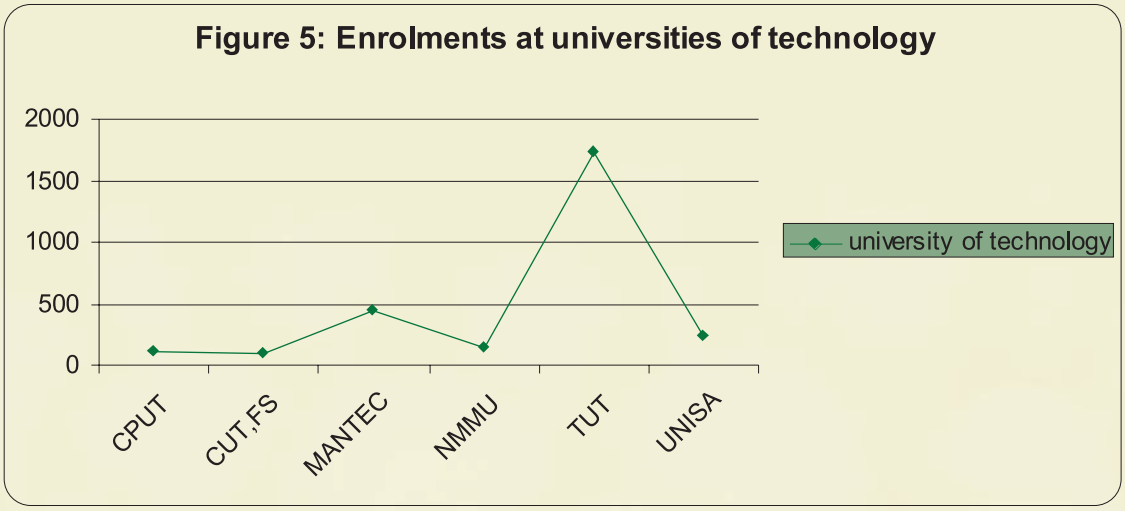
3.3 Enrolments in AET Programmes at Universities of Technology during the 2004 academic year

Table 13: Enrolments per university of technology during the 2004 academic year

University of technology	Enrolment figures	Percentage (%)
CPUT	112	4
CUT	95	3
Mantec	449	16
NMMU	139	5
TUT	1 727	63
UNISA	240	9
TOTAL	**2 762**	**100**

Table 13 presents enrolment figures at universities of technology during the 2004 academic year. TUT enrolled 63% of the total enrolments followed by Mantec with 16% and UNISA with 9%. NMMU, CPUT and CUT all enrolled the lowest with 5%, 4% and 3% respectively.

Table 13 and Figure 5 depict a significant difference between TUT and the rest of the universities of technology in terms of student intake. The highest 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 2 762 agricultural enrolments registered nationally at universities of technology 1 727 students are registered with TUT.



3.3.1 Demographic Breakdown of AET Enrolments at Universities of Technology in 2004

Table 14 presents a demographic breakdown of AET enrolments by universities of technology during the 2004 academic year.

Table 14: Demographic Breakdown of AET enrolments at universities of technology during the 2004 academic year.

University of technology	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	5	3	8	5	2	7	87	10	97	0	0	0	112
CUT	52	16	68	3	0	3	22	2	24	0	0	0	95
Mantec	265	184	449	0	0	0	0	0	0	0	0	0	449
NMMU	81	41	122	3	1	4	13	0	13	0	0	0	139
TUT	695	398	1 093	4	3	7	388	233	621	4	2	6	1 727
UNISA	140	55	195	5	5	10	12	20	32	3	0	3	240
TOTAL	**1 238**	**697**	**1 935**	**20**	**11**	**31**	**522**	**265**	**787**	**7**	**2**	**9**	**2 762**

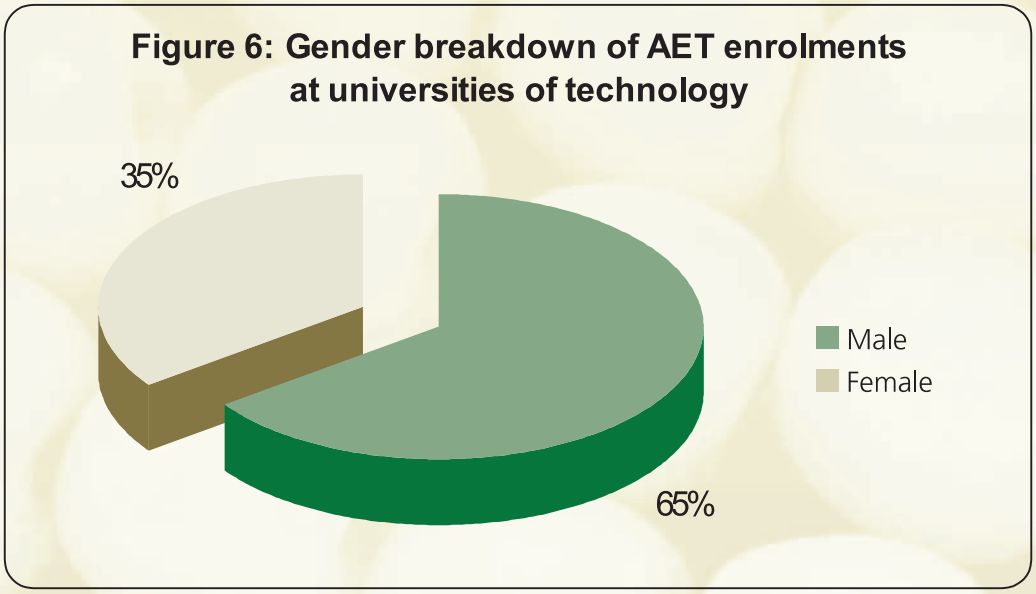


Figure 6 depicts that Male students constituted 65% of the total enrolments and females constituted 35%.

Figure 7: Racial breakdown of AET enrolments at universities of technology

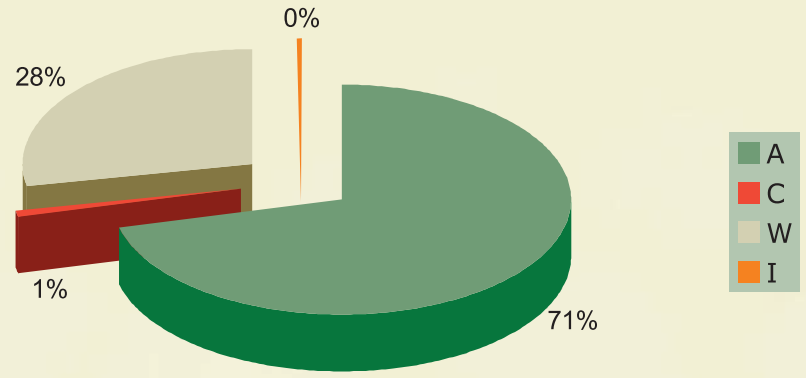


Figure 7 and Table 14 above depicts that African and White students have higher enrolments constituting 71% and 28% of the total enrolments respectively. Coloured and Indian students collectively constituted less than 2% of the total enrolments.

Figure 8: Racial breakdown of female enrolments at universities of technology

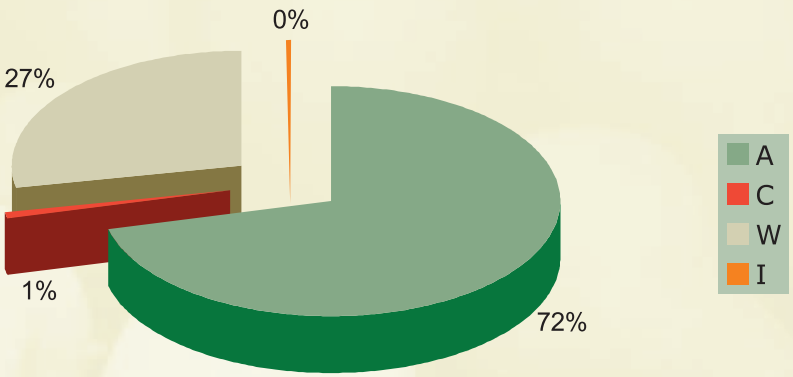


Figure 8 suggests that African females constituted 72% of the total female enrolments at universities of technology followed by White females with 27%. Coloured females accounted for 1% only. Indian females are almost non-existent.

Figure 9: Racial breakdown of male enrolments at universities of technology

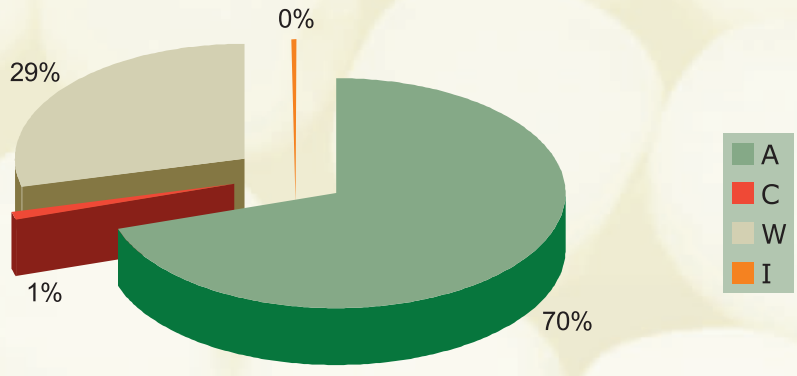


Figure 9 indicates that African males constituted 70% of the total male enrolments followed by White males with 29%. Coloured males accounted for 1% only. Indian males are almost non-existent.

3.3.2 AET Enrolments at Universities of Technology by Level of Qualifications & CESM in 2004

Table 15: Agricultural enrolments at universities of technology by CESM & levels of qualification						
CESM	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**TOTAL**	**%**
Animal Science	1 058	86	0	1	1 145	41
Horticulture	118	53	0	0	171	6
Plant Science	190	0	0	0	190	7
Land Reclamation	79	46	0	0	125	5
Renewable Natural Resources	501	32	25	2	560	20
Agricultural Management	178	0	0	0	178	6
Other Agric. and Renewable Resources	84	0	0	0	84	3
Wildlife	134	0	0	0	134	5
Agricultural Science-General	0	101	21	3	125	5
Agricultural Extension	0	50	0	0	50	2
TOTAL	**2 342**	**368**	**46**	**6**	**2 762**	**100**

Table 15 presents enrolments at universities of technology by Category of Education Subject Matter (CESM). Universities of technology offer programmes in the various CESMs as indicated below.

From Table 15 Animal Science and Renewable Natural Resources have the highest enrolment figures with 41% and 20% of the total number of AET enrolments during the 2004 academic year academic year respectively. Other CESMs have registered less than 10 % of enrolments each.

3.3.2.1 Demographic Breakdown of Agricultural Education and Training Enrolments at Universities of Technology by CESM & Levels of Qualification in 2004

Table 16: Demographic breakdown of Diploma enrolments by CESM at universities of technology													
CESM Category (Diplomas)	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Animal Science	520	365	885	5	6	11	43	115	158	3	1	4	1 058
Horticulture	56	29	85	1	0	1	27	5	32	0	0	0	118
Plant Science	110	67	177	0	0	0	13	0	13	0	0	0	190
Land Reclamation	14	12	26	0	0	0	36	15	51	2	0	2	79
Renewable Natural Resources	147	69	216	1	1	2	199	82	281	2	0	2	501
Agricultural Management	63	36	99	7	1	8	69	2	71	0	0	0	178
Other Agric. and Renewable Resources	47	27	74	1	1	2	8	0	8	0	0	0	84
Wildlife	17	2	19	0	0	0	99	16	115	0	0	0	134
TOTAL	**974**	**607**	**1 581**	**15**	**9**	**24**	**494**	**235**	**729**	**7**	**1**	**8**	**2 342**

Table 16 outlines the enrolments for the Diploma in Agricultural programmes at universities of technology in 2004. Diploma enrolments constituted 85% of the total enrolments at Universities of Technology in 2004.

Table 17: Demographic Breakdown of BTech enrolments by CESM at universities of technology													
CESM Category (BTech Degree)	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Science-General	49	19	68	3	2	5	25	3	28	0	0	0	101
Agric Extension	34	16	50	0	0	0	0	0	0	0	0	0	50
Animal Science	58	21	79	0	0	0	5	2	7	0	0	0	86
Horticulture	27	14	41	0	0	0	9	2	11	0	1	1	53
Land Reclamation	0	0	0	0	1	1	26	19	45	0	0	0	46
Renewable Natural Resources	26	6	32	0	0	0	0	0	0	0	0	0	32
Total	**194**	**76**	**270**	**3**	**3**	**6**	**65**	**26**	**91**	**0**	**1**	**1**	**368**

Table 17 outlines the enrolments for BTech in Agricultural programmes at universities of technology in 2004. BTech enrolments constituted 13% of the total enrolments at universities of technology in 2004.

Table18: Demographic breakdown of postgraduates enrolments by CESM at universities of technology													
CESM Category (Postgraduate)	**Africans**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
MTech (Renewable Natural Resources)	5	0	5	0	0	0	14	6	20	0	0	0	25
MTech (Agriculture)	13	2	15	0	0	0	5	1	6	0	0	0	21
DTech Renewable Natural Resources	1	0	1	0	0	0	1	0	1	0	0	0	2
DTech (Animal Production)	0	0	0	0	0	0	1	0	1	0	0	0	1
DTech. Agric.	3	0	3	0	0	0	0	0	0	0	0	0	3
Total	**22**	**2**	**24**	**0**	**0**	**0**	**21**	**7**	**28**	**0**	**0**	**0**	**52**

Table 18 outlines enrolments at Postgraduate level in Agricultural programmes at universities of technology in 2004. Postgraduate enrolments constituted 1% of the total enrolments at universities of technology in 2004. Only 52 students enrolled for Postgraduate Degrees in agricultural programmes in 2004, of which 46 were MTech and 6 were DTech students.

3.3.2.2 Animal Science Enrolments at Universities of Technology in 2004

This CESM at universities of technology includes Diploma, BTech, MTech and DTech in Animal Health, Animal Production, Pig Production Management, Equine Science, Nutrition, Production Physiology and Animal Production Management. Programmes in this CESM are offered by Mantec, TUT and UNISA. There were 1 145 students enrolled in this CESM during the 2004 academic year.

Table19: Demographic breakdown of Animal Science enrolments by level of qualification													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Diploma	520	365	885	5	6	11	43	115	158	3	1	4	1 058
BTech	58	21	79	0	0	0	5	2	7	0	0	0	86
DTech	0	0	0	0	0	0	1	0	1	0	0	0	1
TOTAL	**578**	**386**	**964**	**5**	**6**	**11**	**49**	**117**	**166**	**3**	**1**	**4**	**1 145**

Table 19 presents a demographic breakdown of Animal Science enrolments during the 2004 academic year by level of qualification.

High numbers of Animal Science enrolments were evident in the Animal Science Diploma which constitutes 92%. Animal Science BTech enrolments constituted only 8% of the total enrolments in this CESM. DTech Animal Science enrolments are very low while, MTech Animal Science enrolled no students during the 2004 academic year.

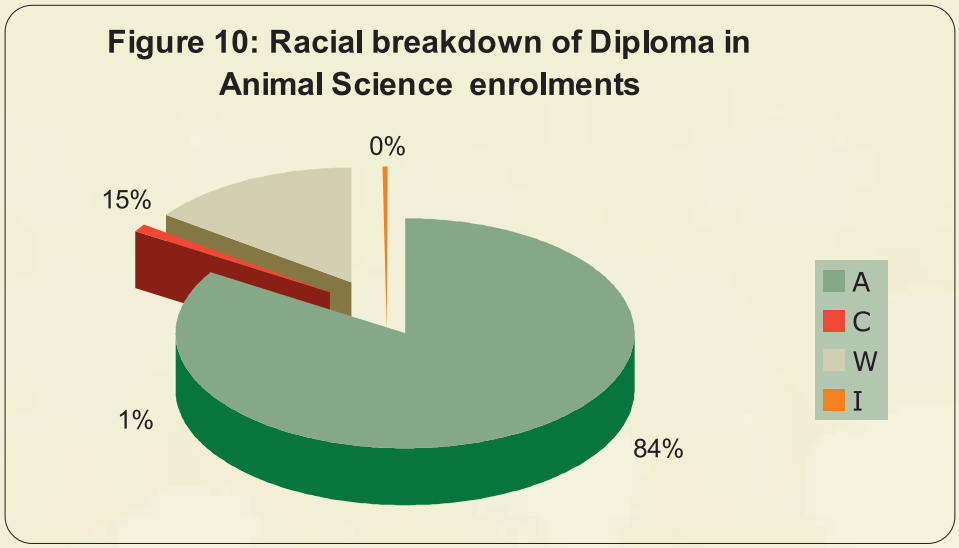


Figure 10 depicts that African students constituted 84% of the Animal Science Diploma enrolments. White and Coloured students accounted for 15% and 1% respectively. Indian student enrolments were insignificant.

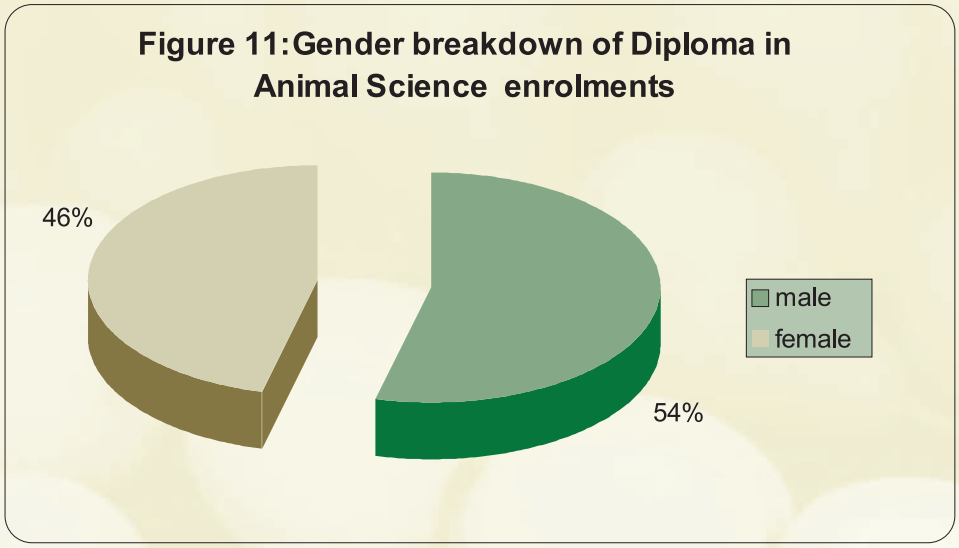


Figure 11 depicts that male students dominated the Diploma enrolments in this CESM with 54% while female students constituted only 46%. Male enrolments are dominated largely by African males with 90% of the total male enrolments in the Diploma in Animal Science. White males constituted 8% and Coloured and Indian males collectively accounted for only 2%. African females constituted a significant 75% followed by White females with 24%. Coloured females constituted only 1% and there were no Indian female students.

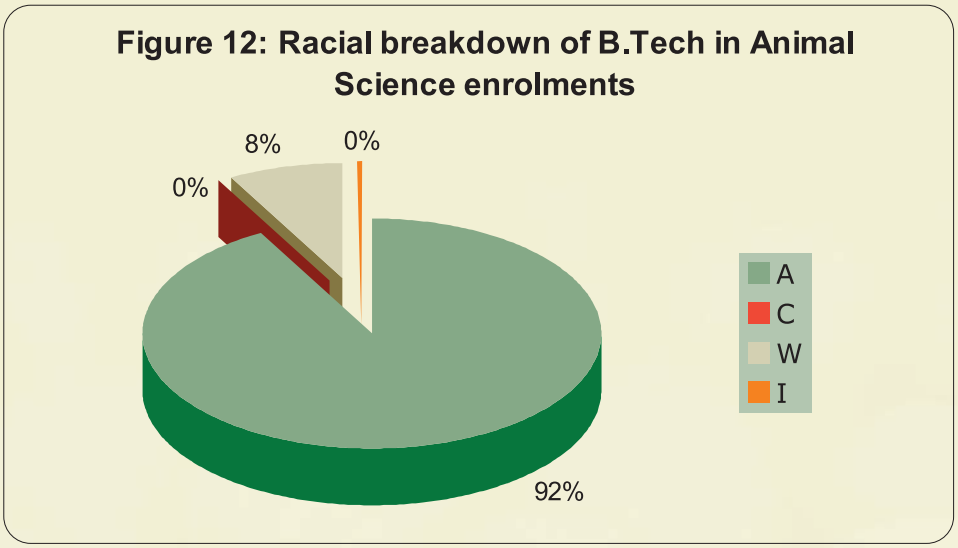


Figure 12 indicates that African students constituted the majority of BTech Animal Science enrolments with 92%. White students constituted only 8% and there are no Coloured and Indian students enrolled for the BTech Animal Science.

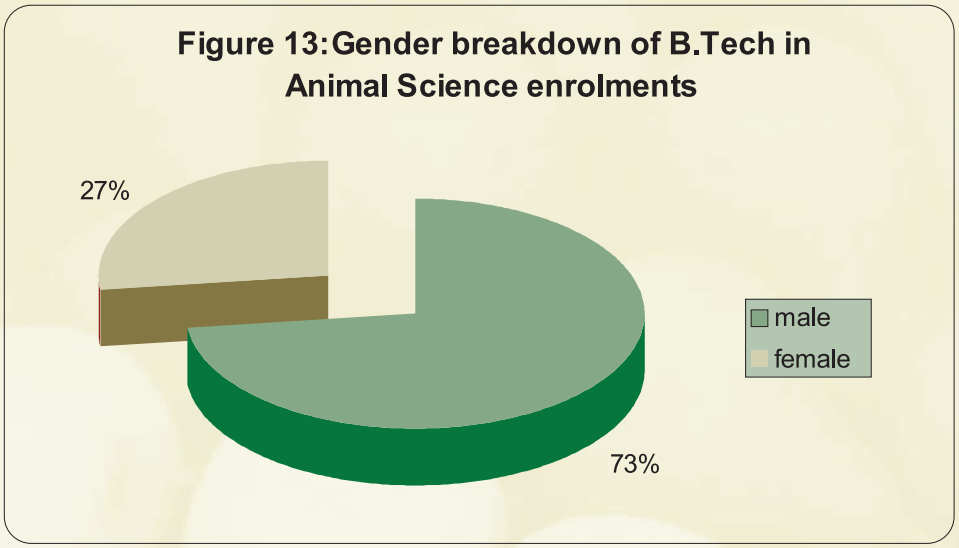


Figure 13 depicts that male students comprised 73% of the total BTech Animal Science enrolments and female students accounted for only 27% of the overall BTech Animal Science enrolments. African males constituted 92% and White males constituted 8% of the enrolments for this programme. African females constituted 91% and White females 9% of the female enrolments respectively. No Indian and Coloured females enrolled for this programme in 2004. One (1) White male student enrolled for DTech Animal Science and there were no enrolments for other racial groups.

3.3.2.3 Horticulture Enrolments at Universities of Technology in 2004

Horticulture CESM at universities of technology includes Diploma, BTech, MTech and DTech in Horticulture. One hundred and seventy one (171) students registered for Horticulture at universities of technology during the 2004 academic year. The Horticulture CESM enrolments constituted 7% of the total AET enrolments at universities of technology during the 2004 academic year. TUT is the only University of Technology offering Horticulture programmes in South Africa.

Table 20 presents a demographic breakdown of Horticulture enrolments during the 2004 academic year by level of qualification.

Table 20: Demographic breakdown of Horticulture enrolments by level of qualifications

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	56	29	85	1	0	1	27	5	32	0	0	0	118
BTech	27	14	41	0	0	0	9	2	11	0	1	1	53
TOTAL	**83**	**43**	**126**	**1**	**0**	**1**	**36**	**7**	**43**	**0**	**1**	**1**	**171**

Table 20 illustrates that enrolments in Diploma Horticulture accounted for 69% of the overall Horticulture CESM enrolments and BTech Horticulture comprised 31% of the total Horticulture enrolments during the 2004 academic year.

Figure 14: Racial breakdown of Diploma in Horticulture enrolments

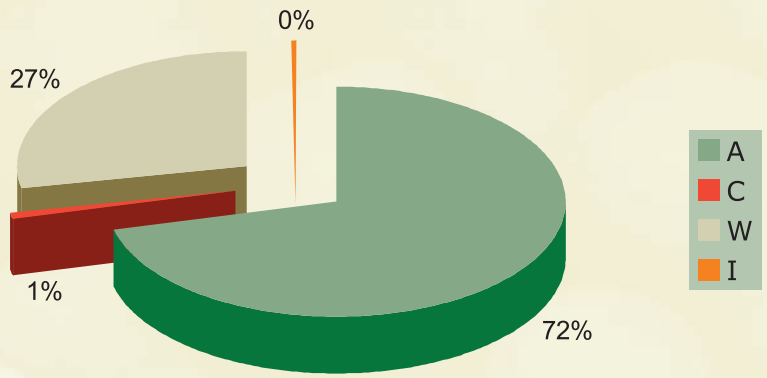


Figure 14 depicts that African students constituted 72% of the Diploma enrolments in Horticulture, followed by White students with 27% and Coloured students with only 1%. No Indian students registered for this programme during the 2004 academic year.

Figure 15: Gender breakdown of Diploma in Horticulture enrolments

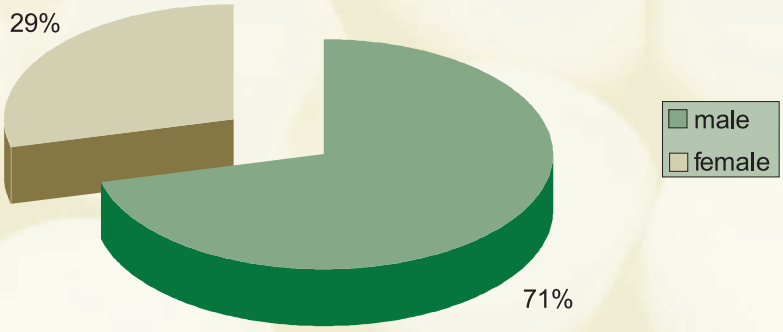


Figure 15 shows that male students dominated with 71% and female students constituted 29% of the Horticulture Diploma enrolments. African males dominated male enrolments with 67% followed by White males with 32%. Coloured males constituted 1% and Indian males were non-existent.

African females constituted 85% of the total number of Diploma enrolments in Horticulture followed by White females with 32%. There are no Indians and Coloured students registered for this programme during the 2004 academic year.

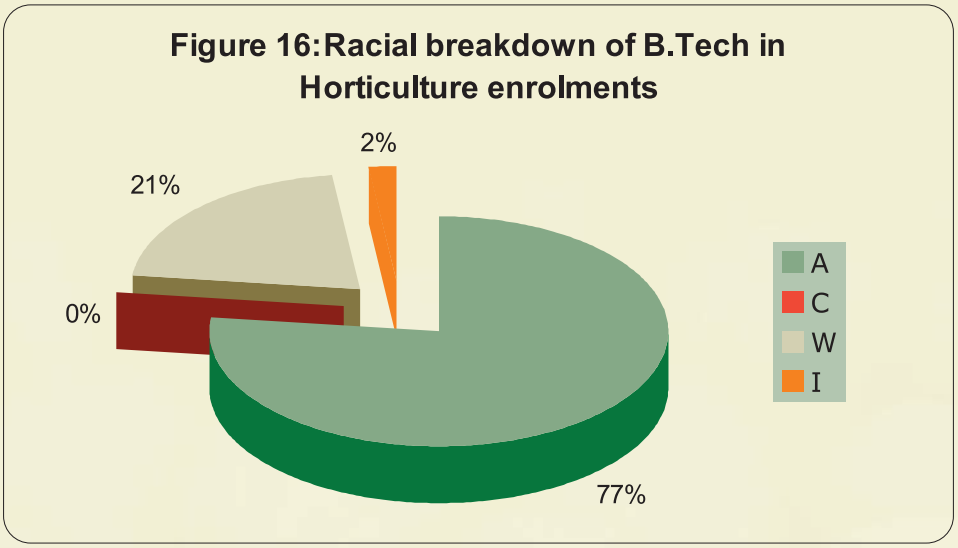


Figure 16 indicates that African students constitute 77% of the enrolments for the programme, White students constituted 21% and Indian students constituted only 2%. There were no Coloured enrolments for this programme during the 2004 academic year.

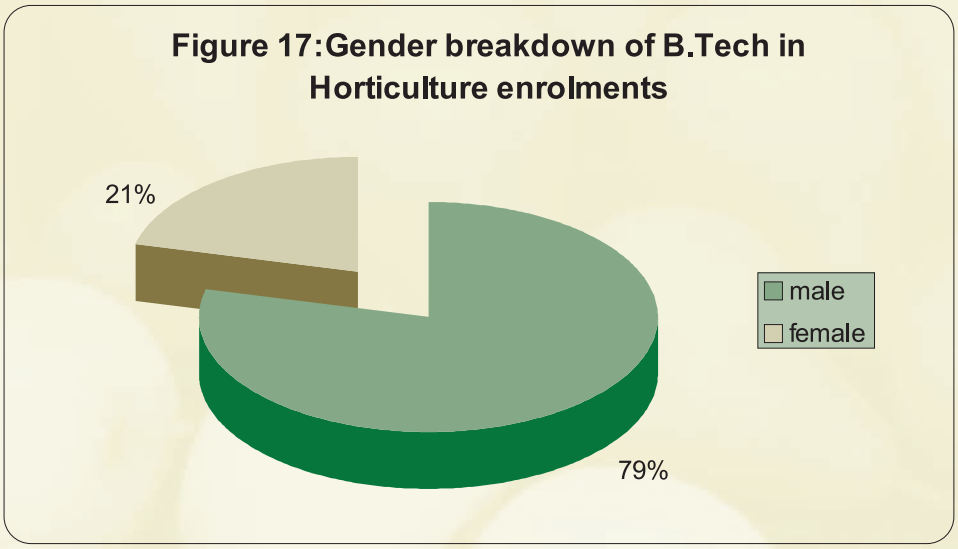


Figure 17 depicts that male students dominated the BTech Horticulture enrolments with 79% and female students constituted 21%. African males constituted 75% and White males constituted 25% of the male enrolments in the programme. No Indian and Coloured males were registered for the programme during the 2004 academic year. African females constitute 82% of the female enrolments, followed by White females with 12% and Indian females constituted only 6% of the female enrolments. Coloured females did not register for this programme during the 2004 academic year.

3.3.2.4 Plant Science Enrolments at Universities of Technology in 2004

Plant Science CESM consisted of Diploma, BTech, MTech and DTech in Crop Production and Plant Production. One hundred and ninety (190) students registered for this programme, which constituted 7% of the total AET enrolments during the 2004 academic year. There were only Diploma enrolments for this CESM during the 2004 academic year at universities of technology.

Table 21: Demographic breakdown of Plant Science Diploma enrolments at universities of technology in 2004													
LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	110	67	177	0	0	0	13	0	13	0	0	0	190
TOTAL	**110**	**67**	**177**	**0**	**0**	**0**	**13**	**0**	**13**	**0**	**0**	**0**	**190**

Table 21 presents a demographic breakdown of Diploma Plant Science enrolments in the 2004 academic year.

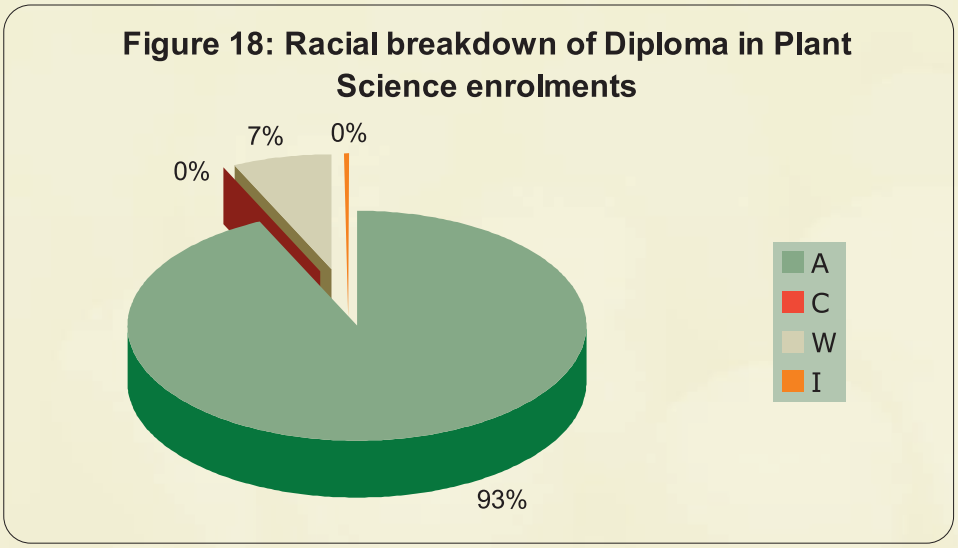


Figure 18 depicts that Diploma in Plant Science programmes were dominated by African students with 93% and White students constituted only 7% of the total Diploma enrolments in Plant Science. No Coloured and Indian students registered for the Diploma in Plant Science programmes during the 2004 academic year.

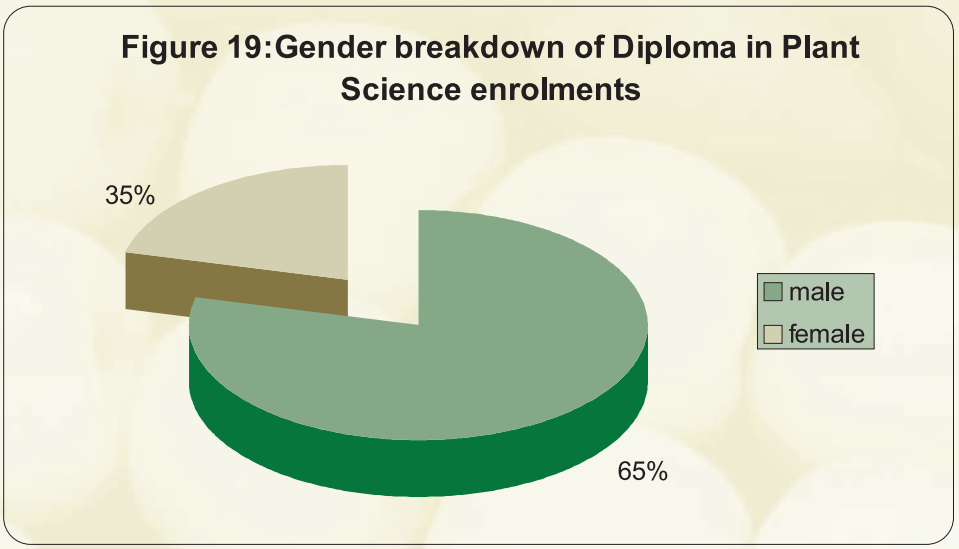


Figure 19 indicates that male students constituted 65% of the total diploma enrolment in Plant Science and female students constituted 35% of the total diploma enrolments in Plant Science. African males dominated enrolments with 89%, followed by White males with 11% of the total enrolments. Coloured and Indian male students were non-existent. The only female enrolments for this programme were Africans.

3.3.2.5 Land Reclamation Enrolments at Universities of Technology in 2004

Land Reclamation CESM includes Diploma, BTech, MTech and DTech in Landscape Technology. Land Reclamation programmes at universities of technology are offered by TUT only. One hundred and twenty five (125) students enrolled for Land Reclamation in 2004.

Table 22 presents a demographic breakdown of Land Reclamation enrolments during the 2004 academic year by level of qualification.

Table 22: Demographic breakdown of Land Reclamation enrolments by level of qualifications

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	14	12	26	0	0	0	36	15	51	2	0	2	79
BTech	0	0	0	0	1	1	26	19	45	0	0	0	46
TOTAL	**14**	**12**	**26**	**0**	**1**	**1**	**62**	**34**	**96**	**2**	**0**	**2**	**125**

There were only Diploma and BTech enrolments for this CESM during the 2004 academic year, and no MTech and DTech enrolments. Diploma enrolments constituted 63% and BTech constituted 37% of total enrolments.

Figure 20: Racial breakdown of Diploma in Land Reclamation enrolments

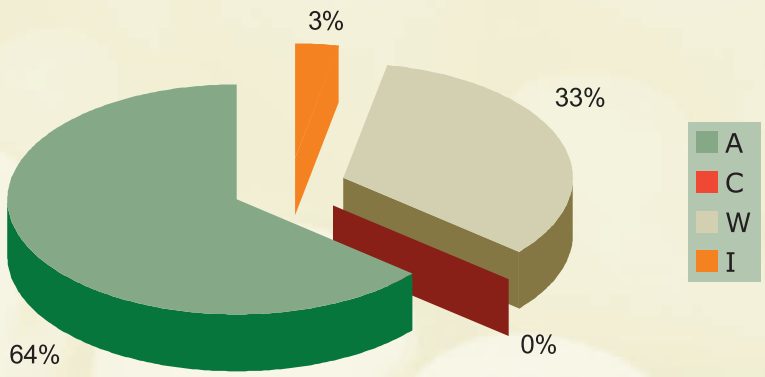


Figure 20 depicts that White students dominated the Diploma in Land Reclamation enrolments during the 2004 academic year with 64% followed by African students with 33% and Indians constituted 3%. There were no Coloured students enrolled for the Diploma in Land Reclamation programmes during the 2004 academic year.

Figure 21: Gender breakdown of Diploma in Land Reclamation enrolments

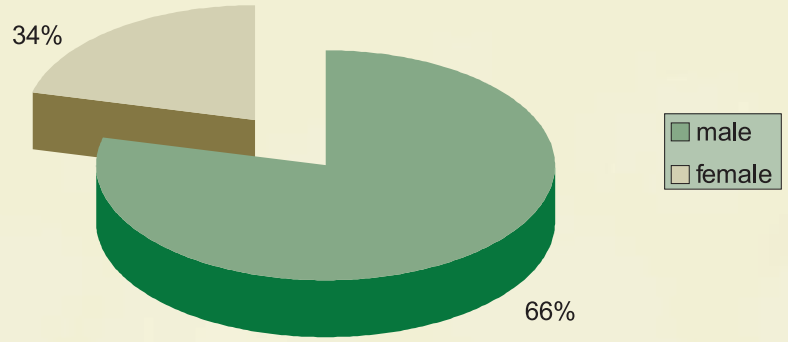


Figure 21 indicates that male students constituted 66% of the Diploma in Land Reclamation enrolments and female students accounted for 34%. White males have enrolled in higher numbers with 69% followed by African males with 27%. Indian males constituted 4% of the total male enrolments for this programme and there were no Coloured males registered. White females dominated female student enrolments in this programme with 56% followed by African females with 44%. No Coloured and Indian female students registered for this programme during the 2004 academic year.

Figure 22: Racial breakdown of B.Tech in Land Reclamation enrolments

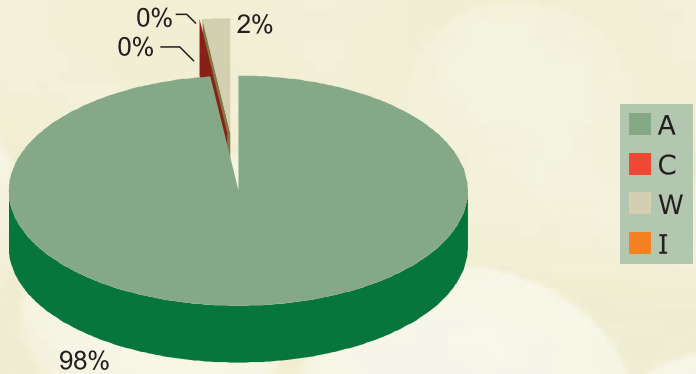


Figure 22 depicts that the BTech Land Reclamation programme was dominated by White students and they constituted 98% of the total enrolments. White males represented the majority. Coloured and Indian students accounted for 2%. No African students registered for this programme during the 2004 academic year.

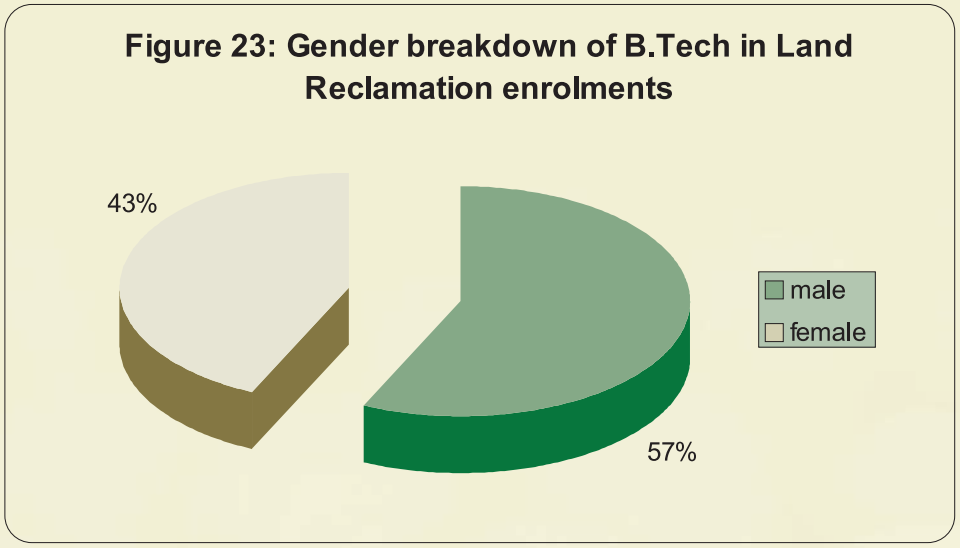


Figure 23 indicates that male students constituted 57% of the total BTech Land Reclamation enrolments and female students constituted 43%. White male students were the only male students registered for BTech in Land Reclamation.

White female students dominated female enrolments in this programme by 95% and Coloured students constituted 5% only. There were no African or Indian female students enrolled for the programme during the 2004 academic year.

3.3.2.6 Renewable Natural Resources Enrolments at Universities of Technology in 2004.

Renewable Natural Resources includes Diploma, BTech, MTech and DTech in Nature Conservation. TUT is the only University of Technology that offers programmes in Renewable Natural Resources. Five hundred and sixty (560) students enrolled in this CESM during the 2004 academic year. Table 23 presents a demographic breakdown of Renewable Natural Resources enrolments during the 2004 academic year by level of qualification.

Table 23: Demographic breakdown of Renewable Natural Resources enrolments by level of qualifications

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	147	69	216	1	1	2	199	82	281	2	0	2	501
BTech	26	6	32	0	0	0	0	0	0	0	0	0	32
MTech	5	0	5	0	0	0	14	6	20	0	0	0	25
DTech	1	0	1	0	0	0	1	0	1	0	0	0	2
TOTAL	**179**	**75**	**254**	**1**	**1**	**2**	**214**	**88**	**302**	**2**	**0**	**2**	**560**

Table 23 shows that Diploma in Natural Resources constituted 90% of the total Renewable Natural Resources followed by BTech Renewable Natural Resources with 6% and MTech with 4%. DTech enrolments were very low in this programme, constituting less than 1%.

Figure 24: Racial breakdown of Diploma in Renewable Natural Resources enrolments

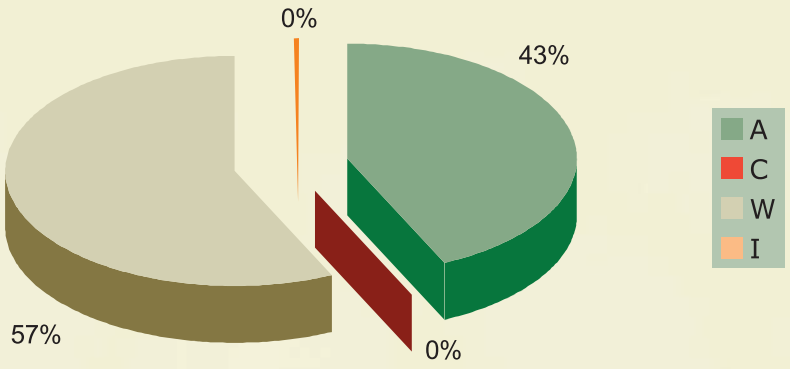


Figure 24 depicts that White students dominated the Diploma Renewable Natural Resources enrolments with 57% followed by African students with 43%.There were no Coloured and Indian students enrolled for the programme during the 2004 academic year.

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

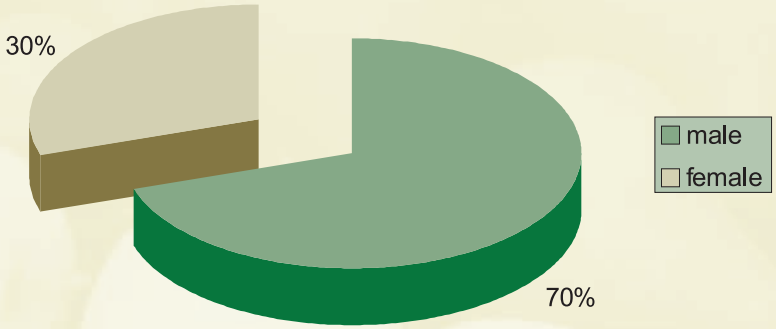


Figure 25 depicts that male students dominated the Diploma in Renewable Natural Resources enrolments with 70% while female students constituted 30%. White male enrolments constituted 57% of the total male students for the Diploma Renewable Natural Resources followed by African males with 42% and Indian males constituted only 1%. Coloured males were almost non-existent.

Female enrolments were dominated by White females with 54%; African females constituted 45% and Indian females accounted for 1% only. There were no Coloured females enrolled for this programme during the 2004 academic year.

Thirty two (32) students were enrolled in 2004 in this CESM at BTech level. Only African students have enrolled for this programme at BTech level; 26 were male students and 6 were female students.

Figure 26:Gender breakdown of B.Tech in Renewable Natural Resources enrolments

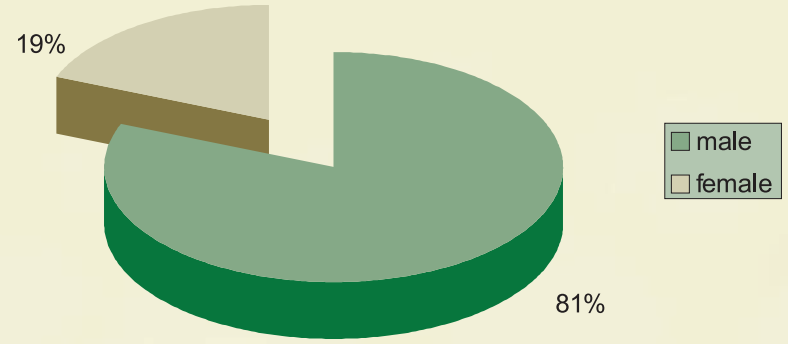


Figure 26 depicts that male students constituted 81% and female students constituted 19% of the total enrolments for the BTech Renewable Natural Resources during the 2004 academic year.

Twenty five (25) students enrolled for the MTech Renewable Natural Resources during the 2004 academic year. This figure represents 6% of the total enrolments for Renewable Natural Resources CESM.

Figure 27:Racial breakdown of M.Tech in Renewable Natural Resources enrolments

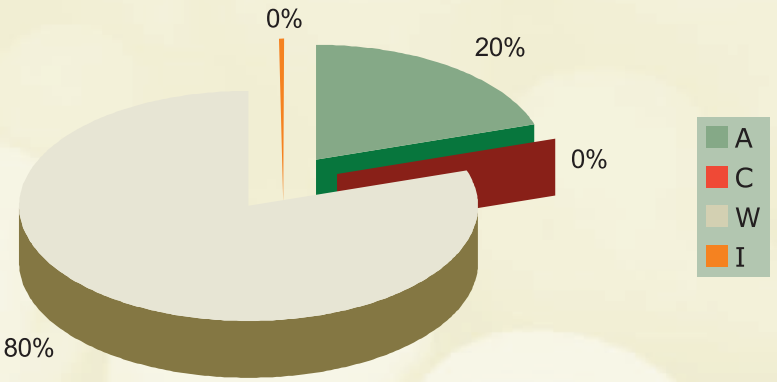


Figure 27 depicts that White students constituted 80% of the enrolments in this programme, followed by African students with 20%. There were no Indian and Coloured students enrolled for this programme.

Figure 28: Gender breakdown of M.Tech in Renewable Natural Resources enrolments

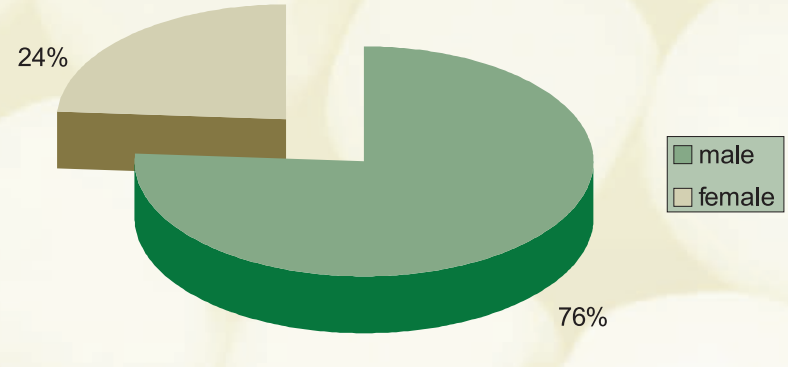


Figure 28 indicates that male students constituted 76% and female students comprised 24% of the total MTech Natural Renewable Resources enrolments. White males dominated with 76% and African males constituted 24% of the Renewable

Natural Resources MTech male enrolments. Only White females enrolled for the programme and there were no Indian and Coloured males.

Only 2 male students, of which 1 was African and 1 was White, registered for a DTech in Renewable Natural Resources during the 2004 academic year.

3.3.2.7 Agricultural Management Enrolments at Universities of Technology in 2004

Agricultural Management Diploma programmes are offered by CPUT, CUT, NMMU, TUT and UNISA. Agricultural Management has enrolled students at Diploma level only during the 2004 academic year. Table 24 presents a demographic breakdown of Diploma Agricultural Management enrolments during the 2004 academic year.

Table 24: Demographic breakdown of Diploma Agricultural Management enrolments

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	63	36	99	7	1	8	69	2	71	0	0	0	178
TOTAL	**63**	**36**	**99**	**7**	**1**	**8**	**69**	**2**	**71**	**0**	**0**	**0**	**178**

One hundred and seventy eight (178) students were enrolled at Diploma level in this CESM during the 2004 academic year.

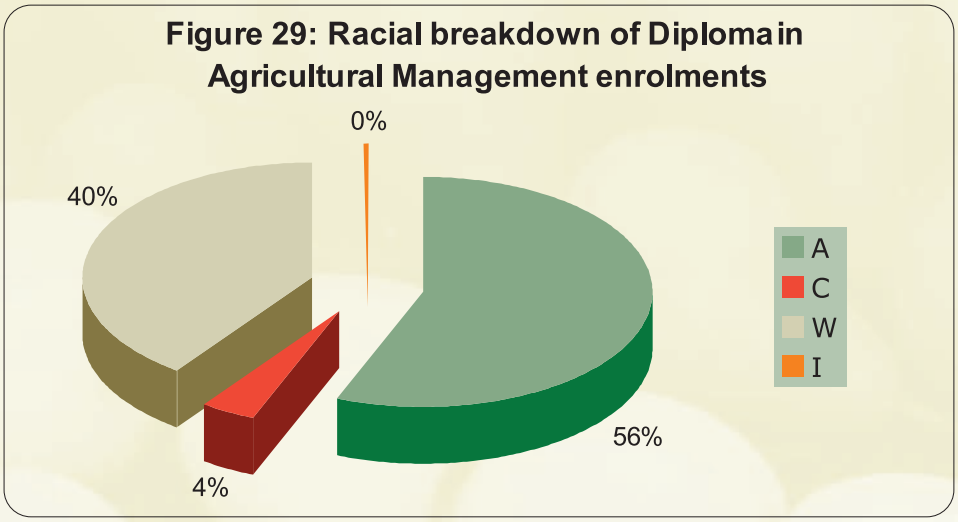


Figure 29 depicts that the majority of the enrolments at diploma level in this CESM is African students who comprised 56% followed by White students with 40% and Coloured students constituted 4% only. No Indian students were registered at Diploma level in this CESM during the 2004 academic year.

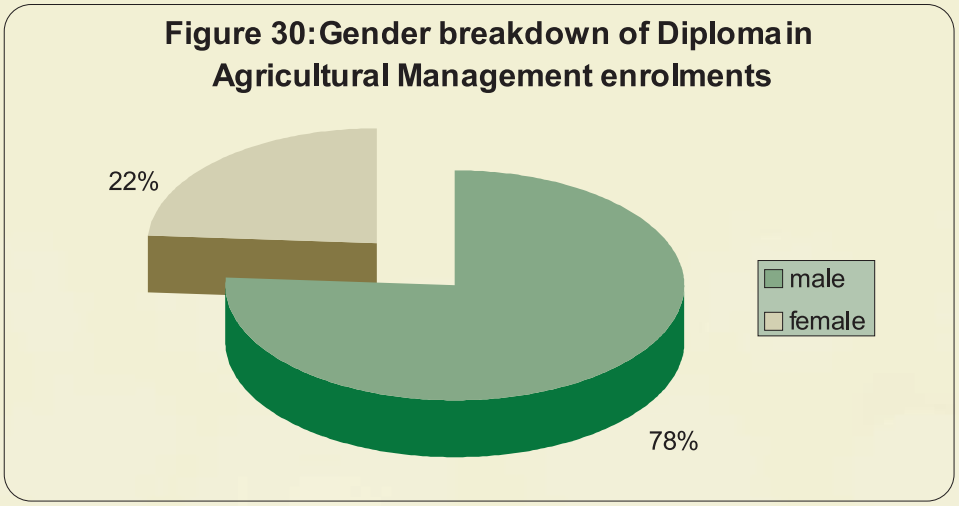


Figure 30 shows that male students dominated enrolments at the Diploma level in this CESM with 78% and female students constituted only 22%. White males accounted for 50% of the male enrolments at Diploma level in this CESM. African males comprised 45% of the male enrolments at Diploma level in this CESM followed by Coloured males with only 5%. African females dominated the female enrolments in this CESM at Diploma level with 92% followed by White females with 5%, and Coloured female students comprise only 3%. No Indian females were enrolled in this CESM at Diploma level at universities of technology during the 2004 academic year.

3.3.2.8 Other Agricultural and Renewable Resources Enrolments at Universities of Technology in 2004

Other Agricultural and Renewable Resources at universities of technology encompass the Diploma, BTech, MTech and DTech in Agriculture: Mixed Farming. TUT is the only university of technology offering programmes in this CESM. Table 25 presents a demographic breakdown of Diploma Other Agricultural and Renewable Resources enrolments in 2004 academic year.

Table 25: Demographic breakdown of Diploma Other Agric. and Renewable Resources enrolments

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	47	27	74	1	1	2	8	0	8	0	0	0	84
TOTAL	**47**	**27**	**74**	**1**	**1**	**2**	**8**	**0**	**8**	**0**	**0**	**0**	**84**

All the 84 students enrolled for this CESM are registered at Diploma level. This CESM is dominated by African enrolments.

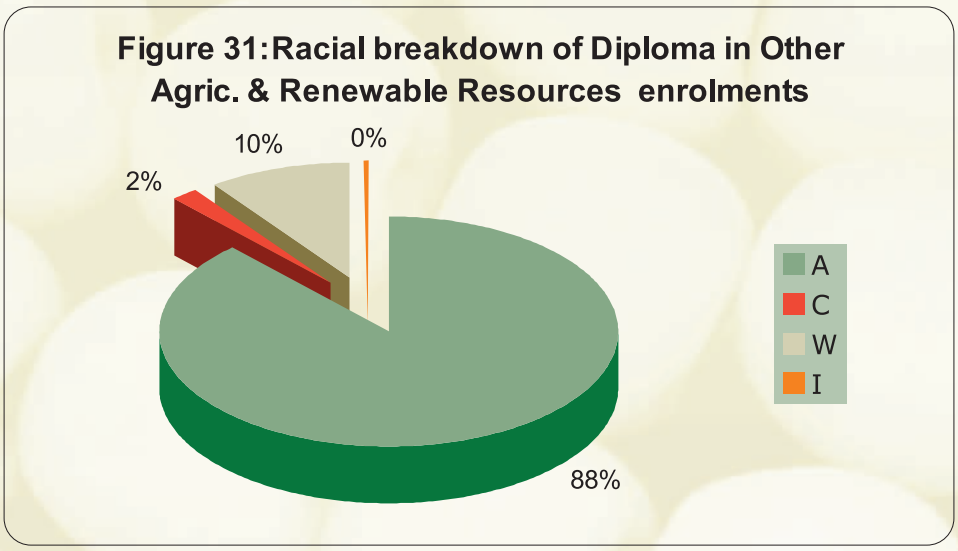


Figure 31 depicts that 88% of Diploma enrolments in this CESM are African students. White students constituted 10% followed by Coloured students with only 2%. No Indian students registered for this programme during the 2004 academic year.

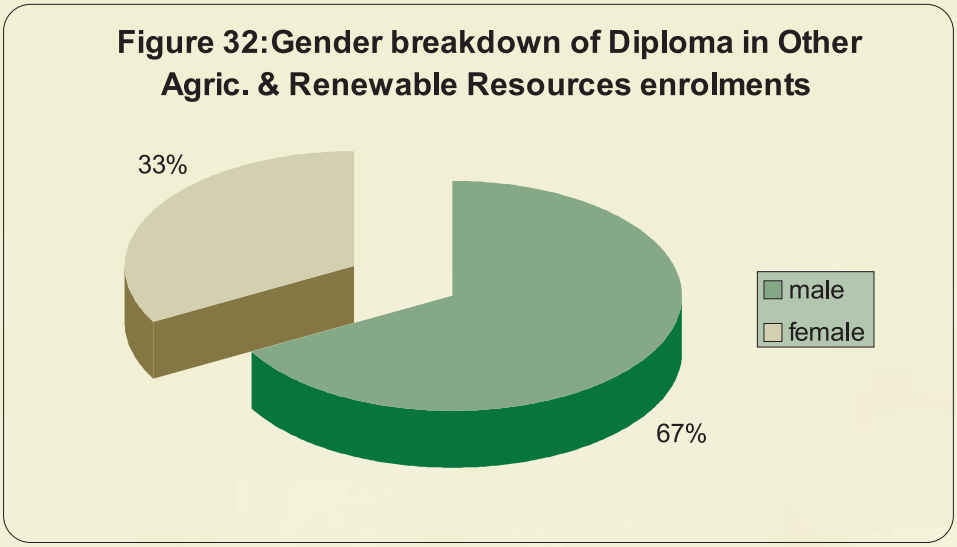


Figure 32 indicates that male enrolments dominated at 67% while female enrolments constituted 33%. African males accounted for 84% of male enrolments in this programme, followed by White males with 14%. Coloured students constituted 2% of the male enrolments in this programme.

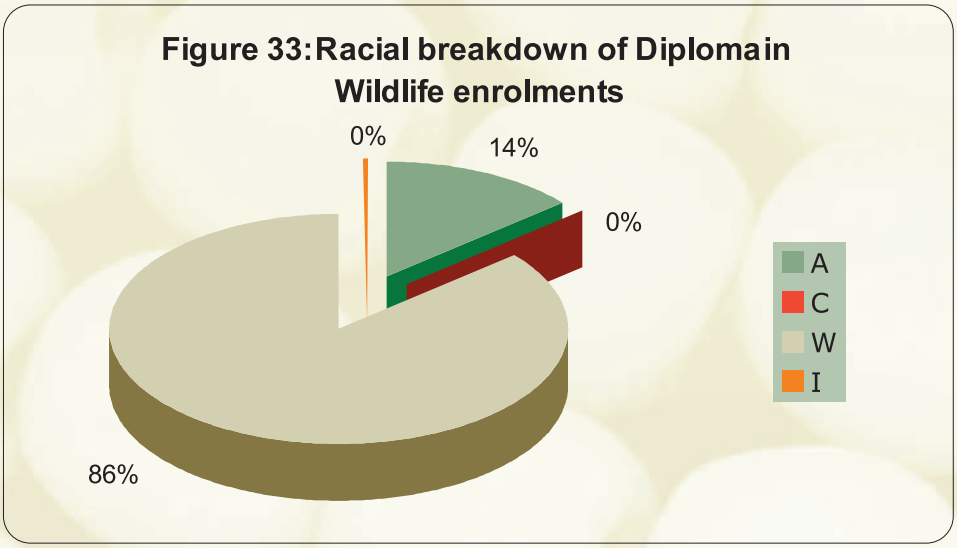
Female enrolments for this programme are dominated by African females with 96%. Coloured females constituted 4% and there were no enrolments for White and Indian female students in this programme.

3.3.2.9 Wildlife Enrolments at Universities of Technology in 2004

Wildlife CESM includes Diploma, BTech, MTech and DTech in Game Ranch Management. TUT is the only University of Technology offering this programme. The programme has registered 134 students in 2004. Only the Diploma programmes have enrolled students in this CESM. Table 26 presents a demographic breakdown of the Diploma Wildlife enrolments during the 2004 academic year.

Table 26: Demographic breakdown of Diploma in Wildlife enrolments

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	17	2	19	0	0	0	99	16	115	0	0	0	134
TOTAL	**17**	**2**	**19**	**0**	**0**	**0**	**99**	**16**	**115**	**0**	**0**	**0**	**134**



Enrolments at Diploma level in this CESM during the 2004 academic year were dominated by White students with 86% followed by African students with 14%. No Coloured and Indian students were enrolled in this CESM at Diploma level during the 2004 academic year.

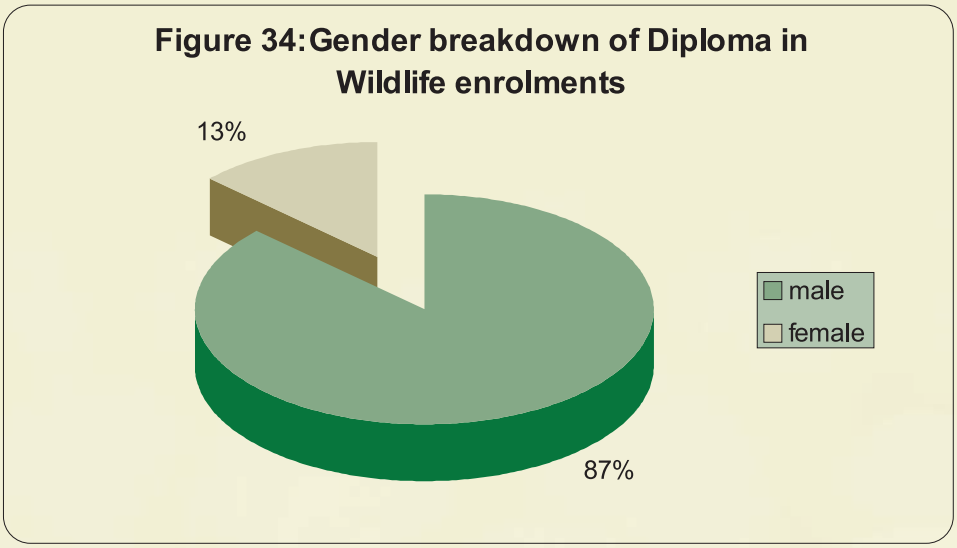


Figure 34 shows that male students dominated the Diploma in Wildlife enrolments with 87% and female students constituted only 13%. White males constituted 85% of the male enrolments at Diploma level in this CESM and African males accounted for 15%. White females constituted 89% of the Diploma enrolments in this CESM and African females accounted for 11% only.

3.3.2.10 Agricultural Science Enrolments at Universities of Technology in 2004

Agricultural Science CESM includes Diploma, BTech, MTech and DTech, Agriculture and Agricultural Science. Agricultural Science programmes are offered by CPUT, CUT, TUT and UNISA. One hundred and twenty five (125) students registered in this CESM during the 2004 academic year.

Agricultural Science BTech enrolled 81% of the overall enrolments in this CESM, followed by MTech programmes with 17% and DTech programmes accounted for of 2% only. There were no Diploma enrolments in this CESM during the 2004 academic year. Table 27 presents a demographic breakdown of Agricultural Science-General enrolments in 2004 academic year by level of qualification.

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

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
BTech	49	19	68	3	2	5	25	3	28	0	0	0	101
MTech	13	2	15	0	0	0	5	1	6	0	0	0	21
DTech	3	0	3	0	0	0	0	0	0	0	0	0	3
TOTAL	**49**	**19**	**68**	**3**	**2**	**5**	**25**	**3**	**28**	**0**	**0**	**0**	**125**

One hundred and one (101) students in 2004 were enrolled in this CESM at BTech level during the 2004 academic year.

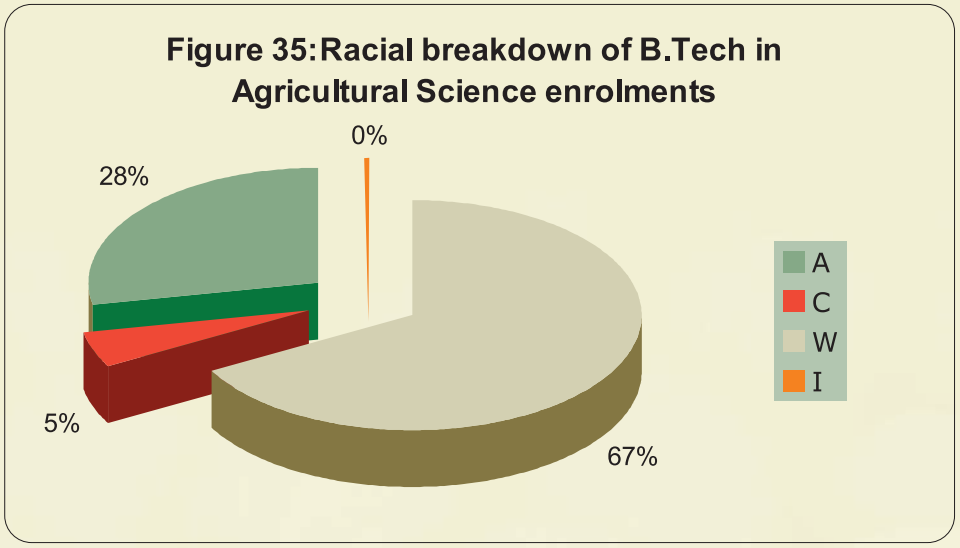


Figure 35 indicates that African students comprised 67% of the total BTech Agricultural Science enrolments followed by White students at 28% and Coloured students comprised 5%. Figure 35 depicts that there are no Indian students registered for this programme during the 2004 academic year.

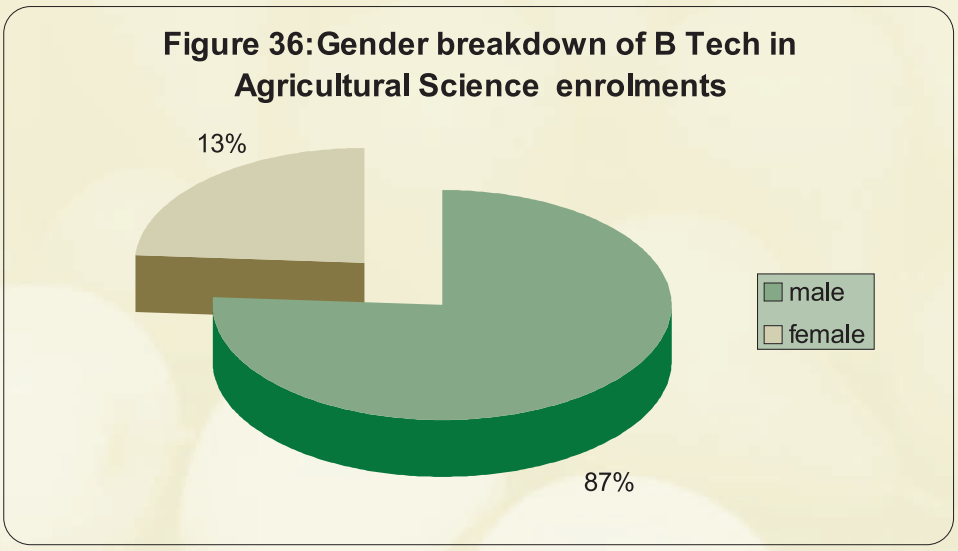
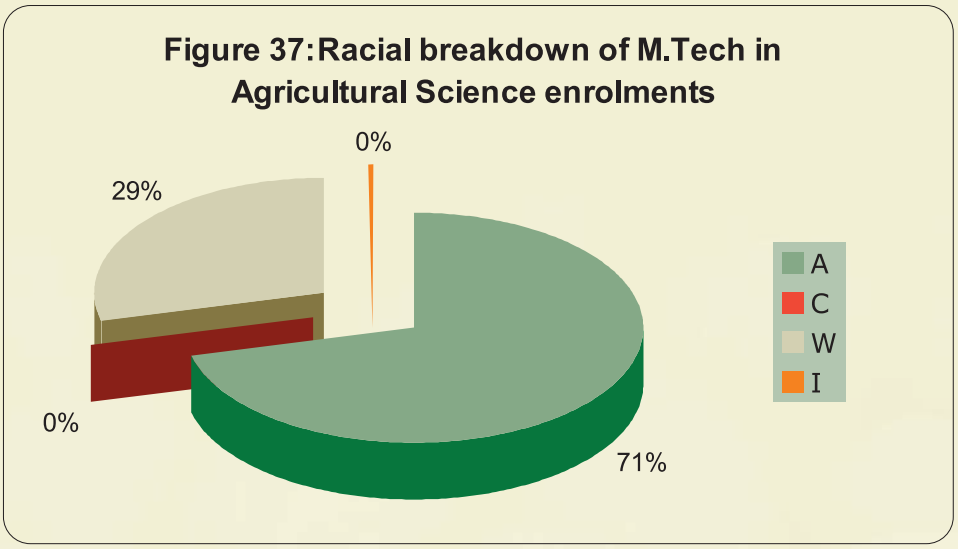


Figure 36 indicates that male students dominated with 76% and female students constituted 24% of the total BTech Agricultural Science enrolments. African males dominated male BTech enrolments in this programme with 64%, followed by White males with 32% and Coloured males accounted for only 4%. African female students constituted 79% of the BTech female enrolments for this CESM, followed by White females with 13% and Coloured females constituted 8%.



Twenty one (21) students enrolled in this programme during the 2004 academic year at MTech level. Figure 37 indicates that African enrolments in this programme constituted 71% of the total enrolments and White students comprised 29%. No Coloured and Indian students enrolled for MTech Agricultural Science during the 2004 academic year.

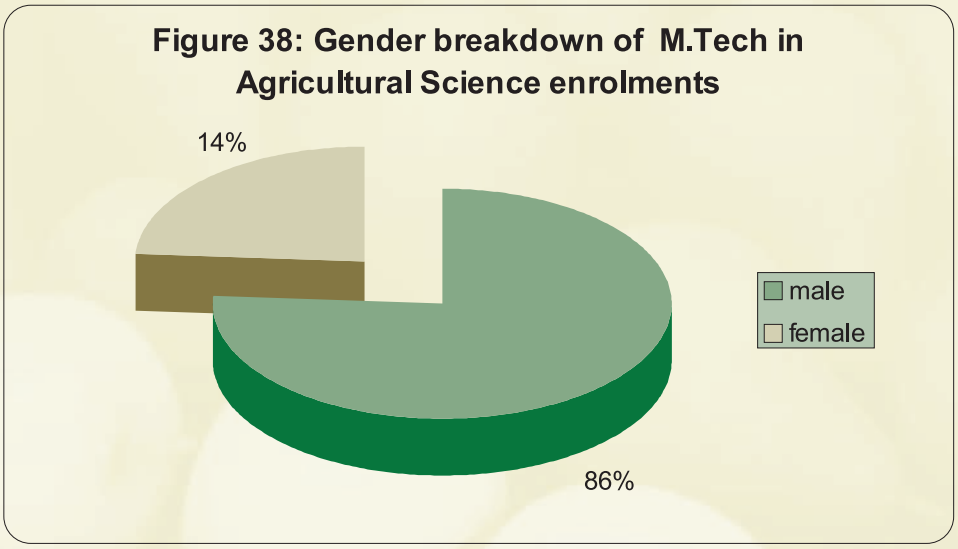


Figure 38 indicates that male students dominated enrolments in this programme with 86% and female students constituted only 14% of the enrolments. African males dominated male enrolments with 72% and White male enrolment constituted 28% of the total MTech enrolments in this CESM. African females accounted for 67% of the female enrolments followed by White females with 33%.
Only 3 African males registered for DTech Agricultural Science during the 2004 academic year.

3.3.2.9 Agriculture Extension Enrolments at Universities of Technology in 2004

Agriculture Extension CESM includes Diploma, BTech, MTech and DTech in Agricultural Rural Development and TUT is only university of technology offering this programme. Table 28 presents a demographic breakdown of BTech Agricultural Extension enrolments during the 2004 academic year academic year by level of qualification.

Table 28: Demographic breakdown of BTech in Agricultural Extension enrolments

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
BTech	34	16	50	0	0	0	0	0	0	0	0	0	50
TOTAL	**34**	**16**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**50**

Table 28 indicates that BTech Agriculture Extension enrolled 50 students and all the students were Africans.

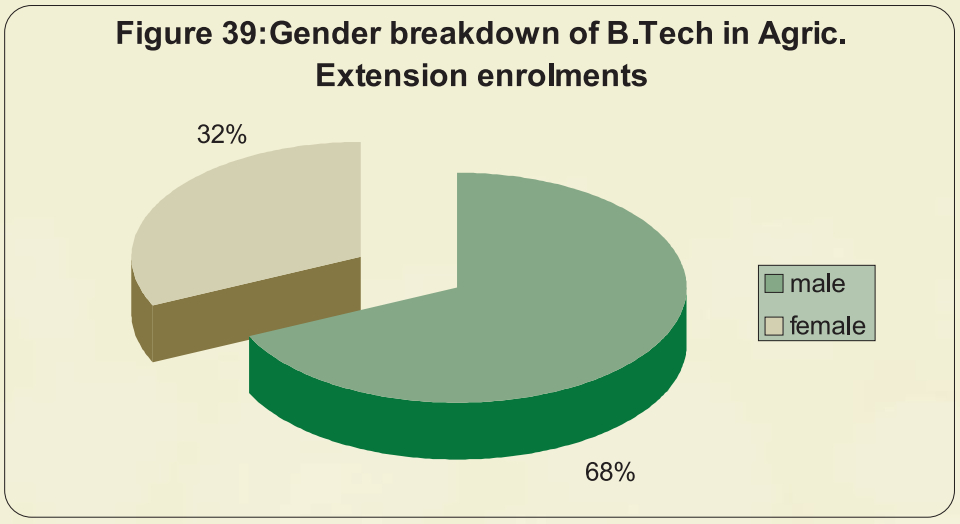


Figure 39 depicts that only African students registered for this programme during the 2004 academic year i.e. 100% of the enrolments were African of which 68% were males and 32% were males.

3.4 Graduate outputs of Universities of Technology during the 2004 academic year.

Table 29 and figure 40 presents number of graduates at various AET programmes during the 2004 academic year per university of technology.

Table 29: Graduate figures at universities of technology in 2004

Name of university of technology	Number of AET Graduates	Percentage (%)
CPUT	58	7
CUT	62	8
Mantec	59	8
NMMU	42	5
TUT	534	68
UNISA	28	4
TOTAL	783	100

TUT has produced 68% of the overall graduates at the universities of technology during the 2004 academic year. Other universities of technology collectively produced the remaining 32% of the overall graduates during the 2004 academic year. The high number of graduates produced by TUT might be linked to the many agricultural programmes offered by this institution.

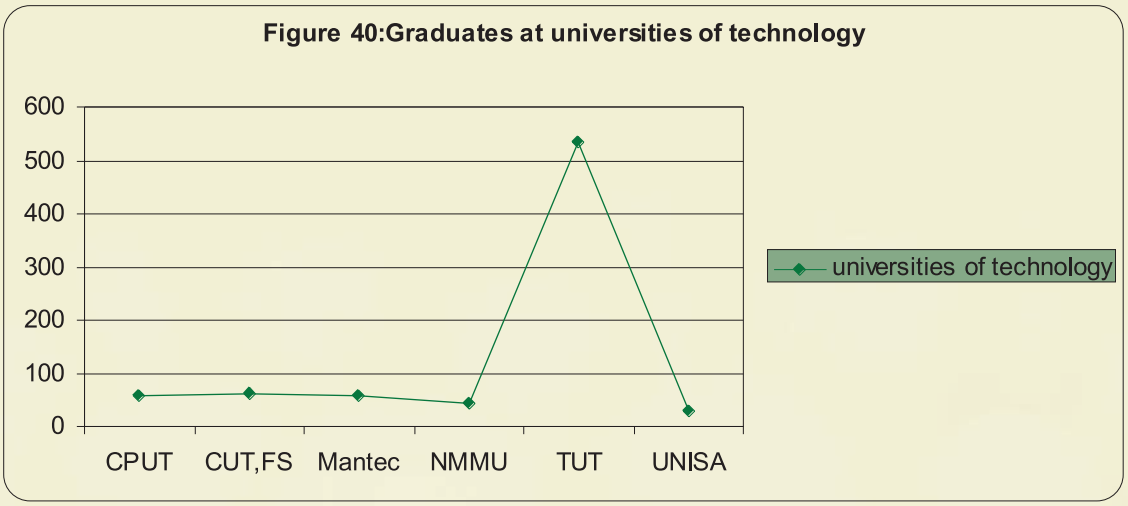


Figure 40 indicates that the difference between qualifications awarded by CPUT, CUT, Mantec and NMMU is insignificant. UNISA has the lowest number of graduates during the 2004 academic year even though they have many agricultural programmes in comparison to the other four universities of technology, excluding TUT. Table 30 presents a demographic breakdown of graduate figures in AET programmes during the 2004 academic year from the universities of technology.

Table 30: Breakdown of graduates by gender and race

Name of the university	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	10	3	13	4	2	6	35	4	39	0	0	0	58
CUT	30	14	44	1	1	2	15	1	16	0	0	0	62
Mantec	33	26	59	0	0	0	0	0	0	0	0	0	59
NMMU	20	18	38	1	0	1	3	0	3	0	0	0	42
TUT	231	148	379	0	0	0	90	64	154	1	0	1	534
UNISA	17	9	26	0	0	0	1	1	2	0	0	0	28
TOTAL	**341**	**218**	**559**	**6**	**3**	**9**	**144**	**70**	**214**	**1**	**0**	**1**	**783**

African graduates constituted 72% of all the AET graduates during the 2004 academic year, followed by White graduates with 27% and Coloured graduates comprised 1% of the total graduates produced by universities of technology during the 2004 academic year.

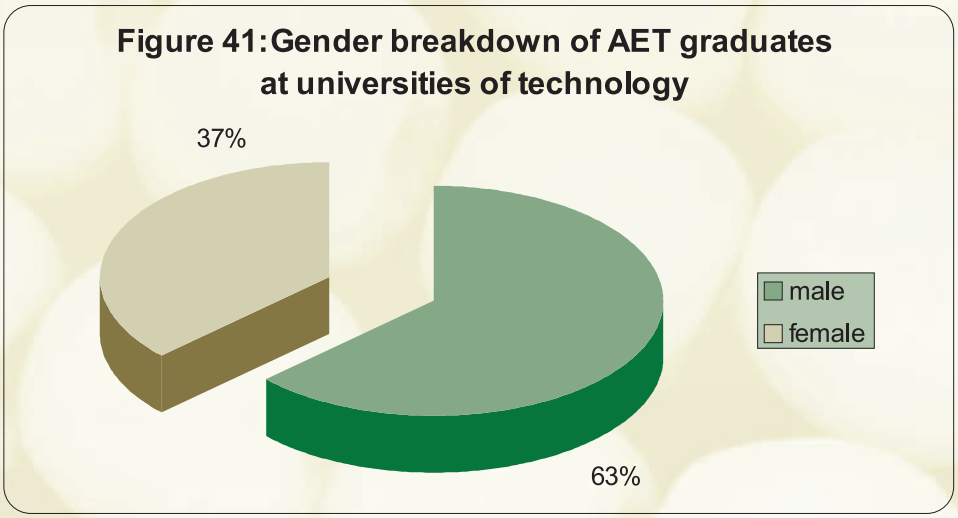


Figure 41 indicates that male graduates constituted 63% of the overall AET graduates at universities of technology during the 2004 academic year, and female graduates accounted for 37%.

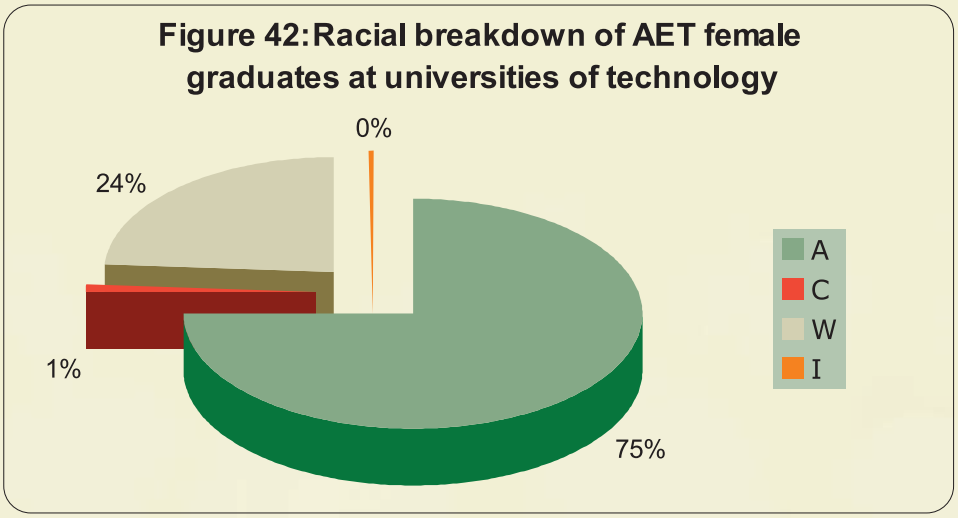
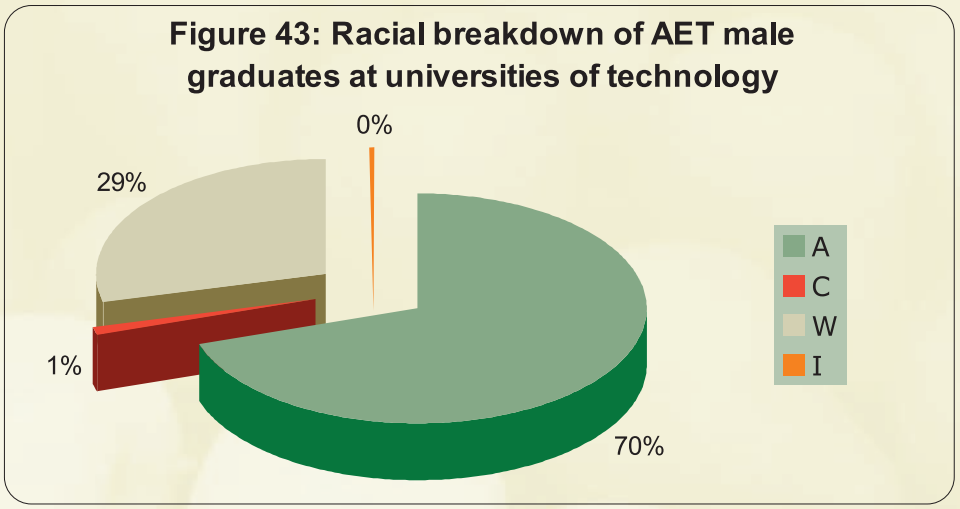


Figure 42 indicates that African females dominated the female graduates at universities of technology by 75%. White females constituted 24% and Coloured females constituted 1%. There were no Indian female graduates from universities of technology during the 2004 academic year.



African males constituted 70% of the AET male graduates followed by White male graduates with 29%. Coloured males constituted only 1% of the total male graduates during the 2004 academic year. Indian males constituted less than 1% of male graduates.

3.4.1 AET Graduates at Universities of Technology by Level of Qualification and CESM in 2004

Table 31: Agricultural graduates at universities of technology by CESM & level of qualification						
CESM	**CERTIFICATE**	**DIPLOMA**	**BTECH.**	**MTECH.**	**TOTAL**	**%**
Agric Management	21	108	71	0	200	26
Animal Science	2	187	35	0	224	28
Horticulture	8	28	16	0	52	7
Plant Science	0	59	0	0	59	8
Land Reclamation	1	17	1	0	19	2
Renewable Natural Resources	0	87	0	0	87	11
Other Agric. & Renewable Resources	4	0	15	0	19	2
Wildlife	8	0	0	4	12	2
Agric. Science-General	0	43	0	0	43	5
Agric. Extension	0	22	41	5	68	9
TOTAL	**44**	**551**	**179**	**9**	**783**	**100**

Table 31 indicates that Animal Science, Agriculture Management and Renewable Natural Resources have high graduate figures with 28%, 26% and 11% respectively. Other CESM categories have less than 10% of the graduates each.

Table 32: Demographic breakdown of Certificate graduates by CESM at universities of technology													
CESM Category (Certificates)	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
N. CERT. (AGRICULTURE MANAGEMENT)	15	6	21	0	0	0	0	0	0	0	0	0	21
N .CERT.(AGRICULTURE)	3	1	4	0	0	0	0	0	0	0	0	0	4
N.CERT.(ANIMAL PRODUCTION)	2	0	2	0	0	0	0	0	0	0	0	0	2
N.CERT.(HORTICULTURE)	3	2	5	0	0	0	0	1	1	0	0	0	6
N.CERT. LAND SCAPE TECHNOLOGY	0	1	1	0	0	0	0	0	0	0	0	0	1
N.CERT. TURFGRASS	0	0	0	0	0	0	2	0	2	0	0	0	2
N.CERT.GAME RANCH	0	0	0	0	0	0	3	0	3	0	0	0	3
N.CERT.NATURE CONSERVATION	5	0	5	0	0	0	0	0	0	0	0	0	5
TOTAL	**28**	**10**	**38**	**0**	**0**	**0**	**5**	**1**	**6**	**0**	**0**	**0**	**44**

The Certificate programmes are rated at NQF level 5. The data in table 32 depict that National Certificate in Agricultural Management dominated with 47% of the total number of awarded certificates. The other CESM produced less than 15% of the total number of awarded certificates during the 2004 academic year. African graduates dominated with 86%, followed by Whites with 14%. No certificates awarded to Coloured and Indians in AET programmes during the 2004 academic year

Table 33: Demographic breakdown of Diploma graduates by CESM at universities of technology													
CESM Category (Diplomas)	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Science	14	14	28	3	1	4	8	3	11	0	0	0	43
Agricultural Extension	12	10	22	0	0	0	0	0	0	0	0	0	22
Animal Science	103	74	177	0	0	0	8	2	10	0	0	0	187
Plant Science	26	22	48	0	0	0	6	5	11	0	0	0	59
Horticulture	8	9	17	0	0	0	9	2	11	0	0	0	28
Land Reclamation	2	2	4	0	0	0	7	6	13	0	0	0	17

Table 33: Demographic breakdown of Diploma graduates by CESM at universities of technology													
CESM Category (Diplomas)	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Renewable Natural Resources	24	10	34	0	0	0	26	26	52	1	0	1	87
Agriculture Management	42	30	72	1	1	2	30	4	34	0	0	0	108
TOTAL	**231**	**171**	**402**	**4**	**2**	**6**	**94**	**48**	**142**	**1**	**0**	**1**	**551**

Table 33 indicates that a total number of 551 graduates were awarded with Diplomas during the 2004 academic year. Animal Science accounted for 33% of the overall diploma graduates, followed by Agricultural Management with 20% of the total diploma graduates at universities of technology during the 2004 academic year.

Agricultural Extension and Land Reclamation awarded the least number of diplomas during the 2004 academic year with 4% and 3% respectively. African graduates dominated diploma graduates with 73%, followed by Whites with 26%. Coloured and Indian graduates constituted very low figures of the total Diploma graduates during the 2004 academic year.

Table 34: Demographic breakdown of BTech graduates by CESM at universities of technology													
CESM Category (BTech)	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Extension	22	19	41	0	0	0	0	0	0	0	0	0	41
Animal Science	17	12	29	0	0	0	3	3	6	0	0	0	35
Horticulture	9	5	14	0	0	0	0	2	2	0	0	0	16
Land Reclamation	0	0	0	0	0	0	0	1	1	0	0	0	1
Agric Management/Admin	37	16	53	1	0	1	16	1	17	0	0	0	71
Other Agric. and Renewable Resources	0	2	2	0	0	0	9	4	13	0	0	0	15
TOTAL	**85**	**54**	**139**	**1**	**0**	**1**	**28**	**11**	**39**	**0**	**0**	**0**	**179**

Table 34 indicates that a total number of 179 graduates were awarded BTech degrees during the 2004 academic year. Agricultural Management accounted for 39%, followed by Agricultural Extensions with 23%.

Other CESM categories have awarded a very low number of BTech degrees with Other Agricultural and Renewable Resources awarding 8%. Africans were the largest recipients of BTech degrees with 77%, followed by Whites with 22% of the total number of BTech graduates during the 2004 academic year. Coloured graduates accounted for only 1% and no Indians graduated in this programme during the 2004 academic year.

Table 35: Demographic breakdown of MTech. graduates by CESM at universities of technology													
CESM Category (MTech)	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
MTECH.(Agriculture)	2	0	2	0	0	0	2	1	3	0	0	0	5
MTECH .(Nature Conservation)	0	0	0	0	0	0	2	2	4	0	0	0	4
TOTAL	**2**	**0**	**2**	**0**	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**9**

As depicted in Table 35 a total of 9 graduates were awarded MTech degrees in AET programmes during the 2004 academic year. MTech Agriculture accounted for 56% and MTech Nature Conservation awarded 44% of the total number of MTech graduates.

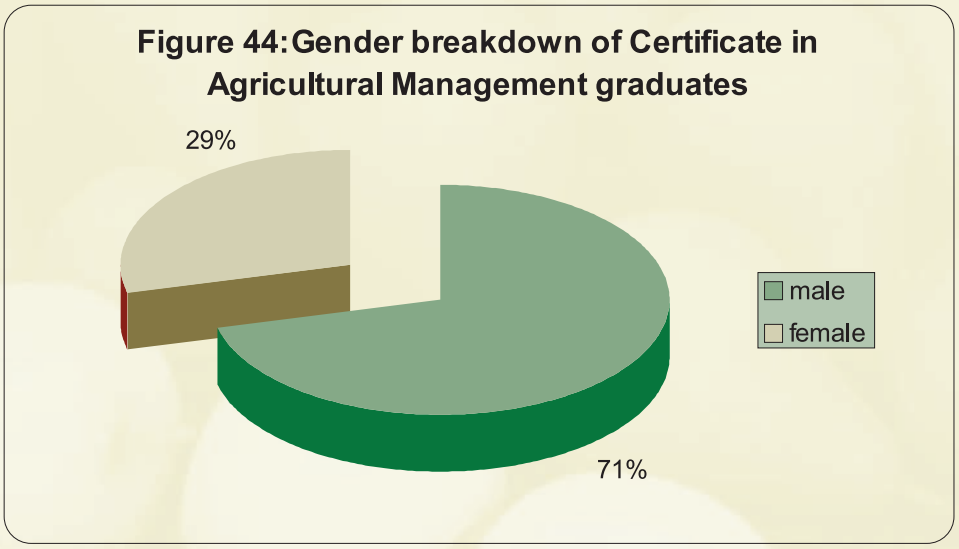
3.4.2.1 Agricultural Management Graduates at Universities of Technology in 2004

Two hundred (200) graduates were produced in this CESM at universities of technology during the 2004 academic year. Table 36 presents a demographic breakdown of Agricultural Management graduates by level of qualifications during the 2004 academic year academic year.

Table 36: Demographic breakdown of Agricultural Management graduates by level of qualification in 2004.

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CERTIFICATE	15	6	21	0	0	0	0	0	0	0	0	0	21
DIPLOMA	42	30	72	1	1	2	30	4	34	0	0	0	108
BTECH	37	16	53	1	0	1	16	1	17	0	0	0	71
TOTAL	**94**	**52**	**146**	**2**	**1**	**3**	**46**	**5**	**51**	**0**	**0**	**0**	**200**

Agricultural Management Diploma graduates constituted 53% of the overall Agricultural Management CESM graduates, followed by BTech with 36%. The lowest numbers of graduates were recorded at Certificate with 11%. No MTech and DTech graduates were produced in this CESM.



Twenty one (21) African graduates were produced at Certificate level in this CESM during the 2004 academic year, of which 71% are males and 29% are females. Certificate graduates constituted 11% of the overall graduates in this CESM during the 2004 academic year.

One hundred and eight (108) Diploma graduates were produced in this CESM during the 2004 academic year. Diploma graduates constituted 53% of the total graduates in this CESM.

Figure 45: Racial breakdown of Diploma in Agricultural Management graduates

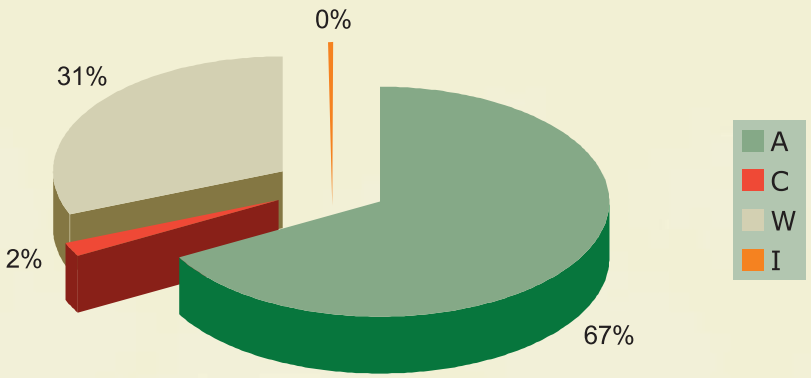


Figure 45 above indicates that 67% of the diploma graduates in this CESM are Africans. White graduates constituted 31% and Coloured graduates accounted for only 2% of the total diploma graduates in Agricultural Management during the 2004 academic year.

Figure 46: Gender breakdown of Diploma in Agricultural Management graduates

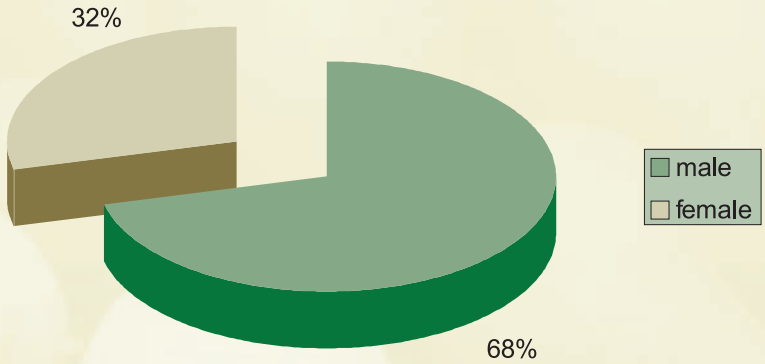


Figure 46 above indicates that male graduates constituted 68% of the Diploma graduates and female graduates accounted for 32%. African male graduates constituted 58% of the male graduates, followed by White male graduates with 41%. Coloured male graduates accounted for 1% only and no Indians graduated in this programme during the 2004 academic year. African female graduates dominated the female Diploma population with 86%, White female graduates constituted 11% and Coloured female graduates constituted 3% only.

Seventy one (71) BTech graduates were produced in this CESM during the 2004 academic year at universities of technology. This constitutes 36% of the overall graduates in this CESM.

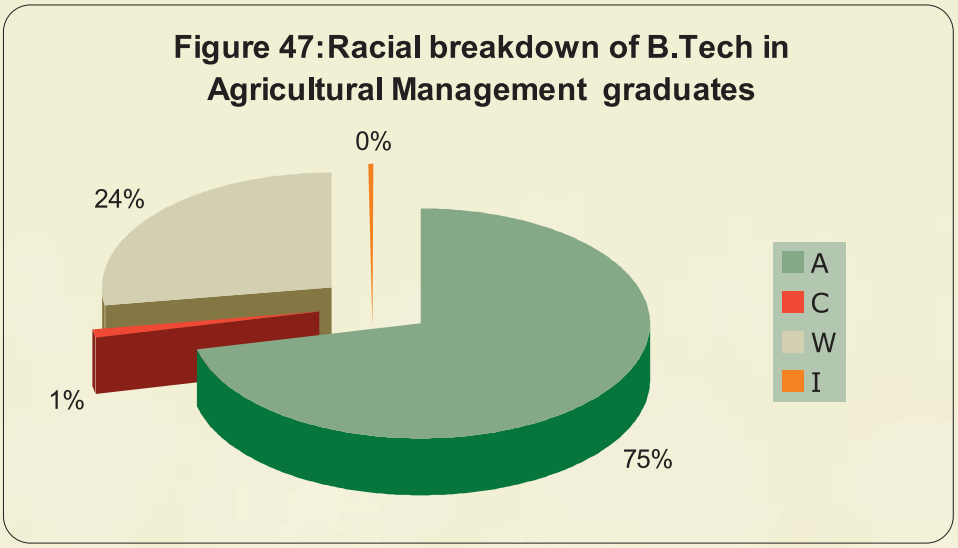


Figure 47 shows that African graduates constituted 75% of the total BTech Agricultural Management graduates, followed by White graduates with 24% and Coloured graduates constituted only 1%. No Indians graduated with Agricultural Management Diplomas during the 2004 academic year.

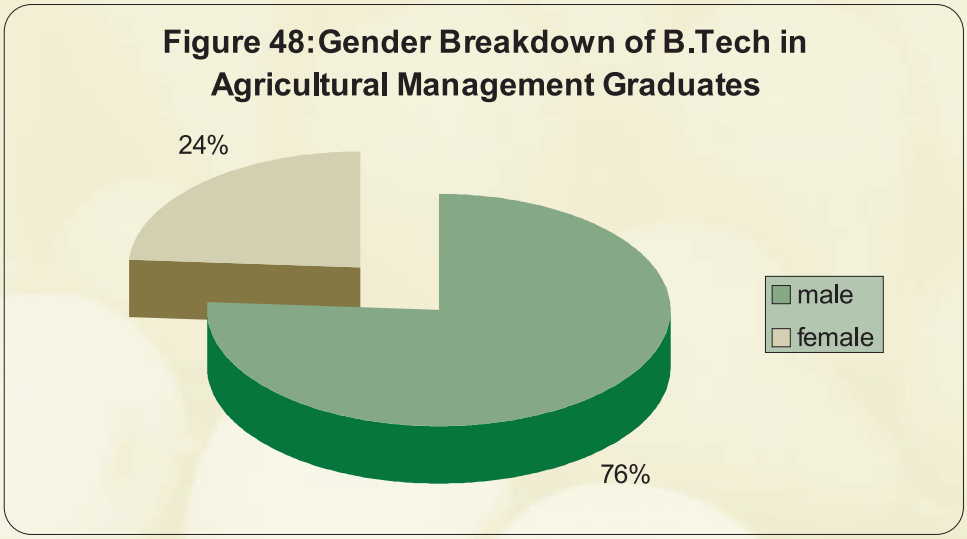


Figure 48 above shows that male graduates constituted 76% of the total BTech Agricultural Management graduates and female graduates constituted 24%. African male graduates dominated male graduates in the BTech Agricultural Management with 68%. White male graduates constituted 30% of all male graduates in the BTech in Agricultural Management and Coloured male graduates accounted for only 2%.

African female graduates constituted 94% of all the females in the BTech Agricultural Management degree. White female graduates accounted for only 6%.

3.4.2.2 Agricultural Science Graduates at Universities of Technology in 2004

Graduates in this category include those which graduated with diplomas in Agriculture Science and diplomas in Agriculture. Only diploma graduates were produced in this CESM during the 2004 academic year.

Table 37: Demographic breakdown of Agricultural Science graduates by level of qualification													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
DIPLOMA	14	14	28	3	1	4	8	3	11	0	0	0	43
TOTAL	**14**	**14**	**28**	**3**	**1**	**4**	**8**	**3**	**11**	**0**	**0**	**0**	**43**

Table 37 presents a demographic breakdown of Agricultural Science graduates during the 2004 academic year by level of qualification.

Forty three (43) graduates were produced in the Agricultural Science CESM during the 2004 academic year.

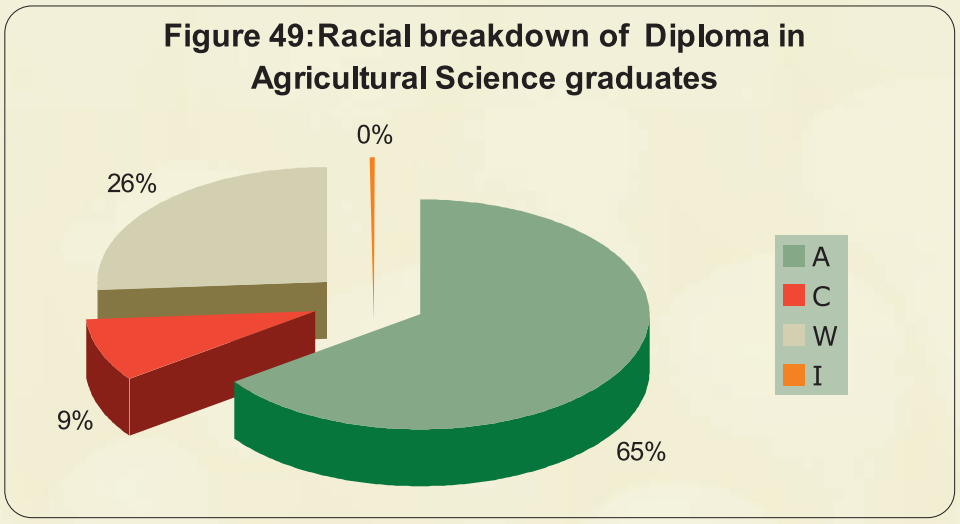


Figure 49 above shows that African graduates constituted 65% of the graduates in this CESM followed by White graduates with 26%. Coloured graduates constituted only 9% of the total Agricultural Science graduates. No Indians graduated in this programme during the 2004 academic year.

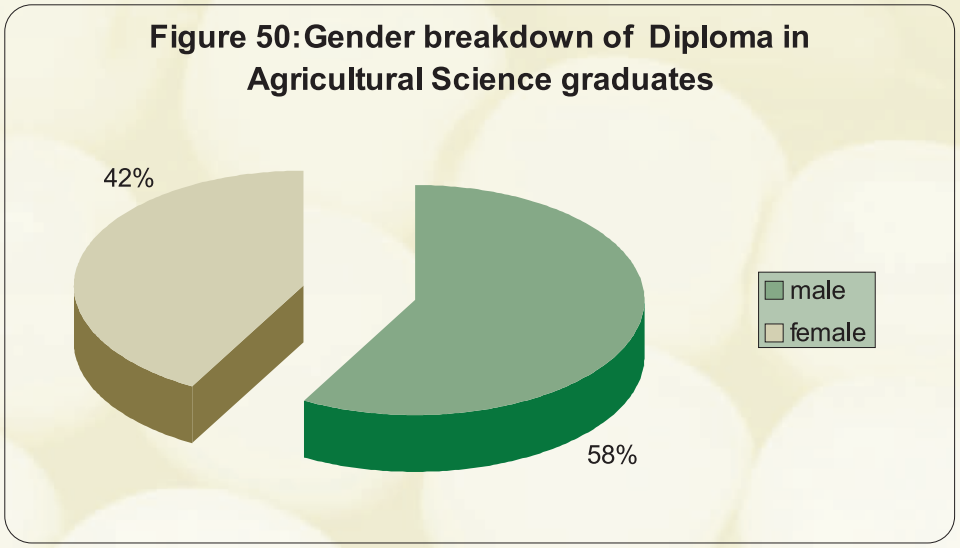


Figure 50 above depicts that male graduates dominated the graduates in Agricultural Science with 58% and females constituted 42%. African male graduates accounted for 56% followed by White male graduates with 32%. Coloured male graduates constituted 12% of all the male graduates for the Diploma in this CESM.

African female graduates dominated the female graduates in the Agricultural Science with 77%, White female graduates accounted for 17% and Coloured female graduates constituted 6% only.

3.4.2.3 Animal Science Graduates at Universities of Technology in 2004

Two hundred and twenty four (224) graduates were produced in Animal Science at universities of technology during the 2004 academic year. Table 38 presents a demographic breakdown of Animal Science graduates during the 2004 academic year by level of qualification.

Table 38: Demographic breakdown of Animal Science graduates by level of qualification

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CERTIFICATE	2	0	2	0	0	0	0	0	0	0	0	0	2
DIPLOMA	103	74	177	0	0	0	8	2	10	0	0	0	187
BTECH	17	12	29	0	0	0	3	3	6	0	0	0	35
TOTAL	**122**	**86**	**208**	**0**	**0**	**0**	**11**	**5**	**16**	**0**	**0**	**0**	**224**

Eighty three percent (83%) of the total Animal Science graduates are diploma graduates, BTech graduates constituted 16% and Certificate constitutes 11% only. No graduates were produced in MTech and DTech programmes in this CESM during the 2004 academic year.

Only 2 African male graduates were produced at Certificate level in this CESM during the 2004 academic year.

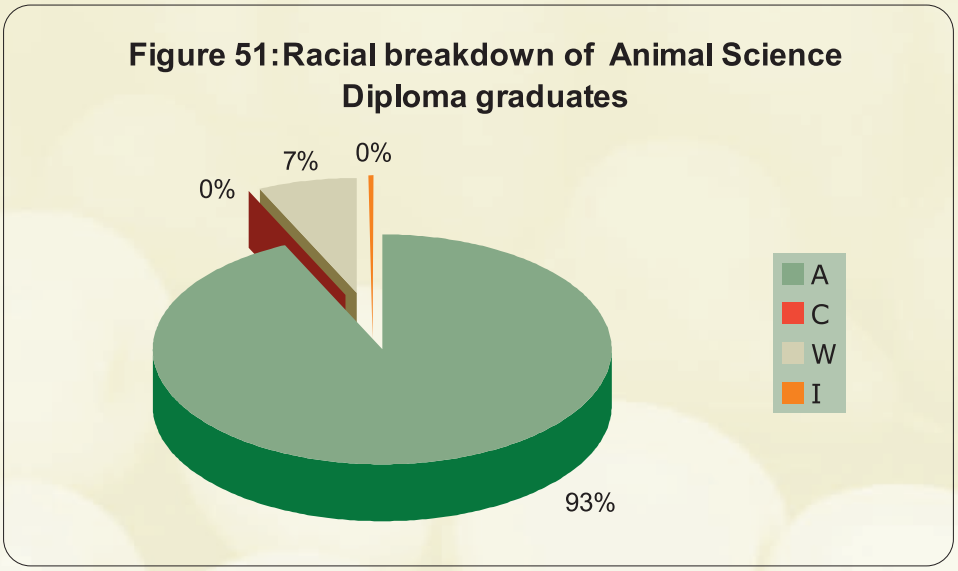
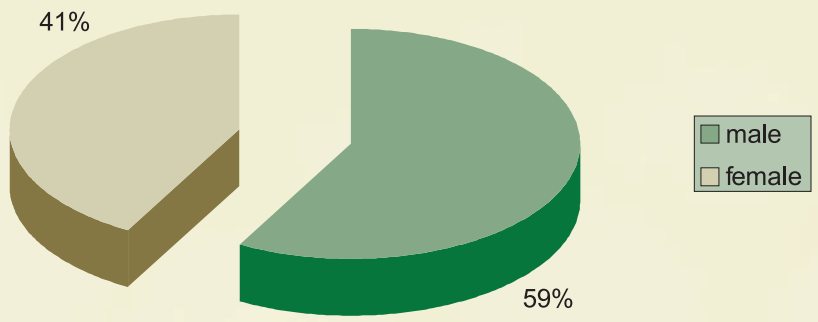


Figure 51 above depicts that African graduates constituted 93% of the Animal Science graduates at universities of technology during the 2004 academic year and White graduates accounted for 7% only. No Coloured and Indian graduates were produced in this programme at universities of technology during the 2004 academic year.

Figure 52: Gender breakdown of Diploma in Animal Science graduates



As it appears in figure 52, male graduates dominated the Diploma in Animal Science graduates with 59% and female graduates constituted 41% of the CESM diploma graduates. African males accounted for 93% and White males comprised 7% only of the Diploma Animal Science male graduates at universities of technology during the 2004 academic year. No graduates were produced from Coloured and Indian males in this programme during the 2004 academic year. African females constituted 97% of the total female graduates studying towards the Diploma Animal Science and White females constituted 3% only. No Coloured and Indian female graduates were produced in this programme by universities of technology during the 2004 academic year.

Thirty five (35) graduates were produced at BTech level in the CESM at universities of technology during the 2004 academic year.

Figure 53: Racial breakdown of B.Tech in Animal Science graduates

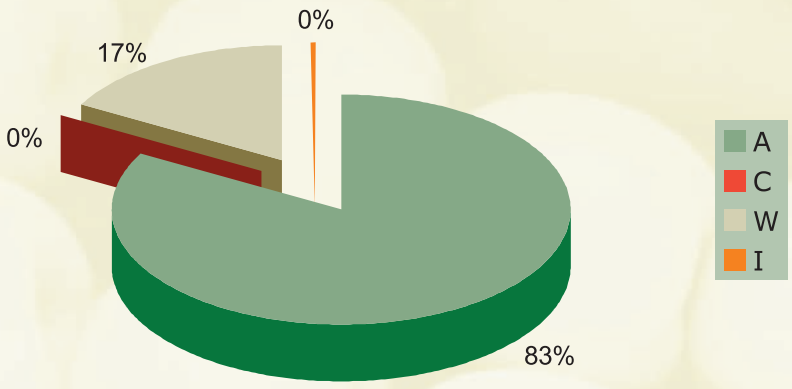


Figure 53 shows that African graduates constituted 83% of the BTech Animal Science graduates followed by White graduates with only 17%.

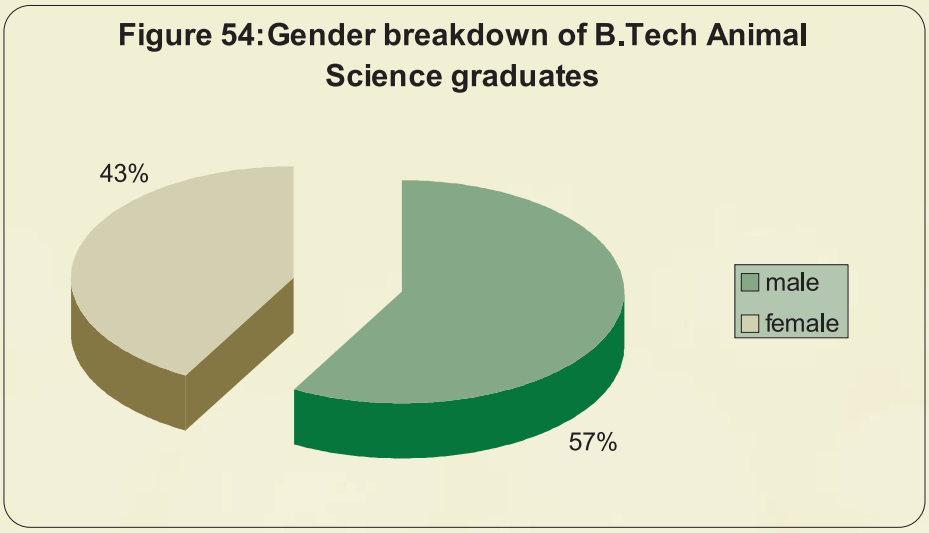


Figure 54 above shows that male graduates dominated the BTech Animal Science graduates with 57% and females constituted 43%. African males constituted 85% of the male graduates studying towards the BTech Animal Science and White males accounted for 15% only. African females comprised 80% of the female graduates in BTech Animal Science and White females constituted 20% only.

3.4.2.4 Horticulture Graduates at Universities of Technology in 2004

Horticulture CESM produced 50 graduates at universities of technology during the 2004 academic year. Table 39 presents a demographic breakdown of Horticulture graduates during the 2004 academic year by level of qualification.

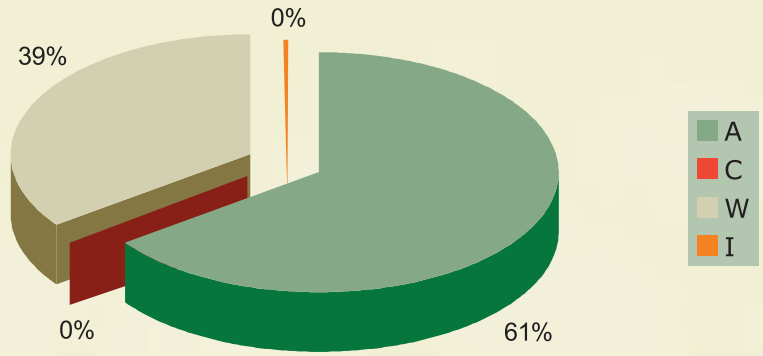
Table 39: Demographic breakdown of Horticulture graduates by level of qualification

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CERTIFICATE	3	2	5	0	0	0	0	1	1	0	0	0	6
DIPLOMA	8	9	17	0	0	0	9	2	11	0	0	0	28
BTECH	9	5	14	0	0	0	0	2	2	0	0	0	16
TOTAL	**20**	**16**	**36**	**0**	**0**	**0**	**9**	**5**	**14**	**0**	**0**	**0**	**50**

A large number of Horticulture graduates 56% studied towards the diploma followed by BTech with 32%. Certificate candidates comprised 12% of the total graduates in Horticulture produced by universities of technology during the 2004 academic year.

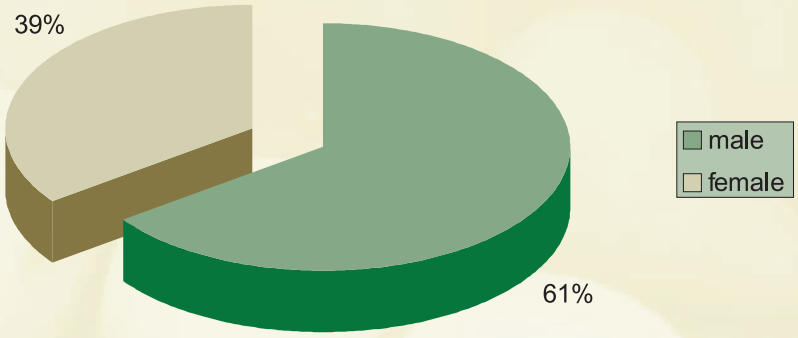
Horticulture Certificate produced only 6 graduates during the 2004 academic year, of which 5 are Africans and 1 is White. Gender breakdown indicates that 3 male and 3 female graduates were produced in the Horticulture Certificate programme.

Figure 55: Racial breakdown of Diploma in Horticulture graduates



Twenty eight (28) graduates were produced at diploma level in Horticulture during the 2004 academic year. Figure 55 depicts that African graduates constituted 61% of the Horticulture Diploma graduates and White graduates produced 39% of Horticulture Diploma at universities of technology during the 2004 academic year. No Indian and Coloured graduates in this programme were produced at universities of technology during the 2004 academic year.

Figure 56: Gender breakdown of Diploma in Horticulture graduates



Gender breakdown in figure 56 above illustrates that male graduates dominated the diploma in Horticulture graduates with 61% and female graduates constituted 39% of the graduates. White males constituted 53% of male graduates in this programme and African males constituted 47%. African females dominated female graduates with 82% of the female graduate population in this programme and White females constituted 18%.

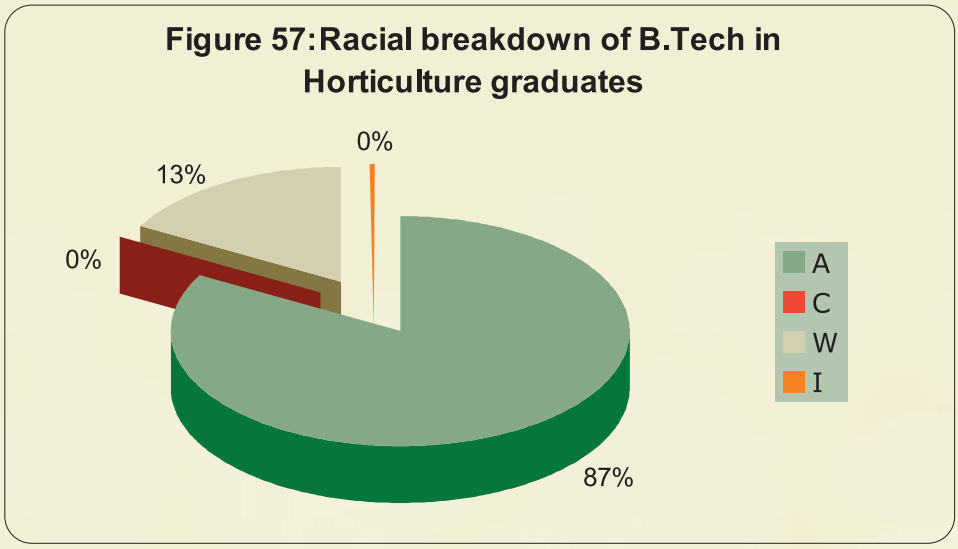


Figure 57 depicts that African graduates constituted 87% and White graduates produced 13% of Horticulture BTech graduates at universities of technology during the 2004 academic year.

3.4.2.5 Agricultural Extension Graduates at Universities of Technology in 2004

Sixty eight (68) graduates were produced in this CESM at universities of technology during the 2004 academic year. Table 40 presents a demographic breakdown of Agricultural Extension graduates during the 2004 academic year by level of qualification.

Table 40: Demographic breakdown of Agricultural Extension graduates by level of qualification

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	12	10	22	0	0	0	0	0	0	0	0	0	22
BTech.	22	19	41	0	0	0	0	0	0	0	0	0	41
MTech.(Agric.)	2	0	2	0	0	0	2	1	3	0	0	0	5
TOTAL	**36**	**29**	**65**	**0**	**0**	**0**	**2**	**1**	**3**	**0**	**0**	**0**	**68**

Twenty two (22) African graduates were produced at Diploma level in this CESM during the 2004 academic year at universities of technology. Gender breakdown shows that 12 males and 10 females graduated with Diploma in Agricultural Extension. Forty one (41) African graduates were produced at BTech level in this CESM at universities of technology during the 2004 academic year, of which 22 were males and 19 were females. Five (5) graduates produced at MTech level in this CESM at universities of technology during the 2004 academic year, of which 2 were African males, 2 were White males and 1 was a White female.

3.4.2.6 Plant Science Graduates at Universities of Technology in 2004

Only Diploma graduates were produced in this CESM at universities of technology during the 2004 academic year. Fifty nine (59) graduates in Diploma Plant Science were produced at universities of technology during the 2004 academic year. Table 41 presents a demographic breakdown of Diploma Plant Science graduates during the 2004 academic year by level of qualification.

Table 41: Demographic breakdown of Plant Science graduates by level of qualification

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
DIPLOMA	26	22	48	0	0	0	6	5	11	0	0	0	59
TOTAL	**26**	**22**	**48**	**0**	**0**	**0**	**6**	**5**	**11**	**0**	**0**	**0**	**59**

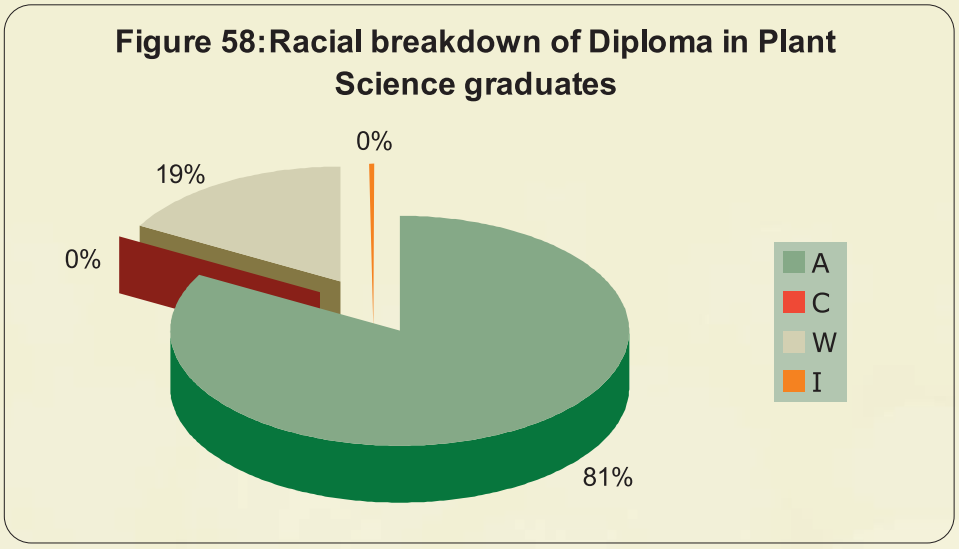


Figure 58 illustrates that African graduates constituted the highest number of graduates in this CESM with 81% followed by White graduates with 19%. No Coloureds and Indians graduated in this programme at universities of technology during the 2004 academic year.

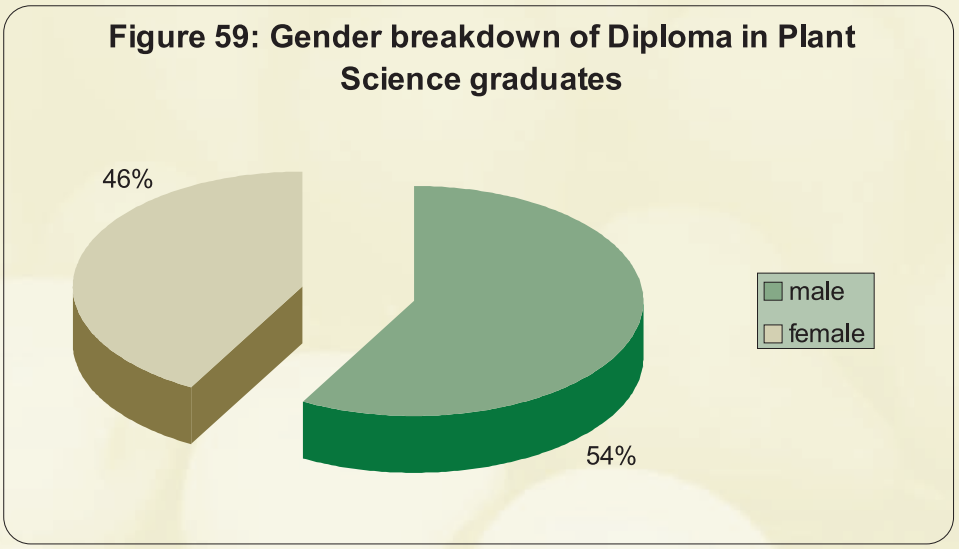


Figure 59 indicates that male graduates dominated with 54% and female graduates comprised 46% of the Diploma Plant Science graduates during the 2004 academic year. African males constituted 81% followed by White males with 19% of the Diploma Plant Science graduates. African females constituted 81% and White females constituted 19% of the female graduate population.

3.4.2.7 Land Reclamation Graduates at Universities of Technology in 2004

Nineteen (19) graduates were produced in this CESM at universities of technology during the 2004 academic year. Table 42 presents a demographic breakdown of Land Reclamation graduates during the 2004 academic year academic year by level of qualification.

Table 42: Demographic breakdown of Land Reclamation graduates by level of qualification													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
CERTIFICATE	0	1	1	0	0	0	0	0	0	0	0	0	1
DIPLOMA	2	2	4	0	0	0	7	6	13	0	0	0	17
BTECH	0	0	0	0	0	0	0	1	1	0	0	0	1
TOTAL	**2**	**3**	**5**	**0**	**0**	**0**	**7**	**7**	**14**	**0**	**0**	**0**	**19**

One (1) African female graduate was produced in this CESM at Certificate level at universities of technology during the 2004 academic year. Diploma produced 17 graduates in this CESM, of which 4 were Africans and 13 were Whites. One (1) White male was produced in this CESM at BTech level during the 2004 academic year at universities of technology.

Figure 60: Racial breakdown of Diploma in Land Reclamation graduates

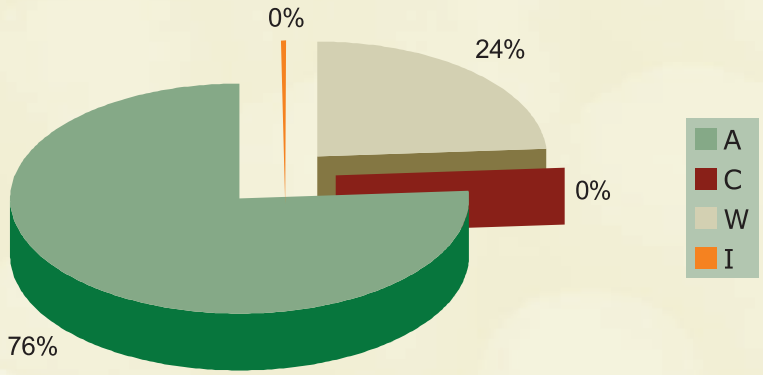


Figure 60 presents a racial breakdown of Diploma Land Reclamation graduates. This figure indicates that White graduates constituted 76% of the Diploma graduates in this CESM and African graduates accounted for 24%.

Gender breakdown of the Diploma in Land Reclamation indicates that there were 53% male graduates and 47% female graduates. Seven (7) White males graduated for the programme at Diploma level and African male graduates constituted only 2. White females accounted for 31% of the total number of diplomas in Land Reclamation graduates and African females constituted 12% of the total number of diploma graduates in this CESM.

3.4.2.8 Renewable Natural Resources Graduates at Universities of Technology in 2004

Only Diploma graduates were produced in this CESM at universities of technology during the 2004 academic year. Table 43 presents a demographic breakdown of Renewable Natural Resources graduates during the 2004 academic year by level of qualification.

Table 43: Demographic breakdown of Renewable Natural Resources graduates by level of qualification													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**TOTAL**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
DIPLOMA	24	10	34	0	0	0	26	26	52	1	0	1	87
TOTAL	**24**	**10**	**34**	**0**	**0**	**0**	**26**	**26**	**52**	**1**	**0**	**1**	**87**

Eighty seven (87) Diploma graduates were produced in this CESM at universities of technology during the 2004 academic year.

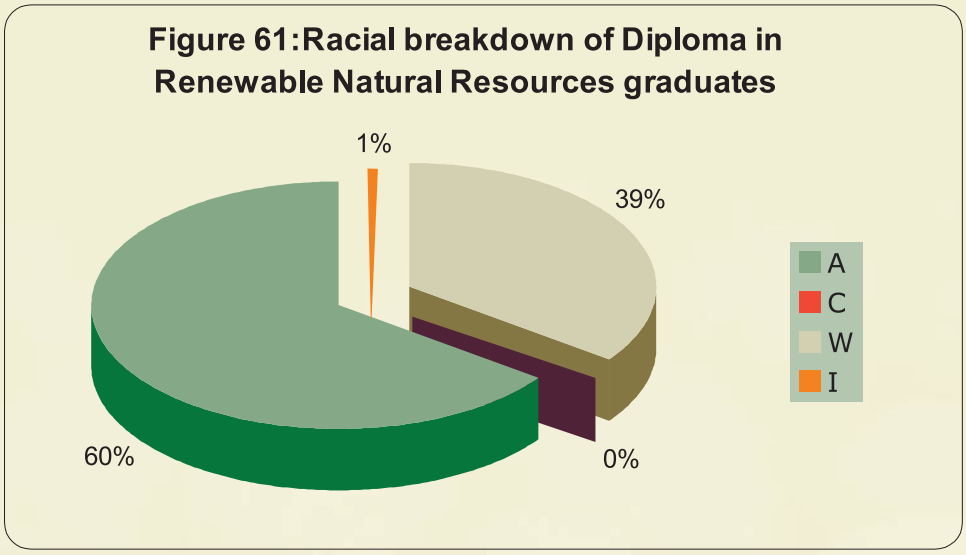


Figure 61 indicates that White graduates dominated the Renewable Natural Resources graduates with 60% and African graduates constituted only 39%. Indian graduates constituted 1% of the Renewable Natural Resources. No Coloured graduates were produced in this programme at universities of technology during the 2004 academic year.

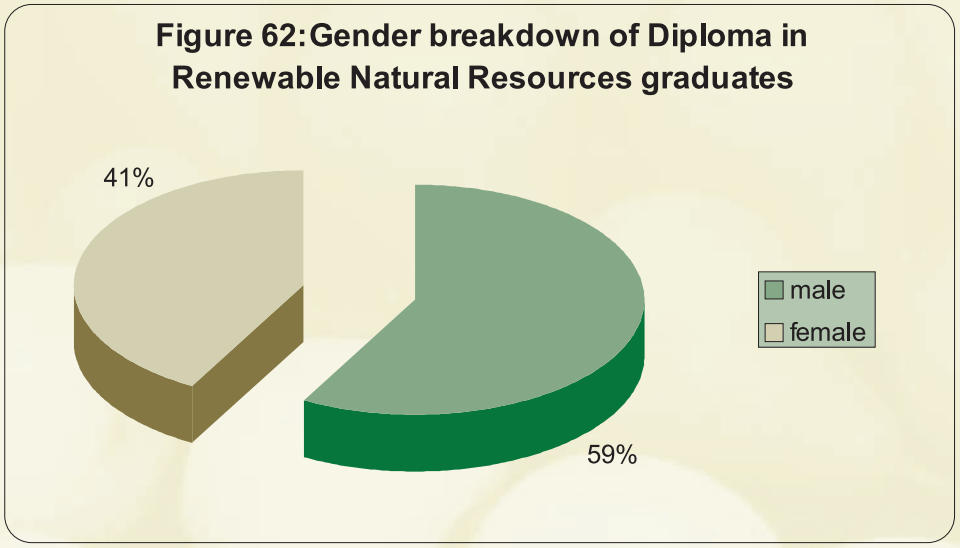


Figure 62 above illustrates that male graduates dominated the graduates in this CESM with 59% and female graduates accounted for only 41%. White males constituted 51% of the male graduates followed by African males with 47%. Indian males constituted only 2% of the male graduates produced in this CESM at universities of technology during the 2004 academic year. White females accounted for 72% of the female graduates and African females constituted 28% of the overall female graduate population in this programme at universities of technology during the 2004 academic year.

3.4.2.9 Wildlife Graduates at Universities of Technology in 2004

Table 44 presents a demographic breakdown of Wildlife graduates during the 2004 academic year by level of qualification.

Table 44: Demographic breakdown of Wildlife graduates by level of qualification.

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CERTIFICATE	5	0	5	0	0	0	3	0	3	0	0	0	8
MTech.	0	0	0	0	0	0	2	2	4	0	0	0	4
TOTAL	**5**	**0**	**5**	**0**	**0**	**0**	**5**	**2**	**7**	**0**	**0**	**0**	**12**

Twelve (12) graduates were produced in this CESM at universities of technology during the 2004 academic year, of which 8

graduated with Certificates and 4 with MTech Degrees. The Certificate graduates include 5 African males and 3 White males, while the MTech graduates includes 2 White males and 2 White females.

3.4.2.10 Other Agricultural and Renewable Resources Graduates at Universities of Technology in 2004

Nineteen (19) graduates were produced in this CESM at universities of technology. Table 45 presents a demographic breakdown of Other Agriculture and Renewable Resources graduates during the 2004 academic year academic year by level of qualification.

Table 45: Demographic breakdown of Other Agric. and Renewable Resources graduates by level of qualification

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
CERTIFICATE	3	1	4	0	0	0	0	0	0	0	0	0	4
BTech.	0	2	2	0	0	0	9	4	13	0	0	0	15
TOTAL	**3**	**3**	**6**	**0**	**0**	**0**	**9**	**4**	**13**	**0**	**0**	**0**	**19**

Four (4) African graduates were produced in this CESM at Certificate level at universities of technology during the 2004 academic year, of which 3 were males and 1 was a female. Fifteen (15) graduates were produced in this CESM at BTech level at universities of technology of which 13 were Whites and 2 were Africans.

3.5 Conclusion

It is evident from enrolments and graduate figures that enrolments in the Universities of Technology far outweigh graduate figures in Universities of Technology, for instance 2564 students enrolled in agricultural programmes in 2004, while only 783 graduated, which is 70% less than enrolments.
From the findings TUT has a bigger share of enrolments and graduates in all the Universities of Technology. This is attributed to the fact that the institution offers many agricultural programmes. CUT, NMMU has the lowest number of both enrolments and graduates, and again this is attributed to the number of programmes offered by the institutions, since the institutions offers only two programmes, namely National Diploma and BTech in Agricultural management.

It is evident from the findings that generally Africans dominate both the enrolments and graduate figures in the Universities of Technology. Out of 2762 enrolments in all the Universities of Technology, 70% are Africans, and out of 783 graduates 71% are Africans. However some programmes are dominated by Whites. For instance, the trend is that in both enrolments and graduates, Whites dominate in Land Reclamation, Renewable Natural Resources and Wildlife while Africans dominate in Animal Science, Plant Science, Horticulture and Renewable Resources. From the findings Coloured and Indian graduates are less represented in almost all the programmes offered by Universities of Technology. Enrolment and graduate figures for Coloureds and Indians are very insignificant in all the programmes accounting for 0% of the total enrolments and graduates in almost all the programmes, and less than 1% in few of the programmes.

In 90% of the programmes males dominate enrolments and graduates across all race groups. It is only one case, in the case of Animal Science enrolments where White females outweigh the number of white males. The general trend is that males, particularly African and White males constitute a higher number of graduates and enrolments, with African males dominating. African males constitute almost half of the enrolment figures and 44% of the total graduate figures in the Universities of Technology.

Most of the programmes in the Universities of Technology are dominated by African enrolments with the exception of Wildlife, Renewable Natural Resources as well as Land Reclamation which is dominated by Whites. The lowest enrolments were recorded in Agricultural Extension which enrolled 50 students only. The lowest graduation figures during the 2004 academic year were produced in Wildlife and Land Reclamation with 12 and 19 graduates respectively.

The general trend is that the majority of the enrolments and graduates in the Universities of Technology were recorded in the Diploma in Animal Science and none in the scarce skills as identified by the Department of Agriculture. Highest enrolment

figures are at Diploma level which constituted 85%, followed by BTech at 13,3 %, while the lowest figures are at MTech and DTech levels with 1,7% and 0,2% of the total enrolment figures respectively. This situation applies to graduate figures as well, with Diploma graduates recording 24%, while MTech recorded only 1% of the total graduate figures and no DTech graduates.

If these trends continue, skills demands of the agricultural public sector will not be addressed and it will add to the problem of unemployed agricultural graduates in the sector, particularly looking at the academic level at which the majority of enrolments and graduates are recorded. The lowest enrolment and graduate figures at postgraduate level is also a course for concern considering the fact 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.

CHAPTER 4

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES IN 2004 ACADEMIC YEAR

CHAPTER 4

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES IN 2004 ACADEMIC YEAR

4.1 Introduction

Eight (8) universities in the study which offer AET programmes are the universities of Fort Hare, North West, Free State, KwaZulu-Natal, Limpopo, Pretoria, Stellenbosch and Venda. 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.

4.2 AET programmes and National Qualification Framework offered at Universities in 2004

All the universities offer various agricultural programmes and they vary in terms of scope. University of KwaZulu-Natal is the only university that offers Agriculture Engineering programmes and the University of Pretoria is the only institution that offers Veterinary Science studies in the country. Viticulture and Oenology are offered by the University of Stellenbosch.

Table 46 present various programmes offered by universities. Universities have broad scope on agricultural curricula.

Table 46: Agricultural programmes offered at universities.

	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
National diploma programmes								
Diploma in Disaster Management			X					
Diploma in Agriculture			X					
Diploma Science and Agriculture				X				
Diploma in Rural Resource Management				X				
Diploma Food Security				X				
Diploma Animal Health		X						
Diploma in Agriculture: Animal Production			X					
Diploma in Agriculture: Crop Production			X					
Diploma in Agriculture: Agricultural Management			X					
Diploma in Agriculture: Natural Resources			X					
Univ. Dip Ext and Rural Develop						X		
Diploma in Agric Economics and Management		X						
B.A. degree programmes								
B. Agric-Economics	X							

Table 46: Agricultural programmes offered at universities.								
	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
B. Agric-Ext/Prod	X							
B. and 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	
BAgricAdmin Business Specific Farm Management- Viticulture							X	
B .Agric			X	X			X	X
Bachelor of Family Ecology								X
Bachelor of AgriBusiness Management						X		X
Bachelor of Family Ecology and Consumer Science								
B Sc Degree Programmes								
B Sc Agriculture		X	X	X	X		X	X
B Sc Food Science and Technology			X				X	X
B Sc Forestry							X	X
B Sc Conservation Ecology							X	
B Sc Agric. Economics		X	X		X	X		
B Sc Agric. Agronomy			X		X			
B Sc Animal Production					X			
B Sc Horticulture					X	X		
B Sc Agric. Pasture Science					X			
B Sc Agric Soil Science			X		X			
B Sc Environmental & Resource Studies					X			
BSc Crop Science		X						
BSc Animal Health		X						
BSc Land Management		X						
B Sc Agronomy and Agrometeorology			X					

Table 46: Agricultural programmes offered at universities.

	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
BSc Plant Pathology			X			X		
BSc Irrigation Science			X					
B.Sc 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		
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		
BScAgric Viticulture and Oenology							X	
BScAgric Oenology							X	
BScAgric Soil Science and Viticulture							X	
BScAgric Agricultural Economics Analysis							X	
BScAgric Horticulture and Agricultural Economics							X	
BScAgric Viticulture and Agricultural Economics							X	
BScAgric Viticulture and Plant Pathology							X	
BScAgric Agronomy and Agricultural Economics							X	
BScAgric Animal Science with Agricultural Economics							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		

Table 46: Agricultural programmes offered at universities.								
	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
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	X		X	X				
B.AgricAdminHons Agricultural Economics							X	
BScHonsAgric Viticulture							X	
BScHonsAgric Oenology							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
BSc Agric: Animal Health		X						
BSc Agric: Crop Science	X	X						
BSc Agric: Animal Science	X	X						
BSc Agric: Economics	X	X	X				X	
BSc Agric: Extension		X						
BSc Agric: Land Management		X						
BSc Forestry							X	
BSc Agric			X				X	
BSc Biotechnology			X					
BSc Soil Science	X		X					
BSc Plant Breeding			X					
BSc Plant Pathology			X					
BSc Animal Science	X		X					
BSc Wildlife Management			X					

Table 46: Agricultural programmes offered at universities.								
	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
B.Com.(Hons): Actuarial Science						X		
B.Com. (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 Produc. and Process.						X		
B. Inst. Agrar. (Hons): Land-Use Planning						X		
B. Inst. Agrar. (Hons): Plant Production						X		
B. Inst. Agrar. (Hons): Rural Devel. Planning						X		
Masters degree programmes								
M. Agric. Admin/ Management				X	X		X	
M. Agric. Admin Agricultural Economics							X	
MScAgric Agricultural Economics							X	
MScAgric Viticulture							X	
MScAgric Oenology							X	
M. A. Agriculture			X	X				
MSc Forestry							X	
MSc Agriculture		X	X	X	X		X	X
MSc Conservation Ecology							X	
MSc Food Science and Technology						X	X	X
Masters in Rural Development								X
M. A. Agric Economics	X				X	X		
M. A. Agric Extension	X				X			
M. Phil Environmental Studies	X							
MSc Agric: Crop Science	X				X			
MSc Agric: Animal Science	X					X		
MSc Agric: Soil Science	X				X	X		
MSc Agric: Horticulture	X				X	X		
MSc Plant Production						X		

Table 46: Agricultural programmes offered at universities.								
	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
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			
M. A : Disaster Management			X					
M. A: 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 Devel.						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 Develop.& Ecotourism						X		
M. Inst. Agrar: Rural Development Planning						X		
M. Inst. Agrar: Rural Household Devel. (Diss)						X		
M. Inst. Agrar: Sust. Ecol. Management						X		
M. Inst. Agrar: Sust. Insect Management.						X		
MSc Agric Agronomy						X		
Wildlife (M. Inst. Agrar)						X		
MSc Animal Breeding & and Genetics						X		

Table 46: Agricultural programmes offered at universities.								
	University Fort Hare	University of North West	University of Free State	University of KwaZulu-Natal	University of Limpopo	University of Pretoria	University of Stellenbosch	University of Venda
MSc Genetics						X		
MSc Microbiology						X		
MPhil Agricultural Economics							X	
MSc Plant Biotechnology						X		
PhD Degree Programmes								
PhD Agric Viticulture							X	
PhD Agric Oenology							X	
PhD: Agrarian Extension						X		
PhD: Agricultural Economics	X					X	X	
PhD: 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		
PhD: Soil Science	X					X		
PhD: Soil Science and Plant Nutrition						X		
PhD. Agriculture				X	X	X	X	X
PhD. Science and Agriculture				X				
PhD. Crop Science	X							
PhD. Geography and Environmental Science	X							
PhD. Forestry							X	

Table 47 outlines the NQF ratings at Universities i.e. the programme levels and matching NQF levels of these programmes (Department of Agriculture 2005).

Table 47: 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 Qualifications
6		First Degree/ Higher Diplomas
5		Diplomas/Occupational Certificates

The rating of the university programmes in terms of NQF standards is similar to the 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 AET Programmes at Universities in 2004

Table 48 depicts the enrolments at universities during the 2004 academic year.

Table 48: Enrolments per universities during the 2004 academic Year		
Name of the university	**Number of AET enrolments**	**Percentage (%)**
University Fort Hare	362	7
University North West	856	16
University of Free State	823	15
University of KwaZulu-Natal	474	9
University of Limpopo	544	10
University of Pretoria	803	15
University of Stellenbosch	1 153	21
University of Venda	389	7
TOTAL	**5 404**	**100**

University of Stellenbosch constituted 21% of the total enrolments during the 2004 academic year. University of North West enrolled 16%, followed by the University of Pretoria and the University of Free State both with 15% of the total university enrolments. The University of Limpopo enrolled 10% of the overall enrolments at universities. The Universities of Fort Hare, KwaZulu-Natal, and Venda all enrolled less than 10% of the total enrolments at universities during the 2004 academic year.

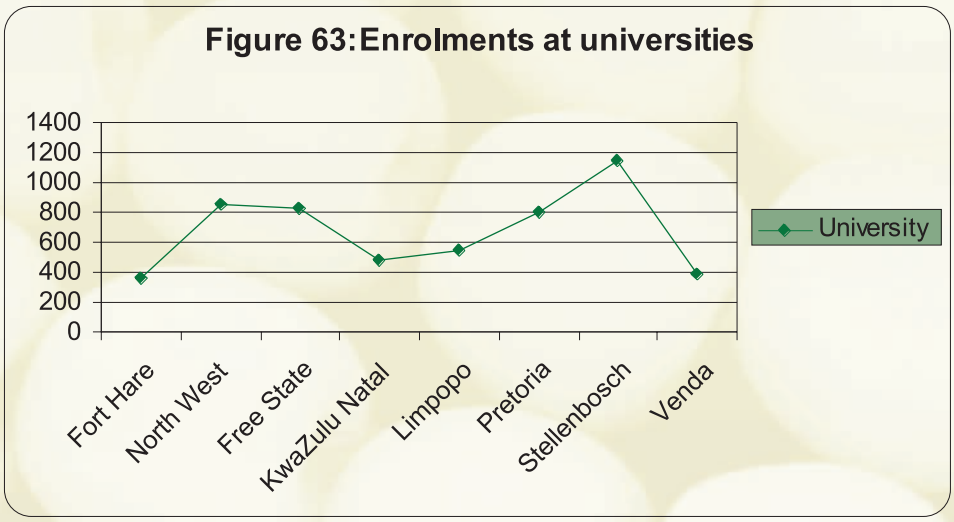


Figure 63 and Table 48 depicts that the University of Stellenbosch enrolled a significant number of students than any other university. North West University and the University of Free State also enrolled many students which can be attributed to the fact that they have many agricultural programmes.

4.3.1 Demographic Breakdown of AET Enrolments at Universities in 2004

Table 49 depicts a demographic breakdown of AET enrolments at universities during the 2004 academic year.

Table 49: Breakdown of enrolments by gender and race per university

Name of the university	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
University Fort Hare	221	139	360	0	0	0	2	0	2	0	0	0	362
University North West	388	468	856	0	0	0	0	0	0	0	0	0	856
University of Free State	230	82	312	6	3	9	392	105	497	3	2	5	823
University of KwaZulu-Natal	192	74	266	6	2	8	98	71	169	16	15	31	474
University of Limpopo	325	216	541	1	0	1	2	0	2	0	0	0	544
University of Pretoria	262	158	420	5	5	10	198	161	359	7	7	14	803
University of Stellenbosch	74	46	120	31	29	60	567	402	969	4	0	4	1 153
University of Venda	217	172	389	0	0	0	0	0	0	0	0	0	389
TOTAL	**1909**	**1355**	**3264**	**49**	**39**	**88**	**1259**	**739**	**1998**	**30**	**24**	**54**	**5 404**

Figure 64: Gender breakdown of AET enrolments at universities

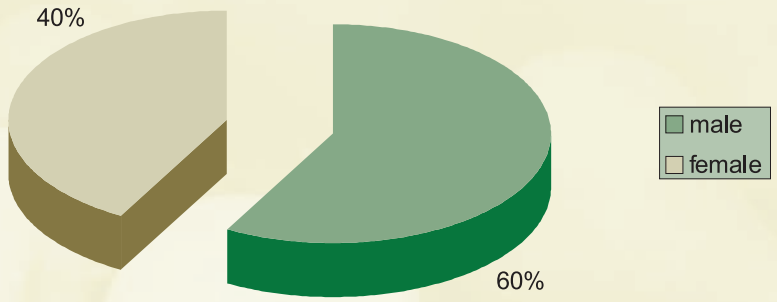
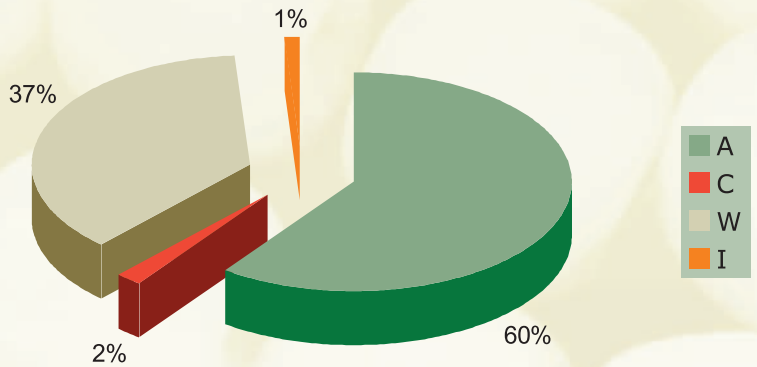


Figure 64 presents the gender breakdown of enrolments at universities during the 2004 academic year. Male students constituted 60% and female students comprised 40% of total enrolments during the 2004 academic year.

Figure 65: Racial breakdown of AET enrolments at universities



Breakdown according to race (Figure 65) depicts that African students accounted for 60% of the overall AET enrolments at universities followed by White students with 37%. Coloured and Indian students collectively constituted less than 4% of the AET enrolments during the 2004 academic year.

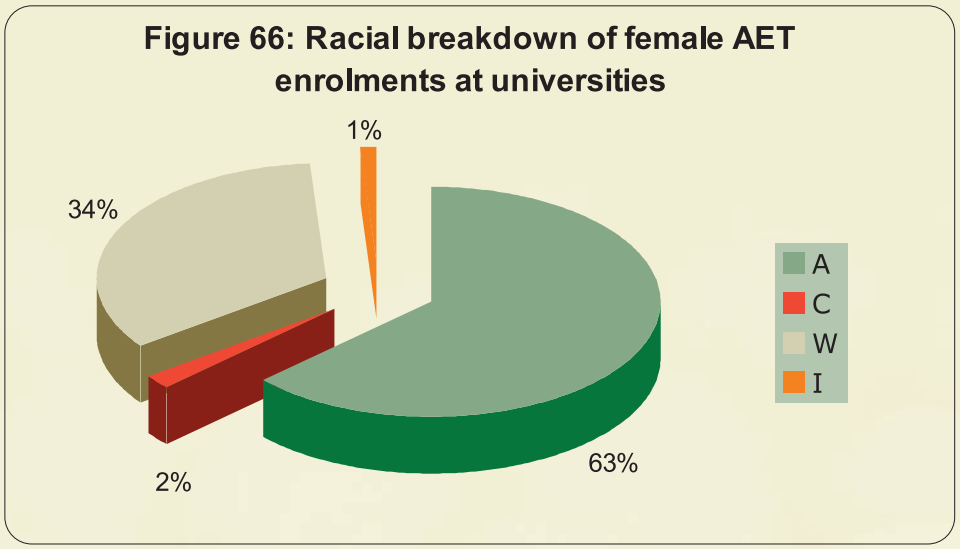


Figure 66 depicts that African females dominated the female AET enrolments with 63% followed by White females with 34%. Coloured and Indian females registered low student figures with 2% and 1% respectively.

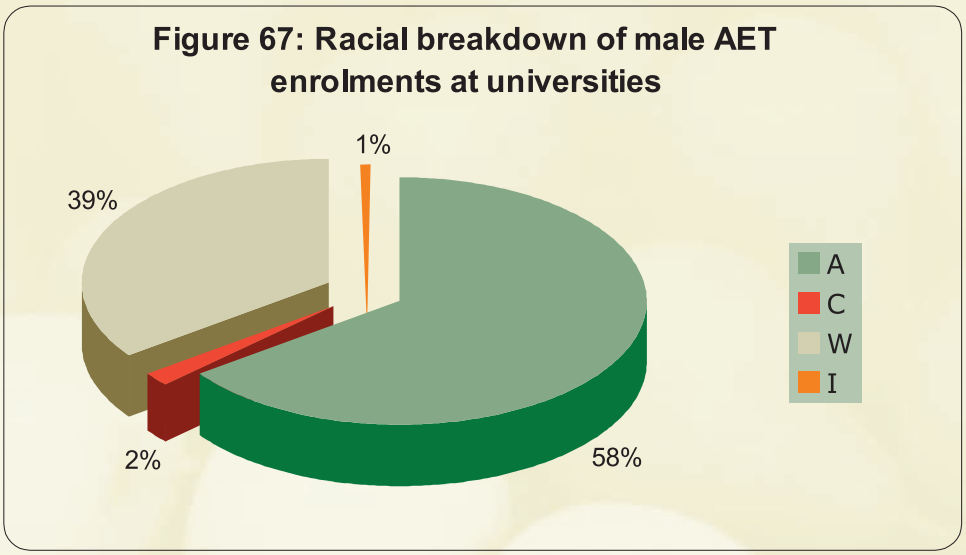


Figure 67 depicts that African males constituted 58% and White males accounted for 39% of the male enrolments at universities during the 2004 academic year. Coloured and Indian males collectively constituted only 3%.

4.3.2 Agricultural Enrolments at Universities by CESM in 2004

Table 50 presents enrolments at universities by Category of Education Subject Matter (CESM).

Table 50: Agricultural enrolments at universities in 2004 by CESM and academic level.

CESM	Undergraduate	Honours	Masters	PhD	TOTAL	%
Agricultural Economics	32	44	64	5	145	3
Agricultural Eco. (AgriBusiness)	12	0	6	27	45	1
Agricultural Science (Art Stream)	502	10	25	310	847	16
Agricultural Science (Science Stream)	912	6	524	0	1 442	27
Agric. Extension (Inst. Agrar. Stream)	0	0	8	0	8	0
Agric. Extension	159	23	59	10	251	5
Agric. Food Technology	170	4	35	24	233	4
Animal Science	906	33	47	10	996	18

Table 50: Agricultural enrolments at universities in 2004 by CESM and academic level.						
CESM	**Undergraduate**	**Honours**	**Masters**	**PhD**	**TOTAL**	**%**
Horticulture	16	0	28	15	59	1
Plant Science	81	8	23	13	125	2
Soil Science	38	2	8	9	57	1
Forestry	47	1	24	14	86	2
Renewable Natural Resources	122	0	6	0	128	2
Agric. Management	336	74	92	0	502	9
Other Agric. and Renewable Resources	5	0	46	3	54	1
Agric. Food Tech (Inst. Agrar. Stream)	34	4	6	0	44	1
Agric. Man (Inst. Agrar. Stream)	0	39	0	0	39	1
Animal Sc (Insta. Agrar. Stream)	12	0	12	0	24	0
Horticulture (Inst. Agrar. Stream)	35	7	16	0	58	1
Land Rec (Land Use Inst. Agrar. Stream)	9	3	4	0	16	0
Rural Dev (Inst. Agrar. Stream)	45	0	13	0	58	1
Agric Econ (Inst. Agrar. Stream)	0	13	23	0	36	1
Environ Man (Inst. Agrar. Stream)	0	0	7	0	7	0
Land Reclamation	0	54	0	0	54	1
Agronomy (Inst. Agrar. Stream)	0	0	6	0	6	0
Wildlife	76	5	3	0	84	2
TOTAL	**3 549**	**330**	**1 085**	**440**	**5 404**	**100**

The table above indicates that universities offer various agricultural programmes under the 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 50 indicates that Agricultural Science (Science Stream) and Animal Science enrolled the highest number of students at universities with 27% and 18% respectively. Agricultural Science (Art Stream) enrolled 16% of the overall enrolments during the 2004 academic year at universities. All other CESM enrolled less than 10% of the overall enrolments at universities during the 2004 academic year.

4.3.3 Breakdown of AET Enrolments at Universities by CESM in 2004

Table 51 outlines the enrolments at Undergraduate level at universities during the 2004 academic year.

Table 51: Enrolments in Undergraduate programmes by CESM at universities in 2004													
CESM Category (Undergraduate)	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Economics	15	10	25	0	0	0	6	1	7	0	0	0	32
Agricultural Eco. (AgriBusiness)	7	5	12	0	0	0	0	0	0	0	0	0	12
Agricultural Science (Art. Stream)	247	136	383	12	3	15	78	26	104	0	0	0	502
Agricultural Science (Science Stream)	147	125	272	11	8	19	399	215	614	1	6	7	912

Table 51: Enrolments in Undergraduate programmes by CESM at universities in 2004													
CESM Category (Undergraduate)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agric. Extension	96	62	158	0	0	0	1	0	1	0	0	0	159
Agric. Food Technology	10	37	47	4	12	16	11	96	107	0	0	0	170
Animal Science	337	382	719	1	2	3	115	68	183	0	1	1	906
Horticulture	11	5	16	0	0	0	0	0	0	0	0	0	16
Plant Science	33	25	58	0	1	1	16	6	22	0	0	0	81
Soil Science	26	7	33	0	0	0	5	0	5	0	0	0	38
Forestry	10	10	20	1	2	3	21	3	24	0	0	0	47
Renewable Natural Resources	73	49	122	0	0	0	0	0	0	0	0	0	122
Agric. Management	119	93	212	1	1	2	107	15	122	0	0	0	336
Other Agric. and Renewable Resources	2	2	4	0	0	0	1	0	1	0	0	0	5
Agric. Food Tech. (Inst. Agrar. Stream)	9	21	30	0	0	0	1	2	3	0	1	1	34
Animal Sc (Inst. Agrar. Stream)	5	3	8	0	0	0	3	1	4	0	0	0	12
Horticulture (Inst. Agrar. Stream)	12	5	17	1	0	1	12	4	16	1	0	1	35
Land Rec (Inst. Agrar Stream)	4	3	7	0	0	0	2	0	2	0	0	0	9
Rural Dev (Inst. Agrar. Stream)	32	9	41	0	0	0	3	1	4	0	0	0	45
Wildlife	0	3	3	0	2	2	36	35	71	0	0	0	76
TOTAL	**1 195**	**992**	**2 187**	**31**	**31**	**62**	**817**	**473**	**1 290**	**2**	**8**	**10**	**3 549**

The Undergraduate enrolments accounted for 66% of the total enrolments at universities during the 2004 academic year.

Table 52 presents the enrolments at Honours level at universities during the 2004 academic year.

Table 52: Honours enrolments by CESM at universities in 2004													
CESM Category (Honours)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics	14	18	32	0	0	0	8	4	12	0	0	0	44
Agricultural Science (Art. Stream)	6	4	10	0	0	0	0	0	0	0	0	0	10
Agricultural Science (Science Stream)	1	0	1	0	0	0	3	2	5	0	0	0	6
Agric Extension	12	11	23	0	0	0	0	0	0	0	0	0	23
Agric Food Technology	2	1	3	0	0	0	0	1	1	0	0	0	4
Animal Science	13	19	32	0	0	0	1	0	1	0	0	0	33
Plant Science	2	2	4	0	0	0	2	2	4	0	0	0	8

Table 52: Honours enrolments by CESM at universities in 2004													
CESM Category (Honours)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Soil Science	1	1	2	0	0	0	0	0	0	0	0	0	2
Agric. Man (Inst. Agrar. Stream)	25	14	39	0	0	0	0	0	0	0	0	0	39
Agric. Eco. (Inst. Agrar. Stream)	7	5	12	0	0	0	0	0	0	1	0	1	13
Agric. Food Tech. (Inst. Agrar. Stream)	1	0	1	0	1	1	0	0	0	1	1	2	4
Horticulture (Inst. Agrar. Stream)	5	2	7	0	0	0	0	0	0	0	0	0	7
Land. Rec. (Land Use Inst. Agrar. Stream)	3	0	3	0	0	0	0	0	0	0	0	0	3
Forestry	0	1	1	0	0	0	0	0	0	0	0	0	1
Land Reclamation	39	15	54	0	0	0	0	0	0	0	0	0	54
Agric. Management	20	15	35	1	1	2	35	2	37	0	0	0	74
Wildlife	2	0	2	0	0	0	2	1	3	0	0	0	5
TOTAL	**153**	**108**	**261**	**1**	**2**	**3**	**51**	**12**	**63**	**2**	**1**	**3**	**330**

The Honours enrolments accounted for 6% of the total enrolments at universities during the 2004 academic year.

Table 53 outlines the enrolments at Masters level at universities during the 2004 academic year.

Table 53: Masters enrolments by CESM at universities in 2004													
CESM Category (Masters)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics	23	18	41	1	0	1	14	7	21	0	1	1	64
Agricultural Eco. (AgriBusiness)	1	0	1	0	0	0	2	3	5	0	0	0	6
Agricultural Science-General (Art Stream)	13	6	19	0	0	0	4	1	5	1	0	1	25
Agricultural Science (Science Stream)	179	85	264	4	1	5	161	81	242	9	4	13	524
Agric. Extension	31	26	57	0	0	0	0	2	2	0	0	0	59
Agric. Food Technology	3	7	10	0	0	0	3	21	24	0	1	1	35
Animal Science	7	3	10	0	0	0	19	18	37	0	0	0	47
Horticulture	9	9	18	0	0	0	5	5	10	0	0	0	28
Plant Science	9	8	17	0	0	0	5	1	6	0	0	0	23
Soil Science	7	1	8	0	0	0	0	0	0	0	0	0	8
Forestry (MSc)	8	2	10	1	0	1	12	1	13	0	0	0	24

Table 53: Masters enrolments by CESM at universities in 2004													
CESM Category (Masters)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agric Eco.(Inst. Agrar. Stream)	16	6	22	0	1	1	0	0	0	0	0	0	23
Agric. Food Tech. (Inst. Agrar. Stream)	0	6	6	0	0	0	0	0	0	0	0	0	6
Animal Science (Inst. Agrar. Stream)	10	0	10	0	0	0	0	0	0	2	0	2	12
Horticulture (Inst. Agrar. Stream)	9	5	14	0	0	0	2	0	2	0	0	0	16
Environ. Man. (Inst. Agrar Stream)	1	1	2	0	0	0	1	4	5	0	0	0	7
Agronomy (Inst. Agrar. Stream)	4	2	6	0	0	0	0	0	0	0	0	0	6
Land Rec. (Inst. Agrar. Stream)	2	0	2	0	0	0	2	0	2	0	0	0	4
Rural Dev. (Inst. Agrar. Stream)	9	3	12	0	0	0	1	0	1	0	0	0	13
Agric. Extension (Inst. Agrar. Stream)	7	1	8	0	0	0	0	0	0	0	0	0	8
Renewable Natural Resources	4	2	6	0	0	0	0	0	0	0	0	0	6
Agric. Management	51	22	73	1	0	1	14	4	18	0	0	0	92
Other Agric. and Renewable Resources	4	6	10	0	1	1	21	12	33	2	0	2	46
Wildlife	1	0	1	0	0	0	1	1	2	0	0	0	3
TOTAL	408	219	627	7	3	10	267	161	428	14	6	20	1 085

The Masters level amounted to 20% of the total enrolments at universities during the 2004 academic year.

Table 54 presents the enrolments at the PhD level at universities during the 2004 academic year.

Table 54: PhD degree enrolments by CESM at universities													
CESM category (PhD)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Eco. (AgriBusiness)	10	8	18	1	0	1	5	2	7	0	1	1	27
Agricultural Science (Art Stream)	124	28	152	2	2	4	85	56	141	9	4	13	310
Agric. Extension	5	2	7	0	0	0	2	1	3	0	0	0	10
Agric. Food Technology	6	8	14	2	0	2	1	6	7	1	0	1	24
Animal Science	4	1	5	0	0	0	1	4	5	0	0	0	10
Horticulture	8	2	10	0	1	1	3	1	4	0	0	0	15
Plant Science	8	0	8	0	0	0	0	3	3	2	0	2	13
Soil Science	3	0	3	1	0	1	5	0	5	0	0	0	9

Table 54: PhD degree enrolments by CESM at universities													
CESM category (PhD)	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Forestry	7	2	9	0	0	0	4	1	5	0	0	0	14
Other Agric. and Renewable Resources	1	2	3	0	0	0	0	0	0	0	0	0	3
Agricultural Economics	2	0	2	1	0	1	2	0	2	0	0	0	5
TOTAL	**178**	**53**	**231**	**7**	**3**	**10**	**108**	**74**	**182**	**12**	**5**	**17**	**440**

This programme amounted to 8% of the total enrolments at universities during the 2004 academic year.

4.3.3.1 Agricultural Economics Enrolments at Universities in 2004

One hundred and forty five (145) students were enrolled in this CESM during the 2004 academic year at universities. The programme is offered by Fort Hare, North West, Limpopo, Pretoria and Stellenbosch Universities. This CESM includes Agricultural Economics Analysis

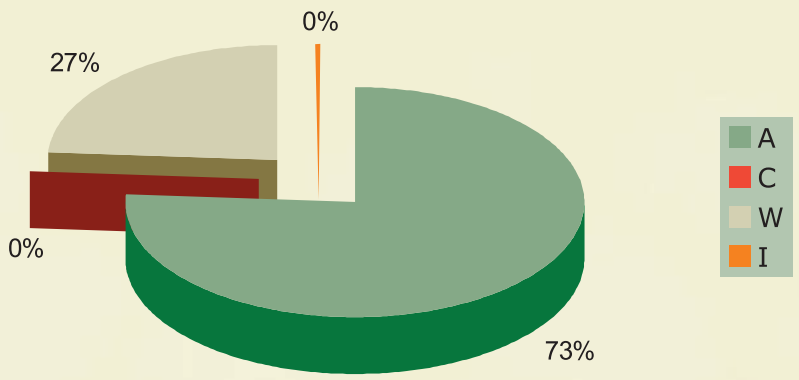
Table 55 presents a demographic breakdown of Agricultural Economics enrolments during the 2004 academic year by academic level.

Table 55: Demographic breakdown of Agricultural Economics enrolments at universities in 2004													
LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	15	10	25	0	0	0	6	1	7	0	0	0	32
Honours	14	18	32	0	0	0	8	4	12	0	0	0	44
Masters	23	18	41	1	0	1	14	7	21	0	1	1	64
PhD	2	0	2	1	0	1	2	0	2	0	0	0	5
TOTAL	**54**	**46**	**100**	**2**	**0**	**2**	**30**	**12**	**42**	**0**	**1**	**1**	**145**

Masters enrolments in Agricultural Economics constituted 45% of the enrolments in this CESM followed by Honours enrolments with 30%. Undergraduate and PhD enrolments in Agricultural Economics accounted for 22% and 3% of enrolments respectively in this CESM during the 2004 academic year.

African students constituted 78% of the Undergraduate enrolments in Agricultural Economics while White students accounted for 22%. No Coloured and Indian students were registered in this programme during the 2004 academic year.

Figure 68: Racial breakdown of Honours in Agricultural Economics enrolments



Breakdown according to race in figure 68 depicts that African students constituted 73% and Whites constituted 27% of the Honours enrolments in Agricultural Economics during the 2004 academic year. No Coloured and Indian students enrolled in this programme during the 2004 academic year.

Figure 69: Gender breakdown of Honours in Agricultural Economics enrolments

Gender breakdown in figure 69 depicts that female and male enrolments accounted for equal distribution of the Honours enrolments in this CESM. African females constituted 82% of the female enrolments at Honours level in this CESM and White females accounted for 18%. African males dominated the male enrolments at Honours level with 64%, while White males constituted 36%.

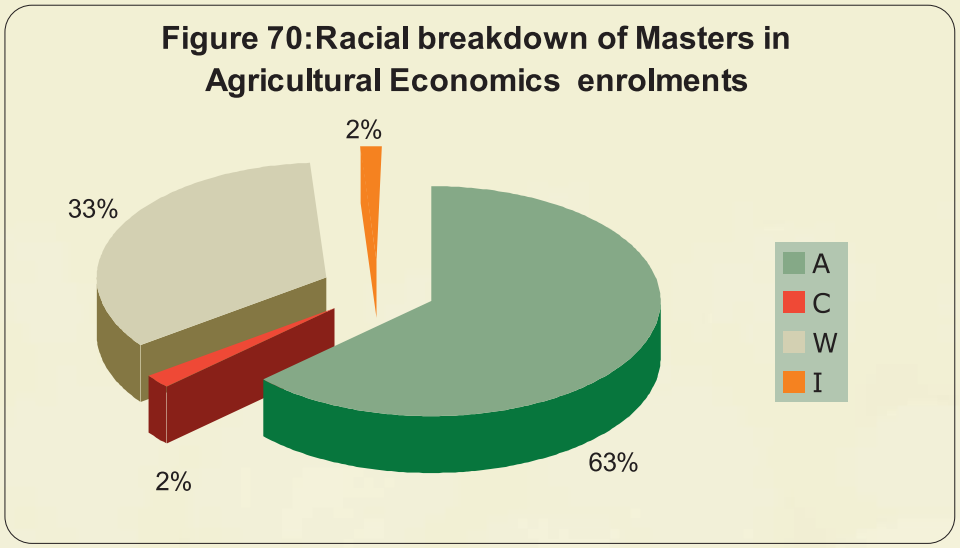


Figure 70 shows that African students constituted 63% of Masters enrolments in Agricultural Economics. White students accounted for 33%, while Coloured and Indian students collectively constituted less than 5% of Agricultural Economics enrolments at Masters level.

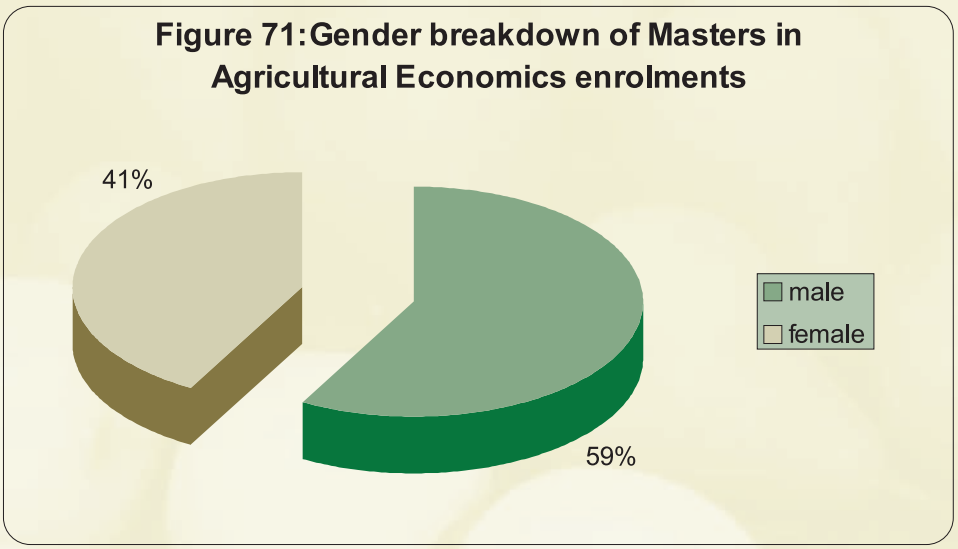


Figure 71 presents gender breakdown of the Agricultural Economics Masters enrolments. Male students dominated the Masters enrolments in this CESM with 59% and female students constituted 41%. African males accounted for 60% of the male enrolments in Agricultural Economics at Masters level. White males constituted 37% and Coloured males accounted for 3% of the Masters male enrolments.

African females comprised 69%, followed by White females with 27%, and Indian females constituted 4% of the female enrolments in this programme.

4.3.3.2 Agricultural Economics (AgriBusiness Management) Enrolments at Universities in 2004

Forty five (45) students were enrolled at universities in this CESM during the 2004 academic year. This programme is offered by the University of Pretoria. Table 56 presents a demographic breakdown of Agricultural Economics (Agribusiness Management) enrolments during the 2004 academic year in terms of academic levels.

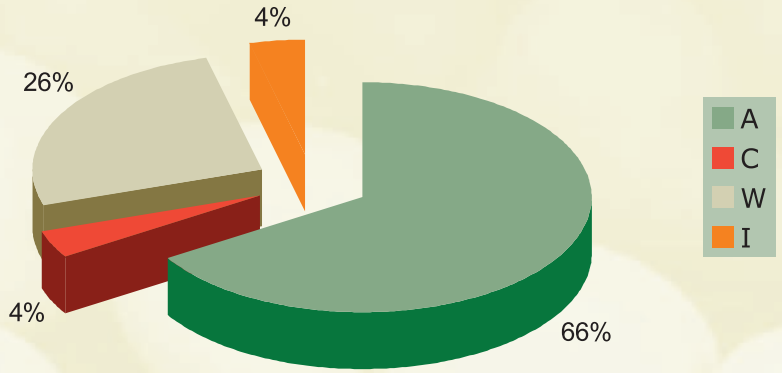
Table 56: Demographic breakdown of Agricultural Economics (AgriBusiness Management) enrolments at universities in 2004													
LEVEL	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduates	7	5	12	0	0	0	0	0	0	0	0	0	12
Masters	1	0	1	0	0	0	2	3	5	0	0	0	6
PhD	10	8	18	1	0	1	5	2	7	0	1	1	27
TOTAL	**18**	**13**	**31**	**1**	**0**	**1**	**7**	**5**	**12**	**0**	**1**	**1**	**45**

Sixty percent (60%) of students in this CESM enrolled at the PhD level, Undergraduate level constituted 27% and Masters level accounted for 13%.

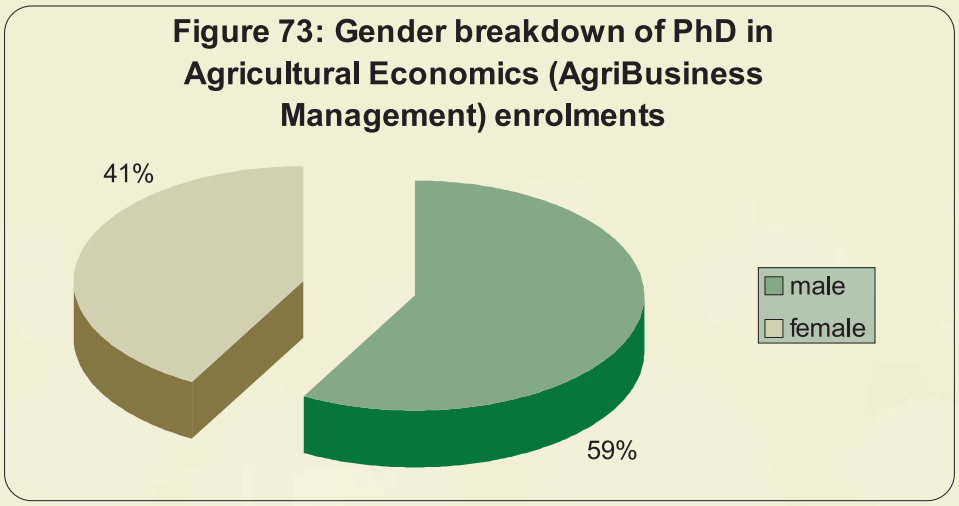
Twelve (12) students enrolled for Undergraduate programmes in this CESM at universities during the 2004 academic year. Breakdown according to race shows that 7 African males and 5 African females enrolled for the Undergraduate programme in Agricultural Economics (AgriBusiness Management). Other racial groups did not enroll for the programme at Undergraduate level.

Six (6) students enrolled for the Agricultural Economics (AgriBusiness Management) at Masters level during the 2004 academic year, of which 2 were White males, 3 were White females and 1 was an African male.

Figure 72: Racial breakdown of PhD in Agricultural Economics (AgriBusiness Management) enrolments



Twenty seven (27) students enrolled in this CESM at PhD level at universities during the 2004 academic year. Figure 72 indicates that African students dominated the PhD enrolments in Agricultural Economics (AgriBusiness Management) with 66%. White students constituted 26% while Coloured and Indian students collectively constituted less than 10% of the total PhD enrolments in Agricultural Economics (AgriBusiness Management) during the 2004 academic year.



Gender breakdown in figure 73 indicates that male students constituted 59% of the PhD enrolments in this CESM and female students accounted for 41%. African males accounted for 63%, White males constituted 31% and Coloured males comprised 6% of the male enrolments in this CESM at PhD level. No Indian males were enrolled. African females dominated female enrolments for PhD Agricultural Economics (AgriBusiness Management) with 73%, while White females constituted 18%.

4.3.3.3 Agricultural Science (Art Stream) Enrolments at Universities in 2004

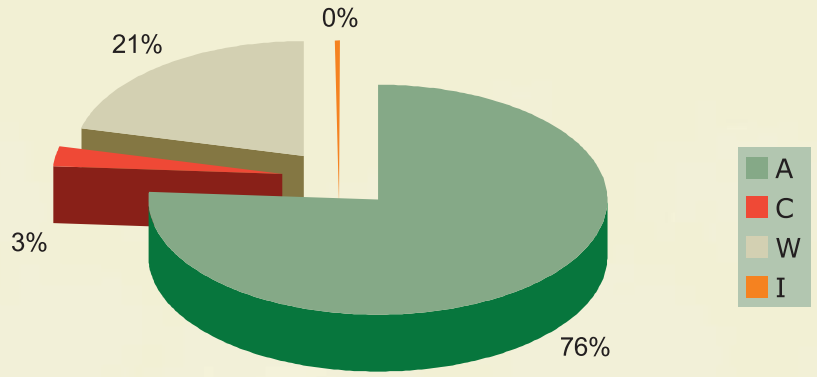
This category comprised the Art. Stream i.e. B. Agric., B. A. Agric., M.A. Agric., B. A. Agric.(Honours) and PhD. These programmes are offered by the Universities of Free State, KwaZulu-Natal, and Pretoria. Eight hundred and forty seven (847) students enrolled in this CESM during the 2004 academic year at universities. Table 57 presents a demographic breakdown of Agricultural Science (Art. Stream) enrolments during the 2004 academic year by level of qualification.

Table 57: Demographic breakdown of Agricultural Science (Art Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	247	136	383	12	3	15	78	26	104	0	0	0	502
Honours	6	4	10	0	0	0	0	0	0	0	0	0	10
Masters	13	6	19	0	0	0	4	1	5	1	0	1	25
PhD	124	28	152	2	2	4	85	56	141	9	4	13	310
TOTAL	**390**	**174**	**564**	**14**	**5**	**19**	**167**	**83**	**250**	**10**	**4**	**14**	**847**

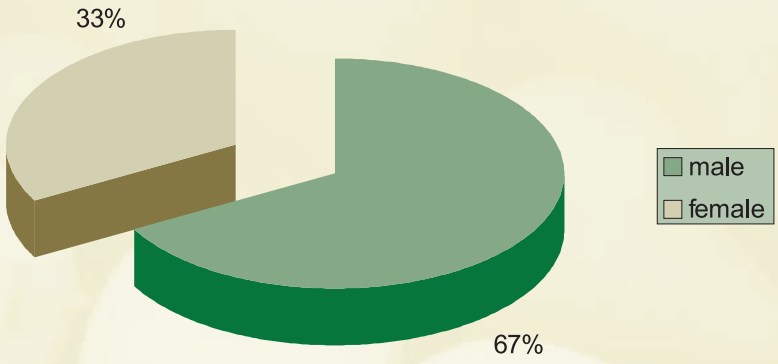
Undergraduate enrolments constituted 59% of the CESM, PhD enrolments accounted for 37%, Masters enrolments constituted 3% and Honours enrolments constituted 1% of the total enrolments in the CESM.

Figure 74: Racial breakdown of undergraduate in Agricultural Science (Art Stream) enrolments



Five hundred and two (502) students enrolled in this CESM at Undergraduate level during the 2004 academic year. Figure 74 shows that African students constituted 76%, White students accounted for 21% and Coloured students comprised 3% of the Undergraduate enrolments in this CESM. No Indians enrolled in this CESM at Undergraduate level during the 2004 academic year.

Figure 75: Gender breakdown of undergraduate in Agricultural Science (Art Stream) enrolments



Gender breakdown in figure 75 indicates that male students constituted 67% of the Undergraduate enrolments in this CESM. African males constituted 73% of the male enrolments at Undergraduate level in this CESM, White males accounted for 23% and Coloured males constituted 4%. African females constituted 60% of the female enrolments at Undergraduate level in this CESM followed by White females with 35% and Coloured females comprised 5%.

Ten (10) students enrolled at Honours level in Agricultural Science (Art Stream). All the 10 students enrolled at Honours level in this CESM during the 2004 academic year were Africans, of which 6 were males and 4 were females.

Twenty five (25) students enrolled at Masters level in Agricultural Science (Art Stream) at universities during the 2004 academic year.

Figure 76: Racial breakdown of Masters in Agricultural Science (Art Stream) enrolments

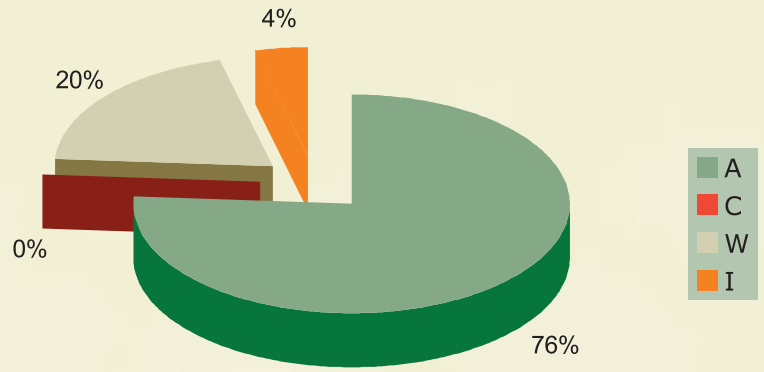


Figure 76 indicates that African students enrolled at Masters level during the 2004 academic year in this CESM accounted for 76%. White students constituted 20% of the Masters enrolments in this CESM and Indian students accounted for 4%. Like most of the programmes, no Coloured students enrolled in this CESM at Masters level during the 2004 academic year.

Figure 77: Gender breakdown of Masters in Agricultural Science (Art Stream) enrolments

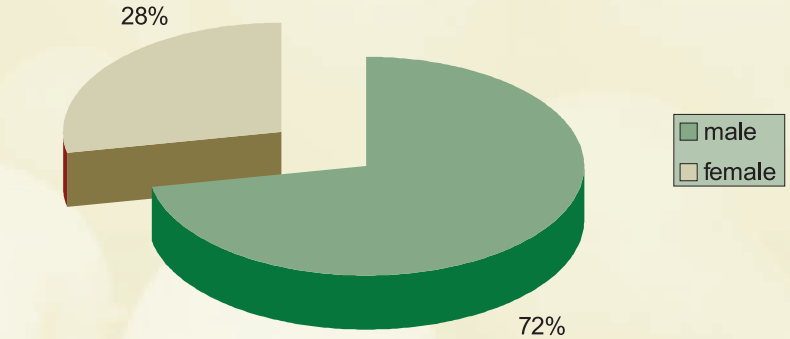
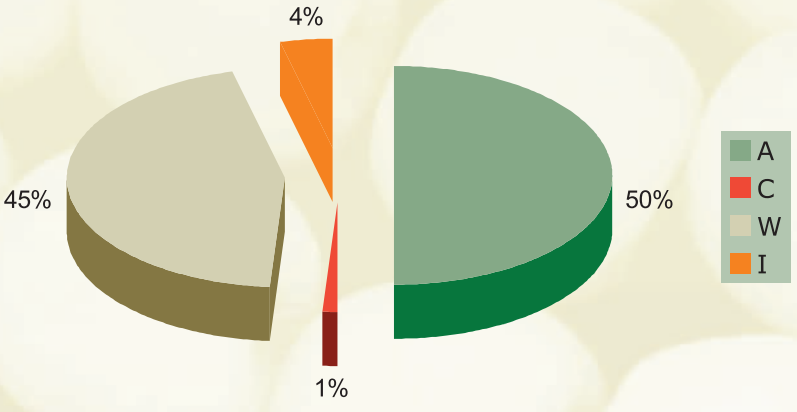


Figure 77 indicates that male students dominated the Masters enrolments in this CESM with 72 % and female students constituted 28% only. Masters enrolments in this CESM are dominated by African males with 72%. White males constituted 22%. No Coloured males enrolled at Masters level in this CESM.

Figure 78: Racial breakdown of PhD in Agricultural Science (Art Stream) enrolments



Three hundred and ten (310) students enrolled at PhD level at universities in this CESM during the 2004 academic year. Figure 78 indicates that African students constituted 50% and White students 45% of the PhD enrolments in this CESM. Indian and Coloured students comprised 4% and 1% of the enrolments respectively.

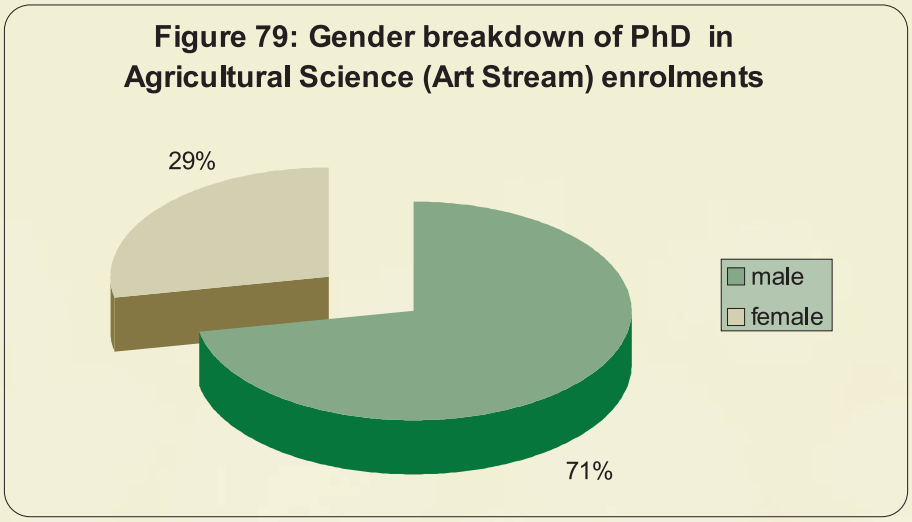


Figure 79 presents gender breakdown of the PhD enrolments in this CESM. Male students dominated the PhD enrolments in this CESM with 71% and female students constituted 29%. African males comprised 56% of the male enrolments at PhD level in this CESM followed by White males with 39%. White females dominated the female enrolments at PhD level in this CESM with 63% followed by African females with 31%.

4.3.3.4 Agricultural Science (Science Stream) Enrolments at Universities in 2004

The Agricultural Science (Science Stream) includes BSc Agric., BSc Agric. (Honours), MSc Agric., and PhD. The CESM enrolled 1 442 students during the 2004 academic year. The Programmes in this CESM are offered by the universities of North West, Pretoria, Free State, Stellenbosch, KwaZulu-Natal, Limpopo and Venda.

Table 58 presents a demographic breakdown of Agricultural Science (Science Stream) enrolments during the 2004 academic year by level of qualification.

Table 58: Demographic breakdown of Agricultural Sciencel (Science Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	147	125	272	11	8	19	399	215	614	1	6	7	912
Honours	1	0	1	0	0	0	3	2	5	0	0	0	6
Masters	179	85	264	4	1	5	161	81	242	9	4	13	524
TOTAL	**327**	**210**	**537**	**15**	**9**	**24**	**563**	**298**	**861**	**10**	**10**	**20**	**1 442**

Undergraduate enrolments in this CESM constituted 64% and Masters enrolled 34% during the 2004 academic year. Honours level enrolled a very insignificant figure.

Nine hundred and fifty two (952) students enrolled for Undergraduate programmes in this CESM at universities during the 2004 academic year.

Figure 80: Racial breakdown of undergraduate in Agricultural Science (Science Stream) enrolments

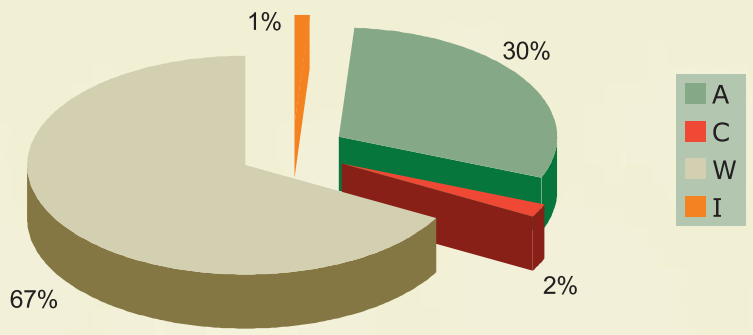


Figure 80 depicts that White students dominated enrolments at Undergraduate level in this CESM with 67%, African students accounted for 30%, Coloured students constituted 2% and Indian students comprised 1% only.

Figure 81: Gender breakdown of undergraduate in Agricultural Science (Science Stream) enrolments

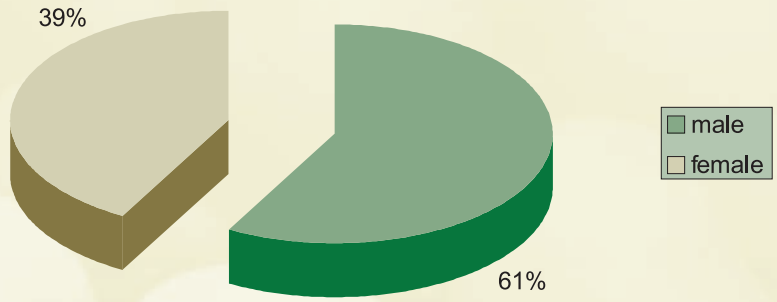


Figure 81 shows that male students dominated Undergraduate enrolments in this CESM with 61% and female students constituted only 39%. White males accounted for 72% of the Undergraduate male enrolments in this CESM; African males constituted 26%. White females dominated the Undergraduate female enrolments in this CESM with 61% and African females accounted for 35%. Coloured and Indian females constituted less than 5% collectively of the female enrolments at Undergraduate programme in this CESM.

Six (6) students enrolled at Honours level in this CESM during the 2004 academic year, of which 3 were White males, 2 were White females and 1 was an African male.

There were 524 students who enrolled for Masters programmes in Agricultural Science (Science Stream).

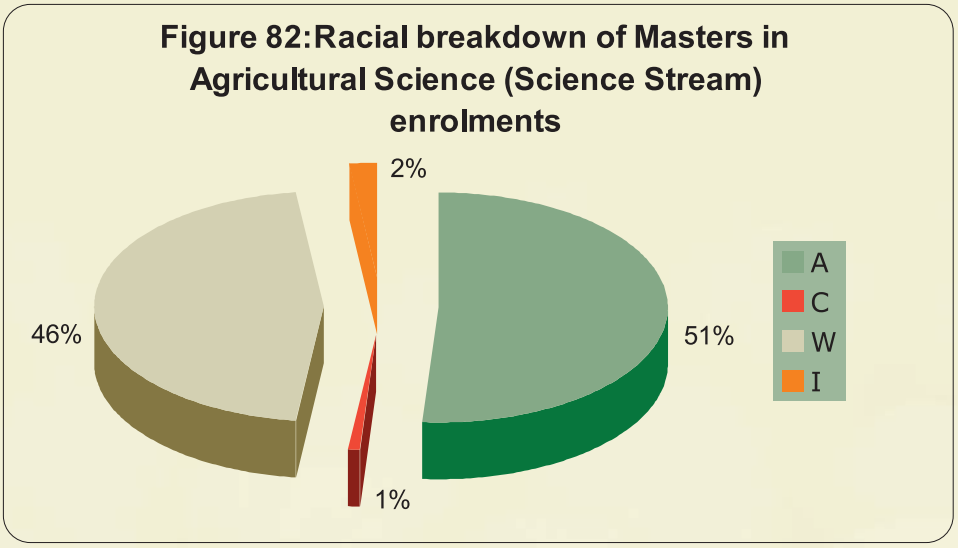


Figure 82 above indicates that African students comprised 51% of the Masters enrolments in this CESM and White students constituted 46%. Coloured and Indian students collectively constituted 3% of the Masters enrolments in this CESM.

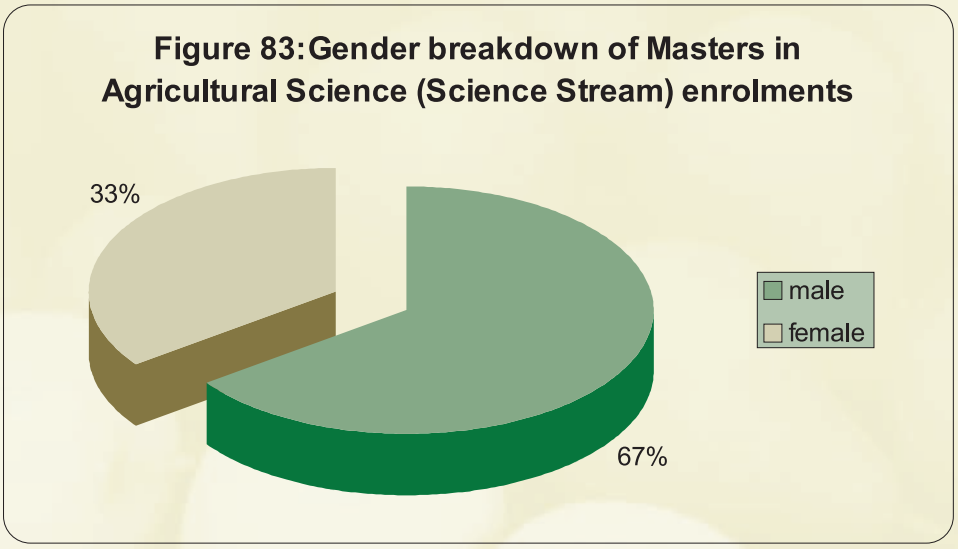


Figure 83 depicts that male students dominated at Masters level in this CESM with 67% and female students accounted for 33%. African males dominated male enrolments at Masters level in this CESM with 50% and White males constituted 47%. Coloured and Indian males collectively constituted 3% of the male enrolments in this CESM. African females constituted 50% of the female enrolments at Masters level in this CESM and White females comprised 47%. Indian and Coloured males accounted for 2% and 1% of the male enrolments at Masters level, respectively.

4.3.3.5 Agricultural Extension Enrolments at Universities in 2004

Two hundred and fifty one (251) students enrolled in this CESM during the 2004 academic year at universities. Table 59 presents a demographic breakdown of Agricultural Extension enrolments during the 2004 academic year by level of qualification.

Table 59: Demographic breakdown of Agricultural Extension enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	96	62	158	0	0	0	1	0	1	0	0	0	159
Honours	12	11	23	0	0	0	0	0	0	0	0	0	23
Masters	31	26	57	0	0	0	0	2	2	0	0	0	59
PhD	5	2	7	0	0	0	2	1	3	0	0	0	10
TOTAL	**144**	**101**	**245**	**0**	**0**	**0**	**3**	**3**	**6**	**0**	**0**	**0**	**251**

The Undergraduate enrolments constituted 63%, Masters enrolments accounted for 24%, Honours level enrolled 9% and PhD level comprised 4% of the enrolments in this CESM for the academic year 2004.

One hundred and fifty nine (159) students enrolled at Undergraduate level in this CESM during the 2004 academic year. Breakdown by race shows that out of 159 students enrolled in this CESM at Undergraduate level of which 158 were Africans and 1 student was White. African males dominated this CESM.

At Honours level, 23 students enrolled in this CESM. Breakdown according to race of enrolments in this CESM at Honours level shows that only African students enrolled, of which 12 were males and 11 were females. Fifty nine (59) students were enrolled in this CESM at universities during the 2004 academic year, of which 31 were African males, 26 were African females and 2 were White females. The findings indicate that PhD enrolments comprised 10 students in this CESM during the 2004 academic year of which 7 were Africans and 3 were Whites.

4.3.3.6 Agricultural Food Technology Enrolments at Universities in 2004

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

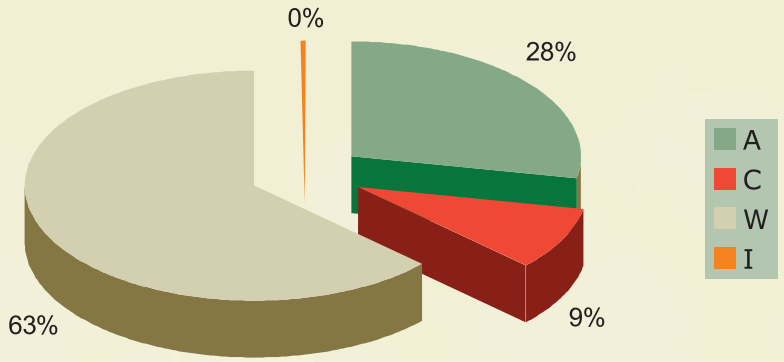
Table 60 presents a demographic breakdown of Agricultural Food Technology enrolments during the 2004 academic year by level of qualification.

Table 60: Demographic breakdown of Agricultural Food Technology enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	10	37	47	4	12	16	11	96	107	0	0	0	170
Honours	2	1	3	0	0	0	0	1	1	0	0	0	4
Masters	3	7	10	0	0	0	3	21	24	0	1	1	35
PhD	6	8	14	2	0	2	1	6	7	1	0	1	24
TOTAL	21	53	74	6	12	18	15	124	139	1	1	2	233

Two hundred and thirty three (233) students enrolled in this CESM during the 2004 academic year. The Undergraduate enrolments constituted 73%, Masters enrolment constituted 15% followed by PhD enrolments with 10% and Honours enrolments accounted for 2% of the enrolments in the CESM.

Figure 84: Racial breakdown of undergraduate in Agricultural Food Technology enrolments



In this CESM at Undergraduate level there were 170 students enrolled during the 2004 academic year, of which the majority was White students (63%). Africans and Coloured enrolments in the CESM share the remaining 27% of the enrolments at Undergraduate level.

Figure 85: Gender breakdown of undergraduate in Agricultural Food Technology enrolments

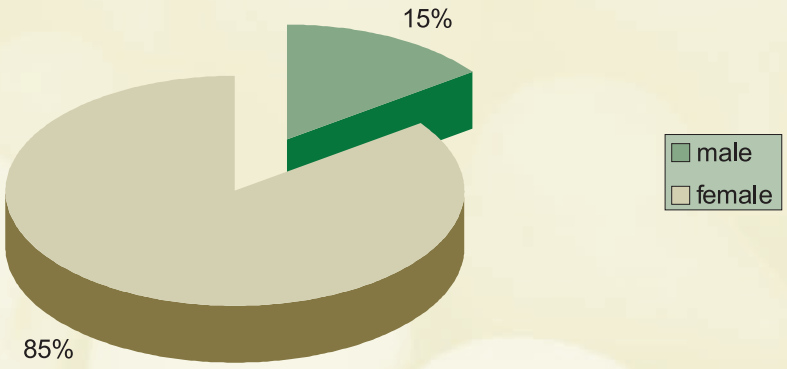
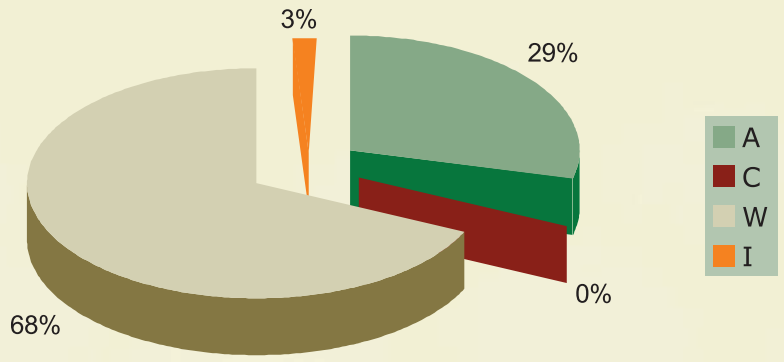


Figure 85 shows that female students dominated the Undergraduate enrolments in this CESM with 85% and male students constituted 15%. White females dominated the female enrolments with 66%. White males constituted 44% of the male enrolments at Undergraduate level in this CESM followed by African males with 40% and Coloured males constituted 16%.

Only 4 students enrolled for the Honours in Agricultural Food Technology CESM during the 2004 academic year. These students consisted of 3 Africans and 1 White, of which 2 are males and 2 are females.

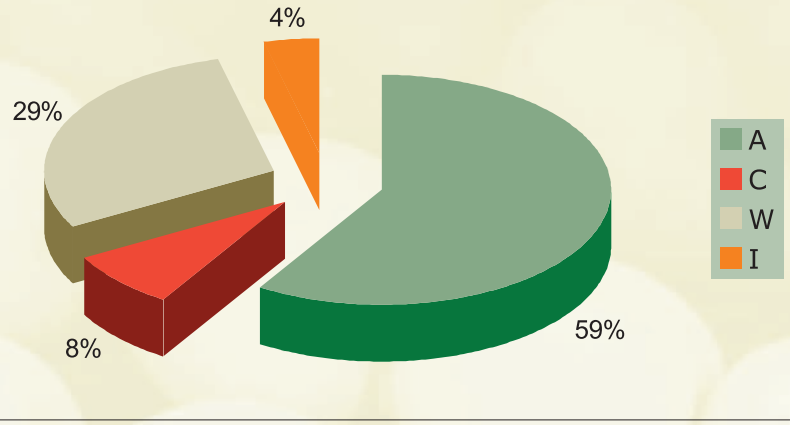
Figure 86:Racial breakdown of Masters in Agricultural Food Technology enrolments



The findings indicate that 35 students enrolled at Masters level at universities in this CESM during the 2004 academic year. The enrolments figures are predominantly White as indicated in figure 86.

Gender breakdown indicates that there were 29 female students and 6 male students enrolled at Masters level in this CESM during the 2004 academic year. Female enrolments in this CESM at Masters level consisted of 21 White females, 7 African females and 1 Indian female. This programme is thus female dominated.

Figure 87:Racial breakdown of PhD in Agricultural Food Technology enrolments



Twenty four (24) students enrolled at PhD level in this CESM at universities during the 2004 academic year. Figure 87 shows that African students constituted 59% of the PhD enrolments in this CESM followed by White students with 29%. Coloured students accounted for 8% and Indian students comprised 4%.

Gender breakdown depicts that female students accounted for 58% of the PhD enrolments in this CESM, whilst male students constituted 42%.

4.3.3.7 Animal Science Enrolments at Universities in 2004

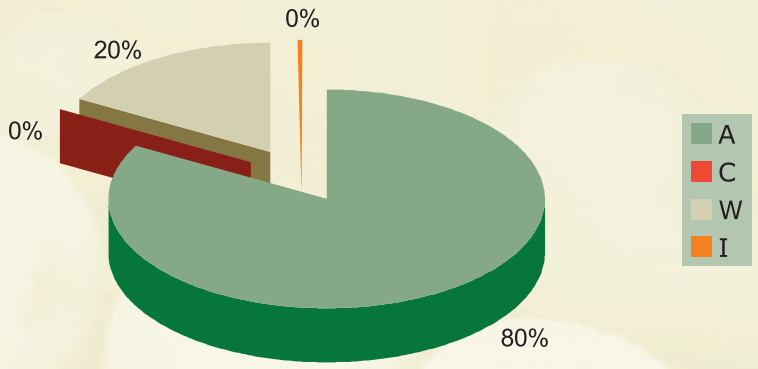
Animal Science CESM includes Undergraduate, Honours, Masters and PhD Animal Health, Animal Production and Animal Science and Genetics. Nine hundred and ninety six (996) students enrolled in this CESM at universities during the 2004 academic year. Table 61 presents a demographic breakdown of Animal Science enrolments during the 2004 academic year by level of qualification.

Table 61: Demographic breakdown of Animal Science enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	337	382	719	1	2	3	115	68	183	0	1	1	906
Honours	13	19	32	0	0	0	1	0	1	0	0	0	33
Masters	7	3	10	0	0	0	19	18	37	0	0	0	47
PhD	4	1	5	0	0	0	1	4	5	0	0	0	10
TOTAL	361	405	766	1	2	3	136	90	226	0	1	1	996

Undergraduate enrolments in Animal Science constituted 91% of the overall enrolments in Animal Science during the 2004 academic year. Honours and Masters enrolment accounted for 3% and 5% respectively and PhD enrolments constituted only 1%.

Figure 88: Racial breakdown of undergraduate in Animal Science enrolments



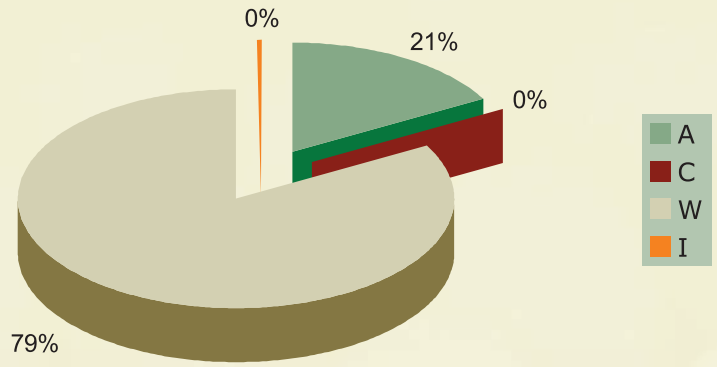
Nine hundred and six (906) students enrolled for Animal Science programmes at universities at Undergraduate level during the 2004 academic year. Figure 88 depicts that African students dominated the Undergraduate enrolments in Animal Science with 80%.

Figure 89: Gender breakdown of undergraduate in Animal Science enrolments

Figure 89 depicts equal distribution of gender enrolments of students in this CESM at Undergraduate level.

Thirty three (33) students enrolled at Honours level in this CESM during the 2004 academic year. Thirty two (32) of these students were Africans and 1 was White, of which 19 were females and 14 were males.

Figure 90: Racial breakdown of Masters in Animal Science enrolments



Forty seven (47) students enrolled at Masters level in this CESM at universities during the 2004 academic year. Figure 90 presents the racial breakdown of Masters enrolment in this CESM at universities during the 2004 academic year. As indicated in figure 90, White students constituted 79% and African students accounted for 21% of the Masters enrolments in this CESM during the 2004 academic year.

Figure 91: Gender breakdown of Masters in Animal Science enrolments

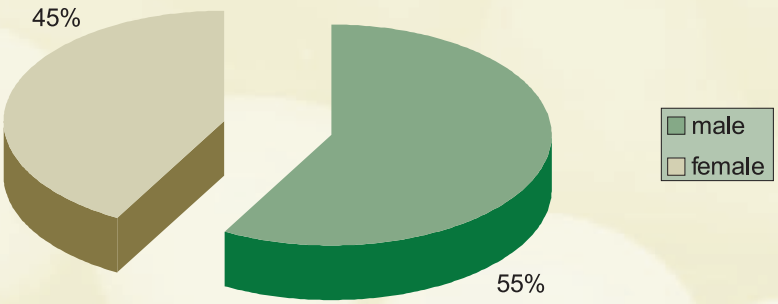


Figure 91 shows that male students dominated with 55% at Masters level in this CESM. White males comprised 73% of the enrolments at Masters level in the CESM, whilst African males constituted 27%. White females accounted for 86%, whilst African females constituted 14% of Animal Science enrolments at Masters level during the 2004 academic year.

Ten (10) students enrolled at PhD in this CESM at universities during the 2004 academic year. The enrolments are shared equally among Africans and Whites, of which 5 were male and 5 were female.

4.3.3.8 Horticulture Enrolments at Universities in 2004

Fifty nine (59) students in this CESM were enrolled during the 2004 academic year at universities. This programme is offered by the universities of Fort Hare, Limpopo and Pretoria. Table 62 presents a demographic breakdown of Horticulture enrolments during the 2004 academic year by level of qualification.

Table 62: Demographic breakdown of Horticulture enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	5	16	0	0	0	0	0	0	0	0	0	16
Masters	9	9	18	0	0	0	5	5	10	0	0	0	28
PhD	8	2	10	0	1	1	3	1	4	0	0	0	15
TOTAL	**28**	**16**	**44**	**0**	**1**	**1**	**8**	**6**	**14**	**0**	**0**	**0**	**59**

Masters enrolments constituted 48% of the enrolments in Horticulture, Undergraduate enrolments accounted for 27% and PhD enrolments constituted 25%.

All the 16 enrolments in the CESM at Undergraduate level were Africans enrolments, of which 11 were male and 5 were female. With regard to Masters enrolment in Horticulture, 28 students enrolled during the 2004 academic year. The enrolments at Masters level are dominated by Africans, and the distribution of enrolments is equal among males and females.

PhD enrolments indicate that 15 students enrolled in the CESM during the 2004 academic year at universities, of which 11 were males and 4 were females.

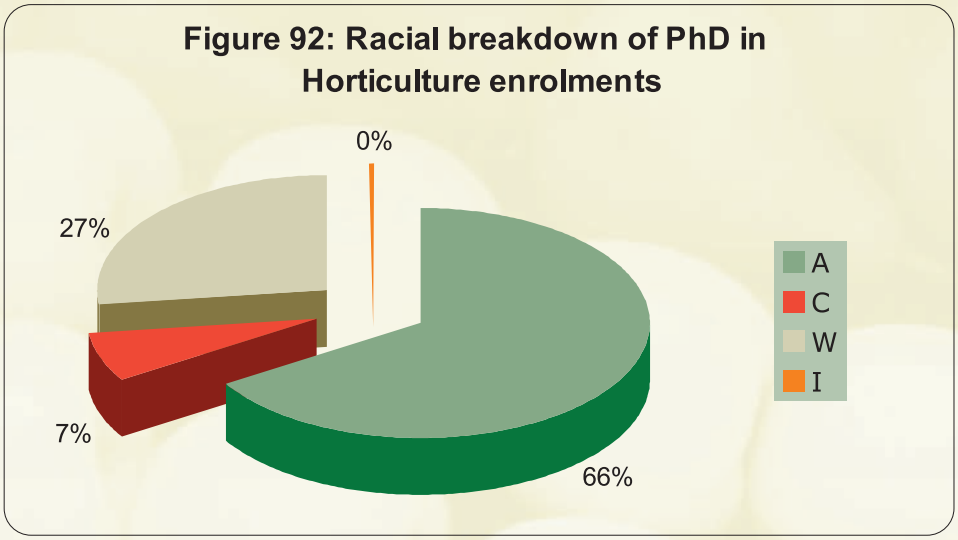


Figure 92 depicts that African students dominated the PhD enrolments in this CESM with 66%. White students constituted 27% and Coloured students comprised 7%.

4.3.3.9 Plant Science Enrolments at Universities in 2004

This CESM includes Undergraduate, Honours, Masters and PhD programmes in Crop Production, Plant Pathology, Plant Pathology and Entomology, Plant Breeding and Genetics, Plant Production, Plant Protection, Pasture Science and Crop Protection.

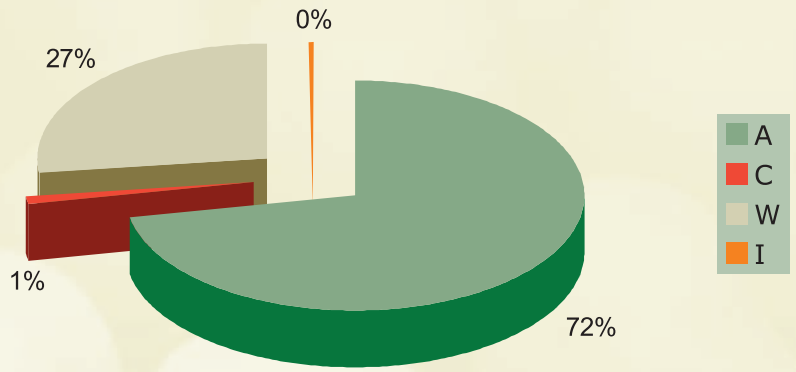
This programme is offered by the universities of Fort Hare, Free State, North West, Limpopo and Pretoria. One hundred and twenty five (125) students were enrolled in this CESM at universities during the 2004 academic year. Table 63 presents a demographic breakdown of Plant Science enrolments during the 2004 academic year by level of qualification.

Table 63: Demographic breakdown of Plant Science enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	33	25	58	0	1	1	16	6	22	0	0	0	81
Honours	2	2	4	0	0	0	2	2	4	0	0	0	8
Masters	9	8	17	0	0	0	5	1	6	0	0	0	23
PhD	8	0	8	0	0	0	0	3	3	2	0	2	13
TOTAL	**52**	**35**	**87**	**0**	**1**	**1**	**23**	**12**	**35**	**2**	**0**	**2**	**125**

Plant Science Undergraduate enrolments accounted for 66% of enrolments in this CESM, Masters enrolment comprised 18%, PhD and Honours accounted for 10% and 6% respectively.

Figure 93: Racial breakdown of undergraduate in Plant Science enrolments



Eighty one (81) students enrolled at Undergraduate level in this CESM during the 2004 academic year. Figure 93 depicts that African students dominated at Undergraduate level in this CESM with 72% followed by White students with 27%. Coloured and Indian enrolments in this CESM at Undergraduate were less than 2%.

Figure 94: Gender breakdown of undergraduate in Plant Science enrolments

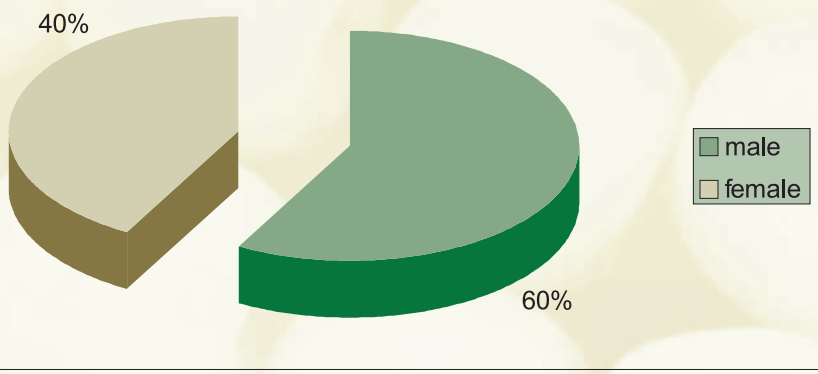
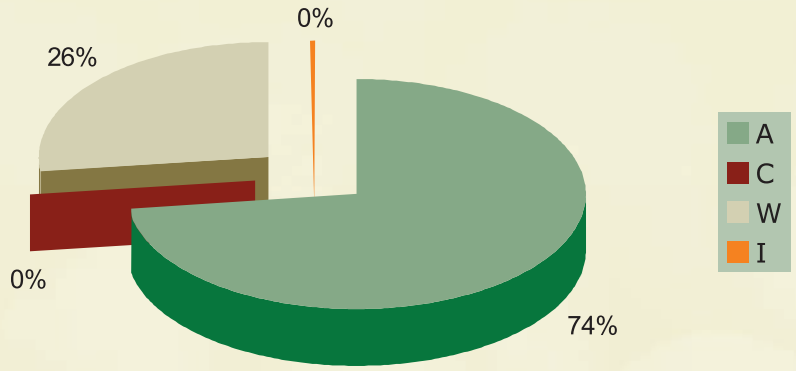


Figure 94 depicts that males dominated Undergraduate enrolments for Plant Science during the 2004 academic year with 60%. African males accounted for 67% of the male enrolments at Undergraduate level in this CESM and White males constituted 33%.

African females constituted 78% of the female enrolments in this CESM at Undergraduate level; White females accounted for 19% and Coloured females constituted 3% of the female enrolments in the CESM at universities during the 2004 academic year.

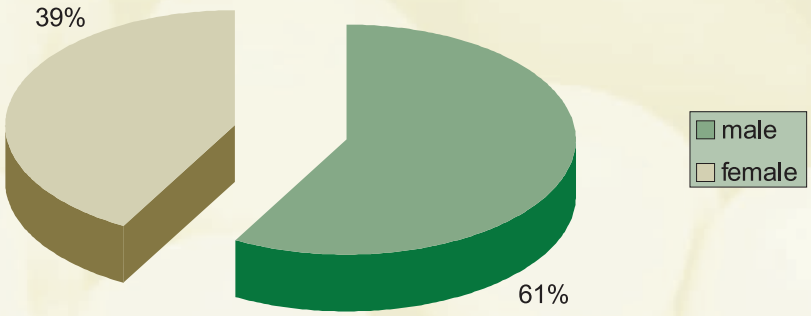
Eight (8) students enrolled at Honours in Plant Science during the 2004 academic year, of which 4 were Africans and 4 were Whites. Gender breakdown also reflects an equal distribution with 4 males and 4 females.

Figure 95: Racial breakdown of Masters in Plant Science enrolments



Twenty three (23) students enrolled at Masters levels this CESM at universities during the 2004 academic year. Figure 95 depicts that African students dominated the Masters enrolments in this CESM 74%, followed by White students with 26%. No Coloured and Indian students were registered at Masters level in this CESM during the 2004 academic year.

Figure 96: Gender breakdown of Masters in Plant Science enrolments



Male students dominated the Masters enrolments in Plant Science with 61% as indicated by figure 96 meanwhile females accounted for 39%.

Thirteen (13) students enrolled at PhD level at universities in this CESM during the 2004 academic year. African students constituted 62% of the PhD enrolments in this CESM followed by White students with 23%. Indian students constituted 15% of the PhD enrolments in this CESM. Gender breakdown indicates that there were 10 male and 3 female students registered at PhD level in this CESM during the 2004 academic year.

4.3.3.10 Soil Science Enrolments at Universities in 2004

Fifty seven (57) students enrolled in this CESM during the 2004 academic year at universities. The universities offering the programme in Soil Science are University of Fort Hare, University of Free State, University of Limpopo and University of Pretoria. Table 64 presents a demographic breakdown of Soil Science enrolments during the 2004 academic year by level of qualification.

Table 64: Demographic breakdown of Soil Science enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	26	7	33	0	0	0	5	0	5	0	0	0	38
Honours	1	1	2	0	0	0	0	0	0	0	0	0	2
Masters	7	1	8	0	0	0	0	0	0	0	0	0	8
PhD	3	0	3	1	0	1	5	0	5	0	0	0	9
TOTAL	**37**	**9**	**46**	**1**	**0**	**1**	**10**	**0**	**10**	**0**	**0**	**0**	**57**

Undergraduate enrolments constituted 66%, PhD accounted for 16%, Masters comprised 14% and Honours constituted 4% of the total Soil Science enrolments at universities during the 2004 academic year.

Thirty eight (38) students enrolled at Undergraduate level in Soil Science at universities, of which 33 were Africans and 5 were White students. Male students constituted 82% of the Undergraduate students in this CESM and female students accounted for 18%.

Two (2) Honours students enrolled in Soil Science at universities during the 2004 academic year. All the students were Africans, of which 1 was male and 1 was female. Eight (8) students enrolled for the Masters in Soil Science at universities during the 2004 academic year. The Masters enrolments in this CESM were all Africans, of which 7 were males and 1 was female. Nine (9) students registered for PhD at universities in this CESM during the 2004 academic year. These enrolments comprised of 5 White males, 3 African males and 1 Coloured male. No female students enrolled for PhD in the Soil Science during the 2004 academic year at universities.

4.3.3.11 Forestry Enrolments at Universities in 2004

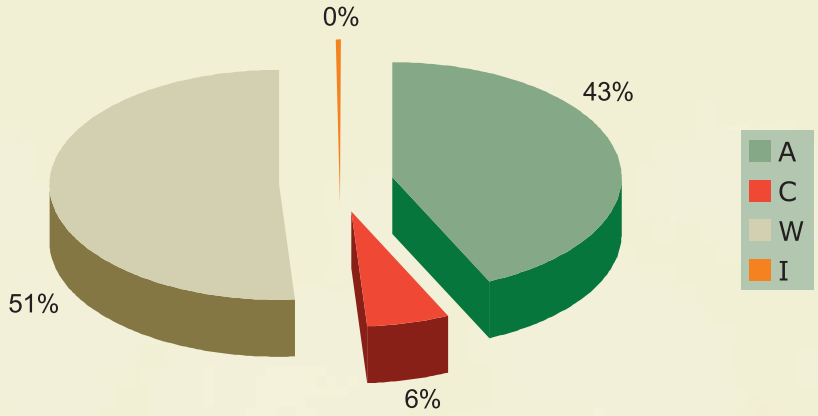
This programme is offered by the following universities: University of Stellenbosch and University of Venda. Table 65 presents a demographic breakdown of Forestry enrolments during the 2004 academic year by level of qualification.

Table 65: Demographic breakdown of Forestry enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	10	10	20	1	2	3	21	3	24	0	0	0	47
Honours	0	1	1	0	0	0	0	0	0	0	0	0	1
Masters	8	2	10	1	0	1	12	1	13	0	0	0	24
PhD	7	2	9	0	0	0	4	1	5	0	0	0	14
TOTAL	**25**	**15**	**40**	**2**	**2**	**4**	**37**	**5**	**42**	**0**	**0**	**0**	**86**

Eighty (86) students enrolled in this CESM at universities during the 2004 academic year. Undergraduate enrolments constituted 55% of the enrolments in this CESM, followed by Masters with 28%. PhD and Honours accounted for 16% and 1% of the total enrolments in this CESM respectively.

Figure 97: Racial breakdown of undergraduate in Forestry enrolments



Forty seven (47) students enrolled at Undergraduate level in this CESM at universities during the 2004 academic year. The enrolments at this level were dominated by White and African students with 51% and 43% respectively.

Figure 98: Gender breakdown of undergraduate in Forestry enrolments

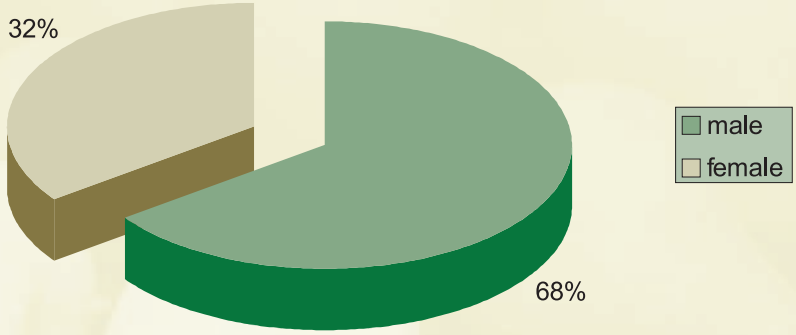
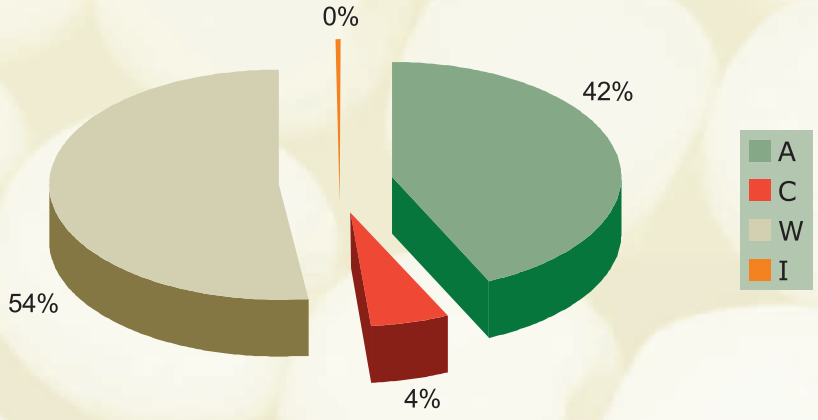


Figure 98 indicates that male students dominated the Undergraduate enrolments in Forestry with 68% and female students constituted 32%. White males dominated the male enrolments at Undergraduate level in Forestry with 66% followed by African males with 31%. African females comprised 67% of the female enrolments at Undergraduate level in this CESM.

Figure 99:Racial breakdown of Masters in Forestry enrollments



Only 1 African female student enrolled at Honours level at universities during the 2004 academic year. Masters enrolments in Forestry indicate that Whites constituted 54%, while Africans constituted 42 % and Coloureds accounted for 4%.

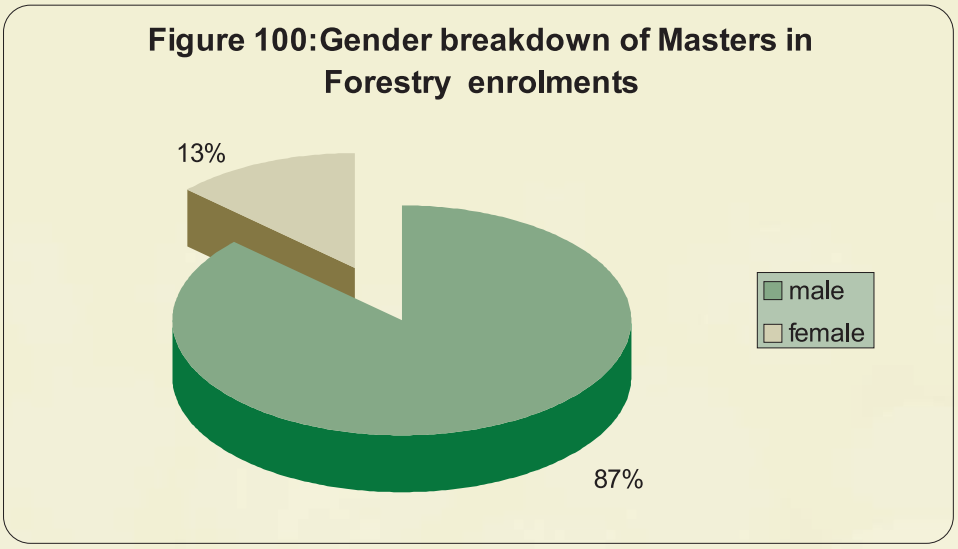


Figure 100 depicts that Masters enrolment in this CESM were dominated by male students with 87% and female students constituted only 13%.

Fourteen (14) students were enrolled for PhD in Forestry at universities during the 2004 academic year. Breakdown according to race for PhD enrolments in Forestry indicates that 9 African students and 5 White students were enrolled, of which 11 were males and 3 were females.

4.3.3.12 Renewable Natural Resources Enrolments at Universities in 2004

One hundred and twenty eight (128) students were enrolled in this CESM during the 2004 academic year. This programme is offered by the universities of Fort Hare, Free State and Pretoria. Table 66 presents a demographic breakdown of Renewable Natural Resources enrolments during the 2004 academic year by level of qualification.

Table 66: Demographic breakdown of Renewable Natural Resources enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	73	49	122	0	0	0	0	0	0	0	0	0	122
Masters	4	2	6	0	0	0	0	0	0	0	0	0	6
TOTAL	**77**	**51**	**128**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**128**

Undergraduate enrolments constituted 95% and Masters accounted for 5% of the total enrolments in the CESM.

One hundred and twenty two (122) students enrolled for programmes in Renewable Natural Resources at Undergraduate level at universities during the 2004 academic year, of which 73 were African males and 49 were African females. Six (6) students enrolled for the Masters, of which 4 were African males and 2 were African females in this CESM.

4.3.3.13 Agriculture Management Enrolments at Universities in 2004

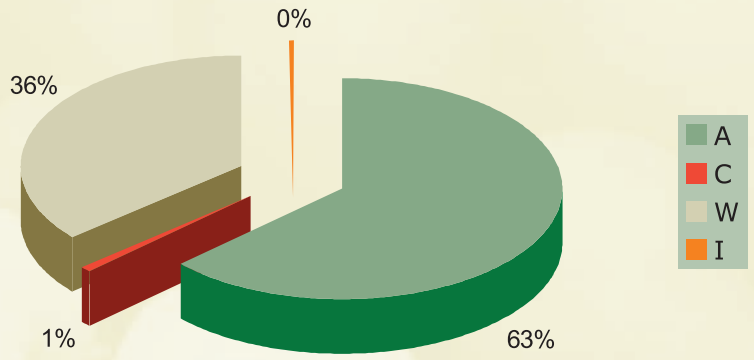
Five hundred and two (502) students enrolled at universities in this CESM during the 2004 academic year. The programme is offered by the universities of Free State, North West, Limpopo, Stellenbosch and KwaZulu-Natal. Table 67 presents a demographic breakdown of Agriculture Management enrolments during the 2004 academic year by level of qualification.

Table 67: Demographic breakdown of Agriculture Management enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	119	93	212	1	1	2	107	15	122	0	0	0	336
Honours	20	15	35	1	1	2	35	2	37	0	0	0	74
Masters	51	22	73	1	0	1	14	4	18	0	0	0	92
TOTAL	**190**	**130**	**320**	**3**	**2**	**5**	**156**	**21**	**177**	**0**	**0**	**0**	**502**

Undergraduate enrolments constituted 64% of enrolments in this CESM, Honours accounted for 20% and Masters constituted 16%.

Figure 101: Racial breakdown of undergraduate in Agricultural Management enrolments



Three hundred and thirty six (336) students were enrolled at Undergraduate level at universities in this CESM during the 2004 academic year. Figure 101 indicates that African students comprised 63% of Undergraduate enrolments at universities in this CESM followed by White students with 36%.

Figure 102: Gender breakdown of undergraduate in Agricultural Management enrolments

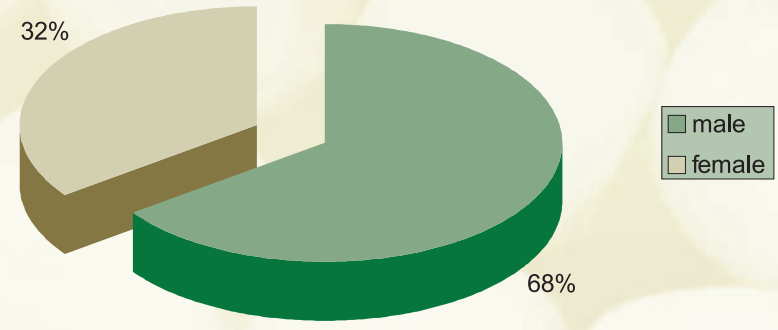
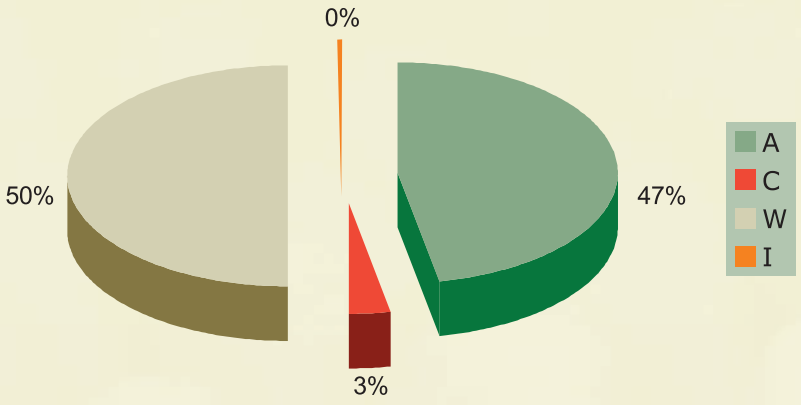


Figure 102 presents gender breakdown of Undergraduate enrolments at universities in this CESM. Male students accounted for 68% of the Undergraduate enrolments in this CESM and female students constituted only 32%.

African males accounted for 53% of the male enrolments in this CESM at Undergraduate level and White males constituted 47%. African females dominated the Undergraduate female enrolments with 85% and White females constituted 14%. Coloured females accounted for 1% of the female enrolments in this CESM at Undergraduate level.

Figure 103:Racial breakdown of Honours in Agricultural Management enrolments



Seventy four (74) students enrolled at Honours level in this CESM at universities during the 2004 academic year. Figure 103 presents the racial breakdown of Honours in this CESM at universities during the 2004 academic year. The figure depicts that White students constituted 50% of the Honours enrolments in this CESM, followed by African students with 47%. Coloured students constituted 3% of the Honours enrolments at universities in this CESM during the 2004 academic year.

Figure 104:Gender breakdown of Honours in Agricultural Management enrolments

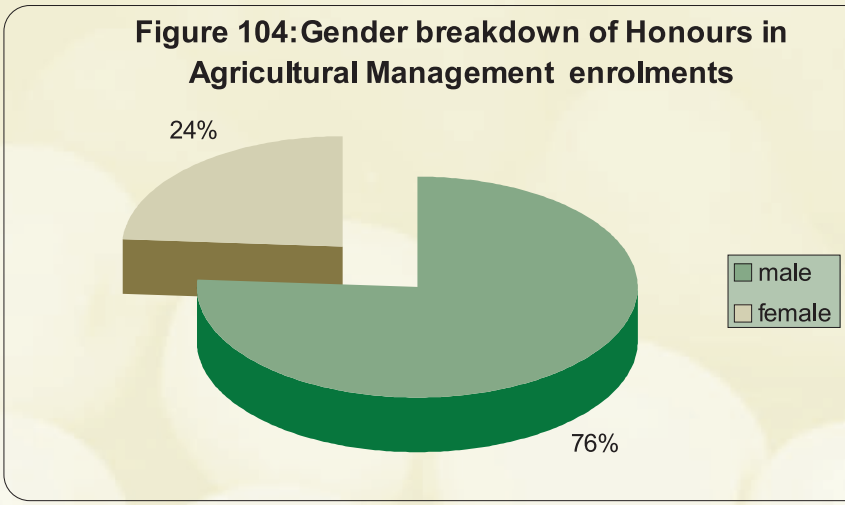
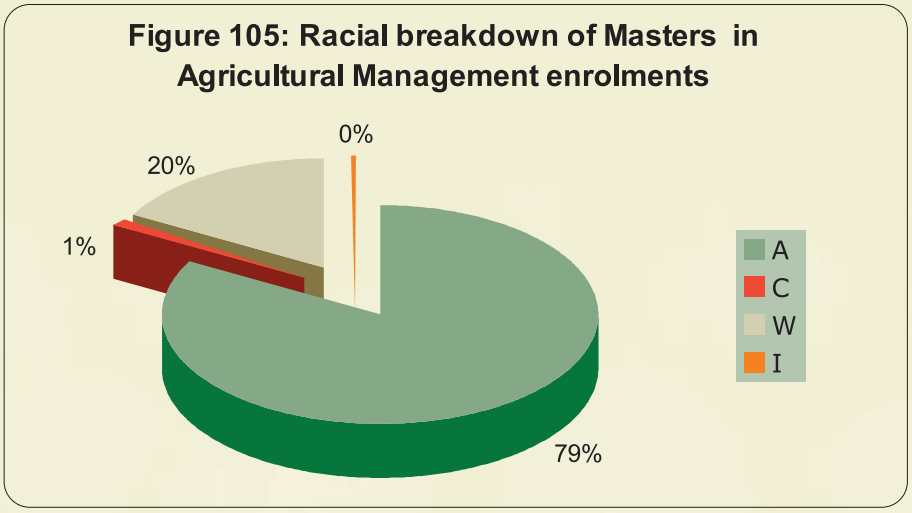
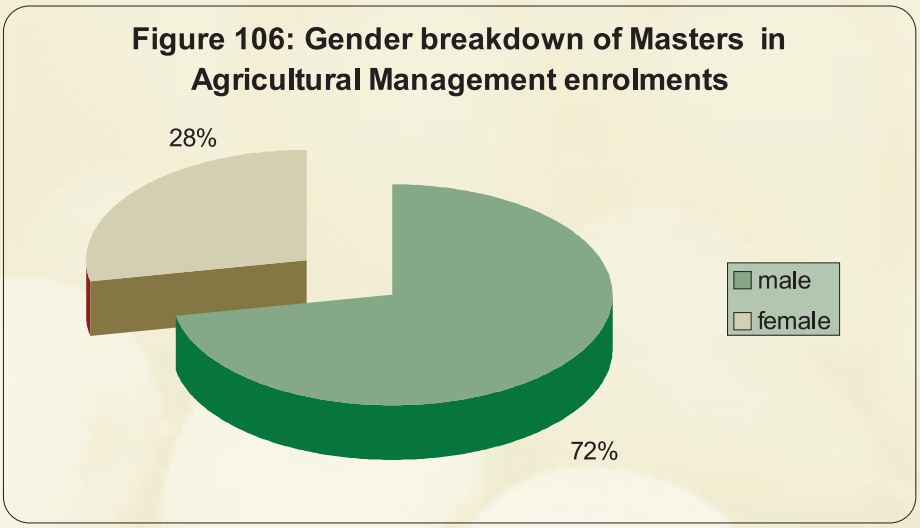


Figure 104 shows that male students constituted 76% of the Honours enrolments and White males dominated the male enrolments at Honours level in this CESM (62%).



Ninety two (92) students enrolled at Masters level at universities in this CESM during the 2004 academic year. Figure 105 indicates that African students constituted 79% of Masters enrolment in this CESM followed by White students with 20% and Coloured students accounted for 1% only. No Indian students enrolled at Masters in this CESM at universities during the 2004 academic year.



Masters enrolments in this CESM are dominated by male students with 72% and female students constituted 28%. African males accounted for 77% of the male enrolments at Masters level in this CESM followed White males with 21% and Coloured males constituted 2% only. African females dominated female figures at Masters level of Agricultural Management at 85%.

4.3.3.14 Other Agricultural and Renewable Resources Enrolments at Universities in 2004

Fifty four (54) students enrolled at universities in this CESM during the 2004 academic year. The programme is offered by the universities of Fort Hare and Free State. Table 68 presents a demographic breakdown of Other Agric. and Renewable Resources enrolments during the 2004 academic year by level of qualification.

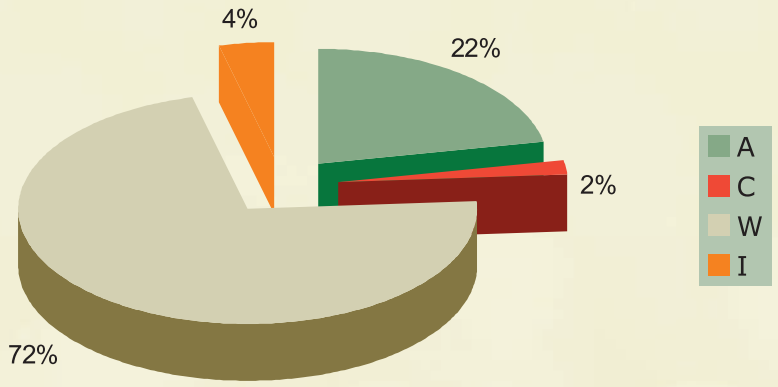
Table 68: Demographic breakdown of Other Agric. and Renewable Resources enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	2	4	0	0	0	1	0	1	0	0	0	5
Masters	4	6	10	0	1	1	21	12	33	2	0	2	46
PhD	1	2	3	0	0	0	0	0	0	0	0	0	3
TOTAL	**7**	**10**	**17**	**0**	**1**	**1**	**22**	**12**	**34**	**2**	**0**	**2**	**54**

Masters enrolments constituted 85% of the total enrolments in this CESM, Undergraduate accounted for 9% and PhD constituted 6%.

Five (5) students enrolled at Undergraduate level in this CESM during the 2004 academic year. The enrolments constituted 4 Africans and 1 White.

Figure 107: Racial breakdown of Masters in Other Agric. Renewable Resources enrolments



Forty six (46) students enrolled for Masters in the CESM at universities during the 2004. Figure 107 presents the breakdown of Masters enrolment at universities according to race in this CESM during the 2004 academic year. White students dominated Masters enrolment in this CESM with 72%, followed by African students with 22%. Indian and Coloured students constituted 4% and 2% of the Masters enrolments in this CESM respectively.

Figure 108: Gender breakdown of Masters in Other Agric. Renewable Resources enrolments

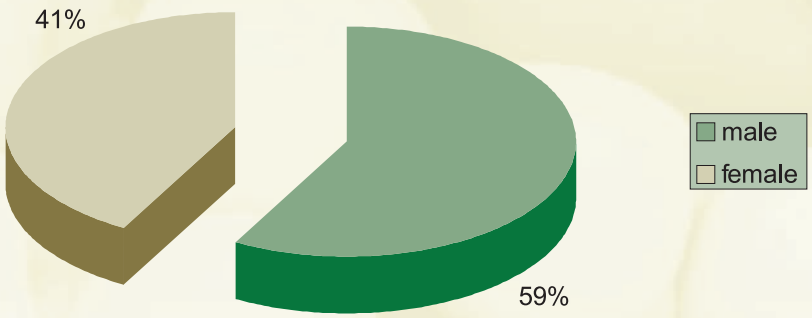


Figure 108 shows that male students dominated the Masters enrolments at universities in this CESM during the 2004 academic year 59% and female students constituted 41%. White males accounted for 62% of the male enrolments at Masters level in this CESM and African males constituted 21%. Indian students constituted 11% of the male enrolments at Masters level in this CESM and Coloured males constituted 5%.

Only 3 African students enrolled at PhD in this CESM at universities during the 2004 academic year, of which 2 were females and 1 was male.

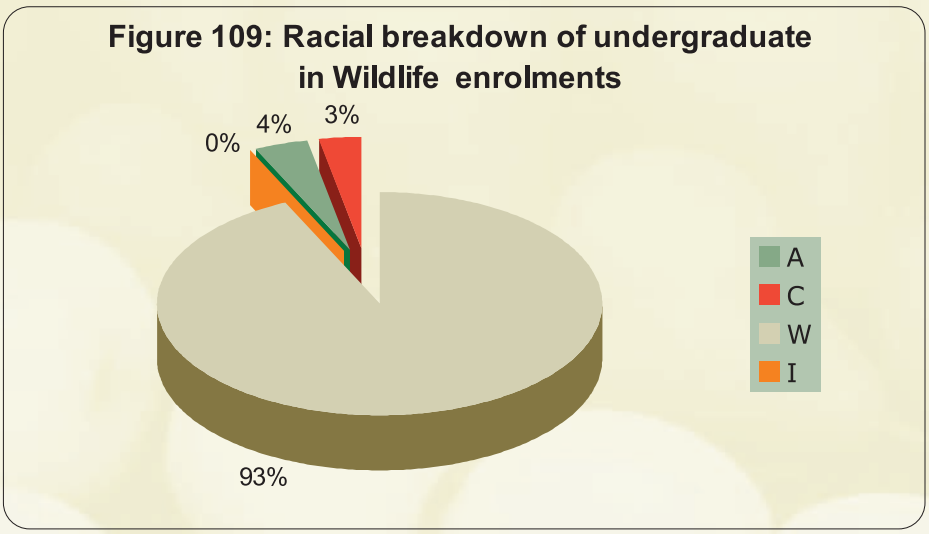
4.3.4.15 Wildlife Enrolments at Universities in 2004

The CESM includes Bachelors, Honours, Masters and PhD in Agricultural Wild Management, Sustainable Insect Management and Ecological Management. The programme is offered by the University of Pretoria and University of Free State during the 2004 academic year. Table 69 presents a demographic breakdown of Wildlife enrolments during the 2004 academic year by level of qualification.

Table 69: Demographic breakdown of Wildlife enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	3	3	0	2	2	36	35	71	0	0	0	76
Honours	2	0	2	0	0	0	2	1	3	0	0	0	5
Masters	1	0	1	0	0	0	1	1	2	0	0	0	3
TOTAL	**3**	**3**	**6**	**0**	**2**	**2**	**39**	**37**	**76**	**0**	**0**	**0**	**84**

Eighty four (84) students enrolled in this CESM during the 2004 academic year. Undergraduate enrolments constituted 90% of enrolments in this CESM, followed by Honours enrolments with 6% and Masters constituted 4%.



Seventy six (76) students enrolled at Undergraduate level in this CESM during the 2004 academic year. Figure 109 presents a breakdown according to race of the Wildlife Undergraduate enrolments during the 2004 academic year. The enrolments in the CESM at Undergraduate level are dominated by White students with 93%. African and Coloured students collectively constituted less than 10% of the Undergraduate enrolments in this CESM.

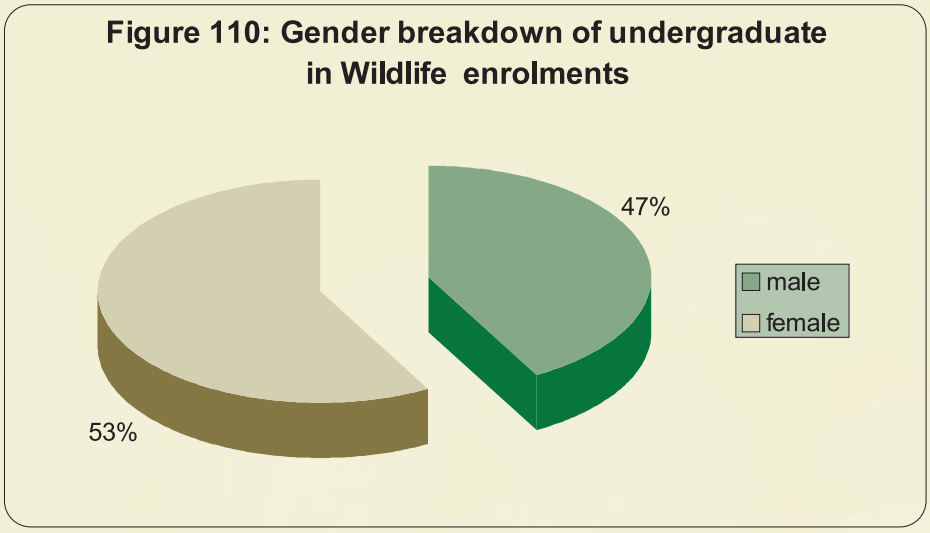


Figure 110 shows that female students accounted for 53% of the total enrolments at Undergraduate level in this CESM and male students constituted 47%. White females accounted for 87% of the female enrolments in this CESM at Undergraduate level. African and Coloured females collectively constituted 13% of the female enrolments in the CESM at Undergraduate level.

Five (5) students enrolled at Honours level in this CESM during the 2004 academic year at universities, 3 were White students and 2 were African students. At Masters level, 3 students enrolled in the CESM during the 2004 academic year, 2 were White students and 1 was an African student.

4.3.3.16 Land Reclamation Enrolments at Universities in 2004

Fifty four (54) students enrolled in this CESM at universities at Honours level during the 2004. All the students were Africans, 39 were males and 15 were females.

4.3.4 Inst. Agrar. Stream Programmes

Inst.Agrar. Stream Programmes are offered by the University of Pretoria only. They include Food Technology, Animal Production, Horticulture, Land Reclamation, Rural Development, Agricultural Economics, and Agronomy. 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 Agricultural Food Technology (Inst. Agrar. Stream) at Universities in 2004

Forty four (44) students enrolled in this CESM during the 2004 academic year at universities. This programme is offered by the University of Pretoria only. This CESM consists of B.Inst.Agrar., B.Inst.Agrar. Honours, M.Inst.Agrar. and PhD. Table 70 presents a demographic breakdown of Agric. Food Technology (Inst.Agrar. Stream) enrolment during the 2004 academic year by level of qualification.

Table 70: Demographic breakdown of Agricultural Food Technology (Inst. Agrar. Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	9	21	30	0	0	0	1	2	3	0	1	1	34
Honours	1	0	1	0	1	1	0	0	0	1	1	2	4
Masters	0	6	6	0	0	0	0	0	0	0	0	0	6
TOTAL	**10**	**27**	**37**	**0**	**1**	**1**	**1**	**2**	**3**	**1**	**2**	**3**	**44**

Thirty four (34) students enrolled for Undergraduate level in the CESM during the 2004 academic year. Thirty (30) students were Africans, 3 were Whites and 1 was Indian. Four (4) students enrolled for Honours in the CESM, 1 was African, 1 was Coloured and 2 were Indians. Six (6) Africans females enrolled for Masters level in the CESM during the 2004 academic year.

4.3.4.2 Agricultural Management (Inst. Agrar. Stream) Enrolments at Universities

This category comprised the B.Inst.Agrar, B.Inst.Agrar Honours, and M.Inst.Agrar in Agricultural Management. Thirty nine (39) students enrolled in this CESM during the 2004 academic year. All the students were Africans, 25 were males and 14 were females.

4.3.4.3 Animal Science (Inst. Agrar. Stream) Enrolments at Universities in 2004

This CESM is made up of B.Inst. Agrar. B. Inst. Agrar. Honours, and M. Inst. Agrar in Animal Science. Table 71 presents a demographic breakdown of Animal Science (Inst. Agrar. Stream) enrolment during the 2004 academic year by level of qualification.

Table 71: Demographic breakdown of Animal Science (Inst. Agrar. Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	5	3	8	0	0	0	3	1	4	0	0	0	12
Masters	10	0	10	0	0	0	0	0	0	2	0	2	12
TOTAL	15	3	18	0	0	0	3	1	4	2	0	2	24

Twenty four (24) students were enrolled in this CESM at universities during the 2004 academic year. Undergraduate and Masters enrolment for the CESM accounted for 50% each.
Twelve (12) students enrolled at Undergraduate level in this CESM at universities during the 2004 academic year, of which 8 were African students and 4 were White students. The enrolments constituted 8 males and 4 females. Twelve students (12) enrolled for Masters level in this CESM during the 2004, 10 were African males and 2 were Indian males.

4.3.4.4 Horticulture (Inst. Agrar. Stream) Enrolments at Universities in 2004

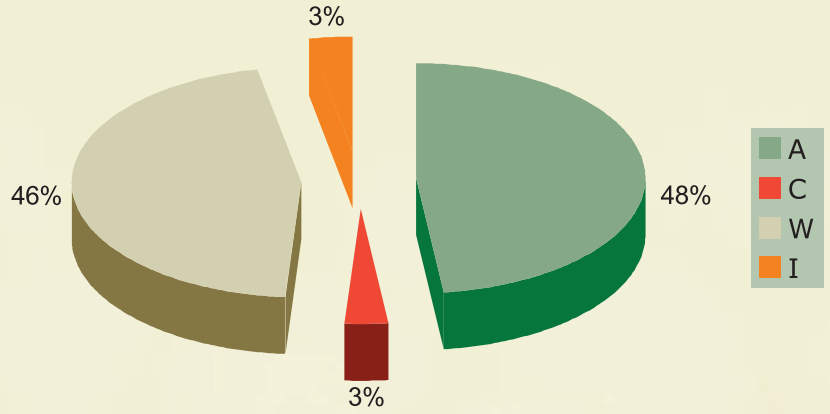
The CESM includes B.Inst.Agrar, B.Inst.Agrar Honours, and M.Inst.Agrar in Horticulture. Table 72 presents a demographic breakdown of the Horticulture (Inst.Agrar. Stream) enrolments by level of qualification.

Table 72: Demographic breakdown of Horticulture (Inst. Agrar. Stream) enrolments by level of qualification

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	12	5	17	1	0	1	12	4	16	1	0	1	35
Honours	5	2	7	0	0	0	0	0	0	0	0	0	7
Masters	9	5	14	0	0	0	2	0	2	0	0	0	16
TOTAL	**26**	**12**	**38**	**1**	**0**	**1**	**14**	**4**	**18**	**1**	**0**	**1**	**58**

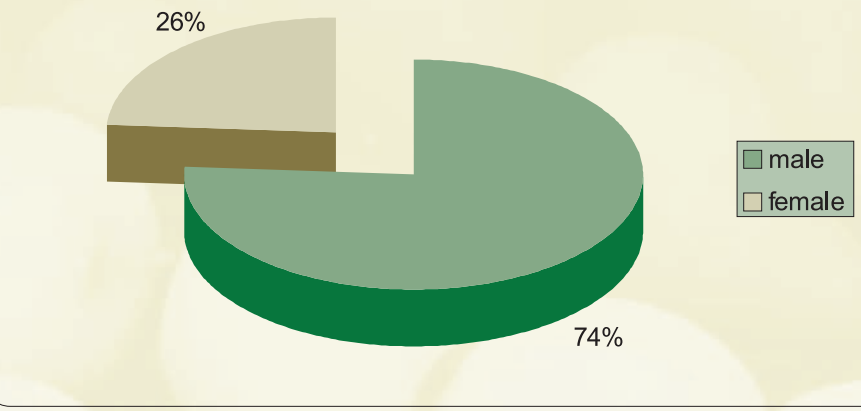
Fifty eight (58) students enrolled in this CESM at universities during the 2004 academic year. Undergraduate enrolments accounted for 60% of the enrolments in this CESM, Masters constituted 28% and Honours accounted for 12%.

Figure 111: Racial breakdown of undergraduate in Horticulture (Inst.Agrar.) enrolments



Thirty five (35) students enrolled at Undergraduate level in this CESM during the 2004 academic year at universities. Figure 111 shows that African students constituted 48% of the Undergraduate enrolments in this CESM followed by Whites with 46%. Coloured and Indian students collectively constituted 6% of the Undergraduate enrolments in this CESM during the 2004 academic year.

Figure 112: Gender breakdown of undergraduate in Horticulture (Inst.Agrar.) enrolments



Male students dominated the Undergraduate enrolments in this CESM with 74% and female students constituted only 26%. African and White males each constituted 46% of the male enrolments at Undergraduate level in this CESM. Coloured and Indian males collectively constituted 8% of the enrolments at Undergraduate level in this CESM.

Seven (7) students enrolled at Honours level in this CESM during the 2004 academic year. All students enrolled at Honours level in this CESM were Africans. Five (5) were males and 2 were females. Sixteen (16) students enrolled at Masters level, 14 were African students and 2 were White students.

4.3.4.5 Land Reclamation (Inst.Agrar. Stream) Enrolments at Universities in 2004

The CESM includes B.Inst.Agrar, B.Inst.Agrar. Honours and M.Inst.Agrar. Sixteen (16) students were enrolled at universities in this CESM or during the 2004 academic year at universities. Table 73 presents a demographic breakdown of Land Reclamation (Inst.Agrar. Stream) enrolment during the 2004 academic year by level of qualification.

Table 73: Demographic breakdown of Land Reclamation (Inst.Agrar. Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	3	7	0	0	0	2	0	2	0	0	0	9
Honours	3	0	3	0	0	0	0	0	0	0	0	0	3
Masters	2	0	2	0	0	0	2	0	2	0	0	0	4
TOTAL	**9**	**3**	**12**	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**0**	**0**	**16**

Nine (9) students enrolled at Undergraduate level in this CESM of which 7 were African students and 2 were White students. Three (3) students were enrolled at Honours level in the CESM during the 2004 academic year and all 3 students were African males. Four (4) students enrolled at Masters level in this CESM during the 2004 academic year at universities. Two (2) were African males and 2 were White males.

4.3.4.6. Rural Development (Inst.Agrar. Stream) Enrolments at Universities in 2004

This CESM encompasses B.Inst.Agrar, B.Inst.Agrar, Honours and M.Inst.Agrar. This programme is only offered by the University of Pretoria. Fifty eight (58) students enrolled in this CESM during the 2004 academic year at universities. Table 74 presents a demographic breakdown of Rural Development (Inst.Agrar. Stream) enrolment during the 2004 academic year by level of qualification.

Table 74: Demographic breakdown of Rural Development (Inst.Agrar. Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	32	9	41	0	0	0	3	1	4	0	0	0	45
Masters	9	3	12	0	0	0	1	0	1	0	0	0	13
TOTAL	**41**	**12**	**53**	**0**	**0**	**0**	**4**	**1**	**5**	**0**	**0**	**0**	**58**

Forty five (45) African students enrolled at Undergraduate level in this CESM during the 2004 academic year at universities, of which 41 are African students and 4 are White students. Masters enrolments for this CESM constituted 13 students, of which 12 are African and 1 is White.

4.3.4.7 Agriculture Economics (Inst.Agrar. Stream) Enrolments at Universities in 2004

The CESM comprises B.Inst.Agrar., B.Inst.Agrar. Honours and M.Inst.Agrar. Thirty six (36) students enrolled in this CESM during the 2004 academic year at universities, of which 13 were at Honours level and 23 at Masters level. Table 75 presents a demographic breakdown of Agric. Economics (Inst.Agrar. Stream) enrolment during the 2004 academic year by level of qualification.

Table 75: Demographic breakdown of Agriculture Economics (Inst.Agrar. Stream) enrolments at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	7	5	12	0	0	0	0	0	0	1	0	1	13
Masters	16	6	22	0	1	1	0	0	0	0	0	0	23
TOTAL	**23**	**11**	**34**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**36**

Thirteen (13) students enrolled at Honours level in this CESM during the 2004 academic year, 12 students were Africans and 1 was Indian. Twenty three (23) students enrolled at Masters level in this CESM during the 2004 academic year, 22 were Africans and 1 was Coloured.

4.3.4.8 Environmental Management (Inst.Agrar. Stream) Enrolments at Universities in 2004

The only enrolments in this CESM during the 2004 academic year were at Masters level. Of the seven students enrolled, 5 were Whites and 2 were Africans. Gender breakdown depicts that 2 males were registered for the programmes in this CESM during the 2004 academic year.

4.3.4.9 Agronomy (Inst.Agrar. Stream) Enrolments at Universities at 2004

Six (6) students enrolled in this CESM at universities during the 2004 academic year at Masters level. All the students were Africans; 4 were males and 2 were females.

4.3.4.10 Agricultural Extension (Inst.Agrar. Stream) Enrolments at Universities in 2004

Agricultural Extension (Inst.Agrar. Stream) CESM consists of B.Inst.Agrar., B Inst.Agrar. Honours, M.Inst.Agrar and PhD. Eight (8) students enrolled at Masters level in this CESM academic year. All the students were Africans; 7 were males and 1 was female.

4.4 AET Graduates at Universities in 2004

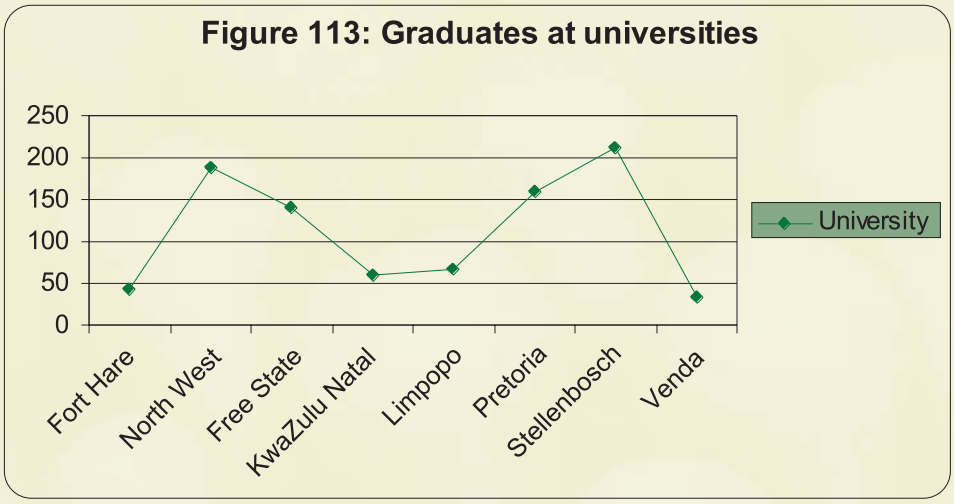
Table 76 indicates that University of Stellenbosch produced 22% of the total graduates during the 2004 academic year followed by the University of North West with 21%. The University of Pretoria accounted for 18% of the total graduates at universities during the 2004 academic year and the University of Free State produced 16% of the total graduates during the 2004 academic year at universities. All other universities each produced less than 10% of the graduate figure.

Table 76: AET graduate figures at universities in 2004

Name of the university	Number of AET graduates	Percentage (%)
University of Fort Hare	44	5
University of North West	189	21
University of Free State	141	16
University of KwaZulu-Natal	60	7
University of Limpopo	66	7

Table 76: AET graduate figures at universities in 2004		
Name of the university	**Number of AET graduates**	**Percentage (%)**
University of Pretoria	160	18
University of Stellenbosch	211	22
University of Venda	34	4
Total	**905**	**100**

Table 76 and figure 113 show that Universities of Stellenbosch, North West, Pretoria and Free State produced more graduates during the 2004 academic year. Graduates produced by the four universities constituted 77% of the total AET graduates at universities in 2004.



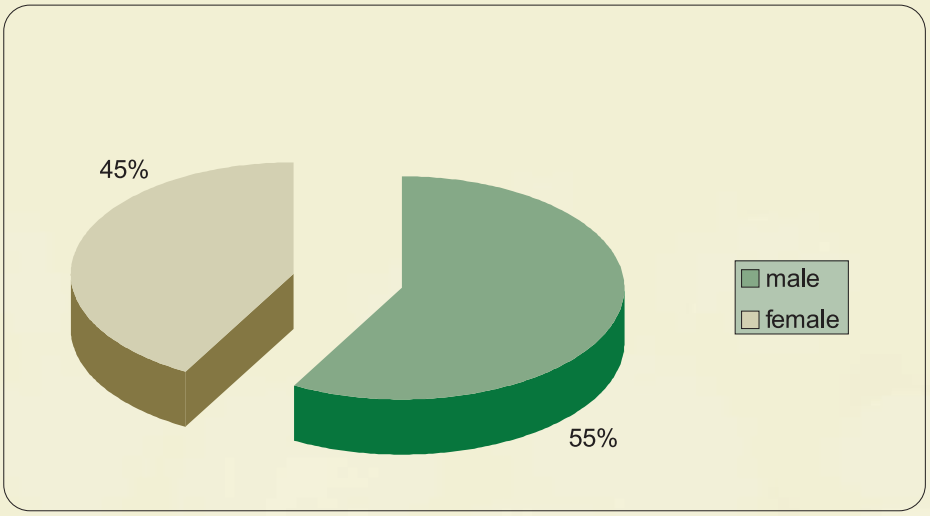
4.4.1 Demographic Breakdown of AET Graduates at Universities in 2004

Table 77 presents a demographic breakdown of graduate figures in AET programmes during the 2004 academic year at universities.

Table 77: Demographic breakdown of AET graduates at universities in 2004.													
Name of the university	**African**			**Coloured**			**White**			**Indian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
University Fort Hare	27	17	44	0	0	0	0	0	0	0	0	0	44
University North West	76	113	189	0	0	0	0	0	0	0	0	0	189
University of Free State	38	9	47	1	0	1	68	23	91	1	1	2	141
University of KwaZulu-Natal	9	22	31	0	0	0	17	11	28	1	0	1	60
University of Limpopo	38	28	66	0	0	0	0	0	0	0	0	0	66
University of Pretoria	53	32	85	1	0	1	35	37	72	2	0	2	160
University of Stellenbosch	17	10	27	3	1	4	99	79	178	2	0	2	211
University of Venda	8	26	34	0	0	0	0	0	0	0	0	0	34
Total	**266**	**257**	**523**	**5**	**1**	**6**	**219**	**150**	**369**	**6**	**1**	**7**	**905**

African and White graduates constituted the most significant figures overall. African graduates accounted for 57% and White graduates constituted 41% of the total universities graduates during the 2004 academic year. Coloured and Indian graduates collectively constituted 2%. Gender breakdown indicates that male graduates dominated the universities graduates with 55% and female graduates constituted only 45% of the total graduates during the 2004 academic year at universities.

African male graduates dominated the male graduates with 54% and White male graduates comprised 44% of the total male graduates during the 2004 academic year. Coloured and Indian male graduates collectively accounted for only 2%.



There were 496 male graduates and 409 female graduates produced by South African universities during the 2004 academic year. Figure 114 depicts that male graduates contributed a larger percentage of the total graduates at 55%, while female graduates contributed 45%.

Figure 115: Racial breakdown of AET graduates at universities

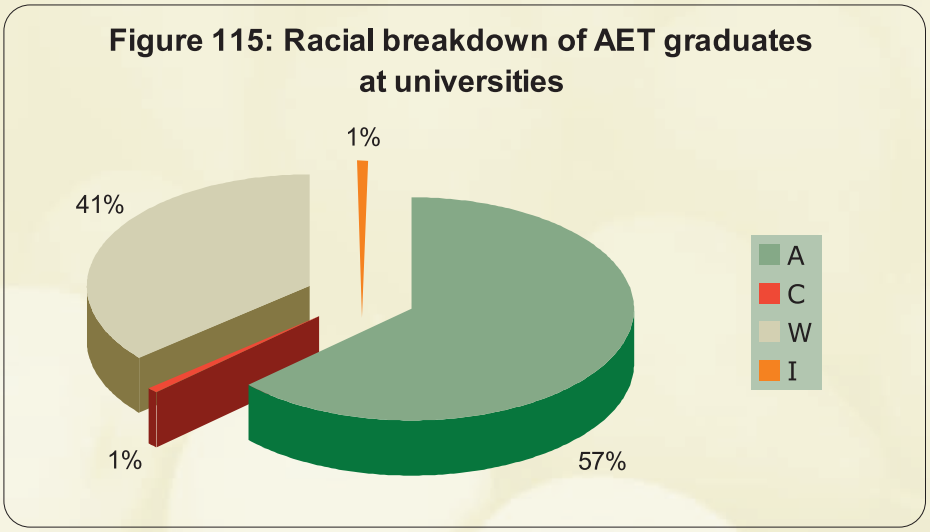


Figure 115 depicts that African graduates dominated at 57% and White graduates constituted 41%. Coloured and Indian graduates collectively accounted for 2% of the total AET graduates produced during the 2004 academic year.

Figure 116: Racial breakdown of female AET graduates at universities

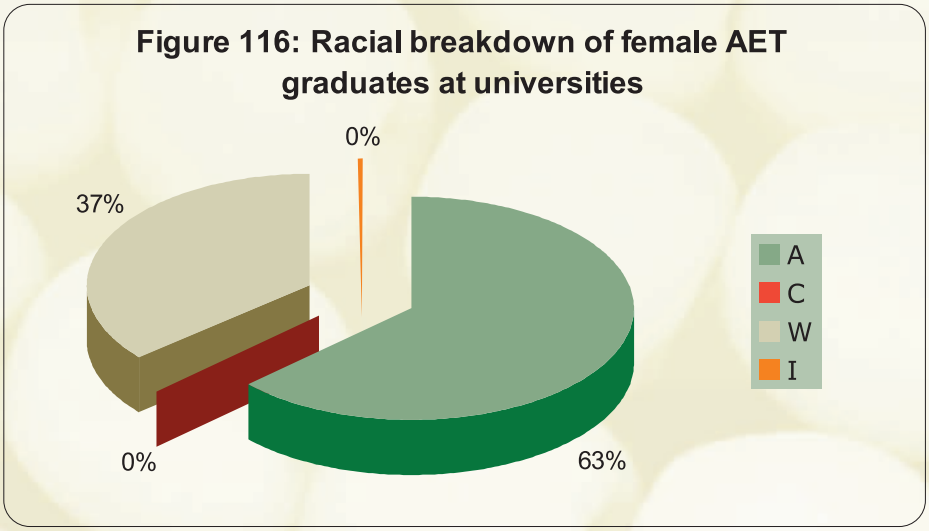


Figure 116 depicts that African female graduates dominated the female graduate population at 63% and White female graduates constituted only 37%. Coloureds and Indians each produced less than 1% of the total AET female graduates during the 2004 academic year.

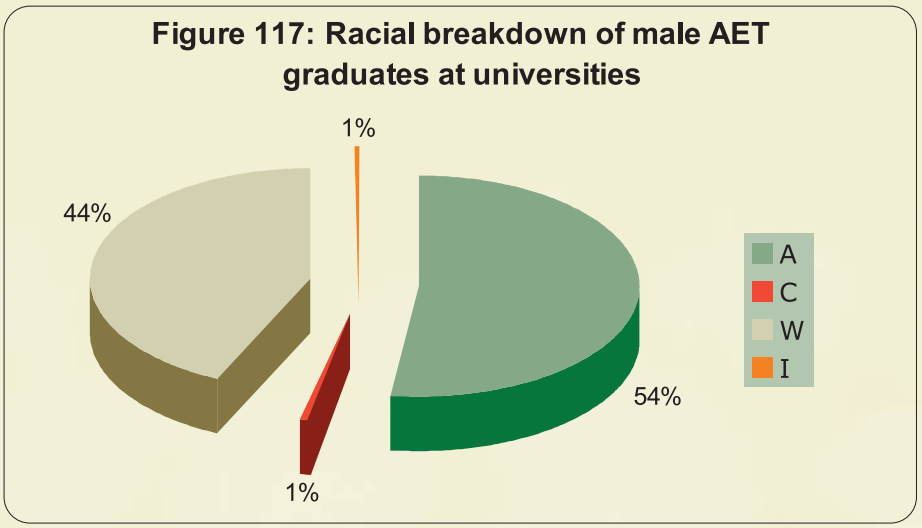


Figure 117 presents the breakdown according to race of AET male graduates produced by universities during the 2004 academic year. African males dominance is prevalent with 54% and they are followed by White male graduates with 44% of the overall male graduates. Coloured and Indian males together constituted only 2% of the overall male graduates at universities during the 2004 academic year.

4.4.2 AET Graduates at Universities by CESM in 2004

Table 78 presents AET graduates at universities by level of qualification per CESM and demographic breakdown of graduates by CESM.

Table 78: Agricultural graduates at universities by CESM and level of qualification

CESM	Undergraduate	Honours	Masters	PhD	Total	%
Agric Economics	19	54	11	0	84	9
Agriculture Science (B.Agric. Stream)	74	6	3	35	118	13
Agric. Science(Science Stream)	119	6	113	0	238	26
Agricultural Extension	16	12	5	2	35	4
Agricultural Food Technology	29	4	9	3	45	5
Animal Science	173	17	6	1	197	22
Plant Science	9	9	2	0	20	2
Horticulture	5	0	4	4	13	1
Soil Science	3	2	3	1	9	1
Forestry	8	1	2	1	12	1
Land Reclamation	2	0	0	0	2	0
Agric. Management	19	15	15	0	49	5
Renewable Natural Resources	0	0	2	0	2	0
Agric Food Tech.(Inst.Agrar. Stream)	1	0	0	0	1	0
Animal Science (Inst.Agrar. Stream)	5	0	0	0	5	1
Horticulture (Inst.Agrar. Stream)	3	5	0	0	8	1
Rural Development (Inst.Agrar. Stream)	8	2	0	0	10	1
Wildlife	0	2	0	0	2	0
Land Reclamation (Inst.Agrar. Stream)	0	1	0	0	1	0
Other Agric. and Renewable Resources	0	0	30	0	30	3

Table 78: Agricultural graduates at universities by CESM and level of qualification						
CESM	Undergraduate	Honours	Masters	PhD	Total	%
Agric. Economics (Inst.Agrar. Stream)	0	6	0	0	6	1
Agribusiness Management (Inst.Agrar. Stream)	0	16	0	0	16	2
Agric Extension (Inst.Agrar. Stream)	0	2	0	0	2	0
TOTAL	**493**	**160**	**205**	**47**	**905**	**100**

Table 78 indicates that Agricultural Science (Science Stream), Animal Science and Agricultural Science (Art Stream) produced 26%, 22% and 13% respectively. Other CESM constituted less than 10% of the total AET graduates produced at universities during the 2004 academic year.

4.4.3 Breakdown of AET Graduates at Universities by CESM in 2004

Graduates in Undergraduate Programmes by CESM at Universities in 2004

Table 79 outlines the graduates for the Undergraduate stream at universities in 2004.

Table 79: Graduates in Undergraduate programmes by CESM at universities in 2004													
CESM Category	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agric. Economics	9	8	17	0	0	0	1	1	2	0	0	0	19
Agricultural Science (Art Stream)	18	30	48	0	0	0	15	11	26	0	0	0	74
Agricultural Science (Science Stream)	11	12	23	0	0	0	64	32	96	0	0	0	119
Agricultural Extension	11	5	16	0	0	0	0	0	0	0	0	0	16
Agricultural Food Technology	3	5	8	0	0	0	0	21	21	0	0	0	29
Animal Science	59	81	140	0	0	0	18	15	33	0	0	0	173
Plant Science	4	5	9	0	0	0	0	0	0	0	0	0	9
Horticulture	1	0	1	0	0	0	3	1	4	0	0	0	5
Soil Science	1	0	1	0	0	0	2	0	2	0	0	0	3
Forestry	2	0	2	0	0	0	6	0	6	0	0	0	8
Land Reclamation	1	1	2	0	0	0	0	0	0	0	0	0	2
Agric. Management	3	0	3	0	0	0	14	2	16	0	0	0	19
Agric. Food Tech. (Inst.Agrar. Stream)	0	1	1	0	0	0	0	0	0	0	0	0	1
Animal Science (Inst.Agrar. Stream)	2	1	3	0	0	0	2	0	2	0	0	0	5
Horticulture (Inst.Agrar. Stream)	0	2	2	0	0	0	0	1	1	0	0	0	3
Rural Development (Inst.Agrar. Stream)	7	0	7	0	0	0	0	1	1	0	0	0	8
TOTAL	**132**	**151**	**283**	**0**	**0**	**0**	**125**	**85**	**210**	**0**	**0**	**0**	**493**

Table 79 shows that Animal Science, Agricultural Science (Science Stream), Agricultural Science (Art Stream) and Agricultural Food Technology constituted 34%, 24%, 15% and 6% respectively. Other categories produced less than 5% each of the total AET graduates during the 2004 academic year.

African graduates and White graduates constituted 57% and 43% respectively. No Coloured and Indian Undergraduates were produced at universities during the 2004 academic year.

Honours Graduates by CESM at Universities in 2004

Table 80 outlines the Honours graduates at universities in 2004.

Table 80: Honours graduates by CESM at universities in 2004

CESM Category	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agric. Economics	16	17	33	0	0	0	12	9	21	0	0	0	54
Agricultural Science (Art Stream)	1	2	3	0	0	0	3	0	3	0	0	0	6
Agricultural Science (Science Stream)	2	0	2	0	0	0	3	1	4	0	0	0	6
Agricultural Extension	5	7	12	0	0	0	0	0	0	0	0	0	12
Agricultural Food Technology	2	2	4	0	0	0	0	0	0	0	0	0	4
Animal Science	7	10	17	0	0	0	0	0	0	0	0	0	17
Plant Science	3	5	8	0	0	0	0	1	1	0	0	0	9
Soil Science	1	1	2	0	0	0	0	0	0	0	0	0	2
Forestry	0	1	1	0	0	0	0	0	0	0	0	0	1
Agric. Management	7	3	10	0	0	0	5	0	5	0	0	0	15
Wildlife	0	0	0	0	0	0	1	1	2	0	0	0	2
Agric Economics (Inst.Agrar. Stream)	3	2	5	0	0	0	1	0	1	0	0	0	6
Agribusiness Man. (Inst.Agrar. Stream)	12	4	16	0	0	0	0	0	0	0	0	0	16
Agric Ext (Inst.Agrar. Stream)	1	0	1	0	0	0	0	0	0	1	0	1	2
Horticulture (Inst.Agrar. Stream)	3	2	5	0	0	0	0	0	0	0	0	0	5
Rural Development (Inst.Agrar. Stream)	0	2	2	0	0	0	0	0	0	0	0	0	2
Land Reclamation (Inst.Agrar. Stream)	1	0	1	0	0	0	0	0	0	0	0	0	1
Total	**64**	**58**	**122**	**0**	**0**	**0**	**27**	**12**	**37**	**1**	**0**	**1**	**160**

Table 80 depicts that Agricultural Economics constituted 34% of the Honours graduates, followed by Animal Science with 11% and Agribusiness Management (Inst.Agrar. Stream) with 10% of the total number of Honours graduates. Other CESM recorded the lowest number of graduates with Land Reclamation, Rural Development and Wildlife constituting less than 3% of the total number of Honours graduates.

African graduates dominated Honours graduates with 76% and White graduates accounted for 23%. Indian graduates constituted 1% of the total Honours graduates. No Honours were awarded to Coloureds in AET programmes at universities during the 2004 academic year.

Masters Graduates by CESM at Universities in 2004

Table 81 outlines the graduates for the Masters programmes at universities during the 2004 academic year.

Table 81: Masters graduates by CESM at universities in 2004

CESM Category	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agric. Economics	4	3	7	0	0	0	1	3	4	0	0	0	11
Agricultural Science (Art Stream)	2	0	2	0	0	0	0	1	1	0	0	0	3
Agricultural Science (Science Stream)	29	20	49	0	1	1	35	24	59	3	1	4	113
Agricultural Extension	4	1	5	0	0	0	0	0	0	0	0	0	5
Agricultural Food Technology	0	2	2	0	0	0	1	6	7	0	0	0	9
Animal Science	1	0	1	0	0	0	4	1	5	0	0	0	6
Plant Science	0	1	1	0	0	0	1	0	1	0	0	0	2
Horticulture	3	1	4	0	0	0	0	0	0	0	0	0	4
Soil Science	1	1	2	0	0	0	1	0	1	0	0	0	3
Forestry	0	1	1	0	0	0	1	0	1	0	0	0	2
Renewable Natural Resources	2	0	2	0	0	0	0	0	0	0	0	0	2
Agric. Management	5	4	9	1	0	1	4	1	5	0	0	0	15
Other Agric. and Renewable Resources	1	0	1	0	0	0	13	15	28	1	0	1	30
TOTAL	**62**	**34**	**86**	**1**	**1**	**2**	**61**	**51**	**112**	**4**	**1**	**5**	**205**

Table 81 indicates that Agricultural Science (Science Stream) dominated Masters graduates with 56% of the total number of graduates in Masters, Other Agric. Renewable Resources constituted 16% and the other CESM categories produced very low figures.

White graduates constituted the highest number of Masters with 55%, followed by African graduates with 42% of the total number of Masters graduates during the 2004 academic year. Coloured and Indian graduates constituted a very low number of the total Masters graduates produced during the 2004 academic year.

PhD Graduates by CESM at Universities in 2004

Table 82 outlines the graduates in the PhD programmes at universities during the 2004 academic year.

Table 82: PhD graduates by CESM at universities in 2004

CESM Category	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Science (Art Stream)	4	6	10	0	0	0	13	12	25	0	0	0	35
Agricultural Extension	0	1	1	0	0	0	0	0	0	0	1	1	2
Agricultural Food Technology	0	1	1	0	0	0	2	0	2	0	0	0	3
Horticulture	2	0	2	0	0	0	1	1	2	0	0	0	4
Animal Science	0	0	0	0	0	0	0	1	1	0	0	0	1
Soil Science	0	0	0	1	0	1	0	0	0	0	0	0	1
Forestry	1	0	1	0	0	0	0	0	0	0	0	0	1
TOTAL	**7**	**8**	**15**	**1**	**0**	**1**	**16**	**14**	**30**	**0**	**1**	**1**	**47**

The data in table 82 depicts that Agricultural Science (Art. Stream) dominated the PhD graduates with 75% followed by Horticulture with 9% and Agricultural Food Technology with 6%. It also indicates that 4 other categories constituted less than 5% of the total number of PhD graduates.

White graduates dominated with 64%, followed closely by African graduates with 32%, of the total number of PhD graduates during the 2004 academic year. Coloured and Indian graduates each constituted 2% of the overall PhD graduates during the 2004 academic year at universities.

4.4.3.1 Agricultural Economics Graduates at Universities in 2004

This CESM is divided into the Science Stream (BSc Agric. Economics, BSc Agric. Economics (Hons), MSc Agric. Economics and PhD) , the Art Stream (B. Agric. Economics, B. Agric. Economics (Hons), M. Agric. Economics and PhD) and the Philosophy Stream (B Philosophy, B Philosophy (Hons), MPhil and PhD) .This CESM produced 84 graduates at universities during the 2004 academic year. Table 83 presents a demographic breakdown of Agricultural Economics graduates during the 2004 academic year by level of qualification.

Table 83: Demographic breakdown of Agricultural Economics graduates at universities in 2004

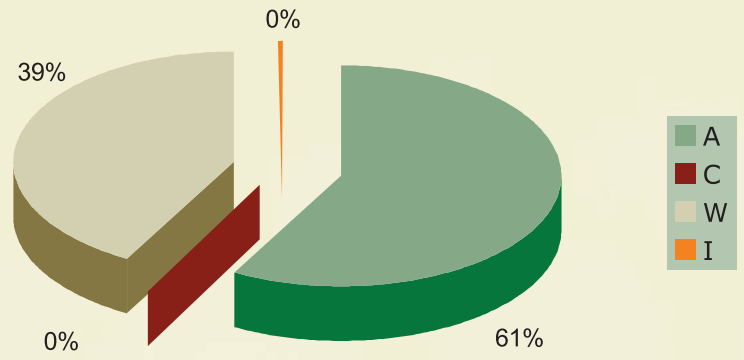
LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	9	8	17	0	0	0	1	1	2	0	0	0	19
Honours	16	17	33	0	0	0	12	9	21	0	0	0	54
Masters	4	3	7	0	0	0	1	3	4	0	0	0	11
TOTAL	**29**	**28**	**57**	**0**	**0**	**0**	**14**	**13**	**27**	**0**	**0**	**0**	**84**

Honours in this CESM comprised 64% of Agricultural Economics graduates followed by Undergraduate with 23% and Undergraduate graduates constituted 13%. No PhD graduates were produced in Agricultural Economics during the 2004 academic year.

Seventeen (17) Africans and 2 Whites graduated in Agricultural Economics at Undergraduate level at universities during the 2004 academic year. Ten (10) were males and 9 were females. BSc Agric. Economics Degree constituted 10 graduates: 5 of them were males and 5 were females. B. Agric. Economics Degree produced 9 graduates: Five (5) were males and 4 were females.

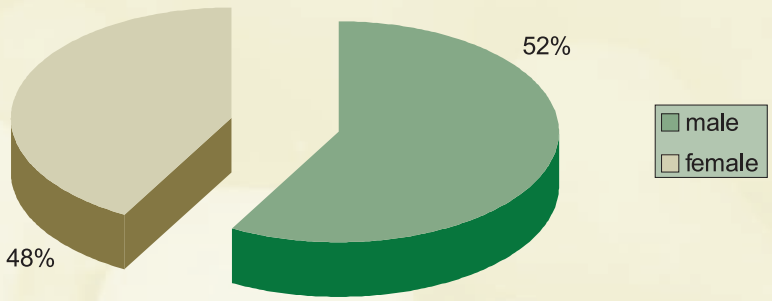
Honours produced 54 graduates during the 2004 academic year at universities. The BSc Agric. Economics (Hons) produced 59% of the Honours graduates while B. Agric. Economics (Hons) constituted 41%. African graduates accounted for 84% of the BSc Agric. Economics (Hons) while White graduates constituted 16%. Male and female graduates constituted an equal distribution of 50% each of the BSc Agric. Economics. Out of the 22 graduates produced in the B. Agric. Economics (Hons) African graduates amount to 19 and White graduates constitute 3. Eleven (11) of them were females and 11 were males.

Figure 118: Racial breakdown of Honours in Agricultural Economics graduates



Breakdown according to race in figure 118 depicts that African graduates dominated with 61%, followed by White graduates with 39% of the Honours in this CESM. No Coloured and Indian graduates were produced in this programme at universities during the 2004 academic year.

Figure 119: Gender breakdown of Honours in Agricultural Economics graduates



Male graduates dominated the Honours graduates in Agricultural Economics with 52% and female graduates constituted 48%.

Eleven (11) Masters Degree graduates were produced in this CESM during the 2004 academic year and 8 were produced in the MSc Agric. Economics, 2 graduates were produced in the M. Agric and 1 graduate was produced in the MPhil. Seven (7) were Africans and 4 were Whites. Female graduates constituted 55% and male graduates produced 45% of the Agricultural Economics Masters graduates at universities during the 2004 academic year.

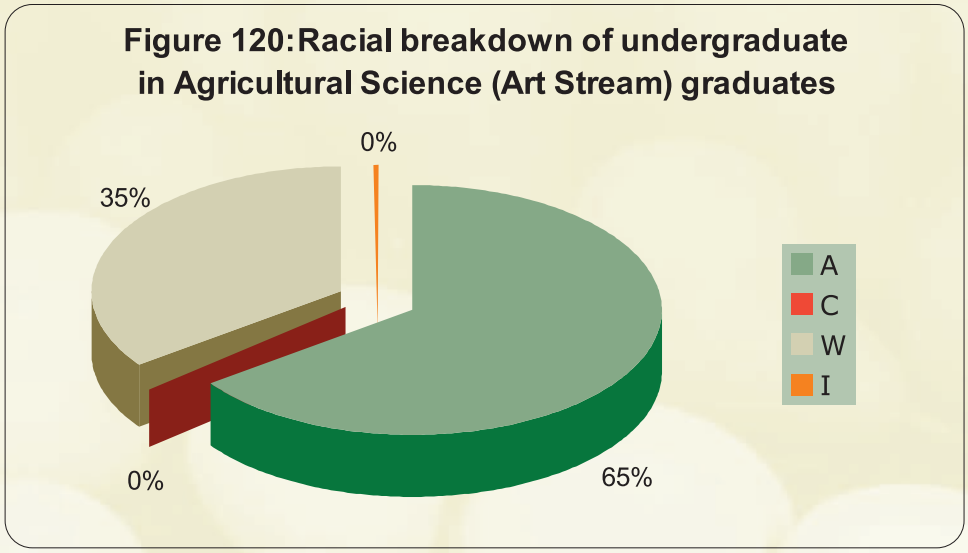
4.4.3.2 Agricultural Science (Art. Stream) Graduates at Universities

One hundred and eight (108) graduates were produced in this CESM at universities during the 2004 academic year. Table 84 presents a demographic breakdown of Agricultural Science (Art. Stream) graduates during the 2004 academic year by level of qualification.

Table 84: Demographic breakdown of Agricultural Science (Art. Stream) graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	18	30	48	0	0	0	15	11	26	0	0	0	74
Honours	1	2	3	0	0	0	3	0	3	0	0	0	6
Masters	2	0	2	0	0	0	0	1	1	0	0	0	3
PhD	4	6	10	0	0	0	13	12	25	0	0	0	35
TOTAL	**25**	**38**	**63**	**0**	**0**	**0**	**31**	**24**	**55**	**0**	**0**	**0**	**118**

Graduates in the Undergraduate programme in the CESM constituted a large percentage 62% PhD graduates constituted 30%, Honours graduates accounted for 5% and Masters graduates constituted 3%.



Agricultural Science (Art. Stream) Undergraduate level produced 74 graduates at universities during the 2004 academic year. Figure 120 presents a breakdown according to race of the Agricultural Science (Art. Stream) Undergraduate programmes. African graduates dominated with 65% and White graduates constituted 35% of the total graduates for the programme.

Figure 121: Gender breakdown of undergraduate in Agricultural Science (Art Stream) graduates

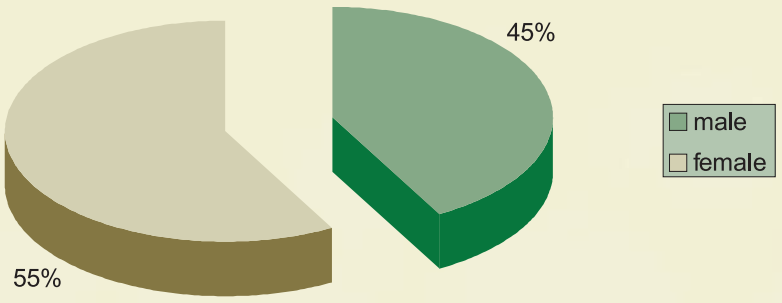
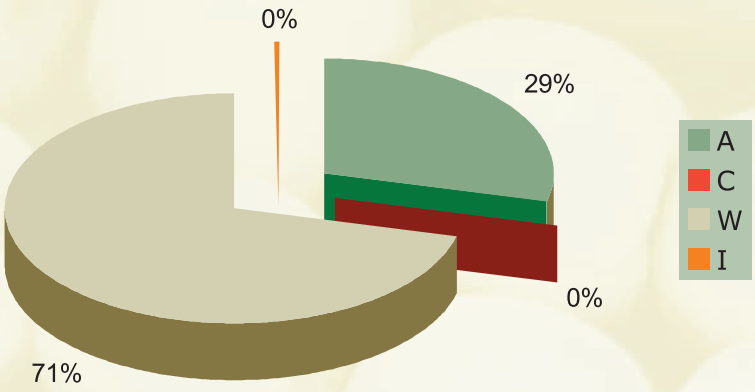


Figure 121 indicates that female graduates accounted for 55% and male graduates constituted 45% of the Agricultural Science (Art. Stream) Undergraduate programmes. African females comprised 73% of the female graduates and White females comprised 27%.

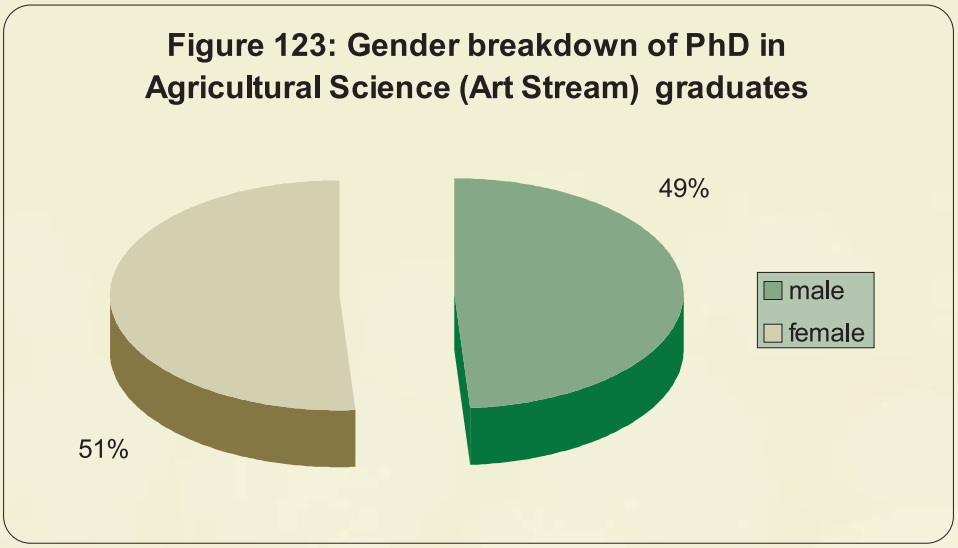
Six (6) students graduated with Honours in Agricultural Science (Art. Stream) at universities during the 2004 academic year. Three (3) graduates were Africans and the other 3 were Whites. No graduates from other racial groups were produced in this CESM at Honours. Male graduates constituted 67% and female graduates accounted for 33% of the overall Honours graduates in this CESM.

Three (3) graduates were produced in this CESM at universities during the 2004 academic year. Two (2) were Africans and 1 was White. Thirty five (35) PhD graduates in this CESM were produced during the 2004 academic year, 25 were White and 10 were Africans.

Figure 122: Racial breakdown of PhD in Agricultural Science (Art Stream) graduates



Breakdown according to race in figure 122 depicts that White graduates for the PhD degree comprised 71%, followed by African graduates with only 29% in this CESM during the 2004 academic year.



Female graduates accounted for 51% and male graduates constituted 49% of the PhD graduates in this CESM. White females accounted for 67% of the female PhD graduates, while African females constituted 33% of the female PhD graduates.

4.4.3.3 Agricultural Science (Science Stream) Graduates at Universities in 2004

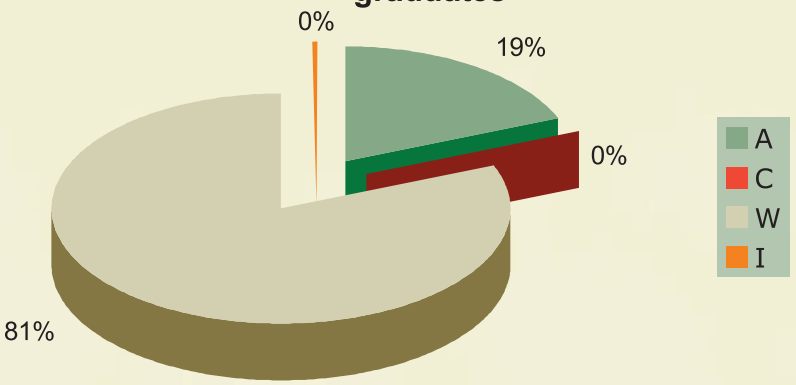
Two hundred and forty nine (249) graduates in this CESM were produced at universities during the 2004 academic year. Table 85 presents a demographic breakdown of Agricultural Science (Science Stream) graduates during the 2004 academic year by level of qualification.

Table 85: Demographic breakdown of Agricultural Science (Science Stream) graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	12	23	0	0	0	64	32	96	0	0	0	119
Honours	2	0	2	0	0	0	3	1	4	0	0	0	6
Masters	29	20	49	0	1	1	35	24	59	3	1	4	113
TOTAL	**42**	**32**	**74**	**0**	**1**	**1**	**102**	**57**	**159**	**3**	**1**	**4**	**238**

Graduates in Undergraduate programmes constituted 50% in this CESM. Masters accounted for 47% and Honours graduates constituted only 3% of the total graduates in this CESM.

Figure 124: Racial breakdown of undergraduate in Agricultural Science (Science Stream) graduates



The Undergraduate programmes in this CESM produced 119 graduates during the 2004 academic year at universities. In figure 124 the breakdown of graduates according to race in this CESM at Undergraduate level indicates that White graduates comprised 81% and African graduates constituted 19%. No Coloured and Indian graduates were produced at Undergraduate level in this CESM.

Figure 125: Gender breakdown of undergraduate in Agricultural Science (Science Stream) graduates

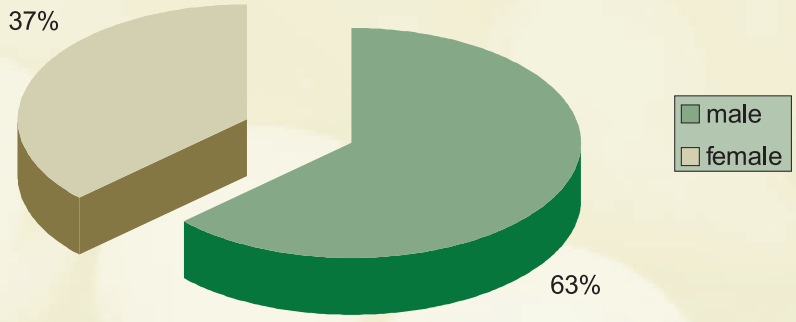
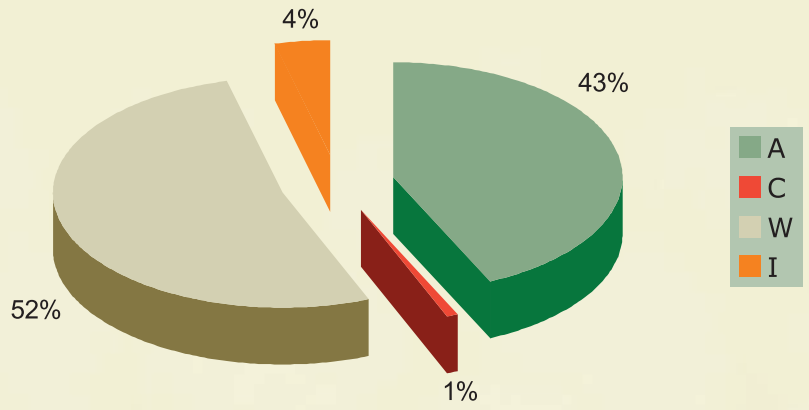


Figure 125 depicts that male graduates constituted 63% and female graduates accounted for 37% of graduates in this CESM at Undergraduate level. White and African males constituted 85% and 15% respectively of the male graduates in this CESM at Undergraduate level .

Six (6) Honours graduates were produced in this CESM at universities during the 2004 academic year. Four (4) were Whites and 2 were Africans. Male graduates constituted 83% and female graduates constituted only 17% of the Honours graduates in this CESM during the 2004 academic year.

Figure 126: Racial breakdown of Masters in Agricultural Science (Science Stream) graduates



One hundred and thirteen (113) graduates were produced at Masters level during the 2004 academic year at universities. Breakdown according to race in figure 126 shows that White graduates constituted 52% of graduates in this CESM at Masters level followed by African graduates with 43%. Indian and Coloured graduates comprised 4% and 1% of the Masters graduates in this CESM respectively.

Figure 127:Gender breakdown of Masters in Agricultural Science (Science Stream) graduates

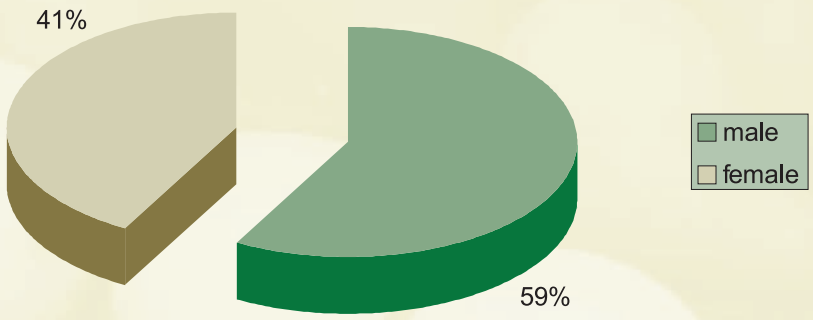


Figure 127 presents a gender breakdown of the Agricultural Science (Science Stream) Masters graduates. Male graduates constituted 59% and female graduates accounted for 41%. White male graduates dominated the male graduates at the Masters level in this CESM with 53% and African males constituted 43%. Indian male graduates constituted only 4% of the male graduates at Masters level in this CESM during the 2004 academic year.

4.4.3.4 Agricultural Extension Graduates at Universities in 2004

Thirty five (35) graduates were awarded with Agricultural Extension qualifications at universities during the 2004 academic year. Table 86 presents a demographic breakdown of Agricultural Extension graduates during the 2004 academic year by level of qualification.

Table 86: Demographic breakdown of Agricultural Extension graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	5	16	0	0	0	0	0	0	0	0	0	16
Honours	5	7	12	0	0	0	0	0	0	0	0	0	12
Masters	4	1	5	0	0	0	0	0	0	0	0	0	5
PhD	0	1	1	0	0	0	0	0	0	0	1	1	2
TOTAL	**20**	**14**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**35**

Forty six percent (46%) of the graduates in this CESM were produced at the Undergraduate level followed by Honours with 34%. Masters and PhD graduates in Agricultural Extension collectively constituted 20% of the total graduates during the 2004 academic year.

Sixteen (16) African graduates were produced in Agricultural Extension at Undergraduate level at universities during the 2004 academic year. Sixty nine percent (69%) were males and 31% were females. Table 86 shows that 12 African graduates were produced at Honours level in this CESM during the 2004 academic year. Females constituted 58% of the Honours graduates in this CESM while males accounted for 42%.

Five (5) African graduates were produced in this CESM at Masters level, 4 were males and 1 was female. Two (2) graduates were produced at PhD level in this CESM during the 2004 academic year at universities, 1 was an African female and 1 was an Indian female.

4.4.3.5 Agricultural Food Technology Graduates at Universities in 2004

Forty five (45) graduates were produced in this CESM during the 2004 academic year at universities. Table 87 presents a demographic breakdown of Agricultural Food Technology graduates during the 2004 academic year academic year by level of qualification.

Table 87: Demographic breakdown of Agricultural Food Technology graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	5	8	0	0	0	0	21	21	0	0	0	29
Honours	2	2	4	0	0	0	0	0	0	0	0	0	4
Masters	0	2	2	0	0	0	1	6	7	0	0	0	9
PhD	0	1	1	0	0	0	2	0	0	0	0	0	3
TOTAL	**5**	**10**	**15**	**0**	**0**	**0**	**3**	**27**	**28**	**0**	**0**	**0**	**45**

Table 87 shows that 64% of the graduates in this CESM were produced at Undergraduate level followed by Masters graduates with 20%. Honours and PhD graduates in this CESM constituted 9% and 7% of the graduates respectively.

Graduates produced at Undergraduate programmes in this CESM accounted for 29 graduates during the 2004 academic year. Twenty one (21) of these graduates were White females, 5 were African females and 2 were African males. Four (4) African graduates were awarded with Honours in Agricultural Food Technology during the 2004 academic year, 2 were males and 2 were females.

Nine (9) graduates were produced at Masters level in Agricultural Food Technology at universities. Seven (7) were Whites and 2 were Africans. Three (3) graduates were produced at PhD level in this CESM during the 2004 academic year at universities, 1 was an African female and 2 were White males.

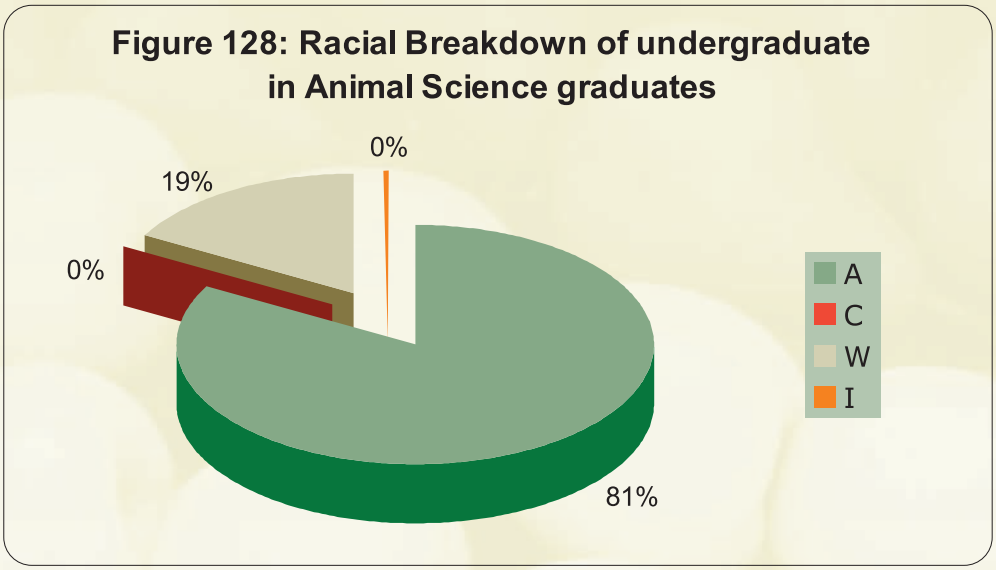
4.4.3.6 Animal Science Graduates at Universities in 2004

In this CESM 197 graduates were produced at universities during the 2004 academic year. Table 88 presents a demographic breakdown of Animal Science graduates during the 2004 academic year by level of qualification.

Table 88: Demographic breakdown of Animal Science graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	59	81	140	0	0	0	18	15	33	0	0	0	173
Honours	7	10	17	0	0	0	0	0	0	0	0	0	17
Masters	1	0	1	0	0	0	4	1	5	0	0	0	6
PhD	0	0	0	0	0	0	0	1	1	0	0	0	1
TOTAL	**67**	**91**	**158**	**0**	**0**	**0**	**22**	**17**	**39**	**0**	**0**	**0**	**197**

Eighty seven percent (87%) of graduates were produced at Undergraduate level followed by Honours graduates with 9% of the total graduates in this CESM. Masters graduates and PhD graduates constituted 3% and 1% respectively.



One hundred and seventy three (173) Animal Science graduates were produced at Undergraduate level at universities during the 2004 academic year. Figure 128 shows that African graduates comprised 81% at the Undergraduate level in this CESM and White graduates constituted 19% of the total graduates at Undergraduate level.

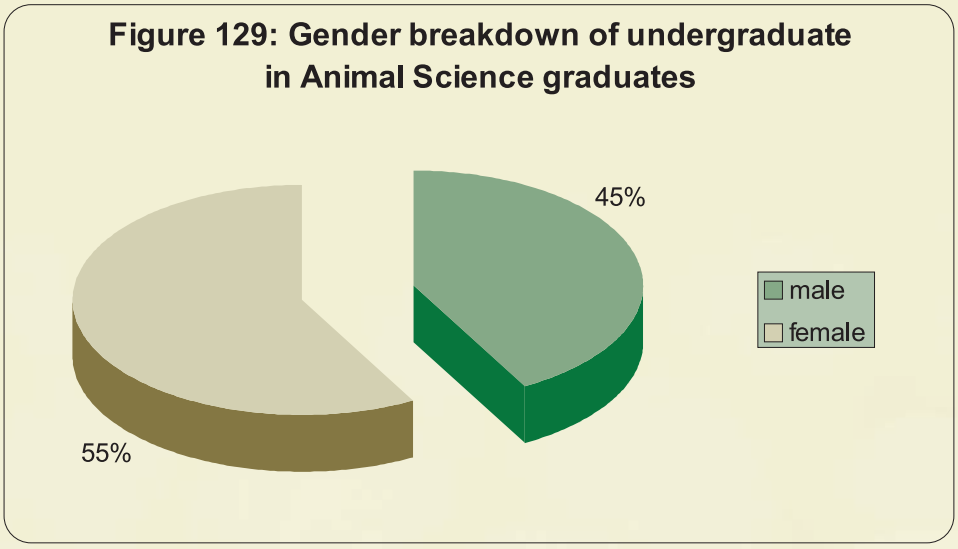


Figure 129 depicts gender breakdown of the Undergraduate graduates in this CESM at universities during the 2004 academic year. Female graduates constituted 55% of the Undergraduate level in this CESM and male graduates accounted for 45%. African females constituted 84% of the female graduates at Undergraduate level in this CESM followed by White females with 16%.

Seventeen (17) African graduates were produced in Animal Science at Honours level at universities during the 2004 academic year, 59% were females and 41% were males. Six (6) graduates were produced at Masters level during the 2004 academic year: Five (5) were Whites and 1 was an African. One (1) White female graduate was produced at PhD level at universities in this CESM during the 2004 academic year.

4.4.3.7 Plant Science Graduates at Universities in 2004

Twenty (20) graduates were produced at universities in this CESM during the 2004 academic year. Table 89 presents a demographic breakdown of Plant Science graduates during the 2004 academic year by level of qualification.

Table 89: Demographic breakdown of Plant Science graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	5	9	0	0	0	0	0	0	0	0	0	9
Honours	3	5	8	0	0	0	0	1	1	0	0	0	9
Masters	0	1	1	0	0	0	1	0	1	0	0	0	2
TOTAL	**7**	**11**	**18**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**20**

The Undergraduate level and Honours level each constituted 45% of graduates in this CESM. The Masters level accounted for 10% of this CESM graduates. No graduates were produced in the PhD level in this CESM.

At Undergraduate level in this CESM, 9 African graduates during the 2004 academic year were produced at universities, 56% were females and 44% were males. Nine (9) graduates were produced at Honours level during the 2004 academic year at universities, 5 were African females, 3 were African males and 1 was a White female. The Masters level in this CESM produced 2 graduates at universities, 1 was an African female and 1 was a White male.

4.4.3.8 Horticulture Graduates at Universities in 2004

Thirteen (13) graduates were produced in this CESM during the 2004 academic year at universities. Table 90 presents a demographic breakdown of Horticulture graduates during the 2004 academic year by level of qualification.

Table 90: Demographic breakdown of Horticulture graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	0	1	0	0	0	3	1	4	0	0	0	5
Masters	3	1	4	0	0	0	0	0	0	0	0	0	4
PhD	2	0	2	0	0	0	1	1	2	0	0	0	4
TOTAL	**6**	**1**	**7**	**0**	**0**	**0**	**4**	**2**	**6**	**0**	**0**	**0**	**13**

The Undergraduate level constituted 38% of the total graduates produced in this CESM. The Masters and PhD levels each constituted 31% of the total graduates produced in this CESM.

Undergraduate level in Horticulture produced 5 graduates during the 2004 academic year: Four (4) were White and 1 was an African. Four (4) African graduates were produced at Masters level during the 2004 academic year, 3 were males and 1 was a female. Four (4) graduates were produced at PhD level, 2 were African males, 1 was a White female and 1 was a White male.

4.4.3.9 Soil Science Graduates at Universities in 2004

Nine (9) graduates were produced in this CESM during the 2004 academic year at universities. Table 91 presents a demographic breakdown of Soil Science graduates during the 2004 academic year by level of qualification.

Table 91: Demographic breakdown of Soil Science graduates at universities 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	0	1	0	0	0	2	0	2	0	0	0	3
Honours	1	1	2	0	0	0	0	0	0	0	0	0	2
Masters	1	1	2	0	0	0	1	0	1	0	0	0	3
PhD	0	0	0	1	0	1	0	0	0	0	0	0	1
TOTAL	**3**	**2**	**5**	**1**	**0**	**1**	**3**	**0**	**3**	**0**	**0**	**0**	**9**

Thirty four percent (34%) of graduates in this CESM were produced at Undergraduate level followed by Masters level with 33%. Honours and PhD graduates constituted 22% and 11% of graduates in this CESM respectively.

Table 91 depicts that 3 graduates were produced in this CESM at Undergraduate level during the 2004 academic year, 2 were White and 1 was an African. Two (2) African graduates were produced at Honours level at universities during the 2004 academic year, 1 was male and 1 was female. The Masters level in this CESM produced 3 graduates during the 2004 academic year at universities, 2 were African and 1 was White. One (1) Coloured female graduate was produced at PhD level at universities during the 2004 academic year.

4.4.3.10 Forestry Graduates at Universities in 2004

Twelve (12) graduates were produced at universities in this CESM during the 2004 academic year. Table 92 presents a demographic breakdown of Forestry graduates during the 2004 academic year by level of qualification.

Table 92: Demographic breakdown of Forestry graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	0	2	0	0	0	6	0	6	0	0	0	8
Honours	0	1	1	0	0	0	0	0	0	0	0	0	1
Masters	0	1	1	0	0	0	1	0	1	0	0	0	2
PhD	1	0	1	0	0	0	0	0	0	0	0	0	1
TOTAL	**3**	**2**	**5**	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**0**	**0**	**12**

The majority of the graduates in this CESM were produced at Undergraduate and Masters level with 67% and 17% respectively. The Honours and PhD graduates each constituted 8% of the Forestry graduates at universities during the 2004 academic year.

Eight (8) graduates were produced in Forestry at Undergraduate level at universities during the 2004 academic year, 6 were White males and 2 were African males. One (1) African female graduate was produced at Honours level. Masters level produced 2 graduates at universities during the 2004 academic year. These graduates consisted of 1 African female and 1 White male. One (1) African male PhD graduate was produced in this CESM during the 2004 academic year at universities.

4.4.3.11 Land Reclamation Graduates at Universities in 2004

Two (2) graduates were produced at universities in this CESM during the 2004 academic year. These graduates were produced at Undergraduate level and all the graduates were Africans, 1 male and 1 female.

4.4.3.12 Agricultural Management Graduates at Universities in 2004

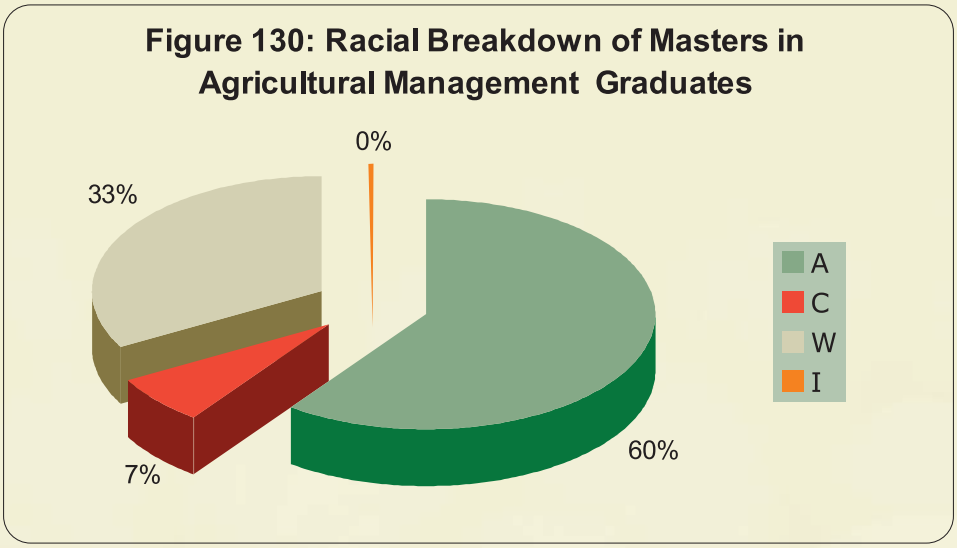
Forty nine (49) graduates were produced in this CESM during the 2004 academic year. Table 93 presents a demographic breakdown of Agricultural Management graduates during the 2004 academic year by level of qualification.

Table 93: Demographic breakdown of Agricultural Management graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	0	0	0	0	0	14	2	16	0	0	0	19
Honours	7	3	10	0	0	0	5	0	5	0	0	0	15
Masters	5	4	9	1	0	1	4	1	5	0	0	0	15
TOTAL	**15**	**7**	**19**	**1**	**0**	**1**	**23**	**3**	**26**	**0**	**0**	**0**	**49**

Undergraduate level constituted 38% of graduates in this CESM. Honours and Masters graduates each constituted 31% of the graduates in this CESM.
Nineteen (19) graduates were produced at Undergraduate level at universities in this CESM during the 2004 academic year. Composition by race of the Undergraduates constituted 84% White graduates and 16% African graduates. Male graduates in this CESM at Undergraduate level accounted for 89% and females constituted 11% in this CESM.

Fifteen (15) Honours graduates were produced in this CESM at universities during the 2004 academic year. Composition by race of the Honours graduates in this CESM consisted of 10 African graduates and 5 White graduates. Twelve (12) male graduates and 3 female graduates were produced in this programme during the 2004 academic year.



This CESM produced 15 Masters graduates at universities during the 2004 academic year. Sixty percent (60%) of graduates in this CESM at Masters level comprised African graduates, followed by White graduates with 33%. Coloured graduates constituted 7% of the Masters graduates produced in this CESM during the 2004 academic year. Male Masters graduates constituted 67% of this CESM and female graduates accounted for 33%.

4.4.3.13 Renewable Natural Resources Graduates at Universities in 2004

Two (2) African male graduates were produced in this CESM at universities during the 2004 academic year.

4.4.3.14 Agricultural Food Technology (Inst.Agrar. Stream) Graduates at Universities in 2004

One (1) African female graduate was produced at a university in this CESM during the 2004 academic year.

4.4.3.15 Animal Science (Inst.Agrar. Stream) Graduates at Universities in 2004

Animal Science (Inst.Agrar. Stream) produced 5 graduates at universities during the 2004 academic year and all the graduates were produced at Undergraduate level. Table 94 presents a demographic breakdown of Agricultural Food Technology (Inst. Agrar. Stream) graduates during the 2004 academic year by level of qualification.

Table 94: Demographic breakdown of Animal Science (Inst.Agrar. Stream) graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	1	3	0	0	0	2	0	2	0	0	0	5
TOTAL	**2**	**1**	**3**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**5**

These graduates consisted of 3 African graduates and 2 White graduates. Male graduates constituted 80% of the total number of graduates in this CESM and females accounted for 20%.

4.4.3.16 Horticulture (Inst.Agrar Stream) Graduates at Universities in 2004

Eight (8) graduates were produced in this programme at universities during the 2004 academic year. Table 95 presents a demographic breakdown of Horticulture (Inst.Agrar Stream) graduates during the 2004 academic year by level of qualification.

Table 95: Demographic breakdown of Horticulture (Inst.Agrar. Stream) graduates in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	2	2	0	0	0	0	1	1	0	0	0	3
Honours	3	2	5	0	0	0	0	0	0	0	0	0	5
TOTAL	**3**	**4**	**7**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**8**

Honours graduates and Undergraduate level constituted 62% and 38% of the overall graduates in this CESM respectively.

Three (3) graduates were produced in this CESM at Undergraduate level during the 2004 academic year. Two (2) were Africans and 1 was White. Five (5) graduates were produced in this CESM at Honours level during the academic 2004 year. Graduates in this CESM at Honours level consisted of 3 African males and 2 African females.

4.4.3.17 Rural Development (Inst.Agrar. Stream) Graduates at Universities in 2004

Ten (10) graduates were produced in this CESM during the 2004 academic year at universities. Table 96 presents a demographic breakdown of Rural Development (Inst.Agrar. Stream) graduates in the 2004 academic year by level qualification.

Table 96: Demographic Breakdown of Rural Development (Inst.Agrar. Stream) graduates at universities in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	7	0	7	0	0	0	0	1	1	0	0	0	8
Honours	0	2	2	0	0	0	0	0	0	0	0	0	2
TOTAL	7	2	9	0	0	0	0	1	1	0	0	0	10

Undergraduate and Honours graduates constituted 80% and 20% of the overall Rural Development (Inst.Agrar.) graduates during the 2004 academic year respectively.

Eight (8) graduates at Undergraduate level in this CESM were produced during the 2004 academic year: 7 were Africans and 1 was White. Two (2) African graduates were produced at Honours level at universities and both were African females.

4.4.3.18 Wildlife Graduates at Universities in 2004

Two (2) graduates were produced in this CESM during the 2004 academic year at universities; both were White: one male and one female.

4.4.3.19 Land Reclamation (Inst.Agrar. Stream) Graduates at Universities in 2004

Land Reclamation (Inst.Agrar. Stream) produced 1 African male graduate at Honours level during the 2004 academic year.

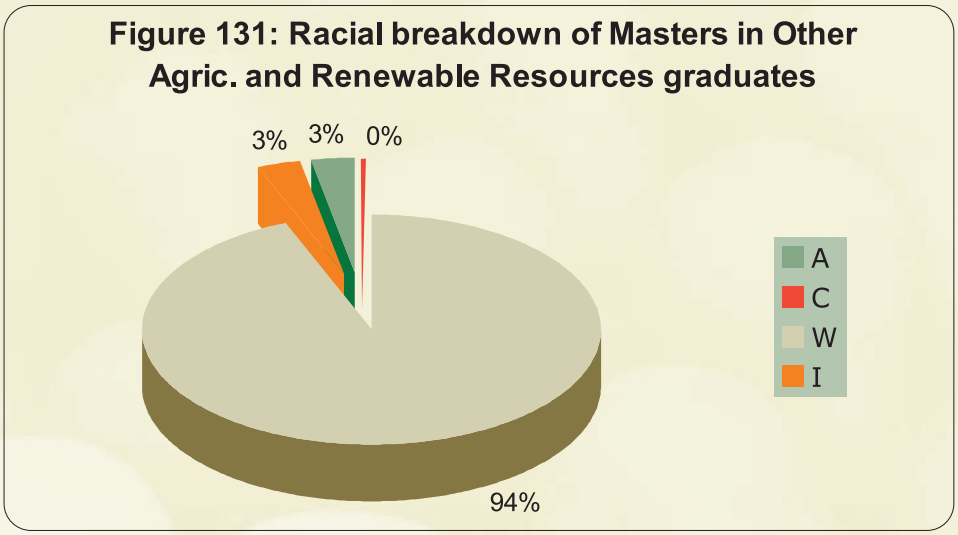
4.4.3.20 Other Agricultural and Renewable Resources Graduates at Universities in 2004

Table 97 presents a demographic breakdown of Other Agricultural and Renewable Resources graduates during the 2004 academic year academic year by level of qualification.

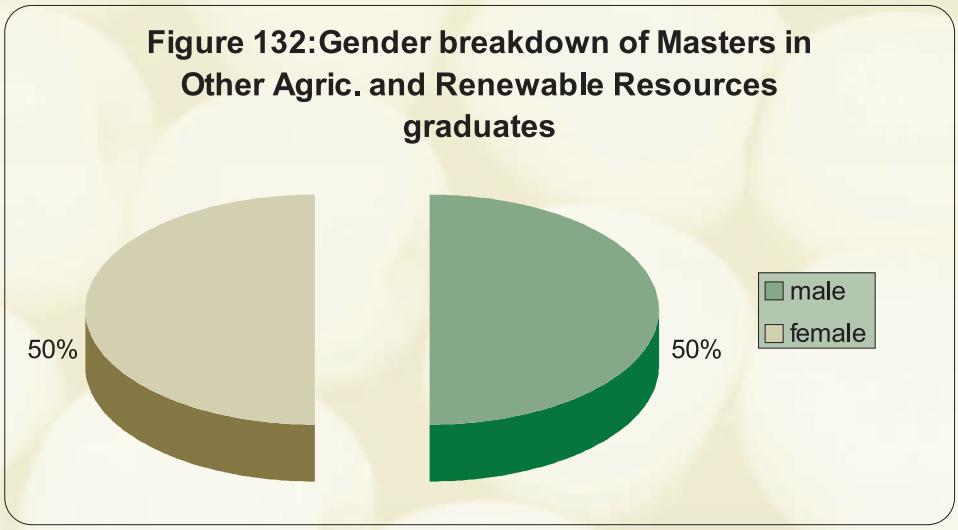
Table 97: Demographic breakdown of Other Agricultural and Renewable Resources by level of qualification 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Masters	1	0	1	0	0	0	13	15	28	1	0	1	30
TOTAL	**1**	**0**	**1**	**0**	**0**	**0**	**13**	**15**	**28**	**1**	**0**	**1**	**30**

Thirty (30) graduates were produced in this CESM at Masters level at universities during the 2004 academic year.



White graduates dominated the Masters level with 94%, Africans and Indians each constituted 3% of the Masters graduates in this CESM during the 2004 academic year. No Coloured graduates were produced in this programme at universities during the 2004 academic year.



There was an equal distribution of male and female Masters graduates in this CESM. White males dominated the male graduates in this programme with 86%. African and Indian male graduates collectively constituted 14% of the Masters graduates in this CESM.

4.4.3.21 Agricultural Economics (Inst.Agrar. Stream) Graduates at Universities in 2004

The Agricultural Economics (Inst.Agrar. Stream) produced 6 graduates: 5 were Africans and 1 was White. Table 98 presents a demographic breakdown of Agricultural Economics (Inst.Agrar. Stream) graduates during the 2004 academic year by level of qualification.

Table 98: Demographic breakdown of Agricultural Economics (Inst.Agrar Stream) by level of qualification

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	3	2	5	0	0	0	1	0	1	0	0	0	6
TOTAL	**3**	**2**	**5**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**6**

4.4.3.22 Agribusiness Management (Inst.Agrar. Stream) Graduates at Universities in 2004

AgriBusiness Management produced 16 graduates at universities during the 2004 academic year, all at Honours level. All the graduates were Africans, 12 were males and 4 were females.

4.4.3.23 Agricultural Extension (Inst.Agrar. Stream) Graduates at Universities in 2004

Two (2) graduates were produced in this CESM at universities during the 2004 academic year at Honours level. All the graduates were males, 1 African and 1 Indian

4.5 CONCLUSION

Generally enrolments far outweigh graduate figures in the Universities, for instance Universities enrolled 5367 students in agricultural programmes in 2004, while only 894 graduated, which is 83% less than enrolments. The highest number of enrolments in the Universities was recorded in Agricultural Science with 2289 students followed by Animal Science with 996. The lowest enrolments were in Land Reclamation with 16 students. The same applies with regard to graduate figures with Agricultural Science producing high number of graduates with 356 and Land Reclamation and Soil Science producing less than 10 graduates each. Generally the InstAgrar programmes enrolled less than 50 students in 2004. For instance Agricultural Economics (InstAgrar), Animal Science (InstAgrar), Food Technology (InstAgrar) all enrolled less than 50 students. This is attributed to the fact that InstAgrar programmes are offered by University of Pretoria only.

University of Stellenbosch has a bigger share of enrolments and graduates in all the Universities despite the fact that many agricultural programmes are offered by University of Pretoria. University of Venda, University of Fort Hare and University of KwaZulu-Natal have the lowest enrolment and graduate figures. This can be attributed to the lowest number of programmes offered by these institutions.

Africans enroll in big numbers at all levels in all the programmes with the exception of scarce skills categories where their enrolments are very low. One would expect the same trend regarding graduation rates assuming the input will translate into the output; however graduation rates for Africans are very low in comparison to that of their white counterparts who have lower enrolment rates as compared to Africans. Because there is no relationship between the 2004 enrolment figures and the 2004 graduate, one cannot conclude on the factors affecting this situation and might just assume that this is attributed to failure rates, change of courses, drop out rates or other factors.

Although generally Africans dominate in most of the agricultural programmes in Universities in terms of enrolments and graduates figures, there are programmes which are predominantly White. For instance, Whites dominate in few programmes such as Other Agricultural and Renewable Resources, Forestry, Agricultural Food Technology and Agricultural Science (Science Stream) while Africans dominate in Animal Science, Agricultural Extension, Horticulture and Agricultural Science (B.Agric. Stream). Generally Coloured and Indians are less represented in all the programmes offered by Universities.

Males dominate the enrolments in almost all the programmes except in the case of Agricultural Food Technology where Females outweigh the number of male enrolments. For instance African males and White males together constitute 58%

of the total enrolments and 54 % of the total graduate figures in all the programmes at Universities, with the exception of scarce skills categories. Regarding graduate outputs, only three programmes are dominated by females, namely Agricultural Food Technology, Animal Science and Plant Science.

The trend in the Universities is that the number of enrolments and graduates at Undergraduate level is very high compared to the enrolments and graduates figures at postgraduate level and this is a cause for concern. From the findings, highest enrolment figures are at Undergraduate level which constituted 66% of the total enrolments, followed by Masters with 20%. PhD and Honours recorded lowest enrolments figures with 8% and 6% of the total number of enrolments in Universities respectively. Graduates were also dominated by Undergraduates with 54%, followed by Masters with 23%, while Honours and PhD graduates recorded 18% and 5% of the total graduate outputs respectively.

It is a general trend in the Universities that White students dominate in the programmes in Agricultural Food Technology (Science stream), Agricultural Science (Science Stream), Forestry and Wildlife. On the other hand Africans dominate significantly in programmes in Agricultural Science (Art Stream), Agricultural economics (Agribusiness), Agricultural Extension, Animal Science, Horticulture, Plant Science, Soil Science, Agricultural Management, Agricultural Food Technology (InstAgrar stream) and Rural Development (InstAgrar).

The programmes in Universities need to be evaluated in terms of their relevance in addressing the needs of the sector, particularly those 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. It will also be essential, that the sector together with Universities review the content of the curriculum to ensure that it prepares students for the world of work.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CHAPTER 5

ENROLMENTS AND GRADUATES OUTPUT FOR SCARCE SKILLS IN AGRICULTURE

CHAPTER 5

ENROLMENTS AND GRADUATES OUTPUT FOR SCARCE SKILLS IN AGRICULTURE

5.1 Introduction

This chapter presents data on enrolment and graduate outputs in Veterinary Nursing, Veterinary Science (BVSc) and Agricultural Engineering. Veterinary Science (BVSc) and Agricultural Engineering are regarded as scarce skills in agriculture; hence they are discussed separately from other CESM. Data on graduate and enrolment outputs for Veterinary Nursing and BVSc at postgraduate level could not be supplied by the university because it's their policy.

The postgraduate figures for Agricultural Engineering could not be supplied by University of KwaZulu-Natal, since the institution could not separate figures for Agricultural Engineering postgraduate enrolments and graduate outputs from postgraduates of other engineering disciplines.

5.2 Enrolments and Graduate Outputs in Diploma Veterinary Nursing in 2004

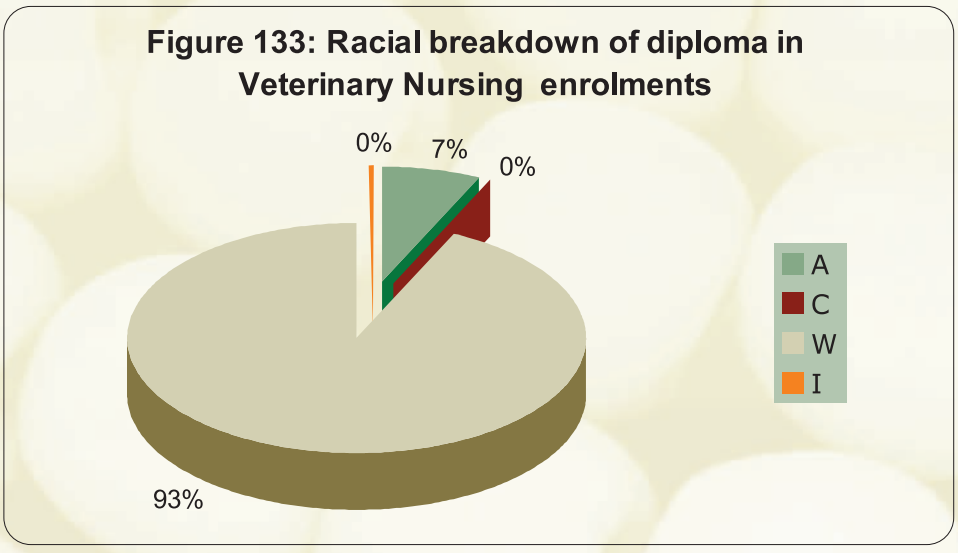
5.2.1 Enrolments in Diploma Veterinary Nursing in 2004

The Diploma in Veterinary Nursing is offered by the University of Pretoria only. Table 99 presents a demographic breakdown of Diploma Veterinary Nursing enrolments during the 2004 academic year.

Table 99: Demographic breakdown of diploma Veterinary Nursing enrolments in 2004

LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma Veterinary Nursing	4	2	6	0	0	0	1	77	78	0	0	0	84
TOTAL	**4**	**2**	**6**	**0**	**0**	**0**	**1**	**77**	**78**	**0**	**0**	**0**	**84**

Eighty four (84) students were enrolled at Diploma level in Veterinary Nursing during the 2004 academic year at the University of Pretoria.



To a larger extent, as indicated in figure 133, Diploma Veterinary Nursing enrolments is dominated by Whites and White females dominated with 93% of the total enrolments.

5.2.2 Diploma Graduates Output in Veterinary Nursing in 2004

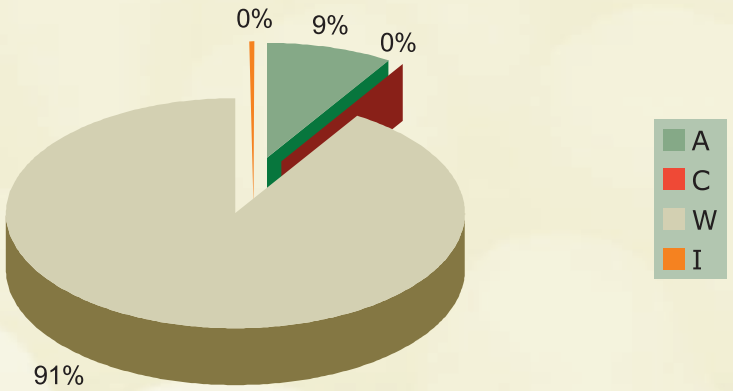
The Diploma Veterinary Nursing graduates constituted 32 during the 2004 academic year in the University of Pretoria. Table 100 presents a demographic breakdown of Diploma Veterinary Nursing graduates during the 2004 academic year.

Table 100: Demographic breakdown of Diploma Veterinary Nursing graduates in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma Veterinary Nursing	2	1	3	0	0	0	0	29	29	0	0	0	32
TOTAL	**2**	**1**	**3**	**0**	**0**	**0**	**0**	**29**	**29**	**0**	**0**	**0**	**32**

The Diploma Veterinary Nursing graduates are dominated by White females with 91% of the total enrolments as indicated in figure 134.

Figure 134: Racial breakdown of Diploma Veterinary Nursing graduates



5.3 Enrolments and Graduate Outputs in Veterinary Science (BVSc) Degree in 2004

5.3.1 Enrolments in Veterinary Science (BVSc) Degree in 2004

The BVSc Degree is offered by the University of Pretoria only, from Undergraduate to Postgraduate levels. One hundred and four (104) students enrolled for the BVSc Degree. Table 101 presents a demographic breakdown of BVSc Degree enrolments during the 2004 academic year.

Table 101: Demographic breakdown of BVSc degree enrolments in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
B.V. Sc. Degree	9	0	9	0	1	1	26	61	87	3	4	7	104
TOTAL	**9**	**0**	**9**	**0**	**1**	**1**	**26**	**61**	**87**	**3**	**4**	**7**	**104**

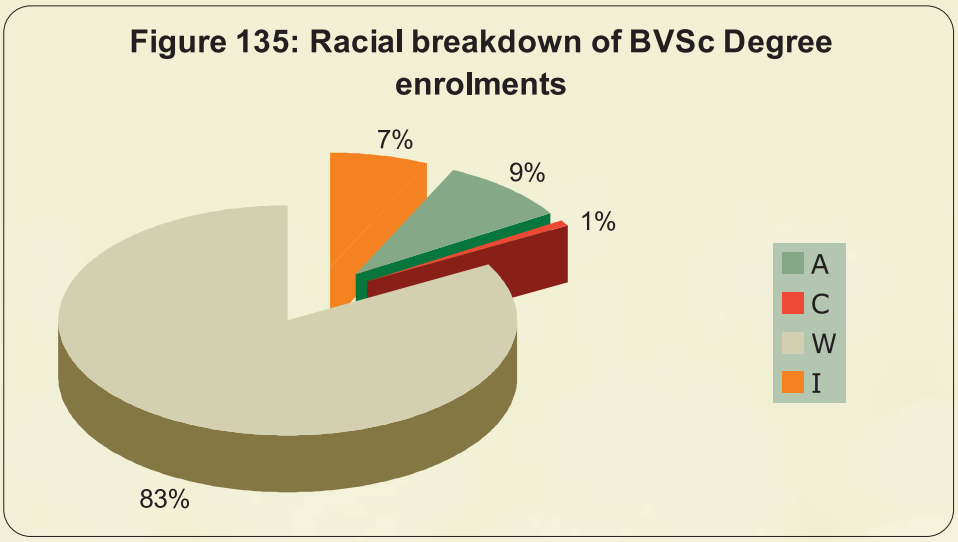
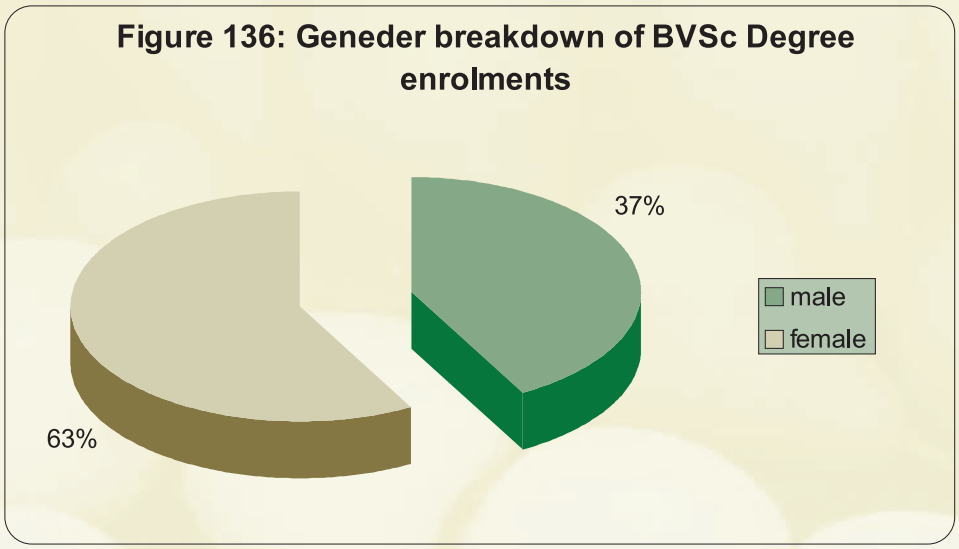


Figure 135 outlines the breakdown according to race of the Veterinary Science Degree during the 2004 academic year. White students accounted for 83% of the Degree enrolments in this programme followed by African students and Indian students with 9% and 7% respectively. Coloured students comprised 1% of the BVSc Degree enrolments during the 2004 academic year.



Gender breakdown in figure 136 depicts that female students constituted 63% of the programme and male students accounted for 37%. White females dominated female enrolments with 92% followed by Indian and Coloured females with 6% and 2% respectively. White males accounted for 68% of the male enrolments in this degree programme. African males and Indian males constituted 24% and 8% respectively.

5.3.2 Graduates Output in Veterinary Science (BVSc) Degree in 2004

Eighty three (83) graduates were produced in the Veterinary Science (BVSc) Degree level during the 2004 academic year. Table 102 presents a demographic breakdown of Veterinary Science (BVSc) Degree graduates during the 2004 academic year.

Table 102: Demographic breakdown of Veterinary Science (BVSc) degree graduates in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Degree	0	1	1	0	1	1	28	50	78	0	3	3	83
TOTAL	**0**	**1**	**1**	**0**	**1**	**1**	**28**	**50**	**78**	**0**	**3**	**3**	**83**

Figure 137: Racial breakdown of BVSc Degree graduates

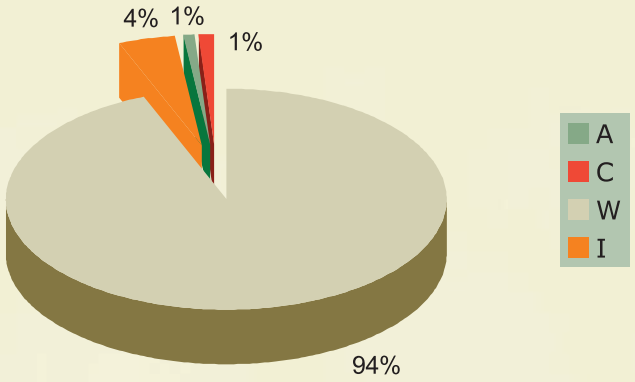


Figure 137 depicts that White graduates constituted 94% of the Veterinary Science (BVSc) graduates and other racial groups collectively constituted 6% of the Veterinary Science (BVSc) Degree graduates.

Figure 138: Gender breakdown of BVSc Degree graduates

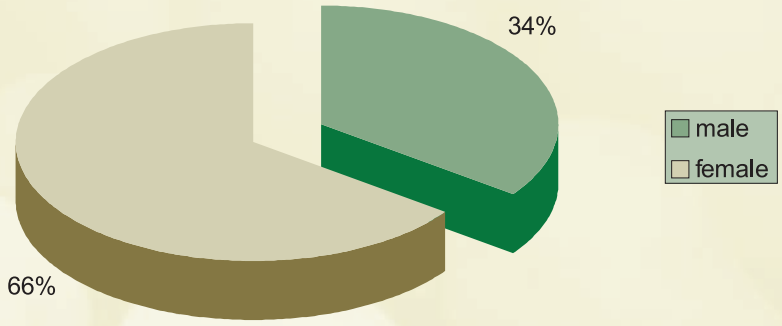


Figure 138 indicates that female graduates dominated the Veterinary Science (BVSc) Degree graduates with 66% and male graduates accounted for 34% of the programme. White females constituted 91% and other racial groups collectively constituted 9% of the female graduates in Veterinary Science (BVSc) Degree.

5.4 Enrolment and Graduate Outputs in BSc Agricultural Engineering in 2004

5.4.1 Enrolment in BSc Agricultural Engineering in 2004

BSc Agricultural Engineering is offered by the University of KwaZulu-Natal. Fifty eight (58) students enrolled for this programme at Degree level during the 2004 academic year. Table 103 presents a demographic breakdown of BSc Agricultural Engineering enrolments during the 2004 academic year.

Table 103: Demographic breakdown of BSc Agricultural Engineering Degree enrolments in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
BSc Agricultural Engineering Degree	18	8	26	0	0	0	27	2	29	2	1	3	58
TOTAL	**18**	**8**	**26**	**0**	**0**	**0**	**27**	**2**	**29**	**2**	**1**	**3**	**58**

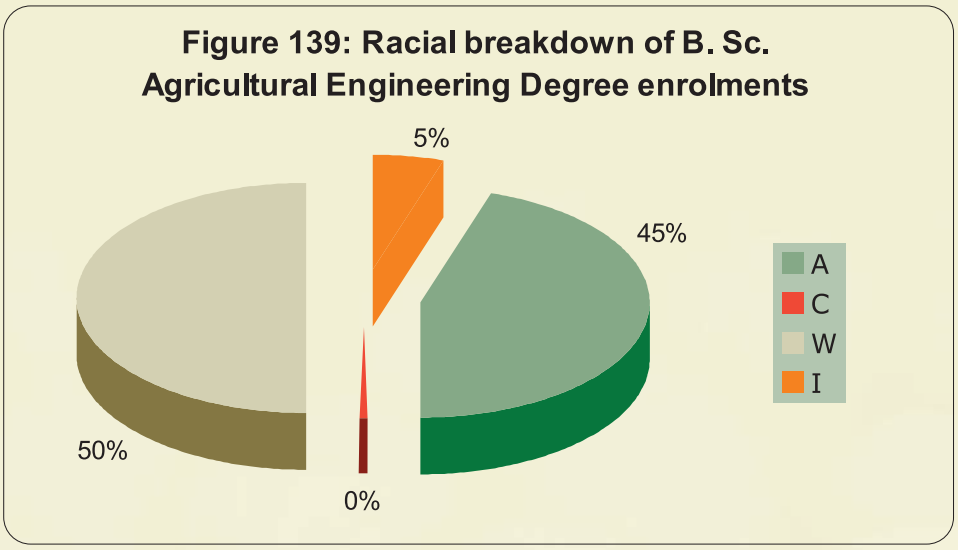


Figure 139 depicts that White students dominated the total enrolments in this programme with 50% followed by African students with 45%. Indian students constituted 5% of the total enrolment in this programme and no Coloured students were enrolled in this programme during the 2004 academic year.

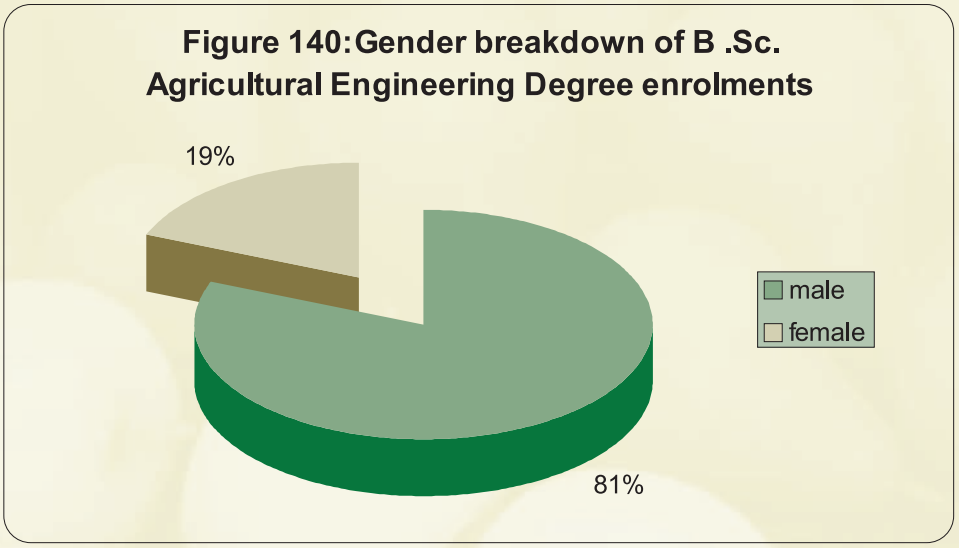


Figure 140 shows that male students dominated total enrolments in this programme with 81% and female students constituted only 19%. White males and African males accounted for 58% and 38% of the male enrolments in this programme respectively. Indian males comprised 4% of the BSc Agricultural Engineering Degree male enrolments.

5.4.2 Graduate Outputs in BSc Agricultural Engineering Degree in 2004

The BSc Agricultural Engineering Degree produced 22 graduates during the 2004 academic year. Table 104 presents a demographic breakdown of Agricultural Engineering graduates during the 2004 academic year.

Table 104: Demographic breakdown of Agricultural Engineering graduates in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Degree	4	3	7	0	0	0	11	2	13	2	0	2	22
TOTAL	**4**	**3**	**7**	**0**	**0**	**0**	**11**	**2**	**13**	**2**	**0**	**2**	**22**

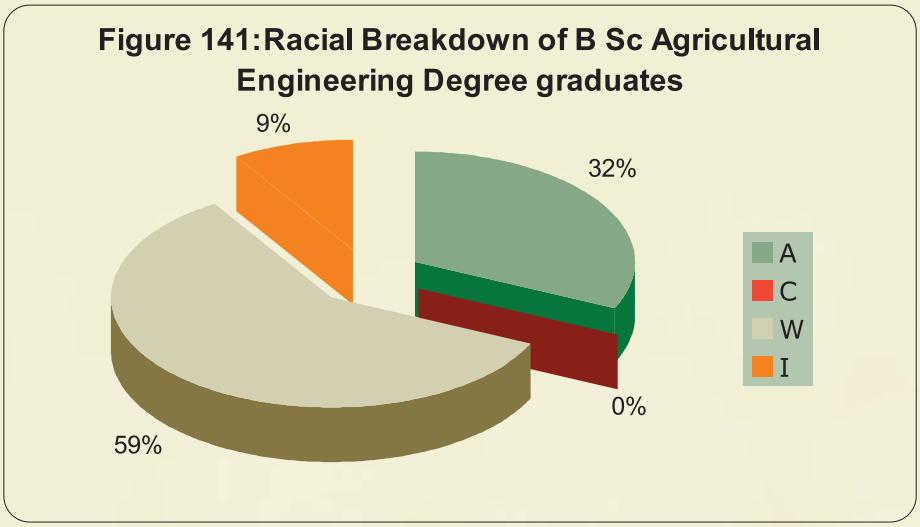


Figure 141 shows that White students comprised 59% of the total graduates in this programme followed by African students with 32% and Indian students constituted 9%.

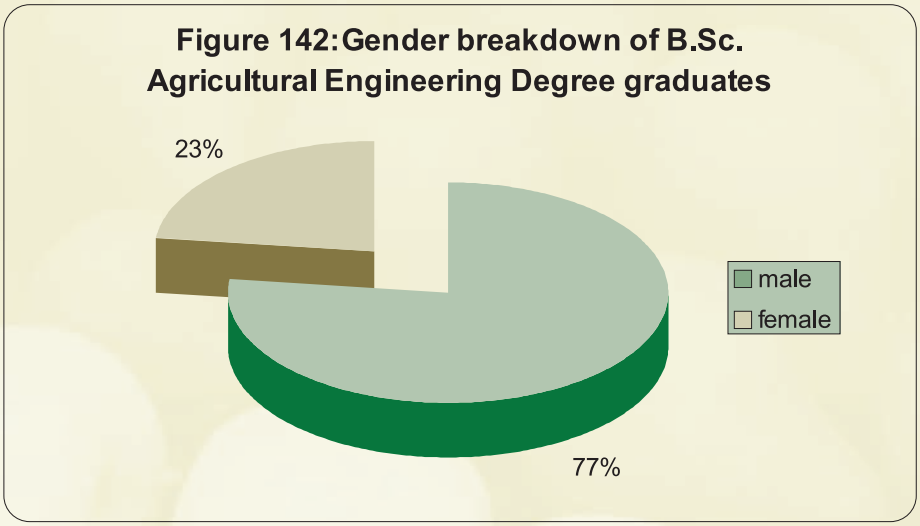


Figure 142 indicates that male graduates dominated the BSc Agricultural Engineering Degree with 77% and female graduates constituted only 23% of the graduates in this programme. White males dominated the male graduates with 64% followed by African males with 24% and Indian males comprised 12% of the male graduates in this programme.

5.5 Enrolments in Diploma Pomology in 2004

The Diploma Pomology is only offered by Elsenburg College of Agriculture. Elsenburg College of Agriculture will produce Pomology Diploma graduates in 2006 academic year. Table 105 presents a demographic breakdown of Diploma in Viticulture enrolments in the 2004 academic year.

Table 105: Demographic breakdown of Pomology diploma enrolments in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	0	0	0	0	0	0	2	0	2	0	0	0	2
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**2**

Only 2 White males were enrolled at Diploma level in Pomology during the 2004 academic year at Elsenburg College of Agriculture.

5.6 Enrolments and Graduate Outputs in Viticulture in 2004

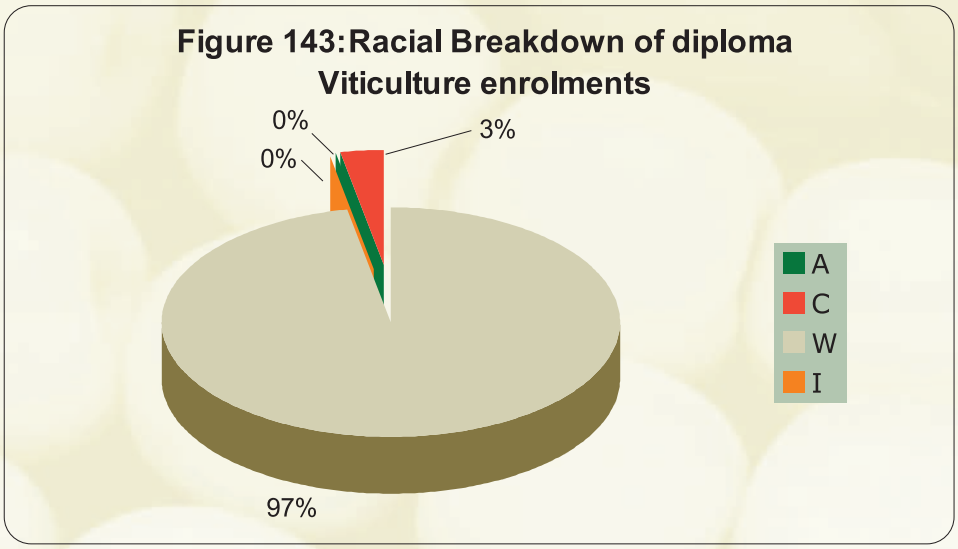
5.6.1 Enrolments in Viticulture in 2004

Viticulture is only offered by University of Stellenbosch and Elsenburg College of Agriculture. Viticulture consists of the art and science stream. The science stream is offered by the University of Stellenbosch and the B.Agric. Stream is offered by Elsenburg College of Agriculture. This three year programme at Elsenburg only started in the 2004 academic year and will only produce graduates in the end of 2006 academic year. Table 106 presents a demographic breakdown of Viticulture enrolments in the 2004 academic year.

Table 106: Demographic breakdown of Viticulture enrolments in 2004

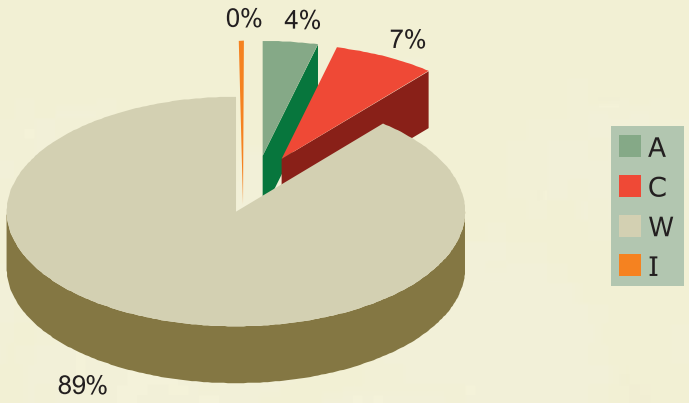
LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Diploma	0	0	0	1	0	1	30	4	34	0	0	0	35
Degree	4	6	10	11	6	17	125	83	208	0	0	0	235
Honours	0	0	0	0	0	0	0	1	1	0	0	0	1
Masters	0	0	0	0	0	0	4	3	7	0	0	0	7
PhD	0	0	0	0	0	0	1	1	2	0	0	0	2
TOTAL	**4**	**6**	**10**	**12**	**6**	**18**	**160**	**92**	**252**	**0**	**0**	**0**	**280**

Two hundred and eighty (280) students were enrolled in Viticulture during the 2004 academic year at University of Stellenbosch and Elsenburg College of Agriculture. Thirty five (35) students were enrolled at Diploma level in Viticulture during the 2004 academic year at Elsenburg College of Agriculture which constituted 13% of the total Viticulture enrolments. Two hundred and thirty five (235) students were enrolled at Degree level in Viticulture which constituted 90% of the total Viticulture enrolments. The Masters level constituted only 3%, PhD and Honours enrolments accounted for less than 2% combined.



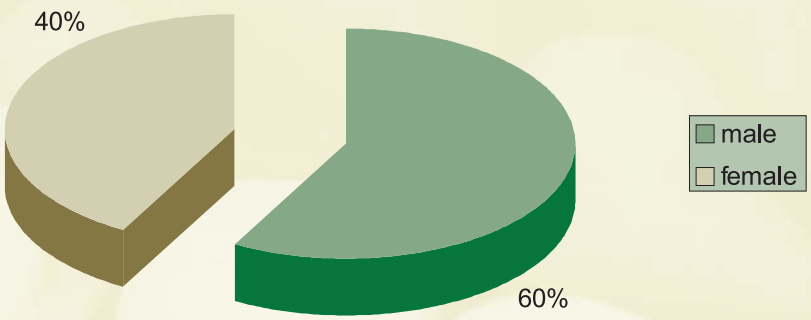
Largely, as depicted in figure 143, Diploma Viticulture is dominated by Whites and they constitute 97% of the total enrolments. White males dominate with 86% of the total enrolments.

Figure 144: Racial Breakdown of degree Viticulture enrolments



The degree in Viticulture is dominated by White students with 89% of the total degree enrolments in the 2004 academic year. Coloured and African students constituted 7% and 4% respectively. No Indian students were registered in Viticulture in the 2004 academic year at all study levels.

Figure 145: Gender breakdown of degree Viticulture enrolments



Male students dominated the degree enrolments in Viticulture in the 2004 academic year with 60% and female students enrolments amounted only to 40%. Male students are largely dominated by White males with 89% of the male enrolments in Viticulture at degree level. Coloured and African males constituted 8% and 3% respectively.

Only 1 White female student registered for Honours in Viticulture in the 2004 academic year. Seven (7) White students enrolled at Masters level of which 4 were males and 3 were females. At PhD level only 1 White male and 1 White female were registered in the 2004 academic year in Viticulture.

5.6.2 Graduate Outputs in Viticulture in 2004

Forty five (45) graduates were produced in Viticulture in the 2004 academic year. Table 107 presents a demographic breakdown of Viticulture graduates at Stellenbosch in the 2004 academic year.

Table 107: Demographic breakdown of Viticulture graduates in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Degree	0	1	1	1	0	1	21	18	39	0	0	0	41
Honours	0	0	0	0	0	0	0	1	1	0	0	0	1
Masters	0	0	0	0	0	0	0	2	2	0	0	0	2
PhD	0	0	0	0	0	0	0	1	1	0	0	0	1
TOTAL	**0**	**1**	**1**	**1**	**0**	**1**	**21**	**22**	**43**	**0**	**0**	**0**	**45**

Forty one (41) graduates were produced at degree level in Viticulture in the 2004 academic year. The degree graduates in Viticulture consist of 39 Whites and 1 African female.

At other study levels there were only 4 graduates produced all together. One (1) White female graduated for the Honours level. The Masters level produced 2 White female graduates in Viticulture for the 2004 academic year. One (1) White female was produced at PhD in Viticulture in the 2004 academic year.

5.7 Enrolments and Graduate Outputs in Oenology in 2004

5.7.1 Enrolments in Oenology in 2004

Oenology is offered by the University of Stellenbosch only. Thirty five (35) students enrolled in Oenology in the 2004 academic year at University of Stellenbosch. Table 108 presents a demographic breakdown of Oenology in the 2004 academic year.

Table 108: Demographic breakdown of Oenology enrolments in 2004

LEVEL	African			Coloured			White			Indian			TOTAL
	M	F	T	M	F	T	M	F	T	M	F	T	
Degree	1	0	1	0	1	1	6	15	21	0	0	0	23
Honours	0	0	0	0	0	0	0	1	1	0	0	0	1
Masters	0	0	0	0	0	0	6	2	8	0	0	0	8
PhD	0	0	0	0	0	0	3	0	3	0	0	0	3
TOTAL	**1**	**0**	**1**	**0**	**1**	**1**	**15**	**18**	**33**	**0**	**0**	**0**	**35**

Out of 23 students who registered for the Oenology degree 21 of them were White, one was African and one Coloured. One (1) White female student enrolled at Honours level in Oenology. At Masters level 6 White males and 2 White females were enrolled. PhD Oenology registered a total of 3 White males in the 2004 academic year at University of Stellenbosch.

5.7.2 Graduate Outputs in Oenology in 2004

Seven (7) graduates were produced in the Oenology in the 2004 academic year, all the graduates were White. Table 109 presents a demographic breakdown of Oenology in the 2004 academic year.

Table 109: Demographic breakdown of Oenology graduates in 2004													
LEVEL	African			Coloured			White			Indian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Degree	0	0	0	0	0	0	2	1	3	0	0	0	3
Honours	0	0	0	0	0	0	0	1	1	0	0	0	1
Masters	0	0	0	0	0	0	2	1	3	0	0	0	3
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**3**	**7**	**0**	**0**	**0**	**7**

Two (2) male graduates and 1 female graduate were produced at degree level in Oenology in the 2004 academic year. At Honours level 1 White female graduate was produced. The Masters level produced 2 White male graduates and 1 White female graduate.

5.8 Conclusion

Generally White males dominate both the enrolments and graduate figures in all the scarce skills programmes in agriculture, except for the BVSc programme and Veterinary Nursing which are dominated by White females. Out of a total of 563 enrolments in all the scarce skills categories, Whites accounted for 85% of all the enrolments. With regard to graduate figures, out of a total of 189 graduates produced in scarce skills during the 2004 academic year 56% were White. White females dominate the BVSc enrolments and graduates constituting 60% and 56% of the total BVSC enrolments and graduates respectively. All the other programmes are dominated by White males. Generally the trend is that Africans and Indians have an equal share of graduate figures, while Indians and Coloureds have almost an equal share of enrolments but relatively very low.

In comparison to other scarce skills programmes, there are higher enrolment figures in the Viticulture programme, and 280 students in 2004 enrolled. The Degree in BVSc programme is the second highest in terms of enrolments with a total of 104 students, and the third highest is Agricultural Engineering with 58 students. The lowest number of enrolments at Undergraduate level is in Pomology in which only 2 students enrolled in the academic year.

As is the case with all the other postgraduate programmes in Universities, i.e. Honours to PhD level, postgraduate programmes in the scarce skills categories enrolled less than 10 students each. All the postgraduate programmes in the scarce skills categories produced by Universities in 2004 are White.

Given the fact that Africans are in the majority in terms of the demographics of the country, one would expect that they will dominate in all the programmes including scarce skills categories. However they recorded insignificant graduate and enrollment figures which are almost equal to that of Indians and Coloureds who constitute a very low percentage in terms of the demographics of the country. Very low numbers of Blacks in all the scarce skills categories might be attributed to several factors, which might include among others, the lack of interest by Blacks in the agricultural scarce skills programmes and or admission requirements for pursuing studies in the scarce skills categories which the majority of Blacks might not meet. This situation has a negative impact on employment equity in the sector, and it is therefore essential that interventions aimed at marketing scarce skills in agriculture be focused on schools which are predominantly African, Coloured and Indian. It is also essential that all the factors influencing this situation be investigated in order to make evidence-based decision making which will eliminate the skewed participation of Blacks and ensure equity in the agricultural sector.


AGRIFAC

CHAPTER 6

ANALYSIS AND RECOMMENDATIONS

CHAPTER 6

ANALYSIS AND RECOMMENDATIONS

6.1. TREND ANALYSIS OF AGRICULTURAL GRADUATE OUTPUTS AND ENROLMENTS DURING THE 2004 ACADEMIC YEAR

The trend is that Whites and Africans dominated in all the agricultural programmes, except in the case of scarce skills programmes which are dominated by whites only. This might be attributed to the fact that these two racial groups constitute the majority of the population in terms of the demographics of the country. However, the findings indicate that some programmes are dominated by Whites and others are dominated by Africans. Generally the number agricultural enrolments and graduates for Coloureds and Indians are very low and in some cases these two racial groups do not feature at all. African and White males dominated most of the agricultural programmes.

The Colleges of Agriculture have enrolled most of their students for the Diploma in Agriculture. This enrolment trend is prevalent in eight Colleges of Agriculture during the 2004 academic year. The enrolment figures among the Colleges of Agriculture during the 2004 academic year range from 244 at Potchefstroom College to 43 at Madzivhandila College. Colleges of Agriculture that had the highest enrolment figures include Fort Cox, Potchefstroom, Lowveld and Glen. The general trend is that African students and White students across the board have had high enrolment figures during the 2004 academic year. Coloured and Indian students are, in general, highly under-represented at all Colleges of Agriculture. The overall enrolments for the Colleges of Agriculture are largely dominated by male students.

Colleges that had the highest graduate outputs during the 2004 academic year include Elsenburg, Taung, Potchefstroom and Owen Sithole. As in the case of enrolments, Africans and Whites dominated the graduate outputs during the 2004 academic year, while Coloured and Indian graduate figures are very low in the colleges of agriculture. The general trend was that male students constituted the majority of the graduates at Agricultural Colleges during the 2004 academic year.

The findings indicated that universities of technology enrolled most of the students in Animal Science, Renewable Natural Resources, Plant Science and Horticulture programmes during the 2004 academic year. Generally agricultural programmes at the universities of technology are dominated by African students followed by White students. However, some programmes are predominantly White while others are predominantly African.

Coloured and Indian students, as is the case in the colleges of agriculture, constituted very insignificant figures in all the programmes for both enrolments and graduates output. Gender analysis throughout the universities of technology indicates high enrolment figures amongst male students. The same trend applies also to the graduate outputs at the universities of technology.

The majority of graduates at universities of technology were recorded in Animal Science, Agricultural Management, Renewable Natural Resources and Agricultural Extension programmes. TUT, CUT, Mantec and CPUT had high graduate figures during the 2004 academic year. African students and White students generally dominate graduation figures at both Universities of Technology and Universities, with male students constituting the majority of graduates and enrolments.

Universities enrolled the majority of the students in Agricultural Science (Science Stream), Animal Science, Agricultural Science (Art Stream) and Agricultural Management. Distribution of enrolments among universities shows that Stellenbosch, North West, Free State and Pretoria had the highest enrolments during the 2004 academic year. African and White students are the only students who recorded significant enrolment figures with male students dominating the enrolments.

Most of the graduates at universities during the 2004 academic year graduated with Agricultural Science (Science Stream), Animal Science and Agricultural Science (Art Stream). The universities of Stellenbosch, North West, Pretoria and Free State

produced most of the graduates in 2004. The majority of graduates are African and White students, and males dominate the agricultural graduates produced during the 2004 academic year.

The number of enrolments at both universities and universities of technology in 2004 far outweighs the number of graduates produced in the same year. For example, universities enrolled 5 367 students in agricultural programmes in 2004, while only 894 students graduated in 2004, which is 83% less than the enrolment figures. Universities of technology, on the other hand, enrolled 2 564 agricultural students and 783 graduated during the 2004 academic year. Therefore, there is a need to track down the enrolment figures after 3 and 4 years, depending on the duration of the programme, to establish trends in terms of throughput, failure and dropout rates. However, it should be noted that in the case of the scarce skills, the situation is different, with the enrolment figures and graduate figures being almost equal.

From the findings, the general trend is that Africans dominate programmes in Animal Science, Plant Science, Horticulture, and Renewable Resources at Universities of Technology. On the other hand, White students dominate the Land Reclamation, Renewable Natural Resources; Agricultural Management and Wildlife.

In the case of Universities, White students dominated programmes in Agricultural Science (Science Stream), Agricultural Food Technology, Forestry and Wildlife. African students dominated programmes in Agricultural Economics, Agricultural Economics (AgriBusiness), Agricultural Science (Art Stream), Agricultural Extension, Animal Science, Horticulture, Plant Science, Soil Science, Agriculture Management, Agricultural Food Technology (InstAgrar Stream) and Rural Development (InstAgrar Stream) significantly. Programmes in Horticulture, Soil Science and Plant Science are generally dominated by both Africans and Whites with regard to enrolments and graduate outputs.

Generally, the findings indicate that both graduate and enrolment figures in the two scarce skills, i.e. Veterinary Science and Agricultural Engineering, are dominated by Whites. BVSc enrolments and graduates are dominated by white females and the trend is the same with regard to veterinary nursing. Africans and Indians constituted almost equal numbers with regard to both enrolments and graduates in the scarce skills programmes. Coloureds are almost non existent in the scarce skills programmes. With regard to Veterinary Nursing, almost all the graduates are White females who are 29 out of the total of 32 graduates.

The findings of this study indicate that, although a considerable number of students enrolled at Masters and PhD levels, a very low percentage of graduates were produced at these levels during the 2004 academic year. If this situation continues it will imply that there will be a very low base of research scientists for the agriculture sector in the future.

The total number of agricultural enrolments during the 2004 academic year in the colleges of agriculture, universities of technology and universities is 1 461, 2 762 and 5 367 respectively. These figures amount to a total of 9 590 students enrolled for AET programmes in the Higher Education Band during the 2004 academic year, ranging from Higher Certificate (NQF level 5), offered by agricultural colleges, to PhD programmes (NQF level 8).

The total number of agricultural graduates produced at agricultural colleges, universities of technology and universities is 668, 783 and 894 respectively and this results in an overall figure of 2 345 graduates produced in agricultural programmes during the 2004 academic year by public higher education institutions offering agricultural programmes.

In terms of enrolments within the main scarce skills categories namely Veterinary and Agricultural Engineering; 162 students were registered. In terms of race Whites were 116 followed by Africans with 35. In terms of gender males dominated with 85 and females were 77.

Total scarce skills graduates produced were 105. Veterinary Science dominated the total number of scarce skills graduates with 83 and Agricultural Engineering produced 22 graduates. In terms of race, Whites were 91 followed Africans with 8. In terms of gender females were 60 and males were 45. Coloured and Indian graduates in scarce skills programmes together produced 6 graduates.

6.2 RECOMMENDATIONS

6.2.1 Reducing overproduction of graduates in programmes which 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 programmes which are not in demand in the agriculture 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 known fact that graduates in certain programmes and from certain institutions have high employment rates than others. It is therefore necessary to investigate the reasons for these trends. To curb this problem it is crucial that all the institutions should develop systems which will track the employability of their graduates in the various programmes in order to decrease over production of skills which are not in demand in the agricultural sector. Funding formula for universities should also be done in terms of the relevance and type of programmes offered as well as the employment rate of graduate in those programmes.

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 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 curriculum for General Education and Training and Further Education and Training bands by the Department of Education. This will ensure that agricultural curriculum at all levels of the education system addresses the needs of the agriculture sector.

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

The perception that the quality of programmes varies in terms of content from one institution to the other is also a cause for concern. For instance BSc in Agriculture does not offer the same content in all the institutions offering the programme and admission requirements for the same programme 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 to establish quality benchmarks for same programmes in higher education institutions.

6.2.4 Encouraging Undergraduates to pursue post graduate studies in specialized 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 is a limited number of agricultural enrolments and graduates at post graduate level, particularly at Masters and PhD level. It is therefore recommended 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 be specialists in certain fields of agriculture. This will establish a strong scientific research base for the sector.

6.2.5 Marketing agricultural careers to Indians and Coloureds

From the findings there is an insignificant number of Indians and Coloureds 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 girl learners to register for scarce skills programmes in agriculture

The general trend is that there is 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 Girl- Learner coordinators to market agricultural scarce skills careers to girl learners. Girl –Learner Coordinators in the various PDEs can also provide a platform for providing guidance to girls 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 black 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 combination which are 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, except for BVSc where they are in the majority. 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 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 agricultural engineering degree at University level, and might also encourage them to pursue agricultural engineering degree at University level. This will then require systems which 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.