Biological products: their significance in IPM strategies and risk management

Wilma Mac Pherson
Minor crop workshop
11 April 2018

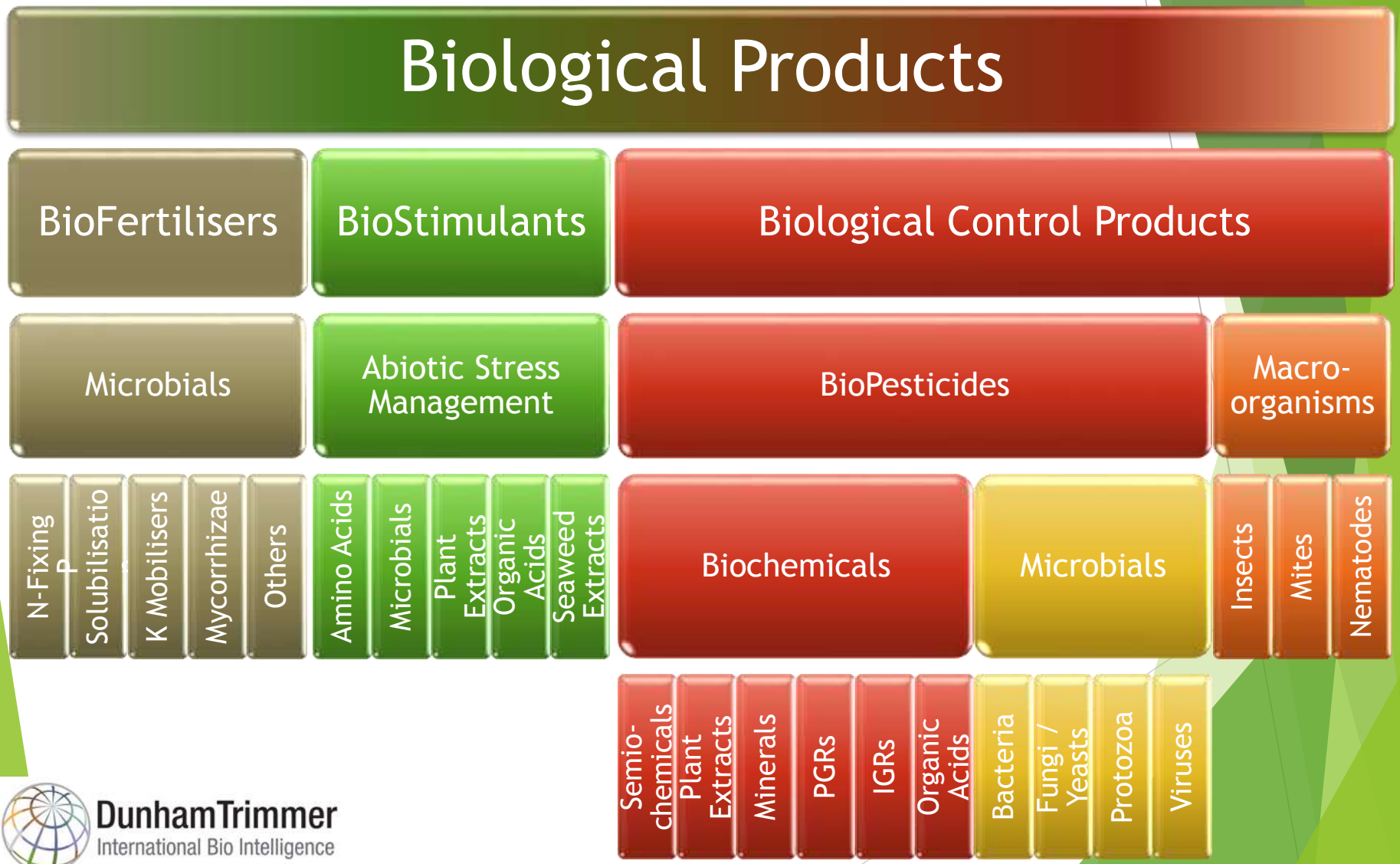
SABO
South African Bioproducts Organisation

Biological products – Sustainable or not?

- 10 – 15 years ago Biological products – imposters.
- Fly by night companies selling snake oil products
- Point of view supported by a marketing drive with the aim of replacing chemical pesticides.
- But first, let's look at what is happening in the market.

SABO
South African Bioproducts Organisation

Biological market overview
Product types



South African Bioproducts Organisation

DunhamTrimmer
International Bio Intelligence

Biological products can add value!

- Evident if we look at the past and predicted growth rate of this industry.

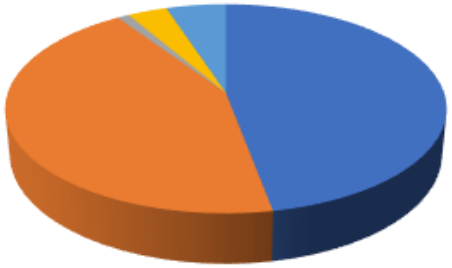
- Growing at an average CAGR of >16%. Many competitive intelligence companies predict that this growth will be maintained for the next 5 - 10 years.
- According to MARKETSANDMARKETS the nett worth will reach $11.35 billion in 2022 (Bio-pesticides, Bio-stimulants, Bio-fertilizers, inoculants and Bio-seed treatments)

DunhamTrimmer
International Bio Intelligence

SABO
South African Bioproducts Organisation

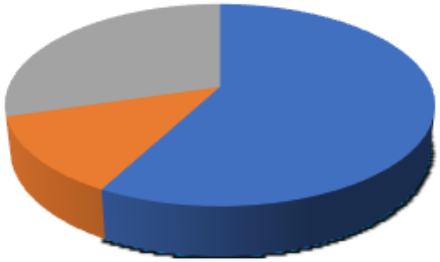
Global market performance - 2020

2020 Global Biocontrol-- Segment Mkt Shares



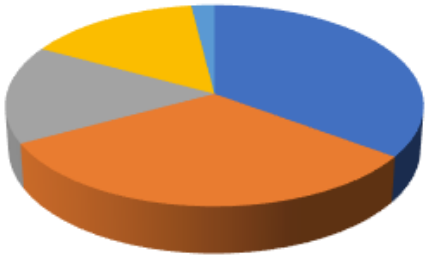
Bio-Insect
Bio-Fung
Bio-Herb
Bio-Nemat
Others

2020 Product Line Mkt Share



Microbials
Macro-organisms
Biochemicals

2020 Global Biocontrol Regional Mkt Share



N.Am
EU
Asia-Pac
LatAm
ROW

DunhamTrimmer
International Bio Intelligence

SABO
South African Bioproducts Organisation

Biological products – What has changed?

- There is increasing pressure from consumers who are demanding nutrient dense, toxin free food.
- Interest in biological products from multinational companies – acquisitions and product development agreements.
- Loss of many conventional products and extending the commercial life of others.
- Due to the focus on biological products the quality improved:
  - Better formulations
  - Longer shelf-life
  - Increased efficacy

SABO
South African Bioproducts Organisation

But are they safe to use?

Just because it's a biological product does not necessarily mean it is safe.

Research based products from reputable manufacturers delivering high quality, safe products to the market.

Act 36 of 1947 - Registration of agricultural inputs

- Same regulations apply that traditional chemical pesticides have to adhere to.
- Department of Health approval
- Department of Environmental affairs approval
- Import permits and mass release permits
- Toxicological testing of the formulation – human/animal/ecological
- Label with the correct hazard information and safe handling instructions

Yes!

Registered biological products are safe to use!

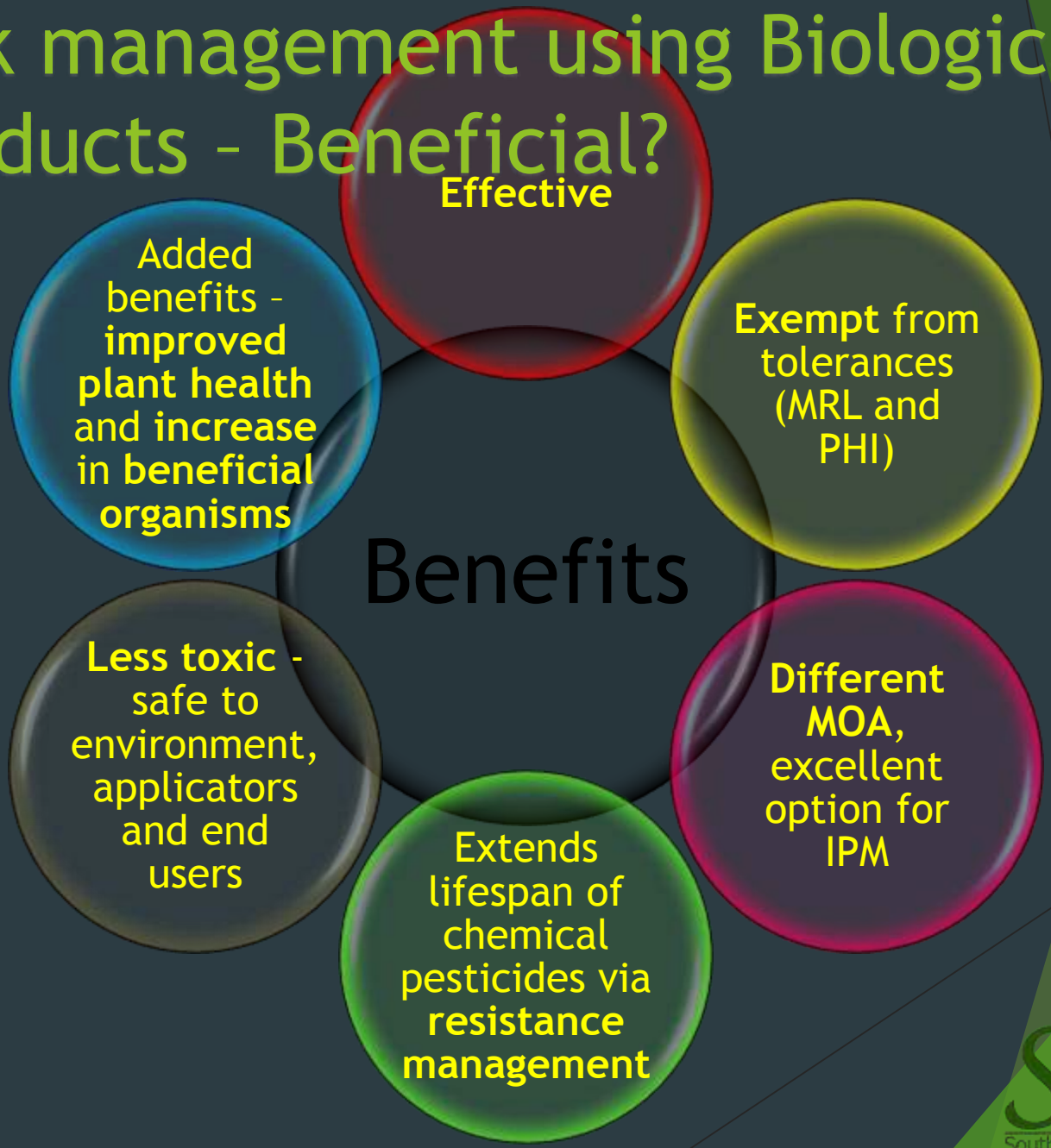
SABO
South African Bioproducts Organisation

Biological products & synthetic chemistry? IPM!

- EPA => IPM: “It uses a combination of practices and control methods to prevent problems rather than only dealing with them after they have happened. IPM focusses on planning, regular monitoring and timely decision-making”
- It includes:
  - Biological control (predators, parasites, microbial pathogens)
  - Cultural and Physical control (barriers, traps, crop rotation)
  - Chemical control (selecting least toxic pesticide)
  - Plant choice (cultivar selection)
  - Genetic control (Sterilised male insect release)
  - Pheromone control (monitor or control)

SABO
South African Bioproducts Organisation

Risk management using Biological products – Beneficial?



SABO
South African Bioproducts Organisation

Biological products in IPM – Added benefit

- A biological product or combination thereof can often replace old synthetic chemistry products in an IPM program.
- This results in the reduction of the total MRL package for the crop – market produce with lower MRL value.
- Provides grower with “a standby MRL” that could be utilised in an emergency situation later in the season to control a pest or disease.

SABO
South African Bioproducts Organisation

Biological products in IPM - Challenges

- Efficacy.
- Well formulated (logistics, storage and environmental conditions).
- User-friendly (regarding equipment and production practices).
- Tank mix only if products are compatible.
- Use the biological product in the correct application slot.
- Effective transfer of product knowledge – manage expectations.
- Cost effective.

SABO
South African Bioproducts Organisation

A commercial example

Madumbi Sustainable Agriculture

SABO South African Bioproducts Organisation

- Crop – Citrus, Target – False Codling Moth (Phytosanitary pest)

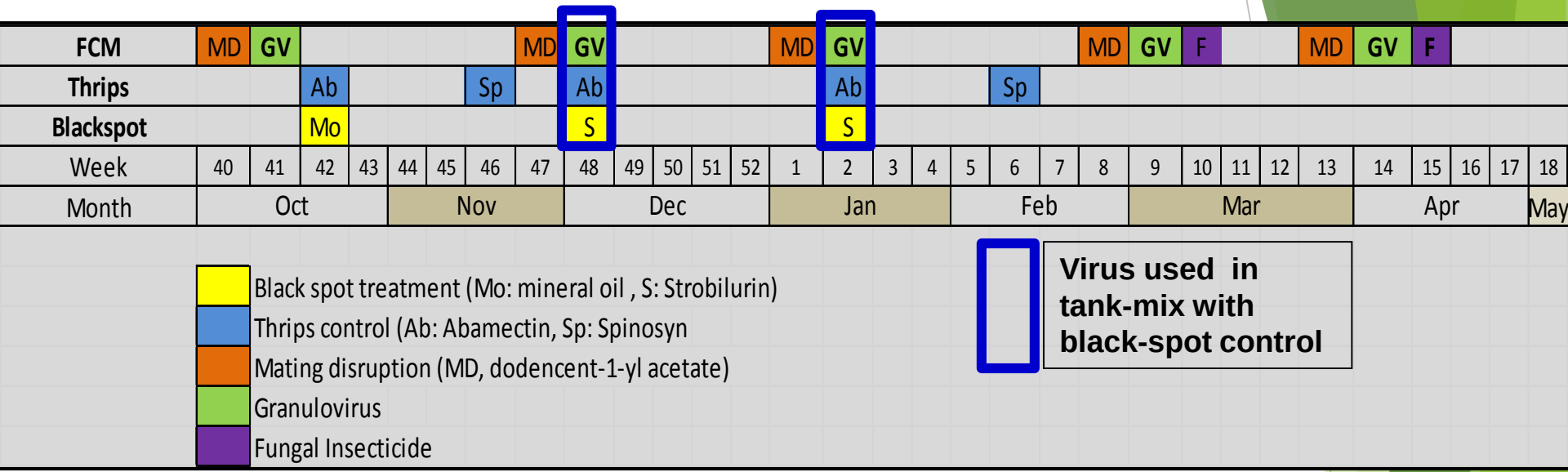
- Area: Limpopo, 700 ha citrus estate
- They have adopted a total IPM approach incorporating:
  - Cultural control – Orchard Sanitation (removal of FCM infected fruit)
  - Pheromone control – Monitoring and Mating disruption

  - Biological control – Granulovirus product (Larvae)
  - Biological control – Fungal insecticide product (Eggs, larvae, pupae & adults)
  - Chemical control - Spinosyn group (Larvae)

Madumbi Sustainable Agriculture

SABO South African Bioproducts Organisation

IPM Program



Over a period of 3 seasons FCM damage was reduced

from 25% to less than 1%

Madumbi Sustainable Agriculture

SABO South African Bioproducts Organisation

Biological products in risk management… Sustainable?

- If Biological products are used correctly they are effective, add value and are definitely sustainable.
- Times have changed – the combined focus of BOTH chemical and biological industries should be to:
  - Provide solutions
  - Add value, and
  - Help our clients farm sustainably

SABO
South African Bioproducts Organisation

Thank you for the opportunity to participate

SABO
South African Bioproducts Organisation