

SANBI

Biodiversity for Life

South African National Biodiversity Institute



SANBI's GMO monitoring and research programme: contribution towards GMO sustainability R&D



Tlou Masehela

1st Biosafety Symposium; 01/02/2018

We believe GMOs have no place in a sustainable food & agriculture system

GMOs:

- impact negatively on the environment
- create uncontrollable pests & weeds
- contaminate wild plants & farmer varieties of seed
- are bad for the health of people and animals
- create farmer debt & counter farmers' rights
- take away our food sovereignty
- entrench corporate control of our food and seed



GMOs

do not prevent
climate change,
ensure food
security,
or create jobs

Programme timeline

(NEMBA) Act
10 of 2004

Ms Tsepang
Makholela
(DEA)

&

Dr Genya
Dana

(World
Economic
Forum)

Vacant

2004

2005

2006

2007

2012

2014

SANBI &
GenØk (Study
on MON810)

Dr Lukeshni
Chetty
(SANSOR)

Dr Tlou
Masehela

Programme mandate (role)

Must monitor and report regularly to the Minister on the impact of any genetically modified organism that has been released into the environment including the impact on non-target organisms and ecological processes, indigenous biological resources and the biological diversity of species used for agriculture;

All categories of genetically modified organisms, post commercial release, based on research that identifies and evaluates risk.

Contributions to GMO R&D (2005-2010)

Monitoring the environmental impacts of GM maize is SA



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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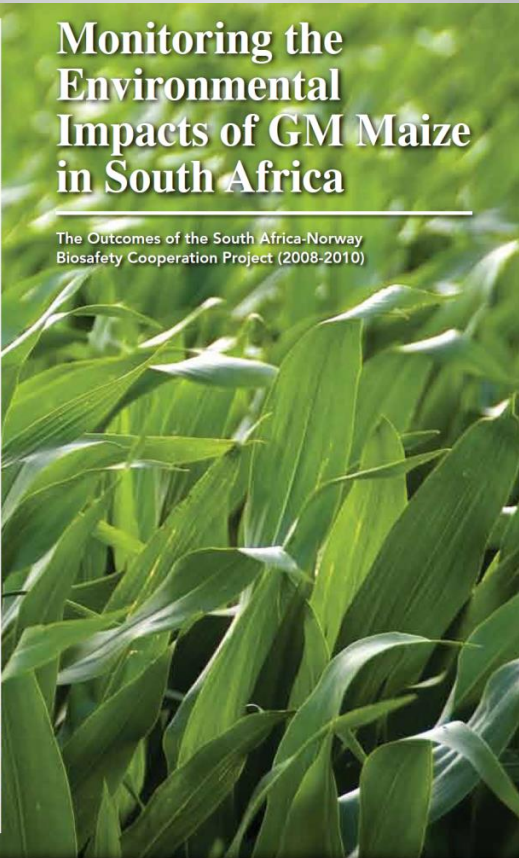
South African National Biodiversity Institute



Monitoring the environmental impacts of GM maize is SA

Monitoring the Environmental Impacts of GM Maize in South Africa

The Outcomes of the South Africa-Norway Biosafety Cooperation Project (2008-2010)



environmental affairs

Department:
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REPUBLIC OF SOUTH AFRICA



national
biodiversity
institute
S A N B I

Key outcomes for MON810:

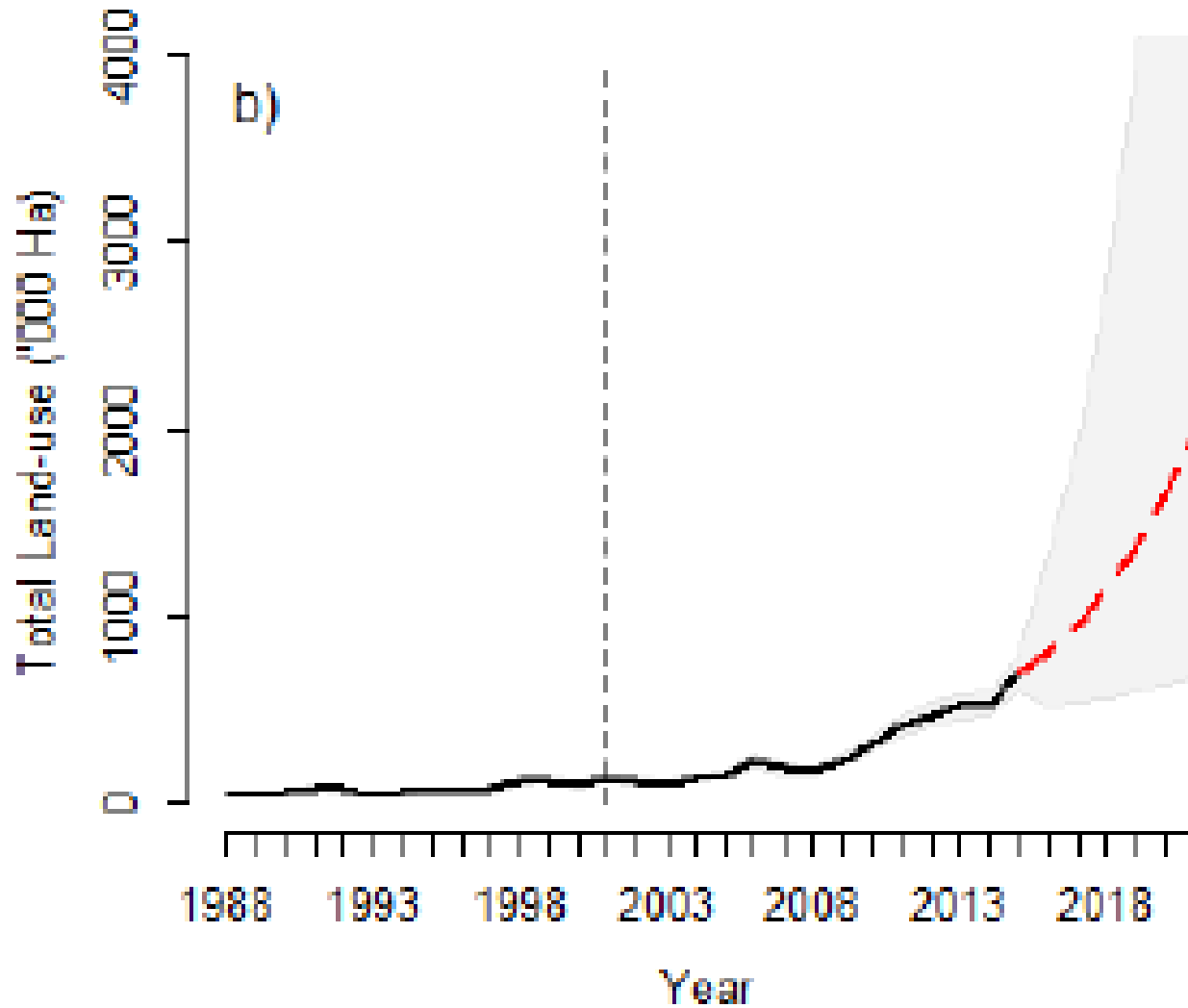
- Potential contribution to resistance development:
 - Varying levels of *Bt* toxin production in different maize tissues;
 - Gene flow from *Bt* maize to non-*Bt* maize results in low levels of *Bt* toxin; and
 - Detection of the another *Bt*-resistant population in the North-West Province;
- Current refugia requirements not adequate to manage resistance in established areas
- Genetic background of the variety used and different growing environment are important considerations in terms of study design
- Potential wide socio-economic implications and concerns

Contributions to research/studies (2014 to date)

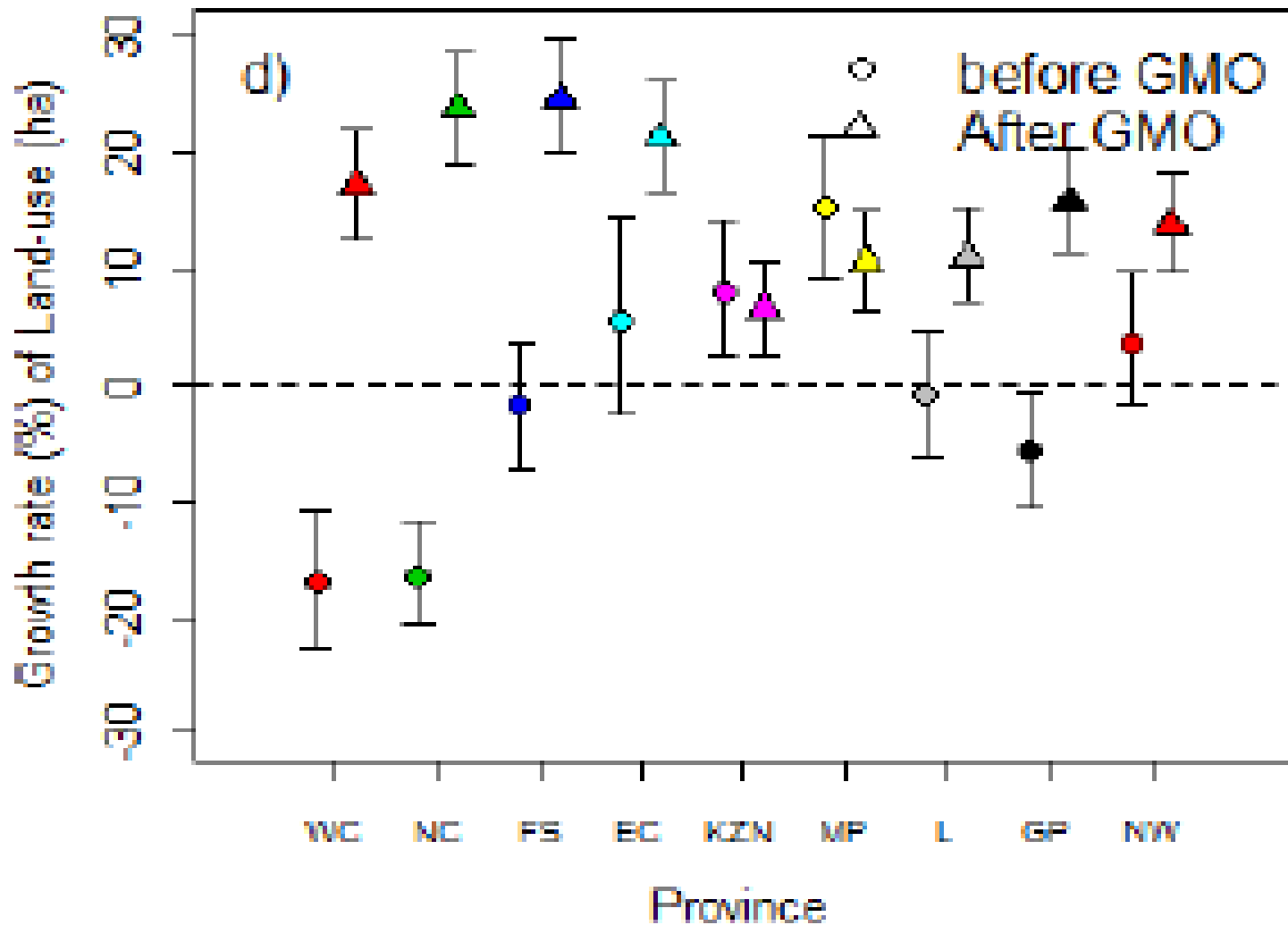
- **Land use trends for GM crops**
 - Soybean and Maize
 - Cotton
- **Pesticides use trends in GM crops**
- **Inventories and datasets on GM crops**



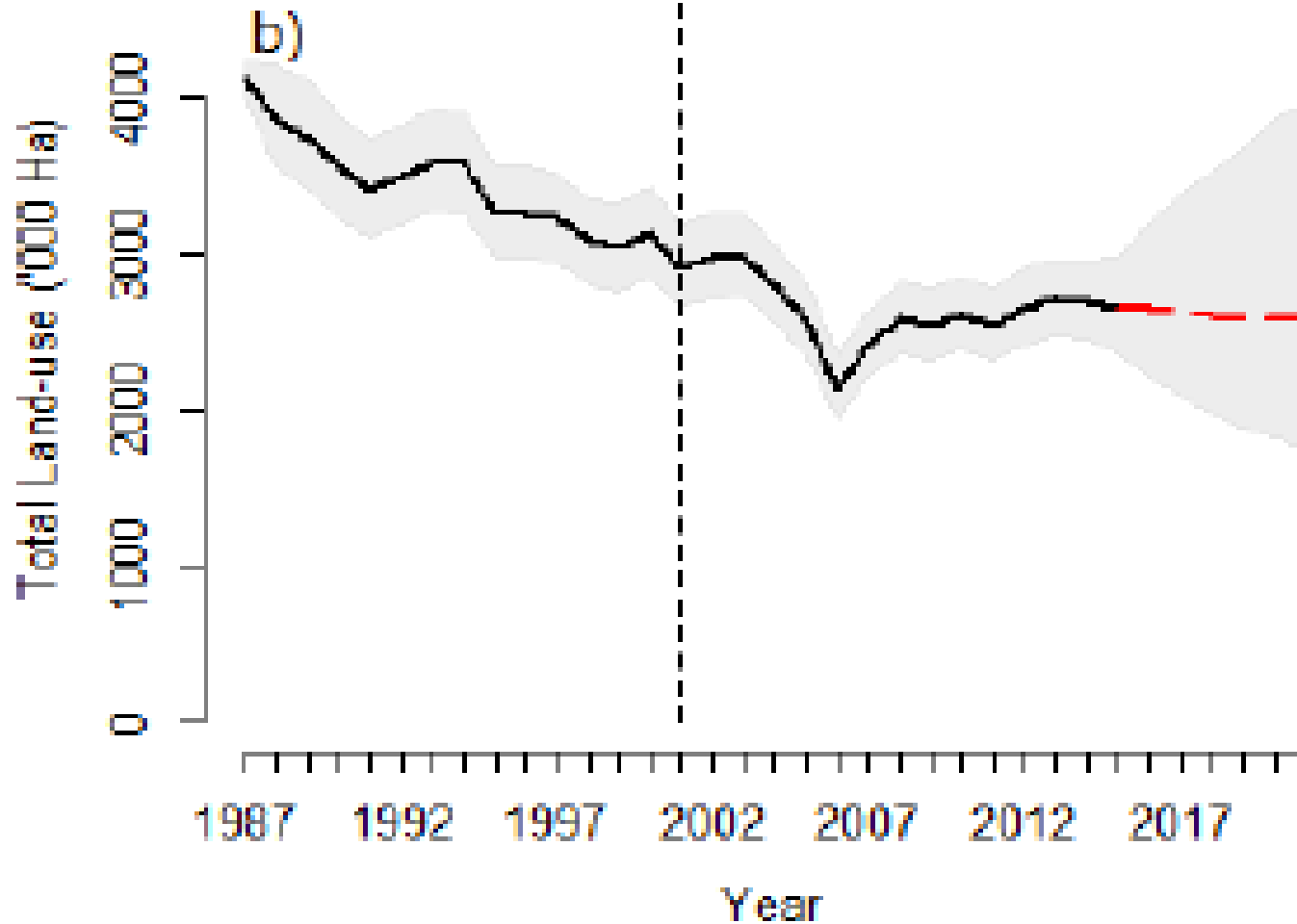
Soybean – overall land use & projection



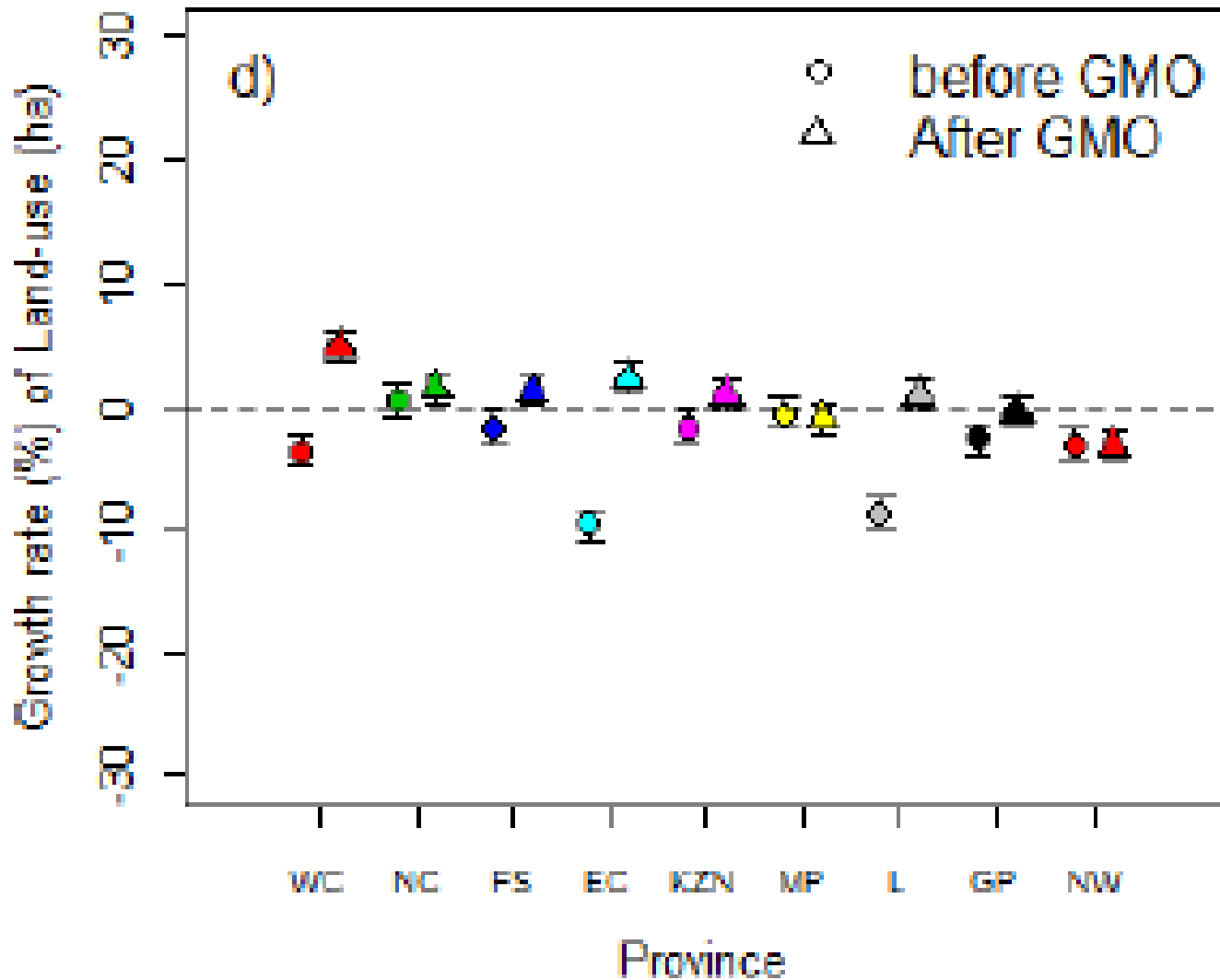
Soybean – comparison per province



Maize – overall land use & projection



Maize – comparison per province



Contributions in the Biosafety space

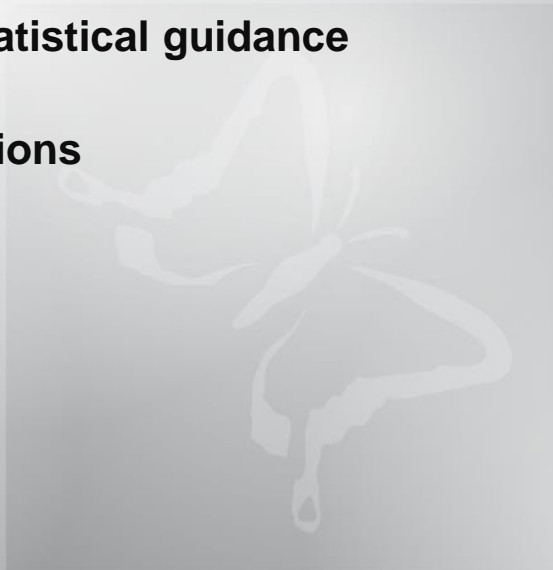
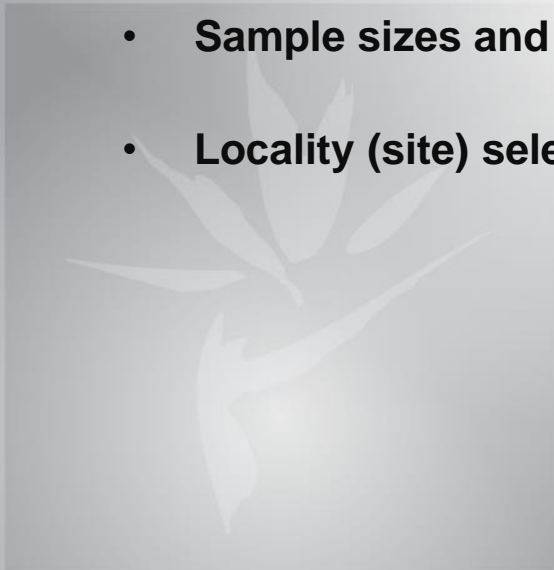
- **2nd National Biodiversity Strategy and Action Plan (NBSAP) 2015 – 2025**
- **Environmental Risk Assessment Framework for GMOs: A guidance document (Chapter 5)**
 - **GAP analysis for ERA**
 - **Protection Goals and Assessment Endpoints for Risk Assessment of Genetically Modified Organisms in South Africa.**
 - **Risk assessments – GMO sub committee**
- **Environmental Risk Assessment Framework guidance document for Genetically Modified Pharmaceutical crops**
- **3rd National Report on the implementation of the Cartagena Protocol on Biosafety**
- **GM sustainability research strategy (BiosafetySA)**
- **COP MOP 8**
- **GMO Annual reports to the Minister**

Assistance on industry monitoring protocols

- **Syngenta & Pioneer**

- **Compliance monitoring for NTOs**
- **2015 & 2016**

- **Sample sizes and statistical guidance**
- **Locality (site) selections**



Pilot project on weed profiling and herbicide use in GM maize (with Herbicide Tolerance traits)



Umthatha Area: Tsolo & Baziya

- 27 ha
- Weed surveys
- Herbicide application records
- Pre-emergence surveys (Nov 2017)
- Post emergence surveys (Jan 2018)



Areas of interest for the project:

- Weed diversity, prevalence, potential of invasive traits;
- Different spectrums of herbicides used and the effectiveness thereof;
 - Comparisons of sites for different planting seasons

Diversity of non-crop plants and arthropods in soybean Agro-ecosystems in South Africa (2018-2019)



Project objectives:

- Gather and compare the beta diversity (spatial turnover in species composition) of soybean fields and natural environments in the Grassland biome of South Africa;
- Document and compare patterns of plant and arthropod functional diversity in soybean fields and margins; and
- Investigate possible cases of weed shift in Roundup Ready (RR) and non-RR soybean fields as well as their margins.

Long term goals

Completion and implementation of the GMO monitoring framework

GMO Database/Portal

GMO Status Report



Acknowledgements



science
& technology

Department:
Science and Technology
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Thank You!



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