



SESSION 2 - Facilitator - Prof Pieter Swanepoel

Speaker 3: Dr Lisa Rothmann - UFS

Dr Lisa Rothmann obtained her undergraduate BSc Agric degrees at the University of the Free State (UFS), and her MSc Agric research focused on sorghum grain mold and associated mycotoxins. Dr Rothmann obtained her doctorate in plant pathology with research titled “The spatial quantification and hierarchy characterization of Sclerotinia prevalence from a decade of observations in soybean and sunflower”

from the UFS in 2020. Her research was under the supervision of Professor Neal McLaren (UFS) and Professor Emerson Del Ponte, at the University of Viçosa in Brazil.

Lisa currently holds the position of lecturer in the Plant Pathology division, Plant Sciences, at the UFS. Dr Rothmann is the Principal Investigator for summer grain pathology and epidemiology research, which is directly associated with producer needs and industry-related challenges. Their research group focuses on management practices associated with Sclerotinia diseases of oilseed and -protein crops, soybean seed health, sorghum foliar and grain diseases as well as concomitant mycotoxins.



OPDT/OAC



Collective efforts towards progress in Sclerotinia stem rot management in South Africa



Lisa Rothmann *et al.*,



University of the Free State
Plant Sciences, Plant Pathology



Realities in South Africa



Why is *Sclerotinia* Hard to Manage



Where Are We Making Progress?



The Rotation Reality



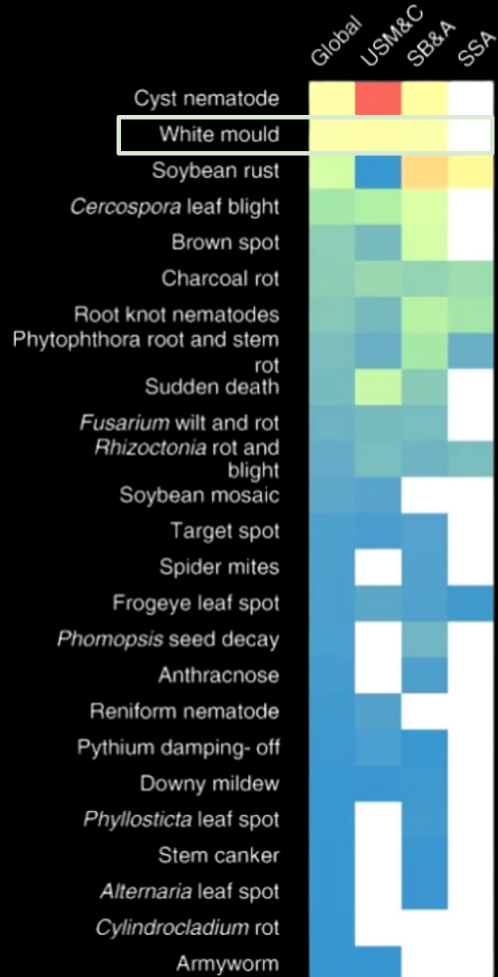
Closing Reflection

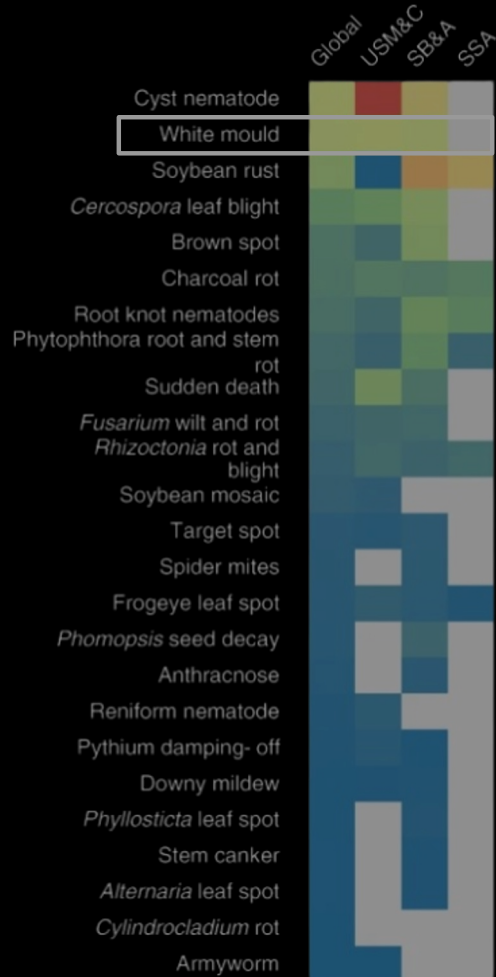
What does
success look
like in
Sclerotinia
stem rot
management?



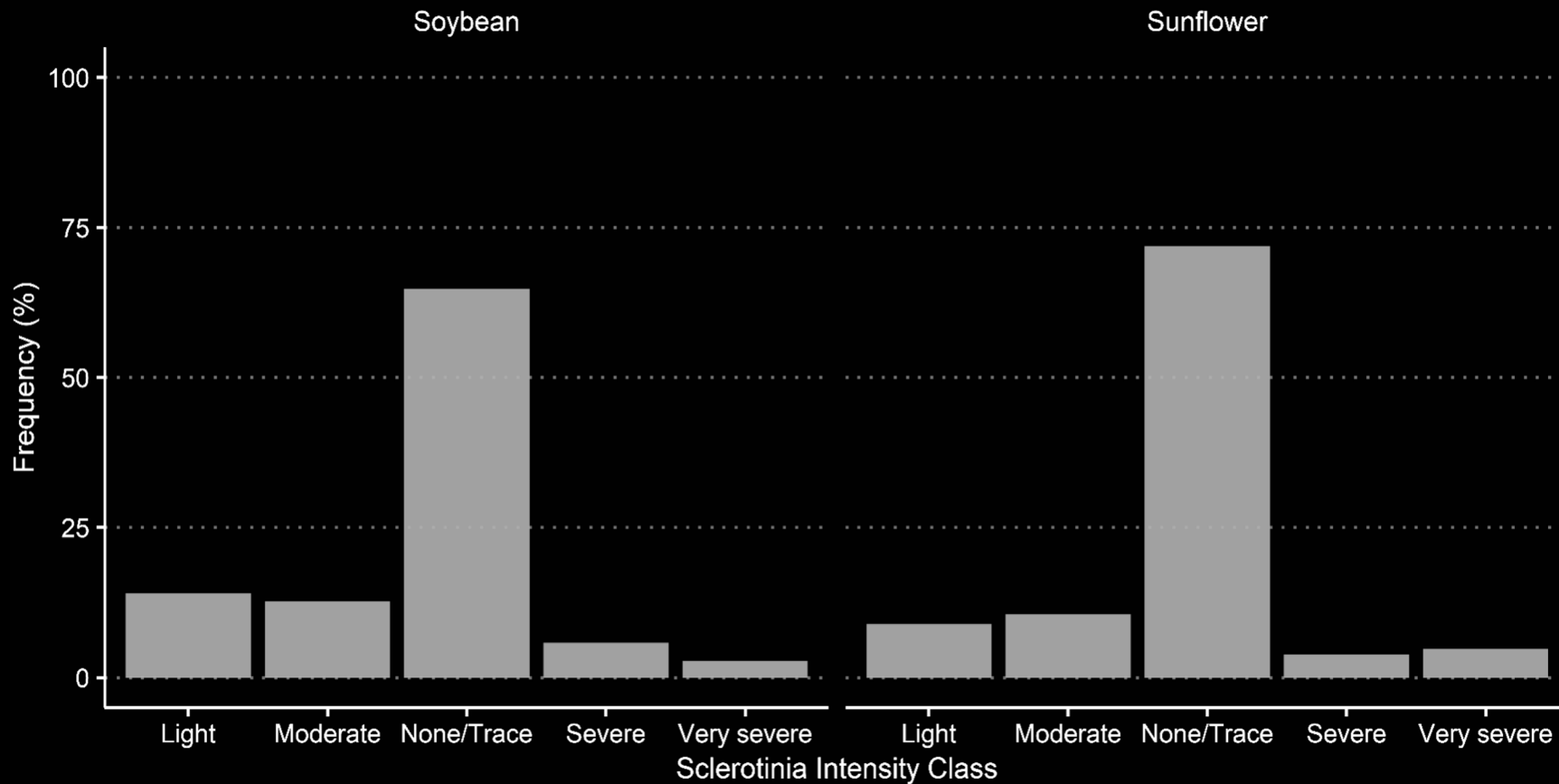
The background of the image is a close-up photograph of a plant. It features several green, hairy stems. There are several seed pods; some are bright green and elongated, while others are a reddish-brown color and appear more fuzzy or downy. The overall texture is very soft due to the fine hairs on the plant parts.

Realities in South Africa





FARMERS SAY THERE'S BEEN TOO MUCH RAIN



None/trace (< 1%), light (1-10%), moderate (11-40%), severe (41-80%) and very severe (>80%).



Apricot², Broccoli³, Brussel sprout³, Cabbage^{3,5}, Carrot⁵, Cauliflower^{3,5}, Common bean^{3,5}, Canola⁶, Grapefruit³, Hoary stock³, Hubbard Squash⁷, Japanese radish⁵, Lettuce⁵, Lupin³, Orange³, Pea⁵, Potato¹, Rangpur³, Soybean^{8,5}, Sunflower^{3,4,5}, Tomato³

¹Denner, Theron, Serfontein, 1992; ²Doidge et al., 1953; as cited in van der Westhuizen & Eicker, 1988; ³Gorter, 1977; ⁴Holtzhausen, 1977; ⁵van der Westhuizen & Eicker, 1988; ⁶Ramusi & Flett, 2015; ⁷Steyn, 2015; ⁸Thompson & van der Westhuizen, 1979; ⁹van der Westhuizen & Eicker, 1988

2006

2007

2008

2009

2010

2011

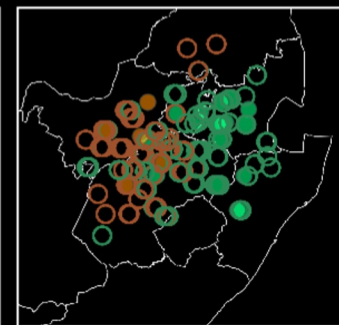
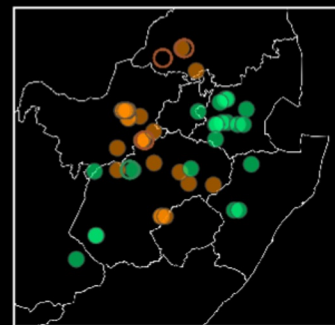
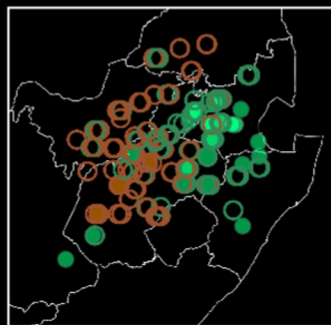
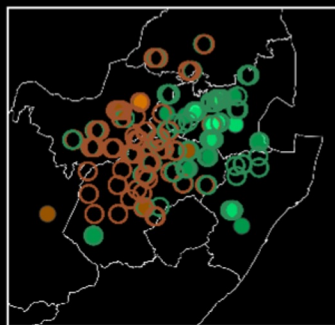
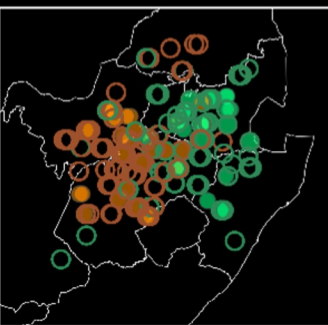
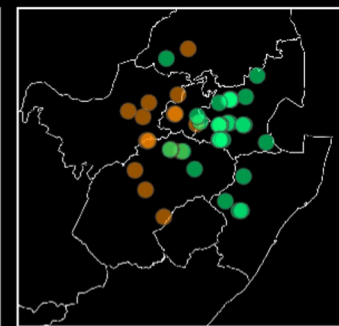
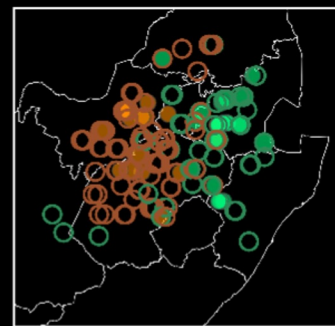
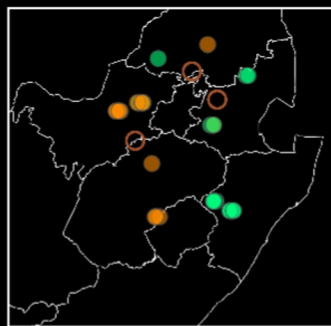
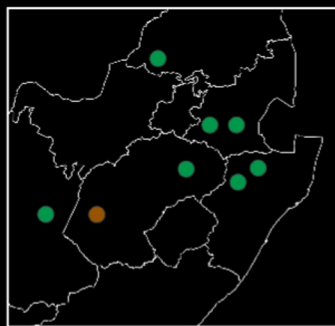
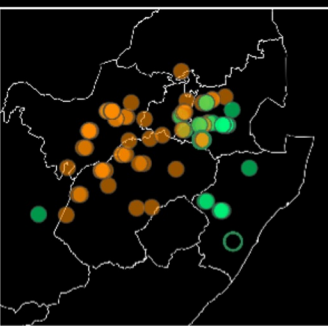
2012

2013

2014

2015

Latitude

24°S
26°S
28°S
30°S
32°S

24°E 26°E 28°E 30°E 32°E

24°E 26°E 28°E 30°E 32°E

24°E 26°E 28°E 30°E 32°E

24°E 26°E 28°E 30°E 32°E

24°E 26°E 28°E 30°E 32°E

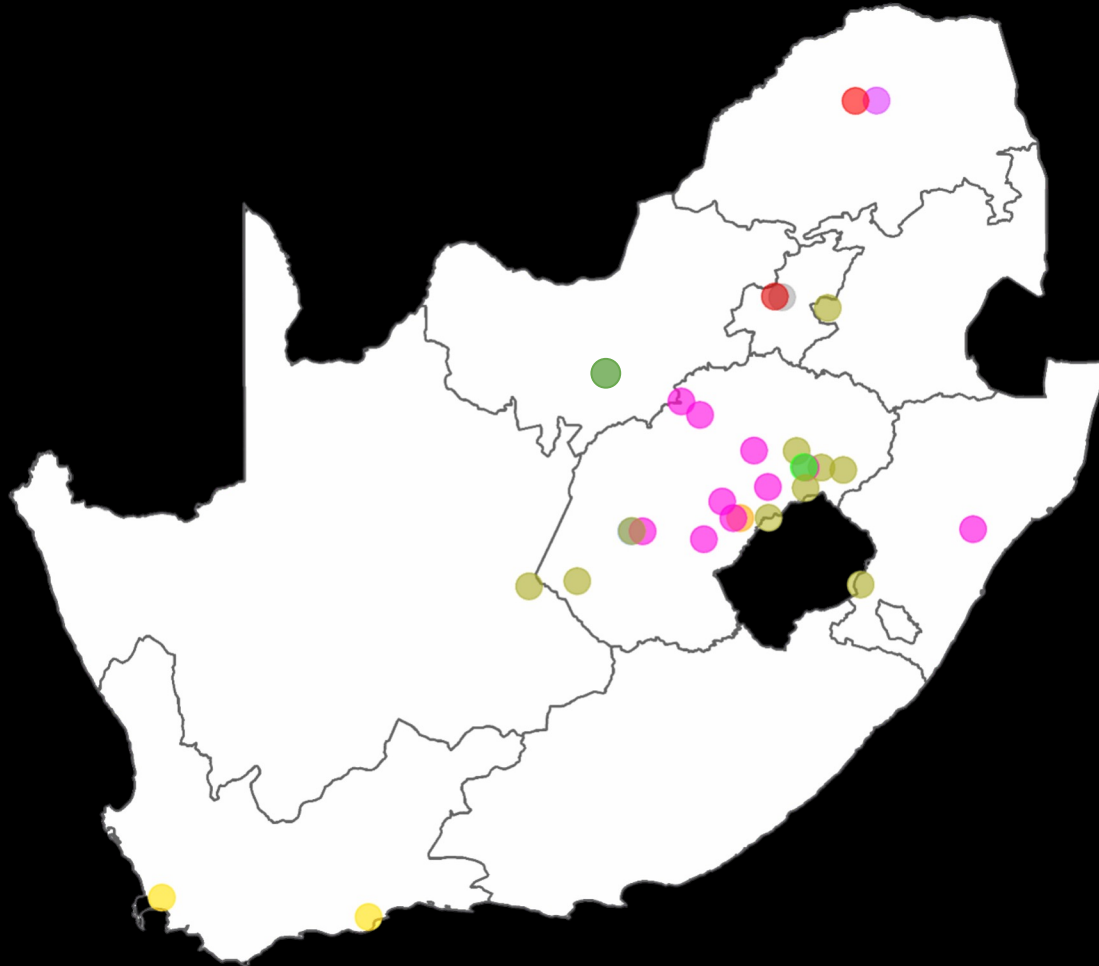
Longitude

No Sclerotinia observed

soybean
sunflower

Sclerotinia observed

soybean
sunflower



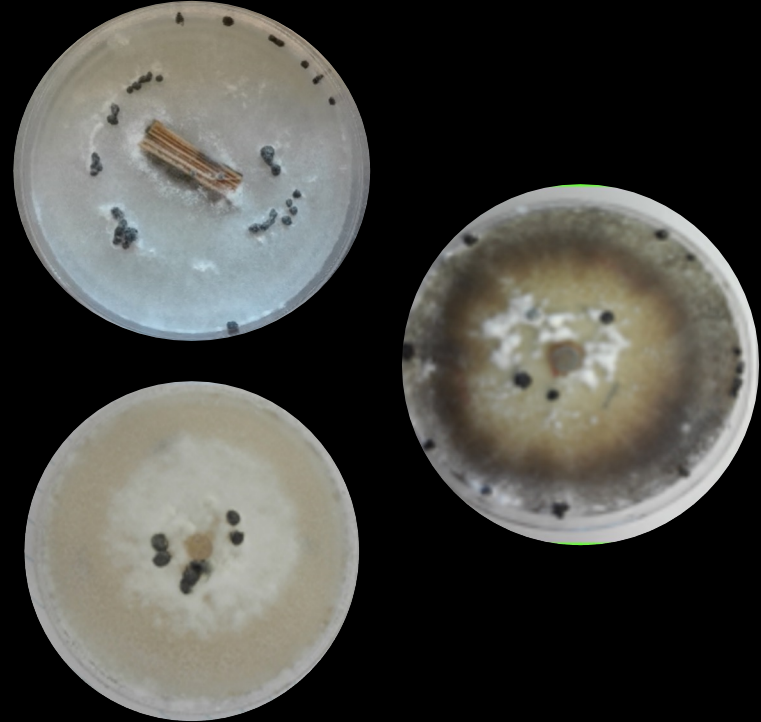
- Butternut
- Cabbage
- Canola
- Dry beans
- Green Beans
- Hubbard Squash
- Soybean
- Squash
- Sunflower
- Tunnel Squash
- Groundnuts

Why is *Sclerotinia* hard to manage?

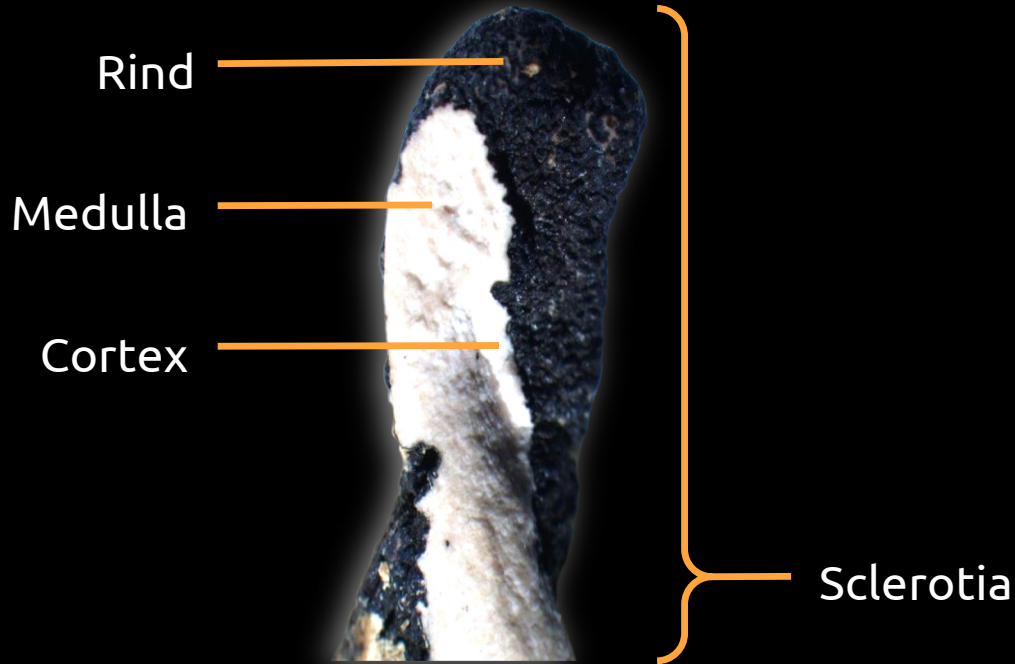




THE CHALLENGE | SCLEROTIA



THE CHALLENGE | SCLEROTIA



Rothmann & Sabela, 2023

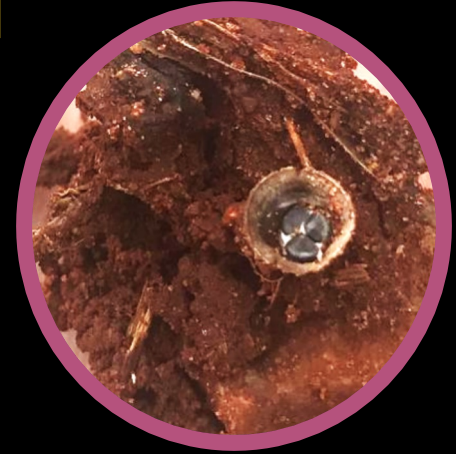
THE CHALLENGE | APOTHECIA



THE CHALLENGE | APOTHECIA



DON'T GET TRICKED | BIRDS NEST









Rothmann & Meiring, 2021



Where are we making progress?

01 10 2024 17:28:46



**Western Cape
Government**
FOR YOU



No registered active



No registered active

Certified seed – your first defence against Sclerotinia in soybeans

December 2018

HANLIE DU PLESSIS for SANSOR

Sclerotinia, a sporadic fungal disease affecting a wide range of host plants, has had a substantial impact on soybean production during the previous season. This fungus has the potential to reduce soybean yields with up to 50%, should conducive environmental conditions for the infection and rapid development of the disease prevail during the growing period.

Unfortunately, by the time the first *Sclerotinia* symptoms are observed, very little can be done to control this fungus. Therefore, preventative management practices should be implemented and applied to minimise the level of infection and further spread of the disease.

Early symptoms

One of the early symptoms of *Sclerotinia* disease is the sudden wilting of soybean plants. Leaves will turn greyish-green before turning brown, curling up and eventually dying off. The fact that the leaves do not drop immediately, makes it easier to distinguish infected plants from healthy ones.

Symptoms will normally be visible within two to three weeks after flowering has commenced in the crop, given that the right conditions persisted, and infection has occurred.

Sclerotinia can easily be distinguished from most other soybean diseases by the presence of a white, cottony, mouldy growth and hard, black sclerotia on the inside and outside of infected stems and pods. The black sclerotia is the survival structure of *Sclerotinia* and can easily be spread during harvesting.





Healthy



White mold

Sclerotinia sclerotiorum



Immature pods



Downy mildew

Peronospora manshurica



Phomopsis decay

Diaporthe spp.



Purple seed stain

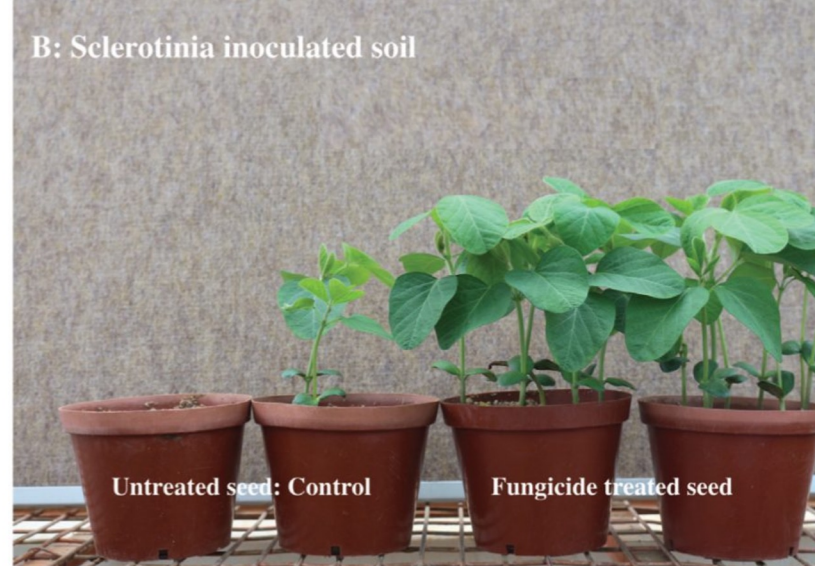
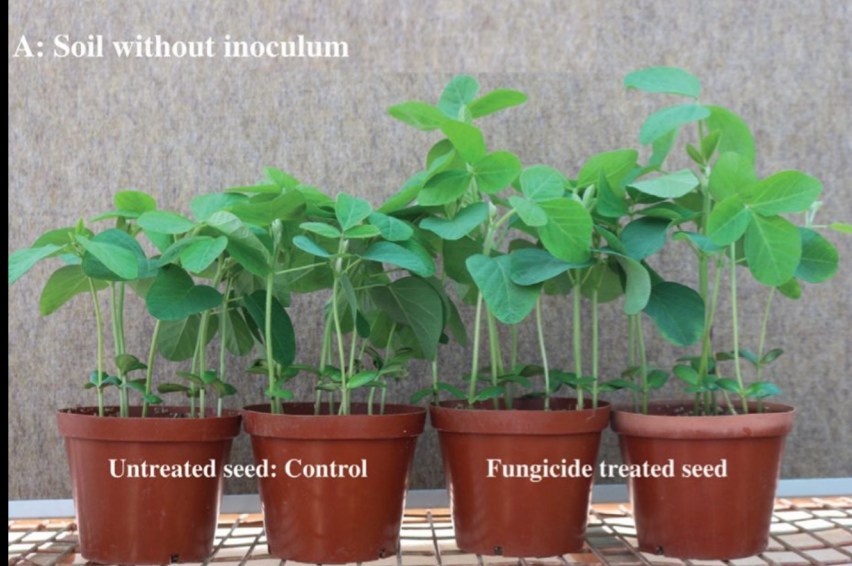
Cercospora kikuchii



“The advantage of using

SEED TREATMENTS

to manage plant pests and diseases is their precise and targeted application, utilising minimal chemicals that specifically target the seeds while minimising harm to the environment.”



INTRODUCING TYMIRIUM™ technology– A NEW NEMATOCIDE TO REVOLUTIONIZE THE FUTURE OF AGRICULTURE IN ZAMBIA

BLOG ARTICLE

02.05.2024

INTRODUCING TYMIRIUM™ technology– A NEW NEMATOCIDE TO REVOLUTIONIZE THE FUTURE OF AGRICULTURE IN ZAMBIA



syngenta®

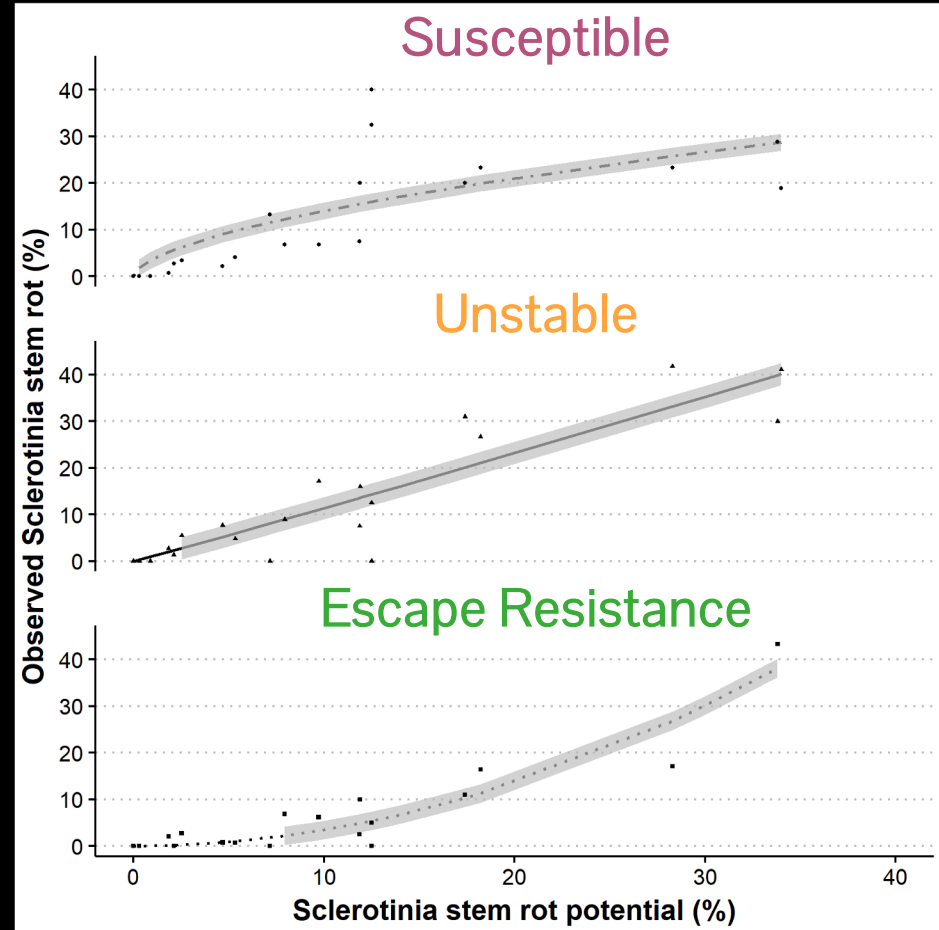
CULTIVAR EVALUATIONS



University of the Free State



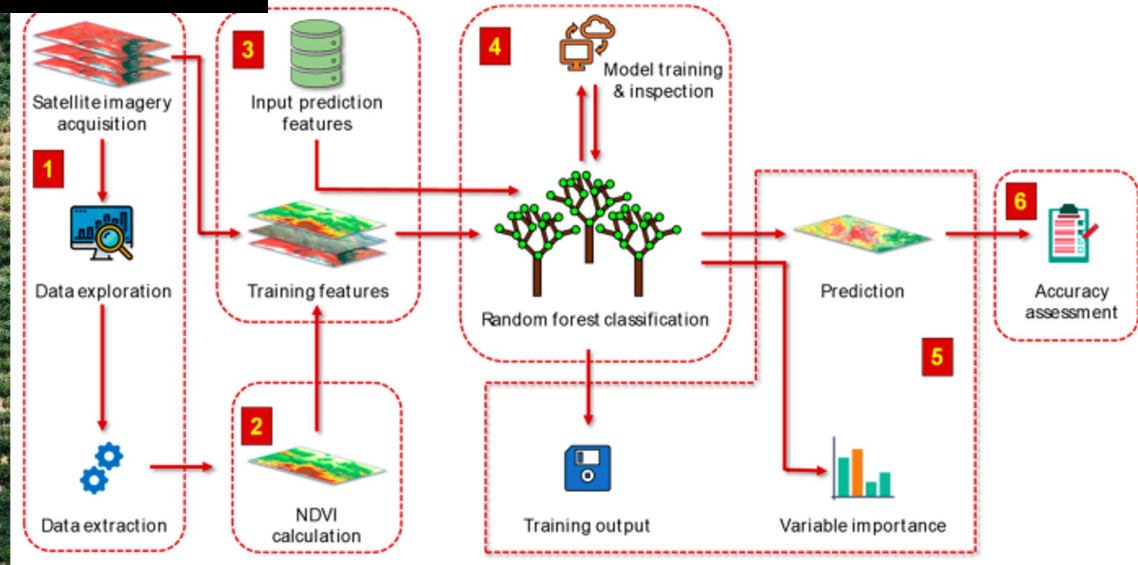
University of the Free State





University of the Free State

FUTURE WITH REMOTE SENSING



& MACHINE LEARNING

BIOLOGICAL CONTROL

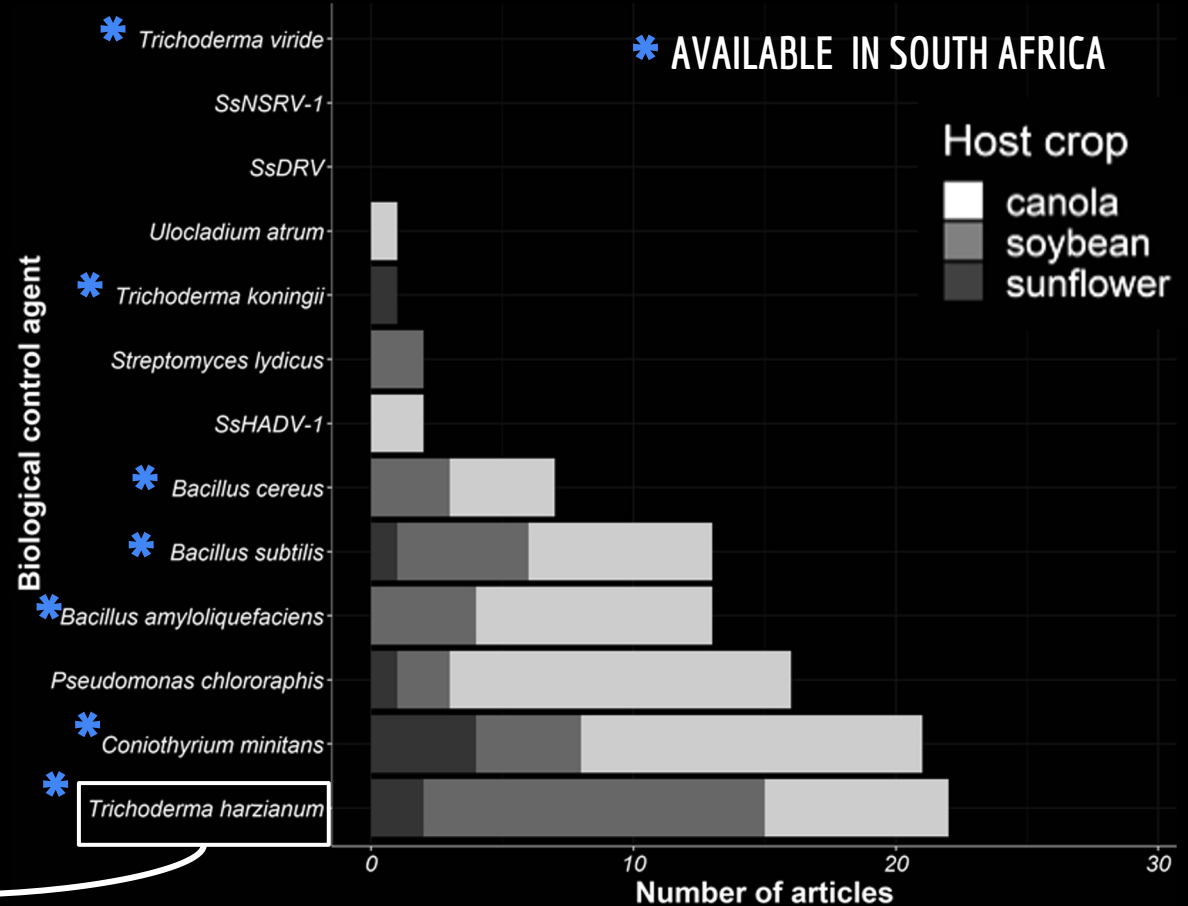
Suppression of disease by a living organism antagonising a targeted pathogenic organism.

Direct antagonism | mycoparasites

Indirect antagonism | biopesticides and biofumigants

Plant growth promoting | biofertilisers

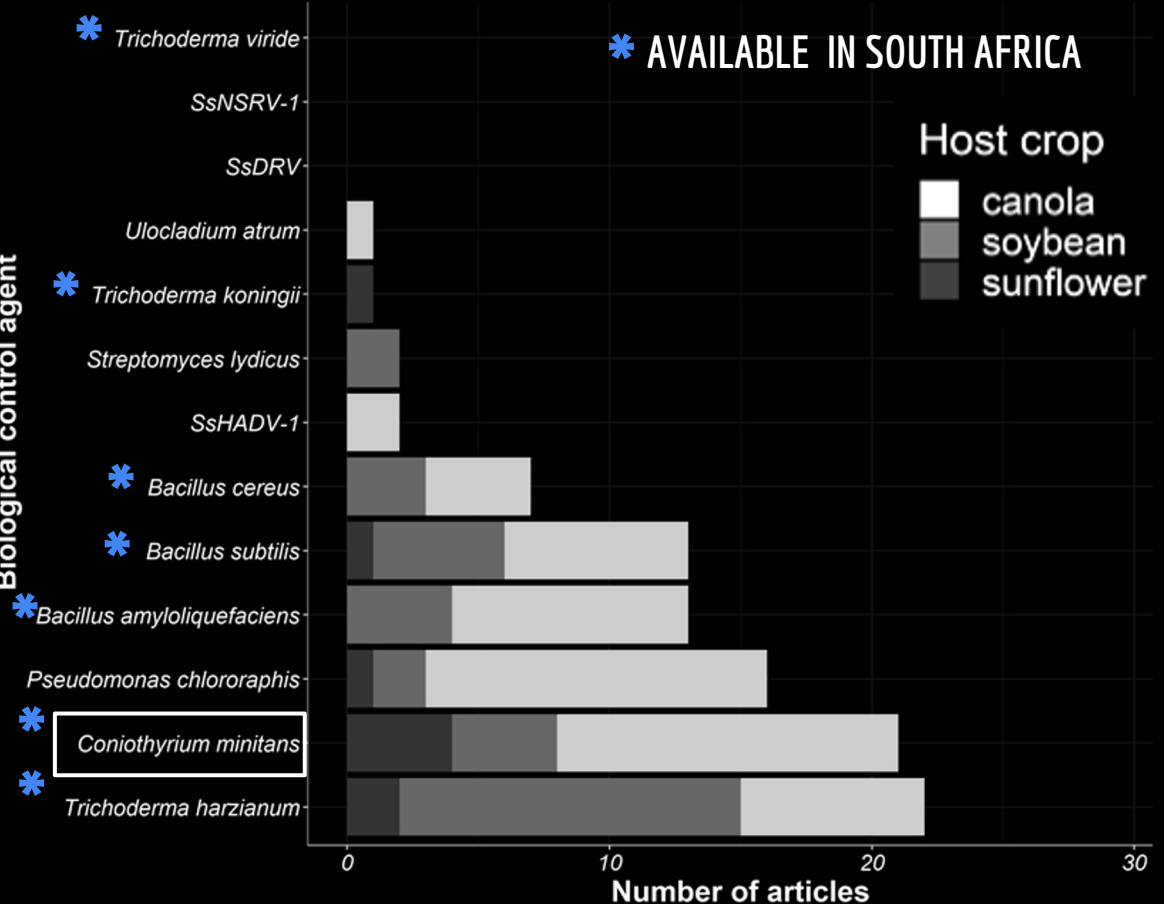
ScienceDirect



Sivagnanapazham et al., 2022
10.1186/s41938-022-00628-1



Biological control agent

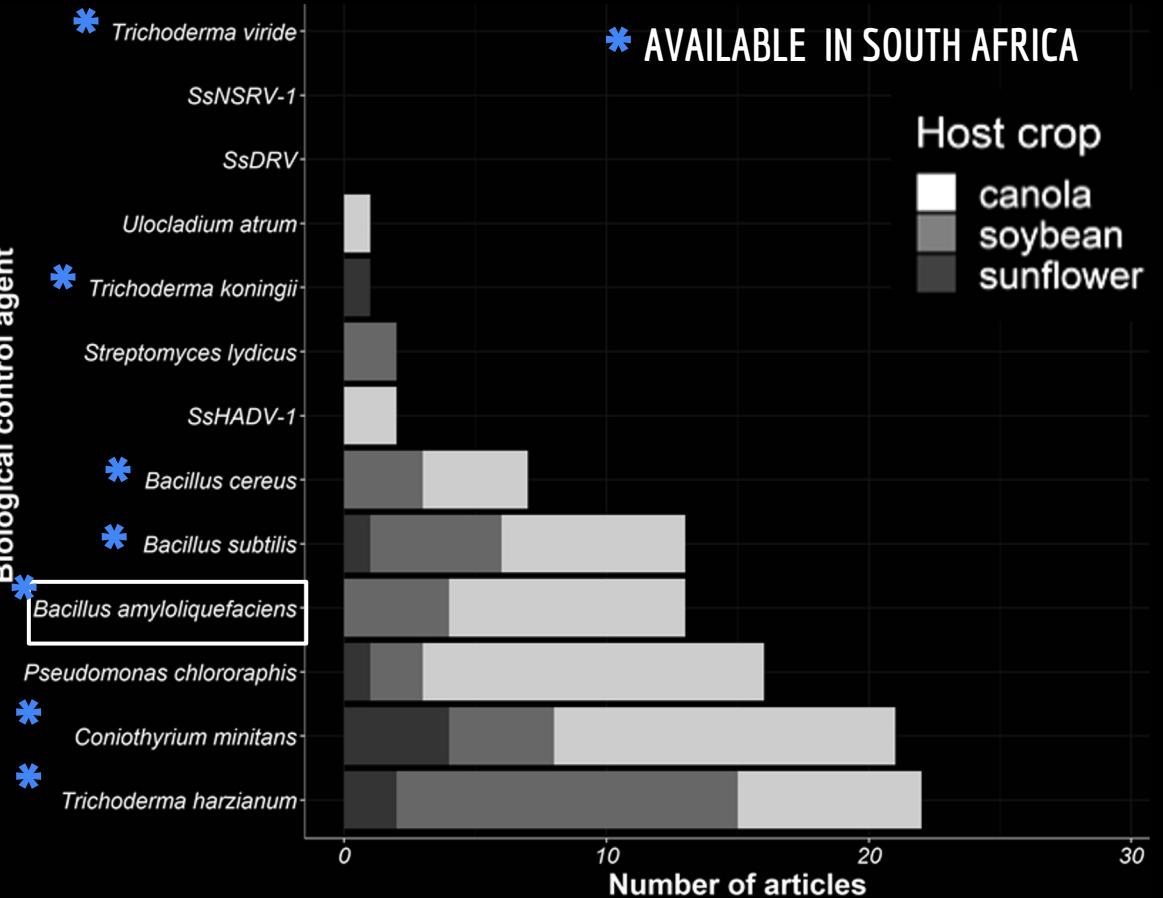


Hwang et al., 2012

10.1007/s10327-012-0376-8



Biological control agent

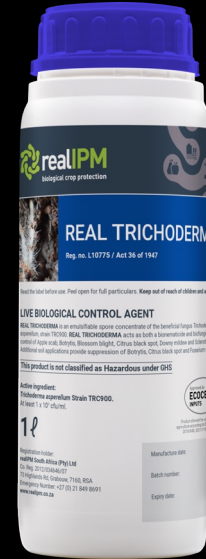




*Coniothyrium
minitans*



*Bacillus
methyilotrophicus*



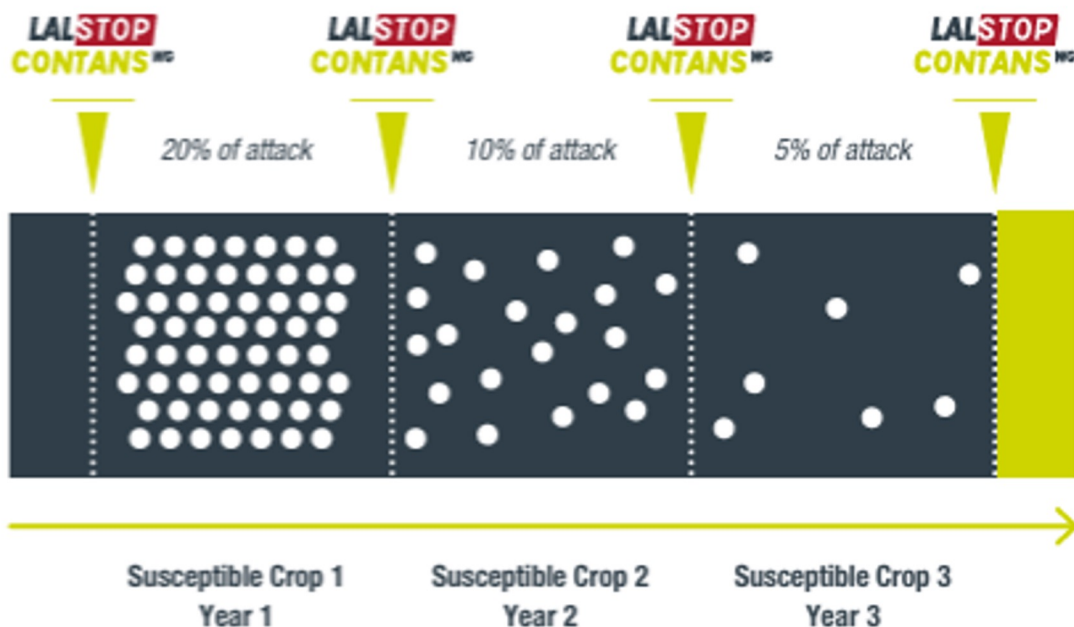
*Trichoderma
asperellum
strain TRC900*

LALLEMAND

ROTATION MANAGEMENT

Sclerotia are the long-term resting spores of *Sclerotinia*. Buried with plant debris during cultivation, they can survive in the soil for a maximum of 10 years. Brought to the surface by tillage, they germinate and allow the disease to spread again.

In situations of heavy infestation, the application of LALSTOP CONTANS WG allows a decrease in pressure by reducing the stock of sclerotia. In this case, the best results are obtained in a rotation with LALSTOP CONTANS WG applications over several years.





Soybean:

Asian Soybean Rust
Phakopsora pachyrhizi

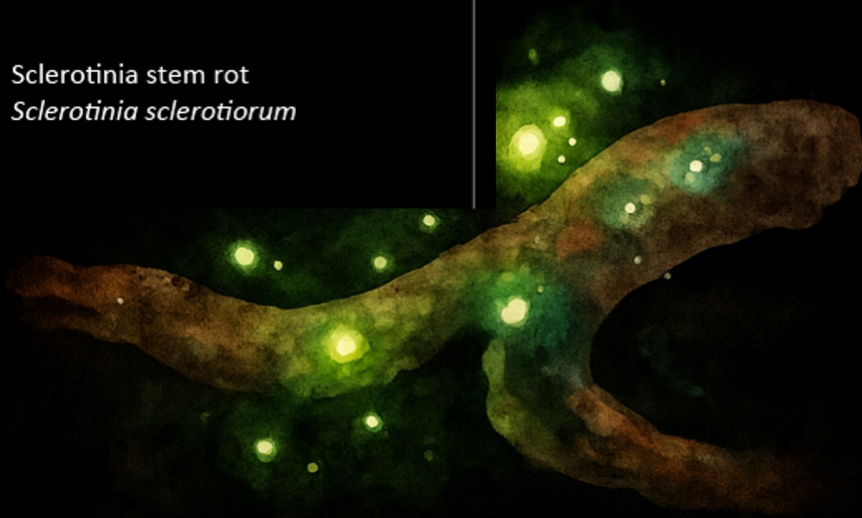
5.0-10.0 L/ha +
50 ml Twister

Apply in a preventative spray program schedule as a full cover spray at 200-1000 L/ha. Depending on the canopy of the soybeans in various regions.

Apply at first signs of disease or at flowering if no disease is present and repeat 7-21 days later. If weather conditions favour disease development (temperatures of 15-28°C and high humidity) use the shorter interval.

Sclerotinia stem rot
Sclerotinia sclerotiorum

Start application at full flower R1-R2 but will be dependent on disease pressure and local environmental conditions favouring disease at an earlier stage. Under high disease pressure apply up to 4 times between 14-28 day intervals from R1-R2.



LIVE BIOLOGICAL CONTROL AGENT

REAL TRICHODERMA is an emulsifiable spore concentrate of the beneficial fungus *Trichoderma asperellum*, strain TRC900. **REAL TRICHODERMA** acts as both a bionematicide and biofungicide for control of Apple scab, Botrytis, Blossom blight, Citrus black spot, Downy mildew and **Sclerotinia**. Additional soil applications provide suppression of Botrytis, Citrus black spot and Fusarium wilt.

CROP	PEST	DOSAGE/HA	PHI	DIRECTIONS
Berries & other Small Fruit	Botrytis	200 ml	0 Days	Foliar spray every 10-14 days.
Cannabis	Botrytis & Downy mildew	200 ml	0 Days	Foliar spray every 10-14 days.
Citrus Fruit	Botrytis & Citrus black spot	200 ml	0 Days	Foliar spray every 10-14 days. Soil drench monthly.
Grapes	Botrytis & Downy mildew	200 ml	Wine Grapes: 7 Days Table Grapes: 0 Days	Foliar spray every 10-14 days.
Pome Fruit	Apple scab	200 ml	0 Days	Foliar spray weekly. Soil drench monthly.
Tree Nuts	Botrytis	200 ml	0 Days	Foliar spray every 10-14 days.

SEED TREATMENT

REAL TRICHODERMA is a highly effective seed or tuber treatment that stimulates root development, plant emergence and plant growth. Apply 100-150 ml **REAL TRICHODERMA** to a hectare worth of seed or tubers.





CURRENTLY REGISTERED

PHILAGRO

SUMISCLEX® SC

Reg. No. / Nr. L6377 Act / Wet No. / Nr. 36 of / van 1947
Reg. No. / Nr. N-AR-9904 : Act / Wet No. / Nr. 36 of / van 1947 (Namibia / Namibië)

READ THE LABEL BEFORE USE AND READ ATTACHED PACKAGED LEAFLET BEFORE USE AND KEEP OUT OF REACH OF CHILDREN AND ANIMALS.	LEES DIE ETIKET VOOR GEBRUIK EN LEES AANGEHEGDE VOUBILJET VOOR GEBRUIK EN HOU BUITE BEREIK VAN KINDERS EN DIERE.
---	---

FUNGICIDE GROUP CODE	2	SWAMDODERGROEPKODE
A translinar systemic organic fungicide (suspension concentrate) for the control of diseases on crops and turf as listed.		
n Translinar sistemiese organiese swamdooder (suspensie-konsentraat) vir die beheer van siektes op gewasse en grasperke soos aangedui.		

Hazard Statements: Suspected of damaging to fertility or the unborn child.		Gevaarverklarings: Vermoede dat dit vrugbaarheid of die ongebore kind beskadig.
Precautionary Statements: Do not breathe vapours or spray. Wear protective gloves, protective clothing, eye protection and face protection.		Voorsorgverklarings: Moet nie dampe of spuitstof inasem nie. Dra beskermende handskoene, beskermende kler, oogbeskerming en gesigbeskerming.

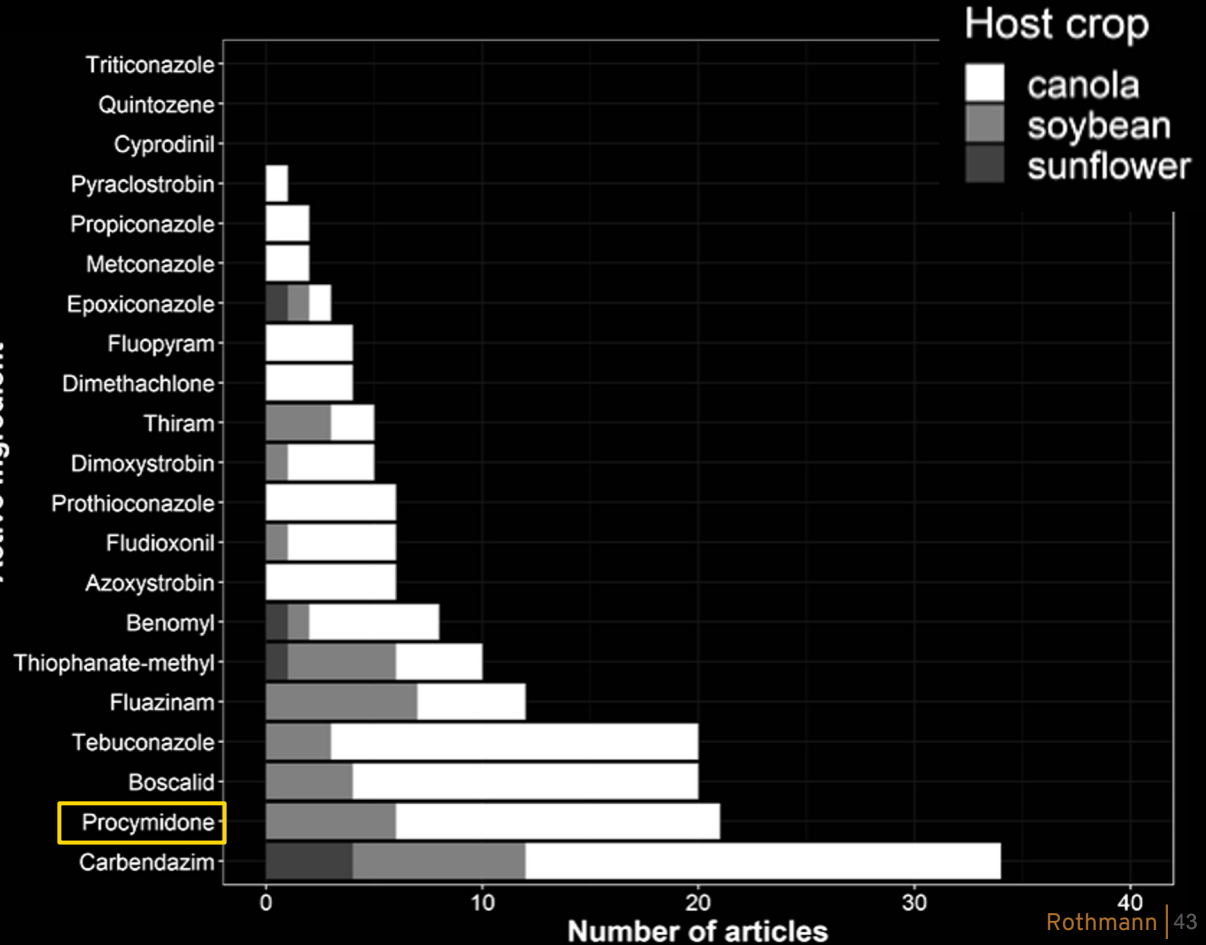
Active Ingredient / Aktiewe Bestanddeel

Procymidone (dicarboximide)	250 g/L	Prosimidoon (dikarboksimid)
Net volume		Netto volume

REGISTRATION HOLDER / REGISTRASIEHOUER
PHILAGRO SOUTH AFRICA (PTY) LTD / (EDMS) BPK
REG NO 1998/010658/07 REG NR
POSTNET SUITE #378, PRIVATE BAG / PRIVAATSAK X025, LYNNWOOD RIDGE / RIF, 0040
Tel: +27(0) 12 348 8808

SUMISLEX is the registered trade mark / is die geregistreerde handelsmerk van Sumitomo Chemical Company, Tokyo, Japan

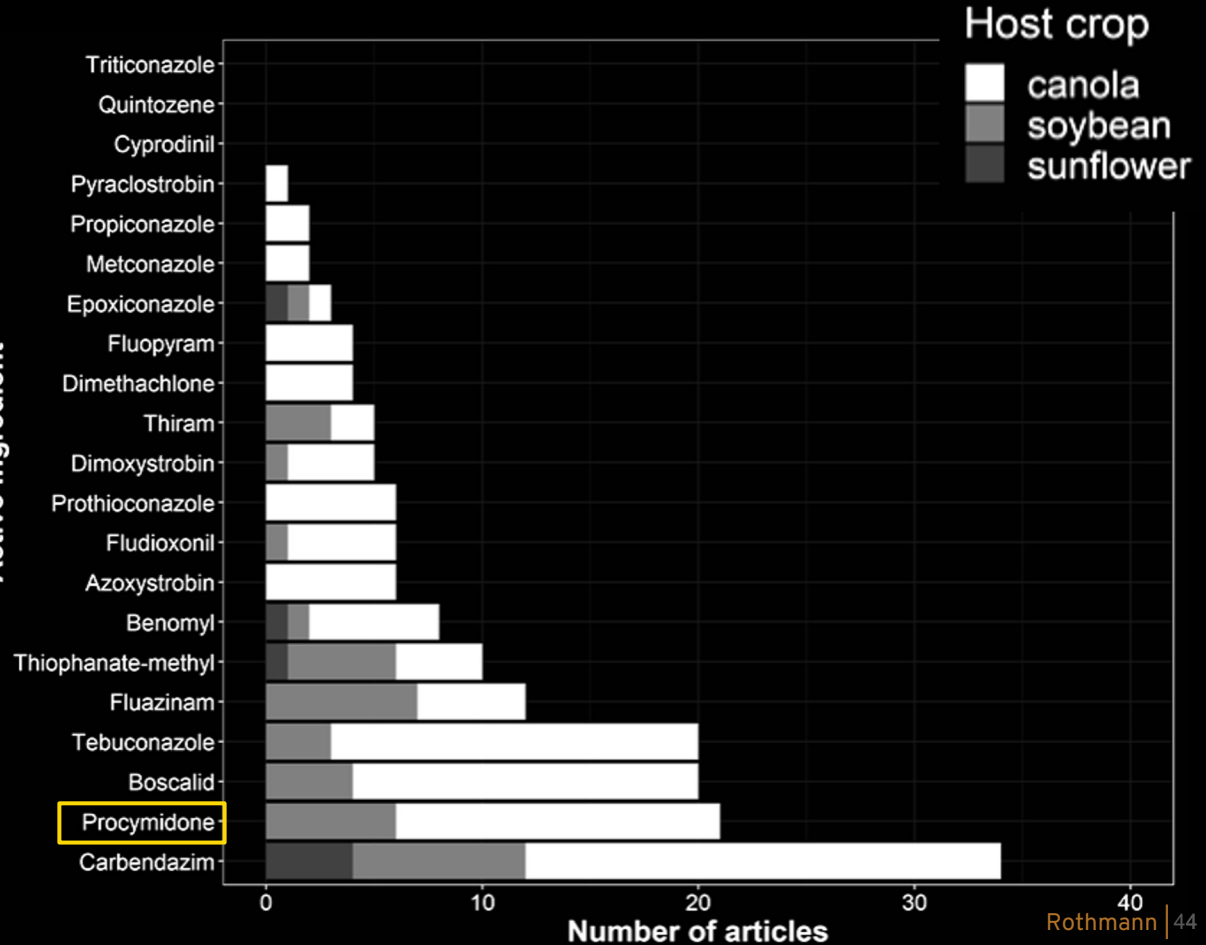
Active ingredient

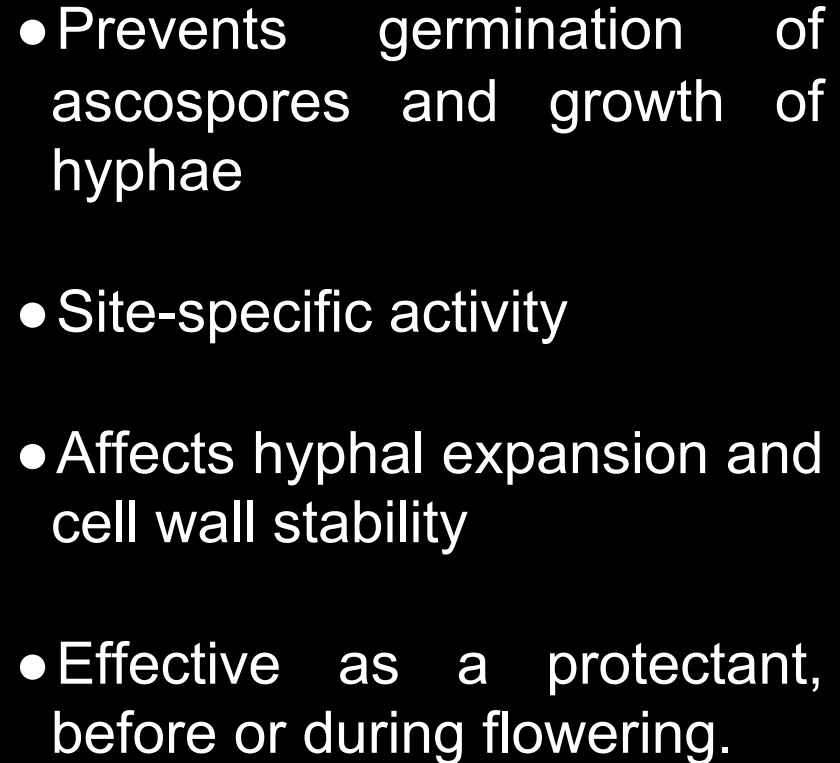


CURRENTLY REGISTERED



Active ingredient

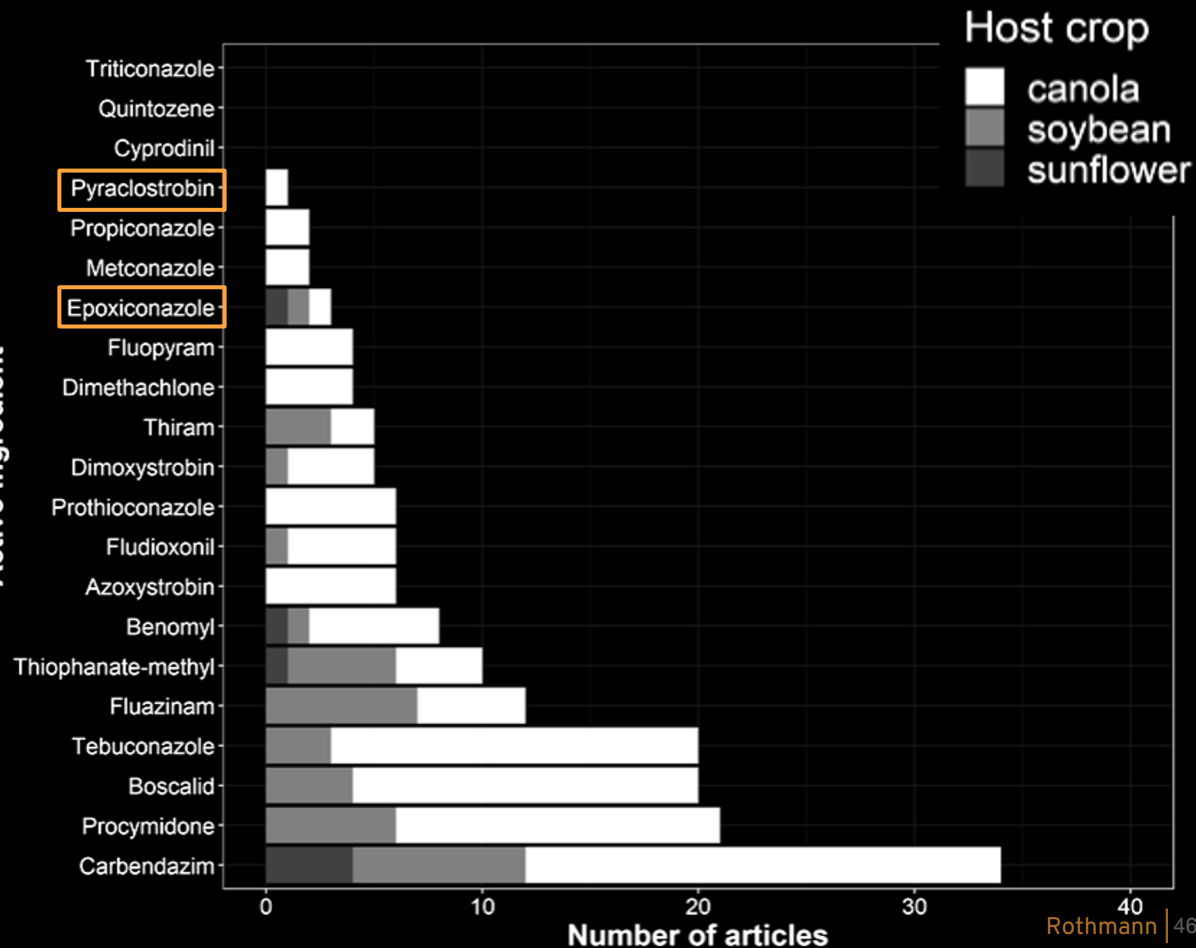




CURRENTLY REGISTERED

	Calculus 125 SE (epoxiconazole 62.5 g/l + pyraclostrobin 62.5 g/l) Safety Data Sheet according to SANS 10234:2019 and SANS 11014:2010 issue date: 9/9/2022 Version: 1.0
SECTION 1: Identification	
1.1. Product identifier	
Product form	Mixture
Trade name	Calculus 125 SE (epoxiconazole 62.5 g/l + pyraclostrobin 62.5 g/l)
Type of product	Fungicide
CAS-No.	[133855-98-8] [175013-18-0]
Product group	End product
1.2. Relevant identified uses of the substance or mixture and uses advised against	
Use of the substance/mixture	A suspo-emulsion contact and translaminar fungicide for the preventative control of diseases on barley, maize, soybeans, sugarcane and wheat.
1.3. Supplier's details	
Supplier Farm-Ag International (Pty) Ltd Old Mill Industrial Park 61, Marshall Drive P.O. Box 1523 4300 Mount Edgecombe – Durban KwaZulu Natal South Africa T 031 003 3486	
1.4. Emergency telephone number	
Emergency number	24 Hr Emergency Number: In case of Poisoning: Poison Information Helpline : 0861 555 777 In case of Spillage: HAZMAT:0800 147 112

Active ingredient



CURRENTLY REGISTERED

BASF
We create chemistry

Abacus® Advance

Reg. No.: L9132 Act. No. 36 of 1947
FRAC FUNGICIDE GROUP CODES 11 AND 3

A suspo-emulsion contact and translaminar fungicide, for the preventive control of diseases on barley, maize, soya beans, sugarcane and wheat.

Active ingredients:
Aktiewe bestanddele: Pyraclostrobin (methoxy-carbamate) 62,5 g/l
Epoxiconazole (triazole) 62,5 g/l

Reg. Nr. L9132 Wet Nr. 36 van 1947
FRAC SWAMDOEDERGROEPCODES 11 EN 3

'n Suspo-emulsie kontak- en translaminêre swamdoder, vir die voorkomende beheer van siektes op gars, koring, mielies, sojabone en suikerriet.

Registered by / Geregistreer deur:
BASF South Africa (Pty) Ltd
Co. Reg. No. 66/10235/07
P.O. Box 2801
Halfway House 1685

BASF Suid-Afrika (Edms) Bpk.
Moy Reg. Nr 66/10235/07
Postbus 2801
Halfweghuis 1685

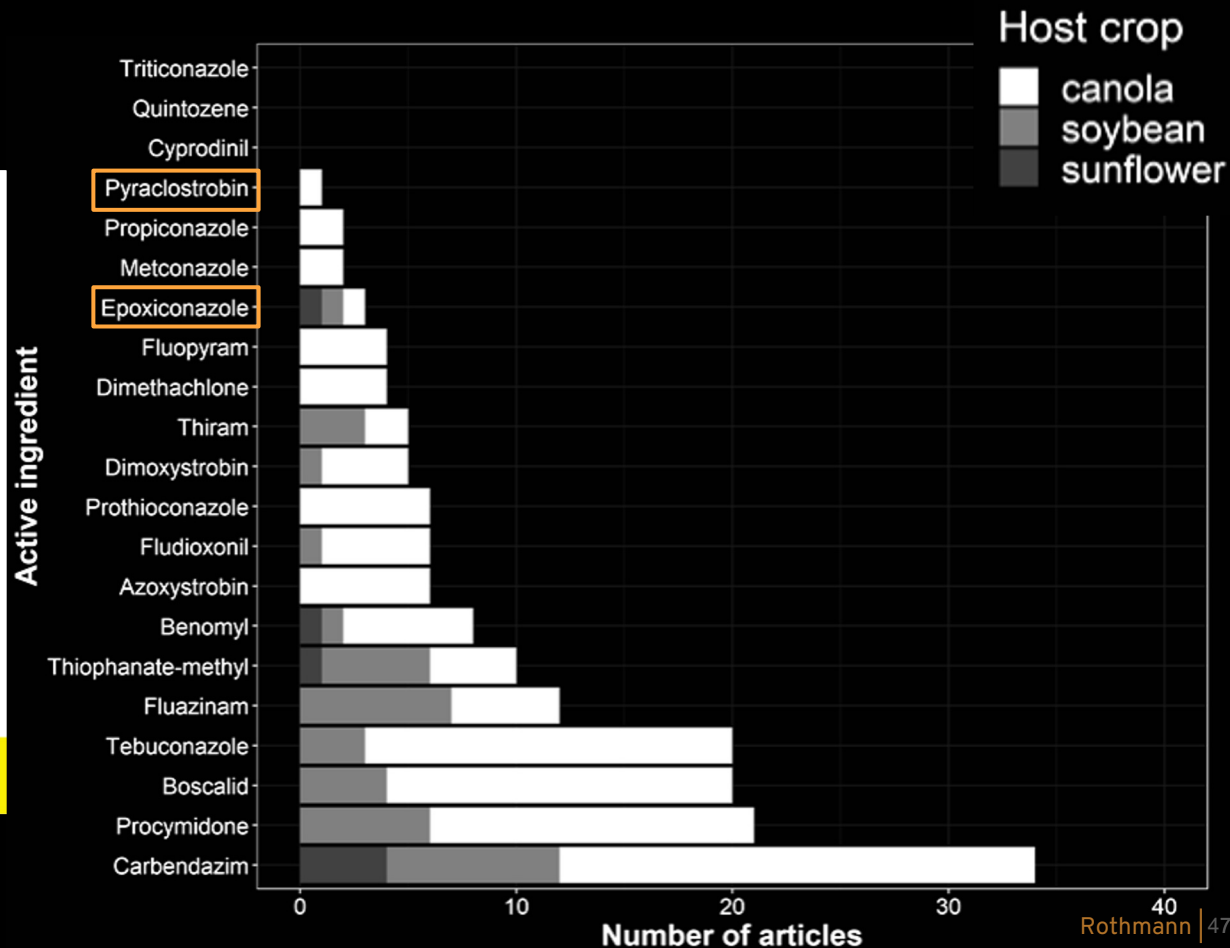
UN No. / VN Nr: 2902
EMERGENCY NUMBER / NOODNUMMER: 083 265 3805

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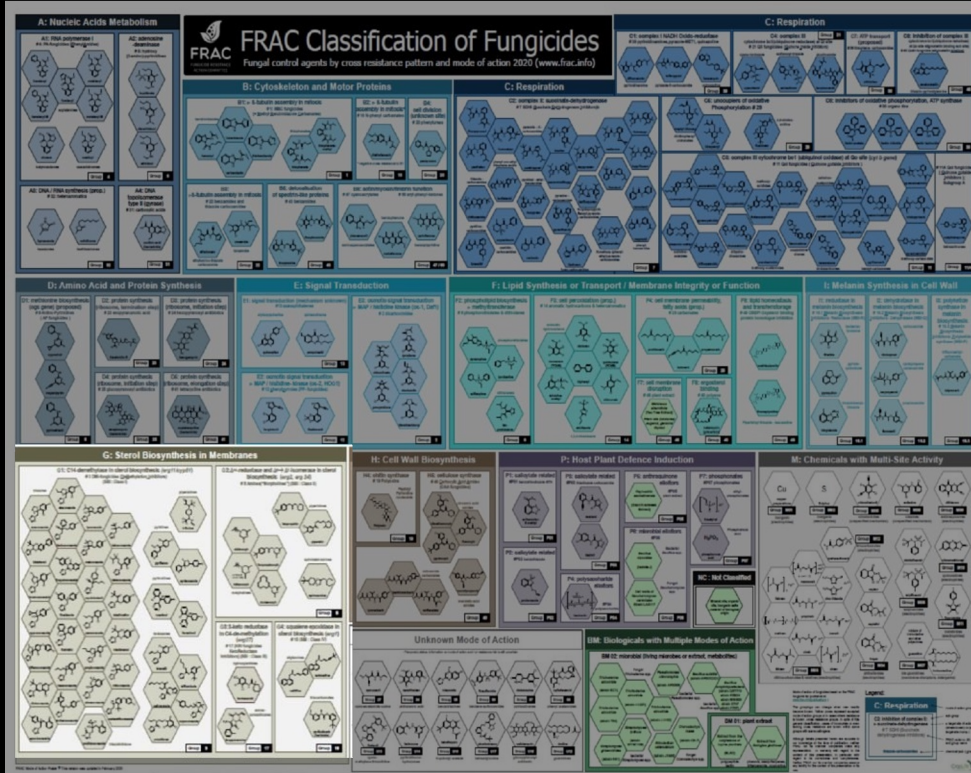
*Registered Trademark of BASF / Geregistreerde Handelsmerk van BASF

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811161422A1037

HARMFUL
SKADELIK

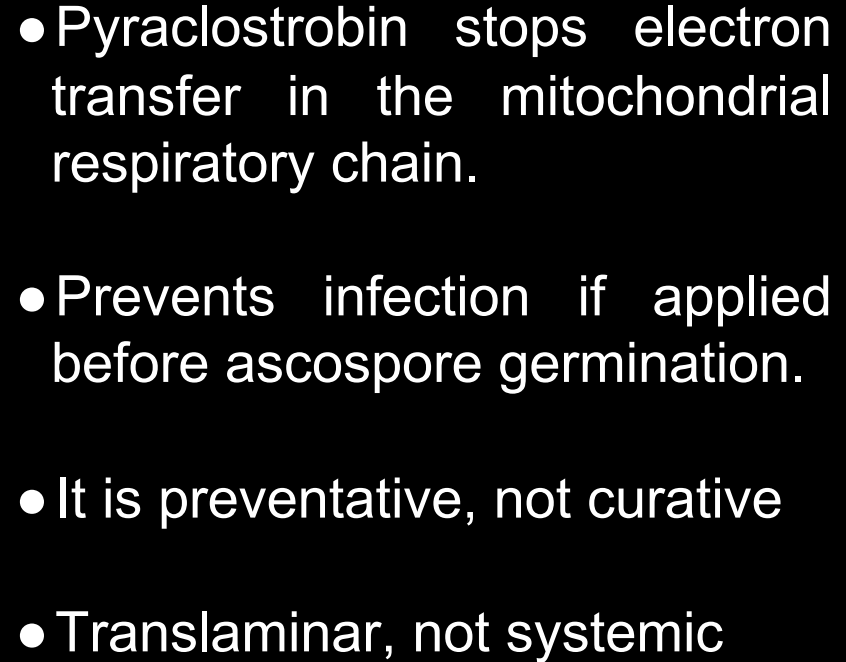


Sterol biosynthesis in membranes



Group 3 DMI

- Inhibiting ergosterol production destabilizes the membrane
- Slows growth of mycelium on host tissues
- Limits lesion development if applied early
- Work best as protectants



CONSIDERATIONS FOR PESTICIDES



UNPOISON SOUTH AFRICA

FOR ALL FOREVER

UnPoison is a civil society movement made up of concerned citizens, educational institutions, and multi-sector organisations that are united behind the common goals of effecting legislative reform of agrichemical policy, ensuring effective regulation and monitoring of agrichemical use, transparent registration processes and access to product information, freeing the agricultural sector from industry capture, and ensuring a healthy, clean, just, and safe South Africa for all of us. Forever.

3350	1947	192	57	7
REGISTERED AGRICHEMICAL PRODUCTS	WHEN AGRICHEMICAL POLICY WAS WRITTEN	HIGHLY HAZARDOUS PESTICIDES LEGAL IN SA	HIGHLY HAZARDOUS PESTICIDES BANNED IN EU STILL LEGAL IN SA	CONSTITUTIONAL RIGHTS BREACHED



FUNGICIDE REGISTRATION PIPELINE

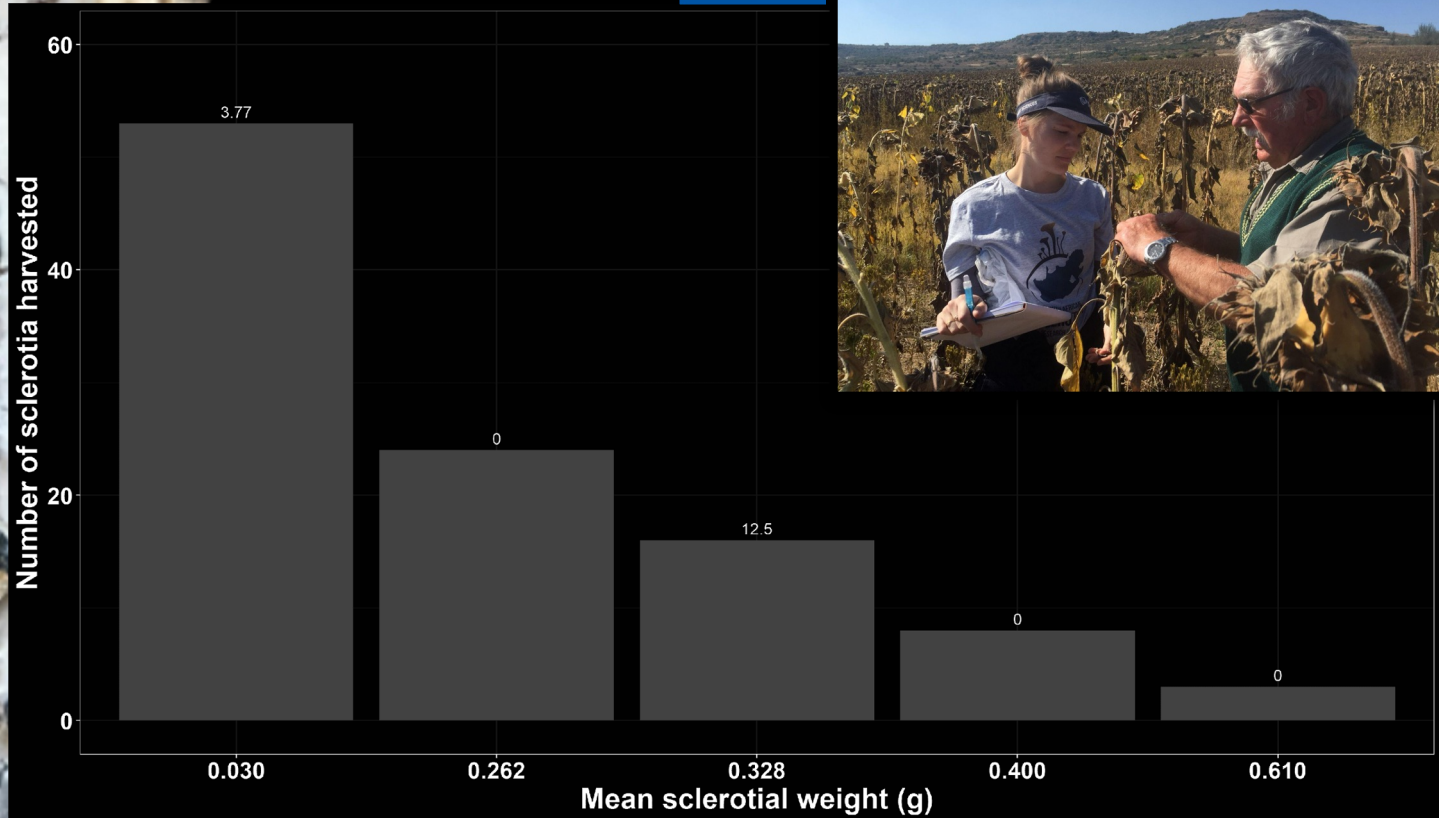


The background is a collage of autumn-themed images. At the top, there are dark, brown, crumpled leaves. Below them, a white banner with a torn, deckle edge runs horizontally across the middle. The banner contains the text 'The rotation reality' in a bold, black, sans-serif font. Below the banner, there are more autumn leaves, some green with yellow and brown spots, and a dried, brown plant stem with a seed head on the right side.

The rotation reality



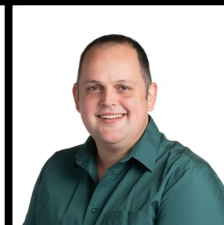




Genomic variability



Soybean Symposia 2025



Mycoviruses



Systemic Infections



Field sites (2020/2021 – 2021/2022)

Pretoria

Potchefstroom

*Sclerotinia* planting date inoculation trial - Pretoria

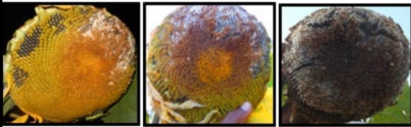
Disease severity scale



Score 0
No symptoms

Score 1
<12.5%

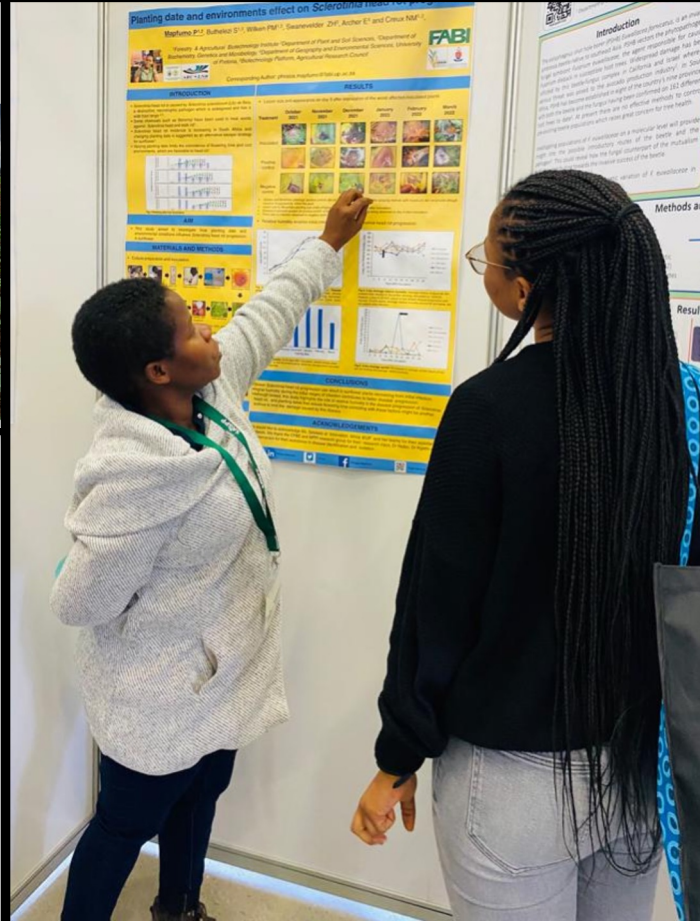
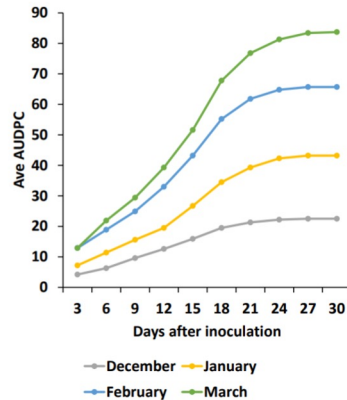
Score 2
12.5 - 25%



Score 3
25 - 50%

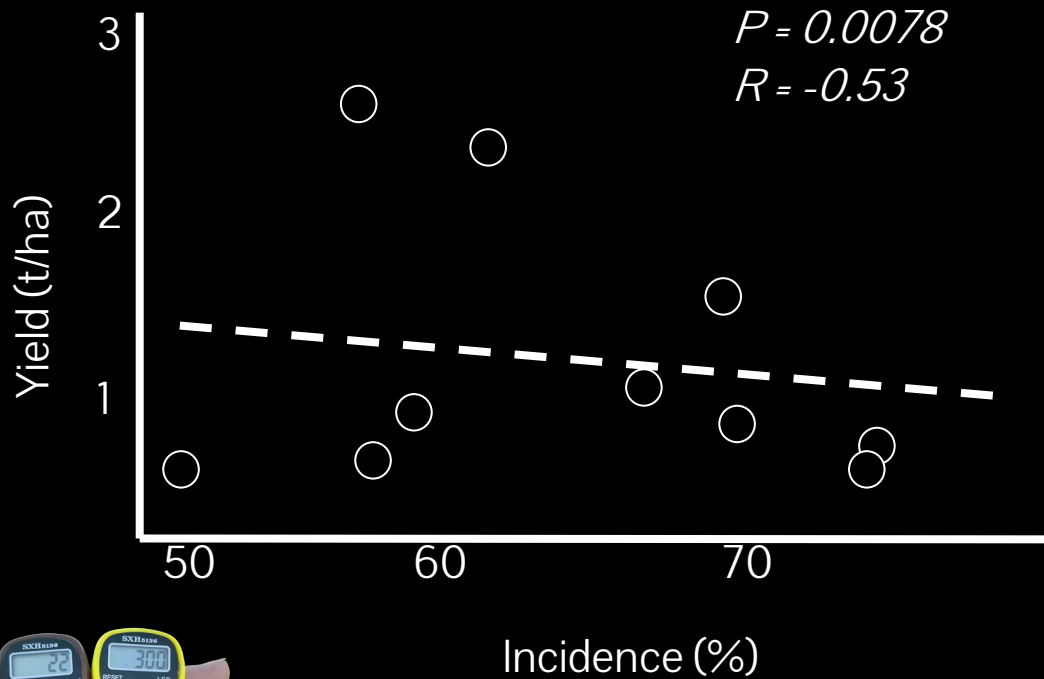
Score 4
50 - 90%

Score 5
>90%



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA





University of the Free State





University of the Free State

Closing Reflection





Sclerotinia isn't standing still —
and neither are we

If you could direct
the next phase of
action, where
would you invest
most energy in
managing
soybean stem rot?





Collective momentum matters



#SclerotiniaZA



Training and awareness are
already making a difference



Connect with us at
#SclerotiniaZA



Advocacy keeps the pipeline
alive

Thank you!





*THANK YOU TEAM | Progress doesn't always look like breakthroughs.
Sometimes, it looks like persistence, pattern-tracking, and keeping the questions
alive.*



Thank you!

