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# PULA IMVULA

**GROWING** FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS





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## A WORD FROM... Dr Sandile Ngcamphalala



IN SIMPLE TERMS, THE FORECASTED EL NIÑO OCCURRENCE IN THE 2023/2024 SUMMER SEASON IS A PREDICTION OF POSSIBLE BELOW-NORMAL RAINFALL. THESE CONDITIONS ARE COMMON TO SOUTH AFRICAN GRAIN FARMERS, AS COMPARED TO THE RARE HEAVY RAINS WE HAVE EXPERIENCED IN THE PAST FOUR YEARS.

The latest prediction is that the El Niño is expected to persist through most of the summer months. However, experience shows that such conditions may represent a great season for farmers in the eastern regions. On the other hand, the conditions are expected to be tough in the western regions.

Weather predictions have, however, increasingly become deeply uncertain due to climate variability. Yet in all the uncertainty, those who are brave enough to persevere through climate storms often come out thriving on the other side. So I encourage all farmers to do what farmers do best – plant and manage the crop as best as you can, and the Lord will bless your efforts.

Those who are brave enough to persevere through climate storms often come out thriving on the other side.

As we start a new year, we at Phahama Grain Phakama NPC (PGP) are very excited by the prospects of the future. We continuously adapt and improve as we learn and become a little wiser. However, sustainable growth will not come easy.

As we experience some serious growth pains, there will be many difficult circumstances that will need very brave and equally difficult decisions from time to time. We certainly can't continue to do the same things and expect different results. There are many farmers and collaborating partners who are fully committed to this cause, and those we will endeavour to honour with impactful development support to developing grain farmers.

– Dr Sandile Ngcamphalala is the head of PGP. ■





# HAY is an IMPORTANT LINK in animal production

*It is important to measure the moisture of the hay, and bale it as quickly as possible.*

**M**AKING HAY IS EXPENSIVE, SO FARMERS MUST FIRST DECIDE WHY THEY WANT TO DO IT. IF HAY IS NEEDED IN THE FODDER FLOW, IT HAS TO BE MADE. HOWEVER, GRAZING ANIMALS ON PASTURES IS A BETTER OPTION AS HAY IS NOT AS NUTRITIOUS AS FRESH FORAGE GRAZED BY ANIMALS.

In addition, hay is harvested and stored, which requires manual labour and machinery. But utilising the surplus of forage pastures during peak growing times for use as feed during the winter is wise if the forage is harvested correctly and stored properly.

Deciding when to make hay is a critical decision and should be based on an understanding of plant growth. Harvesting should be done when there is a likelihood of several days of good haymaking weather. 'Make hay while the sun shines' is a familiar phrase, but there is more to consider in determining good haymaking weather than just sunshine. Understanding the following concepts will enable a haymaker to utilise the weather in the successful production of high-quality hay.

**The objective for haymaking** should be to produce a stable animal feed of good nutritive value, with a minimum loss of dry matters and minimum expenditure. The principle involved in good haymaking is to reduce the water content of grass or hay rapidly to 15% to 20% moisture, so that it can be stored safely without undergoing fermentation or start burning. This must be accomplished in such a manner that the hay is not leached by rain and that the loss of leaves is kept to a minimum.

**High-quality hay should be leafy.** Leaves are generally richer in food value than other parts of the plant. Leaves are usually rich in proteins, vitamins and minerals. A loss of leaves would compromise the feeding value of the end product.

**Timing is very important.** Harvest the crop at the best stage for its maximum nutritive value and yield. Forage crops produce more yield as they mature, but the nutritive value and palatability decrease after first bloom or heading (anthesis stage). Good hay must be harvested to balance the best quantity with quality. It is always good to decide

where in the fodder flow you are going to use the hay. Animals in production must receive high-quality hay, but dry or pregnant animals can use lower-quality hay.

## CUTTING THE HAY

Cut the hay so that the drying and baling can be done efficiently while maintaining the quality. This means that if you can bale 20 hectares per day, cut only 20 hectares per day. The hay-mower usually cuts and lays the hay in windrows to facilitate the drying of the hay.

As far as time is concerned, the crops should be harvested early in the morning because at this time the dew has dried off. Grasses should be cut at the pre-flowering stage.

Dry the hay to 15% to 20% moisture. Forage is up to 90% moisture, so a great deal of drying must take place. Forage in windrows can be 25% moisture within a few days with the favourable temperature and relative humidity. Windrows should be designed so that the hay dries as quickly, evenly and completely as possible. Conditioning swathers help the leaves and stems to dry at similar rates.

Drying is facilitated by turning the windrows over. Turning hay in a tumble-weed fashion leads to leaf loss and is discouraged.

Extremely hot, dry weather can cause the forage leaves to dry too much before the stems dry, which is causing the leaves to become brittle. Brittleness results in breakage and a loss of leaf matter, which lowers the quality of the hay.

## WHEN IS THE HAY DRY ENOUGH?

Two rule-of-thumb methods used by farmers in determining when hay is dry enough for storage:

- The **twist method** is done by twist a wisp of hay in the hands. If the stems are slightly brittle and there is no evidence of moisture on the twisted stems, the hay can be stored safely.
- The **scrape method** is done by scraping the outside of the stems with a finger or thumbnail. If the epidermis can be peeled from the stem, it is not sufficiently cured. If the epidermis does not peel off, the hay is usually dry enough to stack or put in rows for baling.

## BALING

The sun can also bleach the cut forage, which changes the colouring



as well as removes some of the vitamins. Maintain the green colour, which is a strong indication that the forage is maintaining its food value. Therefore, it is important to start baling as soon as possible. In South Africa it is possible to get grasses such as outlandsgas and teff dry enough to be baled within one day. Other species such as Smutsvinger grass, Rhodes and white buffalo grass need to lie in the sun for up to three days to dry before they are ready to be baled. It is important to measure the moisture and to bale it as soon as it is possible.

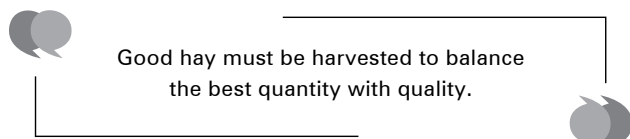
### WHAT IS GOOD-QUALITY HAY?

- Good hay should be green in colour and not a straw colour. Green leaves indicate the amount of carotene, which is a precursor for vitamin A.
- Hay should be soft and pliable.
- It should be free from foreign material such as dust and mould.
- It should be free from weeds, particularly these that may have noxious seeds.
- Hay should have a pleasant smell characteristic of the crop.
- The moisture percentage of hay should not exceed 15%.



**Windrows should preferably be wide and loose.**

<https://www.istockphoto.com/photo/freshly-cut-alfalfa-field-windrows-gm175398748-20302560>



Good hay must be harvested to balance the best quantity with quality.

With the right time of cutting and baling, it is possible to make good-quality hay. But you need the best fertiliser programme to produce excellent hay.

It is important to have a soil analysis and to apply fertiliser according to the needs of the soil. As a rule of thumb, grass will need between 0,2 kg to 0,25 kg nitrogen (N) fertiliser for every 1 mm of rain. In other words, 100 kg N per hectare is needed for a 500 mm rainfall area. Normally phosphorus (P) is applied in the ratio of 10:1 N and P, while potassium (K) is applied in the ratio of 10:2 N and K if the grass is cut, baled and driven away.

With the best fertilisation programme and the best timing to cut, rake and bale, farmers can be sure to make excellent quality hay.

- Make sure that the hay is fed back to the cattle as effectively and efficiently as possible.
- Ensure that high-quality hay is fed to producing animals and the lower quality is fed to dry or pregnant animals. By doing this, the best results for the capital layout will be gained.
- Make use of hay feeding rings or feed racks and cut the feed loss to 4% – compared to a loss of 24% without feeding rings. ■



**PIETMAN BOTHA,  
INDEPENDENT AGRI-  
CULTURAL CONSULTANT**

WORDS OF  
WISDOM



*Not a moment of life is  
wasted on a farm.  
Others may have been more places,  
but haven't outlived me.*

~ JIM FISHER  
South African farmer



# STRATEGIES TO COMBAT maize ear rots

**T**HIS ARTICLE AIMS TO GIVE FARMERS INFORMATION REGARDING THE MOST IMPORTANT MAIZE EAR ROTS AND HOW TO MINIMISE THEM FROM OCCURRING BY USING THE CORRECT MANAGEMENT PROCEDURES. THE FOCUS WILL BE ON THE THREE MAIN EAR ROTS: *STENOCARPELLA MAYDIS* (DIPLODIA), *FUSARIUM VERTICILLIOIDES* AND *FUSARIUM GRAMINEARUM* (GIBBERELLA).

These diseases have been identified as recurring problems throughout maize-producing areas. Maize ear rots result in grain quality reduction, yield losses, livestock and potential human toxicity problems. Diplodia, Fusarium and Gibberella must be seen as individual diseases, as the climatic and/or environmental conditions for the development of each of them varies. Therefore, these diseases will be discussed separately.

## DIPLODIA EAR ROT

Diplodia ear rot is caused by the fungus *Stenocarpella maydis* and is usually noted locally in seasons with early drought, followed by excessive and extended rainfall during the maturation stage of the maize plant.

**Distribution and spread:** Drought during the early season, followed by rain during the late season, can lead to Diplodia ear rot epidemics, especially where high inoculum sources are present on stubble on the soil surface. This fungus produces spore-producing structures that can survive on maize stubble through the winter, while producing spores during the spring. These spores then infect plants throughout the following growing season.

**Symptoms:** After rain or during high humidity, these survival structures release spores in the air, which land on maize plants and infect the base of the ear/leaf junction and ramifies upwards into the ear. The entire ear becomes overgrown with a white mycelial growth (**Photo 1**).

If a cross-section is made of an infected ear, these black spore-producing survival structures at the kernel bases can be seen (**Photo 2**). Late-season infections may occur when the kernel moisture is low, but these symptoms are less obvious. Infections that show little or no symptoms are locally referred to as 'skelm Diplodia'.

Diplodia ear rot can re-occur in certain areas and infected grain is then harvested with the healthy grain, thereby reducing the grain quality. Reduced grain quality will have negative financial implications, as this reduces the price the producer receives for his grain.

## CONTROL MEASURES

**Stubble reduction/retention:** The control of Diplodia ear rot includes surface stubble reduction by means of grazing, burning, baling or ploughing in of the surface maize stubble. As the fungus (*S. maydis*) survives on maize stubble and poorly in soil, any management practice that reduces the levels of infected surface stubble will reduce the initial inoculum concentrations in the field.

The removal of stubble for a single season and then resorting back to stubble retention practices only reduces Diplodia ear rot for





that specific season. Where stubble is present during the following season, the risk of Diplodia ear rot will increase to its original level if the weather conditions are favourable.

**Stress reduction:** Avoid planting unrealistically high plant populations on marginal soils and in areas where there is a high probability of drought, leaf or alternate stalk rot disease conditions. Ensure that the plant nutrition is adequate and balanced relative to the yield potential of the land or area to be planted.

**Crop rotation:** Crop rotations reduce Diplodia ear rots by reducing the inoculum levels in two ways. Firstly, a non-host for the fungus will not allow the fungus to persist for the season where maize is not grown. Secondly, a greater period (a season or two) between maize crops allows for a natural breakdown of maize stubble, which again reduces the survival of the fungus.

Leguminous crops, such as soybeans, dry beans, groundnuts and cowpeas, are very good rotation crops. Other rotation crops that reduce Diplodia ear rots, are wheat and oats. Sunflowers do not significantly reduce Diplodia ear rots under experimental conditions, although the reason has not yet been found.

**Early harvesting** will reduce Diplodia ear rots as it reduces the time available for the fungus to grow on the ear. Late or winter rains keep ears wet and increase the chance for fungal growth.

**Hybrid resistance:** The selection of cultivars is very important. In general, a resistant hybrid will always have less Diplodia ear rot than susceptible hybrids relative to prevailing conditions.

## FUSARIUM MAIZE EAR ROT

*F. verticillioides* can be found wherever maize production takes place and can lead to monetary loss due to poor grain quality and a reduction in the yield. Sometimes grain can be infected with the fungus without showing visible effects. Therefore it is extremely important to include a range of integrated management control strategies throughout the maize growth season.

**Distribution and spread:** *F. verticillioides* is favoured in dry, warm areas with temperatures above 28°C. Stress factors such as heat as well as insect and bird damage will exacerbate the spread of the fungus. Infection of the maize plant can occur at any time during the growth stages and often the fungus can be found within the seed. Seedborne infections can grow systemically with the plant until it reaches the ear.

This fungus is also soilborne, which means that it can survive in the soil or on plant debris from one growing season to another – thereby infecting susceptible maize when the weather conditions are conducive. Rain and wind can also splash fungal spores onto the maize beard, where it will infect and spread onto the kernels.

**Symptoms** of *F. verticillioides* ear infection is a white to light-pink cottony growth (Photo 3 on page 8) on maize kernels. These can be scattered along the maize ear or can be found alongside stalk borer feeding channels. Seed can show a light-pink discolouration and white streaks.

Sometimes infection can take place, but no symptoms can be observed, and it is then difficult to determine if there are mycotoxins present in the grain or not. It has been known for clean (first-grade) grain samples to have symptomless infections of up to 90%.

**Control measures:** Due to the common occurrence of these fungi in nature, the use of sanitation practices has not been very successful in disease reduction. With the use of climatic modelling, Fusarium ear rot and fumonisin predictions can be made for areas with favourable



1 White mycelial growth on maize ear kernels caused by *Stenocarpella maydis* (Diplodia).



2 Black 'spots' containing spores can be seen at the base of the maize kernels.

climatic conditions. These models still require confirmation and further research before being used.

Recent research results indicate that the timely control of stalk borers, using insecticides or Bt maize, helps to reduce *F. verticillioides* ear rot infections and fumonisins. Local hybrids therefore need to be screened before hybrid selection will play a role in controlling Fusarium ear rot and fumonisin contamination levels.

## GIBBERELLA MAIZE EAR ROT

Graminearum ear rot is increasing in South African maize production areas and may become a major threat to the maize industry.

Recent studies have indicated an increased spread and severity of this disease, as well as the stalk rots caused by the *Fusarium graminearum* species complex. In certain cases, severe yield and quality reductions were observed.

Some of the negative impacts that mycotoxins have on animals include hormonal effects (reduced reproductive performance) and feed refusal. Feed refusal is a result of the unpalatability of the feed and may be reflected in decreased weight gains and slower growth rates. Vomiting may occur in animals that consume small quantities of infected grain.

**Symptoms:** Disease symptoms are dark red discolouration of the whole or part of the maize ear (**Photo 4**). Early infections result in complete ear rotting, with husks adhering tightly to the ear. Gibberella ear rot usually progresses from the tip of the ear downward. Most often grain is discoloured and of poor quality (**Photo 5**), causing a lower seed grading.

### CONTROL MEASURES

**Crop rotation:** The rotation of maize with non-graminaceous crops decreases the incidence of the disease.

**Stubble removal:** As the fungus overwinters on maize stubble retained on the soil surface, the removal of maize residues will reduce disease incidence the following crop season. The ability for species within the *Fusarium graminearum* species complex to survive on other sources of organic matter and stubble of other crop species will also influence the role that the removal of maize stubble will play in reducing the inoculum sources of this disease.

**Cultivar selection:** Reports in the literature indicate that hybrids vary in susceptibility to the disease. Although local hybrids are presently in the process of being screened for resistance to this disease, no results are yet available. Field observations have resulted in the identification of highly susceptible hybrids.

### CONCLUSION

It is important to make the correct disease diagnosis before deciding on a management strategy. In some cases, the maize crop can be infected with various diseases, which may require different management practices.

Disease management is a never-ending process. Because the above-mentioned fungi can be present in the seed, it is important to use disease-free certified seed. Usually companies treat the seed with a powder that contains an insecticide, nematicide and fungicide. This can provide protection to young seedlings for up to four weeks.

Farmers must avoid factors that stress plants, such as mechanical damage, wounding by insects and birds, inadequate fertilisers, drought and flooding, to name a few. These factors all weaken the



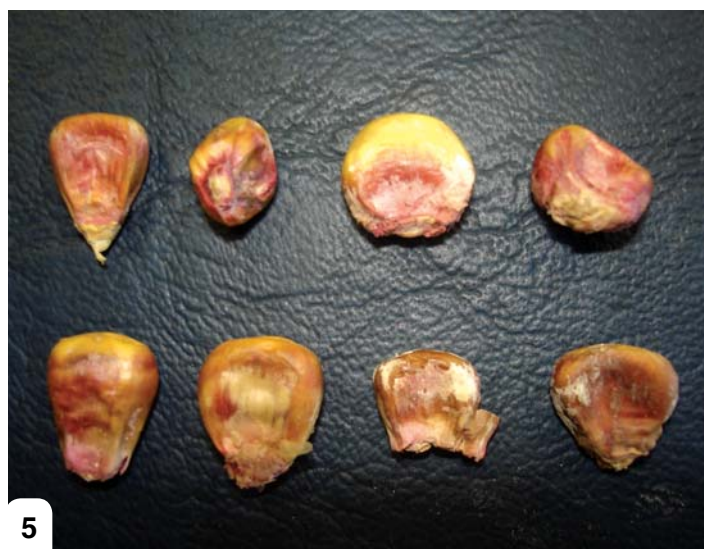
3

A white to light-pink cottony growth on maize kernels caused by *Fusarium verticillioides*.



4

Dark red discolouration of part of the maize ear caused by *Fusarium graminearum* (*Gibberella*).



5

Discolouration and breakdown of grain quality due to *Fusarium graminearum* (*Gibberella*).

plant's immunity and predispose it not only to ear rots but to other diseases as well.

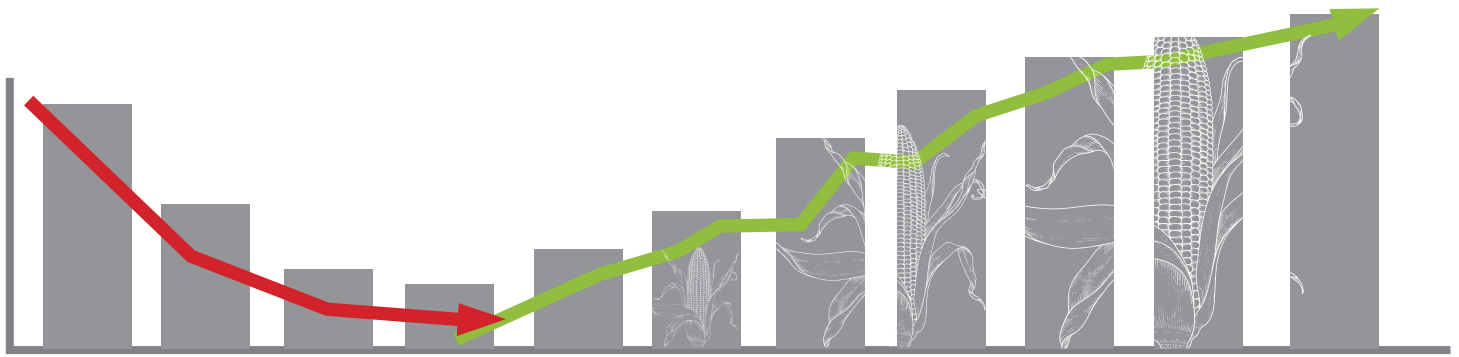
Please note that the use of chemicals to control maize ear rots cannot be justified economically. A fungicide may reduce the fungal spores in the environment, but it will not reach the target area, which is the fungus within the maize ear (protected by ear-sheath leaves). An integrated approach should be followed that focusses on the cultivar choice, sanitation practices and crop rotations. ■

For more information, contact Drs Belinda Janse van Rensburg or Bradley Flett on 018 299 6100.



DR BELINDA JANSE VAN RENSBURG AND DR BRADLEY FLETT, ARC-GRAIN CROPS





# Grain hedging can save costs

**W**ITH THE MARKETING SEASON STARTING SOON, IT IS IMPORTANT TO BEGIN THINKING ABOUT MARKETING YOUR GRAIN AND HOW TO DO IT. THEREFORE, THIS ARTICLE SERIES WILL START BY GIVING THE BACKGROUND OF HEDGING AND WHY YOU SHOULD KNOW ABOUT IT.

## WHAT IS HEDGING?

To explain hedging, you must first understand the risks involved in being a grain farmer. Marketing risks are a group of risks that are associated with selling grain and include the price risk, basis risk and delivery/production risk.

The price risk is the most important when considering hedging. From a farmer's perspective, the price risk entails the risk that the market price of a commodity that you want to sell will decrease – therefore selling at a lower price and making lower profits, or in some cases, making a loss.

Hedging is a term used when you mitigate the risk of price changes through forward contracts, future contracts and options. These concepts will be defined later in this article.

## BENEFITS

In the last few years, input costs have increased. Although costs such as fertiliser are lower than last year, it is still steadily increasing and on a higher level, making it more difficult to be profitable and much more important to protect yourself against price risks.

Benefits of hedging include:

- Setting a price in the future that is higher than your input costs to guarantee a profit.
- Setting a floor price in the future to ensure not making a loss but keeping the option of a higher price open.
- Shifting some of the risk to another entity.
- Managing the cashflow.

Each of these benefits is linked to an element of hedging, with some elements utilising more than one benefit.

## ELEMENTS OF HEDGING

As mentioned above, hedging includes different elements that each serves its own purpose and will be defined below. These elements will be discussed in more depth in future articles.

### Physical/cash market

The physical market, or cash market, is when you take the grain that has already been harvested and sell it directly to the market at the current market price per ton.

An example of this is: When a farmer has harvested his grain today, he will then transport it to the nearest silo, where the grain will be graded and sold to the silo at the current market price.

### Forward contracts

A forward contract is an agreement between a buyer (the farmer) and a seller (the silo or miller) to purchase a specific amount of grain with a specific quality, delivered on a specific date in the future, and sold at a specific price.

An example is that the farmer goes to his neighbour who wants to buy grain at the beginning of March. They agree that he will sell him 50 tons of grade 1 yellow maize at a price of R3 500/t, which should be delivered by the end of July.

### Future contracts

A future contract is a contract with set regulations for how many tons must be sold (100 ton) at a specific price and with a specific quality, which should be delivered by a specific date. The Johannesburg Stock Exchange (JSE) manages the transaction, and therefore you have the right and obligation to sell your grain.

An example is that you go to a trader in the beginning of June and buy a 1 July future contract of white maize (100 tons) that must be grade 1 white maize and must be delivered at the end of July at a price of R3 700/t.

### Options

An option contract gives the option holder (the farmer) the right, but not the obligation, to exercise the option. The regulations that accompany an option are that you set a price in the future for a specific amount of grain, delivered at a specific date, with a specific quality. With this option, there is a premium that you must pay to be able to be an option holder.

If the market is lower than the set price at the time of delivery, you can exercise the option and receive the set price. If the market is higher than the set price at the time of delivery, you can let the option expire and sell your maize at the higher price.

## CONCLUSION

In the uncertain economic times that farmers are in now, it is very important to make use of hedging to mitigate the price risk and protect yourself against prices that can fall and result in lower profits or a loss. ■

The following article will cover options, the third the physical market and the fourth future markets.



JOHAN TEESEN,  
ECONOMIST INTERN,  
GRAIN SA





# HOW TO IDENTIFY

**S**CLEROTINIA CAN BE REGARDED AS ONE OF THE MOST DEVASTATING DISEASES OF OILSEED CROPS (CANOLA, SOYBEAN AND SUNFLOWER) IN SOUTH AFRICA. CABBAGE, LETTUCE AND WEEDS ARE ALSO CROPS THAT CAN BE AFFECTED BY THE PATHOGEN, *SCLEROTINIA SCLEROTIUM*.

Scouting for diseases caused by *S. sclerotiorum* can be done by investigating your fields for **signs of the pathogen** and **symptoms of the disease**. Understanding the life of the pathogen and its interactions with the host plant and environment will help you more easily notice the characteristic signs of *S. sclerotiorum* and symptoms of sclerotinia head and stem rot.

Signs are the visible pathogen structures observed on the host or in the environment, where symptoms are the host plant's reaction to disease caused by the pathogen. A susceptible host interacts with a viable virulent pathogen in an environment that favours disease development, which is resulting in signs and symptoms right through the growing season.

## SYMPTOMS

### Sclerotia

Sclerotia are black and hardened survival structures, normally found within and/or on infected soybean stems, sunflower heads or sunflower stems. Sclerotia can appear as little 'rat droppings' (**Figure 1A**), clumped (**Figure 1B**) or honeycomb-shaped (**Figure 1C**). The shapes form due to the host organ on which the pathogen established.

In cases where severe sunflower head rot occurs, sclerotia fall onto the ground (**Figure 2A**) after complete shredding of the sunflower head (**Figure 2B**). Sclerotia collected from sunflower field trials ranged between 8 cm and 18 cm diameters under high disease pressure.

During harvest, the large sclerotia break into smaller pieces and are dispersed throughout the field. Before the start of the planting season, scout your fields for the survival structure of *S. sclerotiorum*. This will indicate where there is a risk for the development of Sclerotinia diseases, as there is potential for the inoculum to develop.

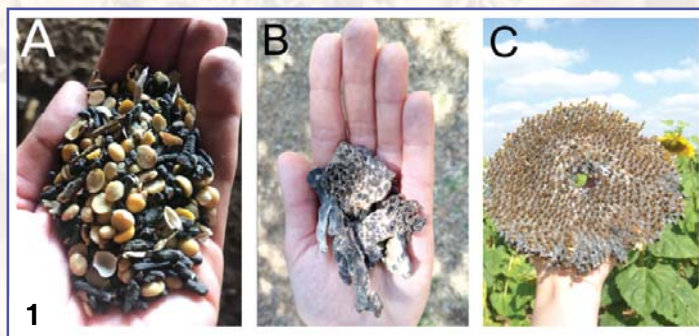


Figure 1A, B and C: Characteristics of sclerotia.

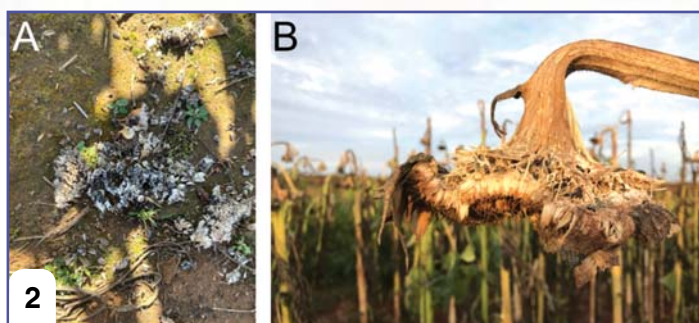


Figure 2A and B: Symptoms of sunflower under high disease pressure.

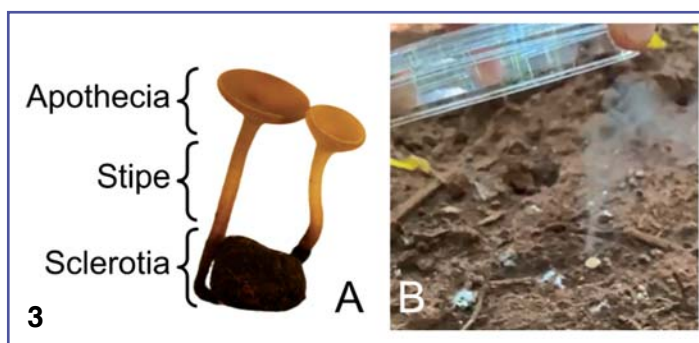


Figure 3A: Apothecia.

Figure 3B: As apothecia germinate, they release ascospores.

Once symptoms are present in the field, a record of infected areas or 'patches' should be mapped out and maintained.

### Apothecia

Apothecia are trumpet-like structures (**Figure 3A**) that germinate from sclerotia on the ground when the environmental conditions are favourable for disease development (cool, high relative humidity and free moisture).

As apothecia germinate, they release ascospores that are dispersed by air currents (**Figure 3B**), which land on the susceptible tissue of the host plant to initiate infection. Spores then germinate, which enables them to enter the host through natural openings (plant flowers) or wounds and grow into host tissues.

Sclerotia may also germinate to infect the roots via mycelia, which are the white cottony filament of the fungus. When scouting for apothecia, try and avoid confusing apothecia with non-plant-pathogenic fungi such as the common bird's nest fungus (**Figure 4**). In



# SCLEROTINIA SCLEROTIORUM



**Figure 4:** Apothecia can be confused with fungi such as the common bird's nest fungus.



**Figure 5A:** Water-soaked lesions.



**Figure 5B:** White fluffy masses show where diseased host tissue has been destroyed by the fungus.

addition to regular in-field scouting for diseases, drone or satellite images during the season may be useful as an overview of the field.

## Wilting and water-soaked lesions

Wilting is the start of the symptoms associated with initial infection as the pathogen takes over the plant material, killing more of the plant tissue. Successful disease establishment is marked by water-soaked lesions (**Figure 5A**) on stems and heads caused by cell-wall-degrading enzymes produced by *S. sclerotiorum*.

Recordkeeping is critical, as knowing where to target your scouting in future seasons will help to determine where the highest risk for infection may occur.

## White fluffy mycelia

Advanced disease signs are associated with white fluffy masses, where diseased host tissue is destroyed by the fungus (**Figure 5B**). Once symptoms are present in the field, a record of infected areas or 'patches' should be mapped out and maintained, allowing the producer to target future scouting for apothecia, as sclerotia will develop as the disease progresses or the season ends.

## Sclerotinia disease management

There is no silver bullet in *Sclerotinia* disease intervention – however, integrated pest management (IPM), which includes a combination of agronomic, biological and chemical strategies, increases the chance of successful disease management. Select and combine agronomic tactics that suit your production system – these that promote plant health, mitigate pathogen entry and reduce the favourable conditions for disease development.

*Sclerotinia* can be eradicated from the field by crop rotation with non-host crops and practising weed control. The exclusion of *S. sclerotiorum* can be achieved with pure certified seed, cleaning implements and harvesters to reduce the likelihood of sclerotia entering your production fields.

Recordkeeping is critical, as knowing where to target your scouting in future seasons will help to determine where the highest risk for infection may occur. Scout for apothecia two weeks prior to flowering, inspect fields regularly and if you see apothecia, be aware that spores will be present. If flowering still needs to happen, plants are at risk for the disease to develop. Unfortunately, limited reactive fungicides are available for application in soybean and canola, and no active ingredients are available for sunflower.

After flowering, if only a few plants show clear disease signs and symptoms, eradicate *Sclerotinia*-infected plants by removing and burning these to prevent the build-up of the pathogen in the field. ■

**DR LISA ROTHMAN, LECTURER AT THE UNIVERSITY OF THE FREE STATE, AND DR GODFREY KGATLE, RESEARCH COORDINATOR AT GRAIN SA**





# Machine maintenance can SAVE YOU MONEY

**T**HE BREAKING OF FARM EQUIPMENT CAN BE PREVENTED BY REPLACING WEARING PARTS ON TIME AND BY DOING REGULAR MAINTENANCE. MAINTENANCE MUST BE DONE DAILY BEFORE MACHINERY STARTS OPERATING AND ON SCHEDULED TIMES AS PRESCRIBED BY THE OWNER'S OPERATION MANUAL.

It is very important for the owner to study the operation manual. If you don't have an owner's operation manual for the equipment, go to the local dealer and talk to the mechanic in the workshop regarding the maintenance of equipment.

Farm machinery and implements are expensive, and the cost of replacement increases every year. Equipment that breaks while in use will increase the farmer's stress levels.

Farm equipment maintenance that is done on time, will help to optimise and execute time-sensitive tasks. If a tractor breaks down during planting, it is a disaster as planting is time sensitive. If you have only one single unit, the season can start as a failure with great financial losses. This is why modern farmers invest extra resources in the maintenance of agricultural equipment.

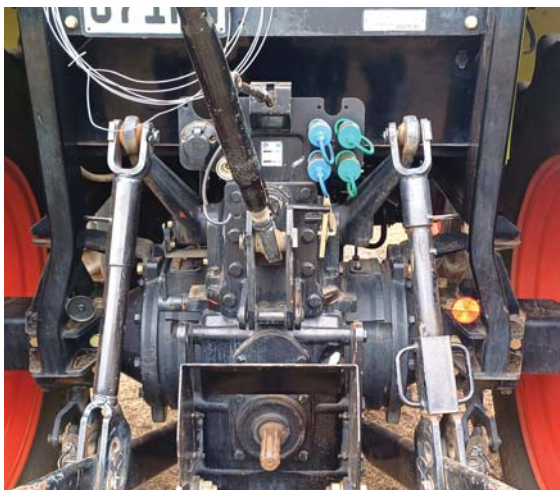
Farmers who follow regular maintenance practices, inspect their machines every day and have their documents organised to track equipment failure. Then they can be ready to replace damaged components ahead of breakdowns and avoid unplanned downtime.

## BASIC FARM EQUIPMENT MAINTENANCE

The basic farm equipment maintenance tasks focus on servicing and storing equipment in the ideal environment to keep it in good condition for as long as possible. Here are some key tips that will help you understand what is needed to maintain farm tools and equipment:

### Training and control

- Maintenance starts with training the operators of equipment. As a farmer, you must be strict about the day-to-day maintenance of



*Make sure that hydraulic linkages are clean and kept dust free.*

machinery and equipment. Make sure that the drivers have greased the tractors after using them.

- Proper maintenance of tractors, combines, fertiliser spreaders and other machines begins with skilled operation. Someone who follows the owner's manual and understands the key risks in its operation, will not misuse the machine or cause it extra damage.

### Follow a maintenance schedule

With a clear action plan, farmers can determine appropriate time intervals for regular maintenance. Normally it makes sense to do it before a major task begins and just after a task is completed.

The frequency of servicing is prescribed in the owner's manual, but weather conditions, the local climate and other factors can cause the build-up of excess dirt and more damage to specific machines. When maintenance tasks and the condition of components are tracked, the maintenance schedule to service and protect the most vulnerable parts can be more frequent.

### Fluid servicing and lubrication

- Machines that perform heavy mechanical work have a lot of friction, which is damaging their components. Keep the pivots, joints, bearings and other moving parts lubricated.
- Other fluid-servicing tasks include tracking oil changes, replenishment and replacement.

### Hydraulic system maintenance

The hydraulic system is responsible for the mechanical work performed by heavy equipment machines. Follow these three important steps:

1. To take proper care of components, start by cleaning the hook-up point and protect components against dust.
2. Workers must inspect the cylinders, pistons and other parts for damages and leaks, and make sure that all parts are greased properly.
3. While its components are all internal, certified technicians need to examine and test the system on a regular basis because big damages will lead to equipment downtime.

### Equipment cleaning

Equipment cleaning is essential to prevent



*Read the manual to determine when the tractor's oil, diesel filter and air filters must be replaced.*



*Ensure that the water level in the radiator is in order.*



more abrasion and damage to farm equipment and their parts. Clean your machinery to remove accumulated dirt, replace air filters and oil filters, and perform regular oil changes to get rid of any contaminants. Certain machines may work slower or use much more fuel when the internal components are constantly affected by contaminants.

### MORE ABOUT MAINTENANCE

Old machinery is easier to maintain but identifying damages ahead of breakdowns is much more difficult. New tractors, combines and other machines have sensors and other electrical components that can minimise the need for repairs.

The most **common signs** that a farming machine needs servicing are visible damage to its exterior, strange noises and warnings on the control panel. However, sensors are not always right and their accuracy can get skewed by an accumulation of dust or dirt. In these cases, a regular maintenance calendar ensures that all machine components receive attention at appropriate time intervals.

**Predictive maintenance** studies the wear and tear of farming equipment to avoid unpleasant surprises. This involves documentation about farm equipment servicing procedures and monitoring how long a specific component survives on average. Predictive maintenance strategies focus on moving parts and keeping documents organised to make sure spare parts await repairs ahead of breakdowns.

### FARM EQUIPMENT MAINTENANCE FRAMEWORK

To keep your farming machines in optimal condition, follow the manufacturer's recommendations and compile a strict maintenance schedule. Here is an example of a basic and adjustable maintenance framework that should cover the main needs of most farming equipment:

#### Daily maintenance

- Daily servicing begins with a visual inspection of a specific tool. The operator or a designated technician should check the machine for visible signs of damage and loose components.
- Next is fluid servicing and lubrication: Check the water, engine oil, hydraulic fluid and greasing on each piece of equipment.
- Last, but certainly not least: Clean the machine before every shift. Make sure the warning lights on the dashboard are working and that the oil pressure gauge and other gauges are working. It helps a lot to prevent breakdowns.

#### Weekly maintenance

- Weekly maintenance procedures focus on deeper cleaning, filter replacement, hydraulic system inspection and tyre pressure levels.
- The operator examines the electrical system for signs of damage or malfunction and informs electricians if there is a need for special assistance.



*Check the oil level of the engine, as well as the hydraulic fluid level.*



*Make sure there is diesel in the tank. If diesel is needed, clean the outside of the tank before adding diesel.*



*Keep the pivots, joints, bearings and other moving parts lubricated.*





## Machine maintenance...

The most common signs that a farming machine needs servicing are visible damage to its exterior, strange noises and warnings on the control panel.

### Seasonal maintenance

Seasonal servicing includes extra cleaning and fluid servicing during the winter months or other periods when the environmental conditions may cause extra damage to farm equipment. Every few months, certified technicians should replace filters and do thorough tests on the machine's fuel consumption, handling and safety.

### Annual maintenance

A mechanic can perform a thorough engine inspection and comprehensive testing of the hydraulic system annually. All changes, repair predictions



*Praise the tractor operator on a job well done, but a warning should be given if he is causing damage to the equipment.*

and unexpected behaviour are documented. If the farm is using farm equipment software, IT specialists must inspect the sensors, install updates and troubleshoot any other issues.

### IN CONCLUSION

It is much cheaper to repair and maintain equipment than to buy new equipment. Breakdowns in a critical period can lower your income and no one can really afford this.

For more information, contact your local machinery dealers and trained mechanics. ■



*Inspect the electrical system daily. Make sure the fanbelt is on tension and that the battery is clean.*



**PIETMAN BOTHA,  
INDEPENDENT AGRI-  
CULTURAL CONSULTANT**





# PUT THE TAX BURDEN in its place

**T**O FARM PROFITABLY IS NOT A GIVEN DUE TO THE CLIMATE, CHANGES IN THE INPUT AND OUTPUT PRICES AS WELL AS MANY OTHER FACTORS THAT CAN GO WRONG. THE RECEIVER OF REVENUE UNDERSTANDS THIS AND THERE ARE MANY LEGAL METHODS OF ROLLING TAXES TO THE FUTURE.

To pay tax when all legal deductions were made, is a privilege – especially if you are a farmer, because this means that you have made a good profit.

Any farmer will implement strategies to lower the production cost. For example, changes to the cultivation practices can lower the diesel needed to plant, but farmers must also use other strategies to lower the tax burden on the business. There are many legal ways to do it, but the farmer in conjunction with his auditor must identify strategies within the law guidelines to pay less tax.

It is important to calculate what your expected profit and the payable tax will be. This is done by subtracting the expenditure for the whole financial year from the income received for the whole financial year. The expected depreciation from capital items such as tractors must also be deducted to calculate the profit or loss. These calculations must be done at least two months before the end of the financial year so that there is still time to implement these strategies.

Farmers can cause problems for themselves with indiscriminate purchases, so make use of specialists to help with the decision of what to buy.

## MANAGE THE TAX BURDEN

Take the cashflow into consideration when deciding what to do to decrease the tax burden. If the cashflow is tight, make sure the plan takes this into consideration.

A farmer has many options to manage the tax burden. The first option will be to pay the tax. The second option will be to buy capital items such as tractors and to write off the depreciation. Farmers can actively grow their businesses to cancel the tax. This will mean that more inputs are needed, but it will then lead to more tax the following year. Alternative strategies will be to buy inputs, grain and marketable livestock.

Determine what is the most logical option, as there is no standard option that will suit everybody. When the cashflow is a problem, the buying of grain and livestock can be a suitable option because it can be sold the following year to help with the cashflow. Just remember, with cattle there must be feed available.

If your farm is stocked to its capacity, rethink your strategy. Remember that the Receiver of Revenue will always take an in-depth look at your business and in some cases, it can exclude some of these transactions and then you must still pay the tax.

When inputs are bought, the cash will be locked up in the inputs



and it can then take up to 18 months to free this capital. Remember that you need to store the inputs and that it can be the wrong choice, so make sure which inputs you are going to buy.

If you are growing your farming enterprise every year, it can be a relatively good strategy. However, remember that growing the business is associated with other problems such as management, extra capital needed and extra equipment.

To buy capital items to manage the tax burden, can only help in a certain extent. According to the 50:30:20 depreciation rule, only 50% of the capital item bought can be deducted as depreciation in the first year. This means that you will spend the capital, but will not get the total benefit to help reduce the tax burden.

All strategies have a negative side, so discuss the tax problem with your auditor and together select an option that will fit your business. ■



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# AVOID CROP LOSSES WITH

**I**F YOU WANT TO INCREASE YOUR PROFIT AND REDUCE THE RISK, CONSIDER HARVESTING SOYBEANS AND SUNFLOWER AS EARLY AS POSSIBLE TO PREVENT SHATTERING OR BIRD DAMAGE. SHATTER LOSSES DUE TO BRITTLE PODS INCREASE AS THE MOISTURE LEVELS OF PODS AND GRAIN DROP. FOR THIS REASON, BE ON TIME WITH THE HARVESTING OF SOYBEANS.

The harvesting process of soybeans and sunflower is a critical aspect in the profitable production of these crops. If something is wrong with the harvesting process, crop losses are unavoidable.

The sound of soybeans shattering with no harvester in the field, or a flock of pigeons in the dry sunflower field, can mean that a large portion of the income is lost.

There are not only losses due to the brittle pods, but the plant growth can also contribute to losses. Some soya plants and soybean cultivars are known to produce pods very low on the ground. If the harvester table cannot harvest low enough, many soybeans are left behind. Therefore, it is important to use the correct harvester header and to plant the correct cultivar.

The hectares a harvester can harvest are determined by the header width, travelling speed and the hours per day that a harvester can harvest. The overestimation of one of these factors will result in a large portion of the crop not harvested.

Harvesting low enough is easier said than done. Unrolled fields are very uneven and large stones in the fields can cause expensive damage to a harvester. Make sure that your harvester is insured against stone damage.

## HEADERS

A flex header or flexi draper is needed to harvest the low-growing and low-podded soybeans. The flexi header will be able to follow the soil contours. Some headers are a floating, multi-section flexible header with a split reel. This allows the entire header frame, cutter bar and reel to follow ground contours as a unit.

A flexi draper header makes use of draper 'belts' that carry the crop to the feeder house. These feed so much smoother and allow farmers to harvest a little later at night due to the even feeding. This belt is also known to reduce soybean losses because the soybean plant is handled gently.

### 1 The costs and field capacities of a 240 kW harvester.

| Harvester cost per hour                          | Harvester (maize) | Harvester (soybeans)      | Harvester (sunflower) |
|--|-------------------|---------------------------|-----------------------|
| Total fixed costs                                | R3 376,67         | R3 376,67                 | R3 376,67             |
| Repair and maintenance cost                      | R800              | R800                      | R800                  |
| Fuel cost @ R25/ℓ                                | R1 080            | R1 080                    | R1 080                |
| Total variable cost                              | R1 880            | R1 880                    | R1 880                |
| <b>Total</b>                                     | <b>R5 256,67</b>  | <b>R5 256,67</b>          | <b>R5 256,67</b>      |
| Harvester header cost per hour                   | Maize header      | Wheat/soybean flex header | Sunflower header      |
| Header used                                      | 8 row 0,91 m      | 9 m                       | 8,1 m                 |
| Average new header price                         | R1 600 000        | R1 300 000                | R879 000              |
| Total fixed costs                                | R675,33           | R548,71                   | R371,01               |
| Repair and maintenance cost                      | R160              | R130                      | R87,90                |
| <b>Total</b>                                     | <b>R835,33</b>    | <b>R678,71</b>            | <b>R458,91</b>        |
| <b>Total: Harvester and header cost per hour</b> | <b>R6 092</b>     | <b>R5 935,38</b>          | <b>R5 715,58</b>      |
| Working speed (km/h)                             | 6                 | 6                         | 6                     |
| Working width (m)                                | 7,2               | 9                         | 8,1                   |
| Field efficiency                                 | 0,75              | 0,75                      | 0,75                  |
| Hectare harvested per day (10 hours)             | 32,4              | 40,5                      | 36,45                 |
| Hour per hectares needed                         | 0,309             | 0,247                     | 0,274                 |
| <b>TOTAL COST PER HECTARES</b>                   | <b>R1 880,24</b>  | <b>R1 465,52</b>          | <b>R1 568,05</b>      |
| Litre (diesel/ha)                                | 13,33             | 10,67                     | 11,85                 |
| Rand (diesel/ha)                                 | 333,33            | 266,67                    | 296,30                |
| Rand (repair and maintenance/ha)                 | 296,30            | 229,63                    | 243,59                |



# EARLY HARVESTING



*Surplus harvester capacity will help increase profitability.*

The higher the yield in the silo, the higher the income and the better the crop profit. When farmers must decide which header to buy, compare the crop loss against the header price to make a decision. The lower the loss, the better the header.

Soybean plants can absorb the dew moisture, after which they get sticky and lose their brittleness. Wet soybean plants are difficult to harvest.

## SOYBEANS: A DIFFICULT CROP TO HARVEST

To harvest a large portion of the harvester's capacity per day, farmers must start as early as possible. Soybean plants can absorb the dew moisture, after which they get sticky and lose their brittleness. Wet soybean plants are difficult to harvest. Typically, the harvesters will break the cutter bar or the plants will get stuck around the threshing drum. This will have an effect on the number of hectares that can be harvested per day.

A rule of thumb is that a harvester with a 9 metre header over time will harvest between 20 hectares and 42 hectares per day, no more. To harvest on time, a farmer needs 1½ eight-row harvesters to keep up with one eight-row planter. It is important to understand that surplus harvester capacity is a risk entrenchment. This will help to increase the soybean profitability.

Harvesting a crop is an expensive action. In **Table 1** the costs of maize, soya and sunflower harvesting are shown, using a 240 kW harvester which costs about R8 million and can harvest maize. At a speed of 6 km/h, 32 hectares of maize, 40 hectares of wheat or soy-

bean and 36 hectares of sunflower can be harvested per day. As soon as the hours per day are decreased, the hectares are also less. In the case of soybeans, ten hours per day harvesting is difficult. So do your calculations accordingly.

To be able to harvest ten hours per day, the repair and maintenance as well as services must be done according to the specifications provided by the manufacturer. Read the manuals and keep to it. If something breaks, spares should be available. Prevention is better than downtime, especially in soybean harvesting. Service the equipment before the harvesting begins – this will save time.

Remember, a combine harvester normally works with an unloading wagon. The size of the wagon will be determined by the harvester. This unloading wagon will require an extra tractor and extra fuel. For a 240 kW harvester, the diesel needed for the unloading wagon can easily reach 10 litres per hectare. Remember to add these costs to your calculations.

Make sure that the harvesters are available on time and that the loss due to downtime is minimised by well-maintained harvesters. ■

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# ACCURATE DISEASE DIAGNOSTICS:

## Appearances can be deceptive

**T**HE SOUTH AFRICAN GRAIN INDUSTRY IS VITAL FOR THE COUNTRY'S AGRICULTURE SECTOR AND PLAYS A CRUCIAL ROLE IN FOOD PRODUCTION AND ECONOMIC GROWTH. IT PRODUCES A WIDE RANGE OF CROPS AND SERVES AS THE FOUNDATION FOR FOOD SECURITY. LOCAL PRODUCERS FACE CHALLENGES LIKE PESTS, DISEASES, CLIMATE VARIABILITY, AND THE DYNAMICS OF THE GLOBAL MARKETS.

Fortunately, the industry is constantly evolving to develop innovative technologies and sustainable practices. Ensuring plant health is crucial for sustainable and profitable crop production, as healthy crops are more productive. Diseases like Sclerotinia have had a devastating impact on yields and producer profitability. Additionally, maintaining plant health is important for trade and biosecurity to protect the industry.

Grain and oilseed producers encounter a diverse range of pests and diseases on a seasonal basis. Accurate diagnostics are crucial as symptoms of these various plant diseases can look misleading or deceptive, making identification difficult. Much like a fever in humans can be caused by various diseases or factors, such as Covid-19, the common cold, cancer, malaria or even heat exhaustion; similarities in disease symptoms can also be observed in plants. An example of this is interveinal chlorosis or yellowing of the leaves of soybeans, which occurs between the veins.

There are several factors that can lead to this chlorosis. These include diseases such as soybean sudden death syndrome (SDS),

Fusarium wilt, stem canker, root-knot nematodes or phytotoxicity that can result from the use of various fungicide products (see **Figure 1**).

While phytotoxicity only causes interveinal chlorosis, examining the roots and stems provides a more detailed insight into differentiating the symptoms of phytotoxicity, Fusarium wilt and SDS (**Table 1**). The outer tissue of SDS-infected roots will exhibit obvious root rot symptoms typically on the tap root.

The discolouration of the stem is contained to the outer area (xylem vessels) and can extend up the stem from the soil line. The stem centre (pith) will remain white. Fusarium wilt infection results in a distinct brown centre (pith) of the stem, and the roots are also rotted.

### ACCURATE DISEASE IDENTIFICATION

A complication for accurate diagnostics is that a disease, like SDS or Fusarium wilt, can be caused by different species. SDS was historically reported to be caused by four species within the *Fusarium solani* species complex, including *Fusarium virguliforme*, *Fusarium brasiliense*, *Fusarium crassispitatum* and *Fusarium tucumaniae*, but a recent publication considered these species as one species under the new name *Neocosmospora phaseoli*.

Fusarium wilt on the other hand is caused by species in the *Fusarium oxysporum* species complex, most notably *F. fabacearum* and *F. glycines*. This implies that diagnosing the disease relies on accurate species identification that can only be done using DNA sequencing.

Accurate disease identification may require specialised and expert skills and techniques. As a result, the Department of Science

#### 1 Distinguishing the symptoms of fungicide phytotoxicity, sds and fusarium wilt of soybean.

| Plant part    | Fungicide phytotoxicity                         | SDS   | Fusarium wilt  |
|---------------|---|---|--|
| Leaves        | Yellowing and eventually browning between veins | Yellowing and eventually browning between veins | Yellowing and eventually browning between veins        |
| Exterior stem | Healthy   | Healthy, although can be rotted                 | Necrosis of the lower stem                             |
| Interior stem | Healthy   | White and healthy                               | Browning in centre of stems, especially in lower parts |
| Roots         | Healthy   | Rotted roots                                    | Rotted roots   |

Scan the QR code for more information on FABI.







**Figure 1: The overlap in symptoms caused by fungicide phytotoxicity 14 to 21 days following application (A); Fusarium wilt of soybean symptoms (B) and sudden death syndrome (SDS) of soybean symptoms (C).**

*Photo A: Tom Allen, Mississippi State University*

*Photo B: Godfrey Kgatle*

*Photo C: Syngenta*

and Innovation, the Technology Innovation Agency, the Maize Trust and Grain SA in collaboration with the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria have been building capacity for the past three years in diagnostic and extension services under the supervision of a taxonomist and diagnostic expert, Prof Cobus Visagie. Scan the QR code for more information or visit [fabinet.up.ac.za](http://fabinet.up.ac.za).

These services aim to identify and address crop health issues by working closely with farming communities. Over the past three years, pest and disease extension officers for the clinic have travelled over 100 000 km to six major grain-producing provinces, liaising with the farming community and collecting samples subjected to accurate diagnostics. The Diagnostic Clinic is now picking up traction and is open to working with grain and oilseed producers, agricultural extension services, and private companies to optimise functionality of the clinic.

Accurate identification of pests and diseases is a foundational step in effective management strategies. Misidentification can lead to the use of inappropriate control measures, wasting of resources and potentially exacerbating the problem. Accurate identification allows for rapid response and containment of outbreaks and reducing their spread. Ensuring a stable food supply and preserving exports will require utmost care in accurately identifying diseases that will inform correct disease management strategies. ■

For further information or disease diagnostic queries, contact Dr Godfrey Kgatle at [godfrey@grainsa.co.za](mailto:godfrey@grainsa.co.za), 079 489 5966 or the FABI Diagnostic Clinic manager, Dr Lieschen de Vos, at [diagnostic.clinic@fabi.up.ac.za](mailto:diagnostic.clinic@fabi.up.ac.za), 012 420 3938/5826.



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# Control options for **WHITE MOULD** on grain

**S**CLEROTIUM ROLFSII (ATHELIA ROLFSII) COMMONLY KNOWN AS SOUTHERN BLIGHT, SOUTHERN STEM BLIGHT OR WHITE MOULD, INFECTS MORE THAN 500 PLANT SPECIES INCLUDING CROPS SUCH AS GROUNDNUT, SUNFLOWER, SOYBEAN, POTATO AND TOBACCO TO NAME A FEW. ALTHOUGH CERTAIN GRAMINACEOUS CROPS SUCH AS WHEAT, MILLET, GRAIN SORGHUM AND OTHER GRASSES MAY ALSO BE INFECTED BY THIS FUNGUS, IT IS UNCOMMON.

The disease occurs worldwide, but is more prevalent in warmer (above 24°C), moist climates. The ARC-Grain Crops have been inundated with queries regarding this disease on soybean, groundnut and sunflower.

This article aims to give producers more information regarding this disease and its control options, which remain difficult due to the pathogen's wide host range.

## DISEASE SYMPTOMS

On sunflower (where the disease is often referred to as collar rot), groundnut and soybean the disease starts with a small water-soaked lesion on the lower stem at the soil surface. This lesion spreads around and finally girdles the stem of the host plant, resulting in the wilting of the plant. The wilted leaves generally turn yellow and then brown, but usually remain hanging on the plant.

As the lower infected portions of the stem are infected and begin to decay, a white mat of mycelium develops around the lesion site. This mycelial mass often spreads out onto the nearby soil surface in a fan-shaped fashion. Round, white sclerotia of 0,5 mm to 1 mm will develop (**Photo 1**). In dry weather, strands or fans of mycelium are less apparent and, instead, white to pale buff mycelia are formed that look like small patches of paint appressed to lower stems. These mycelia then become smooth, round structures and change colour to light tan, brown or black.

Sclerotia are overwintering structures and can be seen in the mycelia or on diseased tissues just above or below the ground surface. The foliage begins to wilt, and dieback occurs due to rotting of the stem tissue (**Photo 2**). In soybeans, lower leaves generally develop brown spots which expand and eventually turn the foliage brown, even though they remain attached to the stem.

## BIOLOGY OF THE PATHOGEN

Many fungi have both asexual and sexual reproductive stages. Each stage has been given a different name. Thus, two different names have often been given for the same fungus. The logic behind this is unclear and there are moves to give each fungal species a single name.

This pathogen has an asexual stage referred to as *Sclerotium rolfsii* which produces the typical symptoms mentioned above. Mature sclerotia consist of an outer thickened and tough mycelial rind which surrounds a layer of thin-walled mycelia. Sclerotia develop to 0,5 mm to 2 mm in diameter, but some may be as large as 10 mm. Hyphal segments may also serve as inoculum sources and can overwinter in plant debris or as sclerotia. Sclerotia have been shown to survive for



**Mycelial mass on lower stem and soil surface.**



**Dieback and wilting caused by *S. rolfsii* infection on the lower stem.**



up to three to four years in soil. *S. rolfsii* doesn't produce any asexual spores.

The sexual stage of this fungus is referred to as *Athelia rolfsii*, but it is not frequently seen. Typical of the basidiomycetes, *A. rolfsii* produces basidiospores attached to a basidium and this is when genetic exchange occurs. These basidiospores are the multicyclic stage of the pathogen's life cycle and are released into the air. When in contact with susceptible host tissue, the spores swell and produce germ tubes that produce appressoria (infection pegs), penetrating the host tissue.

### DISEASE CYCLE AND EPIDEMIOLOGY

At the onset of planting and when favourable warm wet conditions prevail, the sclerotia germinate and develop hyphae. The hyphae infect plant material of any susceptible hosts within their wide host range. *S. rolfsii* is a necrotrophic, soil-borne pathogen that thrives in highly aerobic environments and therefore survives best on or near the soil surface.

Wounds caused to plants by hoeing, mechanical machinery moving through the land, nematodes or insect damage increase the possibility of fungal infections. Once infection occurs the fungus produces oxalic acid and specific enzymes which cause death of host plant cells and facilitate fungal growth and infection. The fungus overwinters as sclerotia and mycelia in infected host tissue (**Photo 3** on page 22). Sclerotia have been known to survive several years in the absence of a host.

This disease is a major problem in warm and wet tropical and subtropical areas. Both temperature and moisture are significant factors in the spread and development of the disease. Optimal growth and Sclerotinia formation occur between 25°C and 35°C. However, sclerotia have been reported to survive in locations where below freezing temperatures occur. Germination of sclerotia is stimulated by the presence of volatile, organic compounds released by decaying plant debris. Current season spread occurs by mycelial growth from debris, organic matter or sclerotia.

This fungus does not produce spores that move in the air, so the disease is confined to localised areas in a field where sclerotia reside. Under favourable conditions, the disease spreads by plant-to-plant contact and infection. Infected plants are often found to occur within a row where plant-to-plant contact occurs. Movement of infected material or infested soil results in long-distance spread of the disease.

### Groundnut and soybean

Groundnut and soybean are infected by sclerotia or hyphae under favourable conditions. These infect the stem near the soil surface, producing silky white mycelium on the stem. As the fungus further colonises tissues of the lower stem, yellowing of the plant, wilting and death follow (**Photo 4** on page 22). This results in yield and quality losses. On infected groundnut plants one or two branches may die off while few branches may still survive.

Groundnut or soybean infected during dry weather have small cankers associated with infection and very seldom wilt. However, if infected during wet, hot weather, stems generally become totally rotted and the plant wilts and dies. Peg and pod infections are also common and result in pod loss. Rotted pods are thin and brittle and the kernels may be stained, rotted or absent.

### Sunflower

Under warm, humid and wet conditions the incidence and severity of collar rot increase. Yield losses of 10% to 15% have been recorded worldwide, but the disease is less prevalent in South Africa. Typical symptoms are rapid wilting of plants with a brownish lesion that girdles the stem base near the soil.

As in soybean and groundnut, the white mycelium forms on infected tissue, often radiates over the soil surface and produces small, brown, spherical sclerotia. Cycles of wet and drying have been reported to stimulate germination of sclerotia.

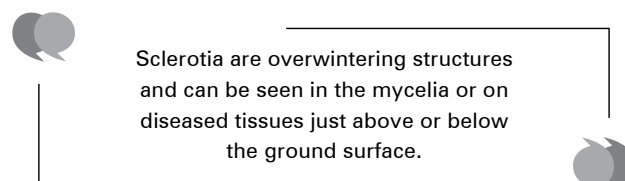
### CONTROL

Control of this pathogen is difficult as it produces sclerotia which overwinter in the soil to emerge as inoculum and cause disease the following season. Various chemical, biological and cultural control strategies have been suggested and implemented, some of which have reduced disease incidence in the field. No groundnut cultivar is completely resistant to infection by *S. rolfsii* and disease management is extremely challenging.

### CULTURAL PRACTICES

Soil tillage, prior to planting groundnut, bury sclerotia and thus reduce inoculum levels. Generally, a mouldboard plough will bury inoculum deep enough. However, with the change to minimum tillage which became more economical and convenient for some producers, this is not always a practical option.

Various researchers have had different results regarding the effect of tillage on this disease. This difference of opinions and results may be due to factors including soil type, depth of ploughing and microclimate variations. Sclerotial germination has been found to be lower at depths below 2,5 cm compared to that at the soil surface and does not occur at depths of 8 cm or more.



Sclerotia are overwintering structures and can be seen in the mycelia or on diseased tissues just above or below the ground surface.

Deep ploughing has thus been suggested as a means of cultural control because survival of the sclerotia of this high-oxygen-demanding fungus is a year or less when buried deeply. Research done at Viljoenskroon on sandy soils showed that ploughing deep using an inversion plough reduced infection levels. These sandy soils are, however, very prone to erosion when left with no crop cover and the producer has to consider the advantages and disadvantages when deciding on a ploughing method.

Cultivation during the season should be avoided as any mechanical stem damage may increase chances of infection. The aeration of the soil allows deeper penetration of the fungus where roots, pegs and pods can be infected. Cultivation during the season can, furthermore, promote disease by uncovering buried sclerotia, improving aeration, and by throwing infested soil onto plants.

Irrigation may be timed to prevent excessive moisture during warm periods, which will increase infections. Producers should allow a dry period between irrigation schedules to reduce infections as prolonged periods of wetness below the canopy will favour disease development. Various studies indicated that increased canopy closure increased infection levels.

Reduced plant densities in a South African study conducted at Viljoenskroon (sandy soils) increased the incidence of disease in an infected field. Therefore, it is not considered to be a viable form of cultural control on these soils. The Viljoenskroon groundnut-producing area in which this trial was conducted, is notorious for wind erosion. The lower planting densities were more wind-prone, causing wind-borne sand to damage the plants or to heap up around the stems of the plants and cover the runner stems, which increased the possibility of infection.



**3** *Mycelium and sclerotia infecting and surviving on previous crop stubble, in this case groundnut stubble.*

It would therefore appear that although soil-borne disease severity may be stimulated by lush foliar growth of the canopy, a decrease in the plant density is not a viable option for reducing *S. rolfsii* damage in areas that are prone to wind erosion.

Crop rotation is effective if producers ensure that the crops rotated are not hosts of the fungus – it has a very wide host range. Maize, grain sorghum, small grains, Sudan grass and cotton are possible alternatives. However, some researchers have claimed that cotton and grain sorghum may also be hosts of the pathogen.

A minimum of two-year rotations is required where the disease pressure is known to be high. Rotations of two years or more to a non-host crop help to prevent build-up of inoculum and disease problems in groundnut. Longer rotations are necessary to reduce disease once high levels of inoculum are established. Weed control is very important and needs to be maintained to prevent disease increase on susceptible weed species, which include mainly dicotyledonous and a few families of monocotyledonous plant species.

Planting dates have been shown to influence the incidence and severity of collar rot on sunflower and may be manipulated to avoid high infestation times. However, this is not always practical as one requires some sort of accurate weather prediction to avoid warm, humid, wet conditions.

### CHEMICAL CONTROL USING FUNGICIDES

Fields with a history of the disease should be scouted weekly to determine onset of this disease. Where the disease is known to be a problem, fungicides may be used to control the disease to a certain extent. In the USA several effective fungicides are registered for use on groundnuts.

Most of these fungicides also control leaf spot, which makes their use economical. In a study done in South Africa and published in 2003, Difenconazole in combination with a *Trichoderma harzianum* biocontrol agent reduced the growth rate of *S. rolfsii*. Since then,



**4** *Death of young sunflower plants due to *S. rolfsii* lower stalk infection (collar rot).*

many new products have appeared on the market that may be better chemical control possibilities. However, they need to be tested.

Fungicide efficacy depends on canopy penetration and ensuring that the fungicide reaches the target. At times two sprays may be necessary, however, producers need to consider the economics of chemical control. In the USA, spray programmes may be as high as four spraying intervals that start when the groundnut rows begin to close about 70 days after planting and thereafter applied at 14-day intervals. Locally, this would be costly and very high disease pressures need to be noted before going to such extremes.

### RESISTANCE

Work done in the USA showed that complete resistance to *S. rolfsii* in groundnut and soybean is not known. However, there is a limited number of cultivars with partial resistance that may be used in an integrated disease management system.

In South Africa, no work has yet been done on resistance to this disease, but should the disease persist or get worse in the following seasons, local hybrids should be screened for resistance. Soybean is susceptible from emergence through pod fill, but producers should only be concerned when infections occur during the vegetative stages of growth. ■

For more information, contact Drs Bradley Flett and Belinda Janse van Rensburg at 018 299 6100.

**DR BRADLEY FLETT, ARC-GRAIN CROPS,  
POTCHEFSTROOM AND DR BELINDA  
JANSE VAN RENSBURG, ARC-GRAIN  
CROPS, POTCHEFSTROOM.  
FIRST PUBLISHED IN  
SA GRAAN/GRAIN, JULY 2023.**





# Effect of insecticides on aphids: Evolution of resistance

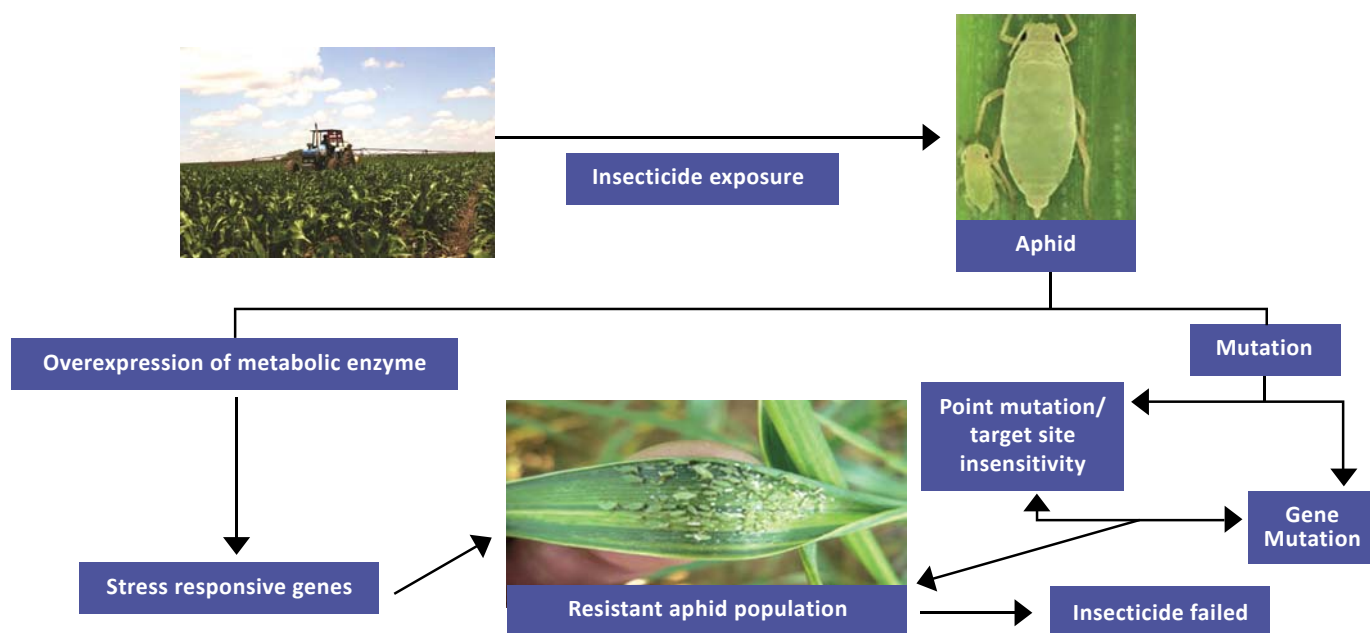


Figure 1: The effect of insecticide exposure on aphids.

**A**PHIDS ARE GLOBALLY SIGNIFICANT ECONOMIC PESTS THAT CAN LEAD TO SUBSTANTIAL ECONOMIC LOSSES. MANAGEMENT OF APHIDS IS CHALLENGING BECAUSE OF THEIR EXTREMELY HIGH MOBILITY AND THE FACT THAT THEY CAN RAPIDLY REPRODUCE, RESULTING IN HIGH POPULATION PRESSURES CAUSING ECONOMIC DAMAGE TO CULTIVATED CROPS.

The aim of chemical control is to keep pest numbers below damaging levels. Because all aphid species can be controlled with chemical insecticides, it is one of the most prevalent management strategies used so far. The most used insecticides are organophosphates and neonicotinoids. Continued and widespread use of these insecticides will, however, eventually result in insecticide resistance in aphid species.

Multiple treatments and increased doses of insecticide have previously resulted in resistance to several insecticides in aphid species. Two species of wheat aphid have developed different degrees of resistance to pesticides with various mechanisms of action. Insecticide resistance is a major cause of failure to control aphids on wheat.

Several mechanisms that render individuals resilient to chemical insecticides, such as reduced cuticular penetration, mutations of targeted receptor sites, and increased levels of detoxification enzymes, are found in aphids. The activation of genes is believed to be the main mechanism conducting xenobiotic detoxification through which aphids counteract exposure to several insecticidal compounds.

Under the selection pressure of insecticide toxicity, a major percentage of the aphid transcriptome is changed, and several hundreds of genes involved in a wide range of pathways are expressed differentially in multiple resistant genotypes (Figure 1).

## DEVELOPING AN APPROPRIATE PEST CONTROL STRATEGY

To maintain the ability to produce wheat efficiently, producers must have continued access to effective insecticides. The development of insecticide resistance is a major limiting factor to access to effective insecticides.

Developing an appropriate pest control strategy should ideally consider the insecticide tolerance difference among different aphid populations. Resistance monitoring is an effective component of a resistance management approach since it provides useful information on the resistance of aphid populations to insecticides with different modes of action. Implementation of resistance-delaying tactics should also be considered. The most important of these tactics are minimising insecticide use, applying insecticides only when needed, and rotation of insecticide classes.

A consequence of the high fitness cost of maintaining resistance, and rapid reproduction of aphids, the resistance levels to insecticides may decline after a few generations in the absence of exposure to the insecticide. Organophosphates and neonicotinoids have been applied widely to manage wheat aphids in recent years and aphids seem to be developing resistance to these insecticides.

Relying on insecticides in different classes for a few generations and limiting insecticide use to certain areas where and when it is absolutely necessary to protect yield, will facilitate insecticide resistance management and provide continued access to effective insecticides. ■

DR ASTRID JANKIELSOHN,  
ARC-SMALL GRAIN, BETHLEHEM. FIRST  
PUBLISHED IN SA GRAAN/GRAIN,  
SEPTEMBER 2023.



# HIGH CROP YIELDS

## expected after good rainfall

**T**HE RAINFALL CONDITIONS IN THE EARLY PART OF THE 2023/2024 SEASON ARE LOOKING DIFFERENT COMPARED WITH EARLIER EXPECTATIONS. HEAVY RAINFALL OCCURRED AT THE END OF 2023 AND THE BEGINNING OF 2024 THROUGHOUT MOST SUMMER RAINFALL REGIONS OF SOUTH AFRICA. THE ONLY PROVINCE THAT HAS NOT RECEIVED AS MUCH RAINFALL, IS NORTH WEST.

Against a backdrop of better-than-expected conditions, producers could plant their usual crops in provinces such as the Free State, Eastern Cape, KwaZulu-Natal, Mpumalanga and Limpopo. Meanwhile, North West saw delays in plantings because of slightly delayed rainfall compared with other provinces. The irrigation regions, such as the Northern Cape, also planted on time, benefitted from higher dam levels and reduced loadshedding during the summer holidays to support crop conditions.

### ABOVE-AVERAGE YIELDS EXPECTED

The latest survey done by Grain SA shows that crop conditions in provinces that received early rainfall are favourable, and producers' plantings of most summer crops may have reached the intended area at the start of the season.

Producers in some of these provinces indicated that they expect above-average yields. The significant risk on the horizon that producers fear is the possibility of hail, especially in areas such as the Eastern Free State that is prone to hail. Still, by mid-January, hail had not caused much damage in these areas and the crops were in a favourable condition.

Some producers in these areas also feared that a mid-summer drought would negatively impact crops, particularly the late-planted crops. However, with the South African Weather Service (SAWS) expecting rainfall to continue until March 2024, there is optimism that a drought won't be a challenge.

The crops would need significant rainfall around February, primarily during pollination time. Beyond pollination, it is believed that the crops would still be in good condition even if the rainfall slows. However, this would likely be a reality for the central and eastern regions. There remains a risk of dryness in the country's western areas, particularly North West, which already did not receive as favourable rainfall as other provinces.

### POSSIBLE DROUGHT IN THE WEST

In its *Seasonal Climate Watch Report* of 19 December 2023, SAWS underscored this point of possible dryness in the western regions, stating that the 'multi-model rainfall forecast indicates mostly below-normal rainfall over most of the country during January to May, except for the central and eastern coastal areas, indicating a higher likelihood of above-normal rainfall'.

With this said, the reality has thus far proven to be better than SAWS's projections as favourable rainfall can be seen continuously across the country since the start of this month, and it is not limited to the coastal regions. If the showers could remain favourable for the remainder of this month and through to the end of February across the country, another ample agricultural harvest could be expected.

These favourable production conditions also support grazing veld for livestock, vegetable production, fruit production and other agricultural activities.

### FAVOURABLE PRODUCTION CONDITIONS

At the start of the 2023/2024 summer crop production season, producers intended to plant 4,5 million ha of land, which is up 2% from the previous season. Given the feedback from the Grain SA survey,





it can be believed that producers met their expected planting area in most provinces. If there are any reductions in area, they will likely be in the white maize regions of North West.

These favourable production conditions also support grazing veld for livestock, vegetable production, fruit production and other agricultural activities. The cautious view that the 2023/2024 production season was started with might be proven to have been too pessimistic, and South Africa could have yet another favourable agricultural season. A lot will unfold in the coming months, but there are now some reasons to be more optimistic about the production conditions.

## POLICY CONSIDERATIONS

The favourable conditions would allow more time to be devoted to long-term policy issues that the sector still needs to resolve. The significant issues that should remain in the policy discussion this year include the need to tackle the problems constraining South Africa's agricultural growth potential head-on. These are the weakening mu-

nicipalities, deteriorating roads, rising crime, inefficient logistics, animal diseases, lack of progress in registering new agrochemicals and seeds, slow launching of the Land Reform Agency and releasing government land to beneficiaries, and persistent loadshedding.

The government and private sector should collaboratively work to resolve these constraints to attract investments and boost the long-term growth of the agricultural sector. The sector should focus more on these aspects for the remainder of 2024. ■

*\* This article was published in the Agbiz Newsletter of 18 January 2024.*



**WANDILE SIHLOBO,**  
CHIEF ECONOMIST, AGBIZ

# Farmers benefit from ROADSHOWS

**T**HE AGRICULTURAL SECTOR IS OFTEN CHALLENGED BY VARIOUS FACTORS SUCH AS CLIMATE CHANGE, INFESTATIONS AND DISEASES. TO BRIDGE THE GAP AND FOSTER AGRICULTURAL DEVELOPMENT, GRAIN SA HAS ESTABLISHED THE RESEARCH AND POLICY CENTRE DEPARTMENT, WHOSE ROLE IS THE CO-ORDINATION OF NEEDS-DRIVEN GRAIN RESEARCH FOR FARMERS.

With constant changes in agriculture, new possibilities and risks emerge daily for farmers. The objective of Grain SA's research, facilitated by its nationwide research network, is to enhance sustainability and profitability. This is achieved by analysing patterns (such as climate variability, weed infestations and diseases) and creating informative resources.

Grain SA hosted a series of roadshows that were sponsored by Absa and John Deere Financial in Mpumalanga, the Free State and North West during the last quarter of 2023. Various stakeholders from the agricultural industry participated in these events.

The theme for the roadshows ('Climate, agronomy and plant health') was based on the Grain SA research consortia and current research initiatives, as well as the challenges currently experienced by farmers.

The main purpose of these roadshows was to:

- Interact with farmers about relevant subjects.
- Create awareness of conclusions from the team's research network.
- Present the research initiatives coordinated by Grain SA. Inputs received from farmers were used to make sure the research was relevant. This scientific information was shared with the farmers to help them with decision-making.

## WHY FARMERS SHOULD ATTEND A ROADSHOW

- In modern agriculture, roadshows have developed as an essential platform for empowering farmers, promoting innovation and promoting sustainable farming practices.

- By serving as a channel for knowledge transfer, technological advancement and community building, these roadshows are instrumental in shaping a more resilient and sustainable future for the global agricultural sector.

As Grain SA continues to embrace the transformative power of these dynamic platforms, the journey towards a more efficient and sustainable agricultural landscape becomes even more attainable. ■



*Prof Willem Landman giving a lecture on weather forecasting.*



**DR GODFREY KGATLE,**  
RESEARCH COORDINATOR AND  
LELELEHONOLO BAKWA,  
COMMUNICATIONS INTERN,  
GRAIN SA



# SA cattle may soon eat seaweed

**A** STARTUP IN SOUTH AFRICA IS TESTING HOW SUPPLEMENTING LIVESTOCK FEED WITH SPECIFIC TYPES OF RED SEAWEED CAN HELP REDUCE METHANE EMISSIONS THAT CAUSE CLIMATE CHANGE.

Bahari Labs, which was set up in May 2023, is the brainchild of Jay van der Walt, who partnered with scientists from various disciplines to work on this solution that relies on seaweed. 'Bahari' is a Swahili word meaning 'from the sea'.

Nearly a third (32%) of methane emissions come from livestock through manure or gastroenteric releases, according to the United Nations Environment Programme. Methane is a greenhouse gas which causes global warming – and is considered 80 times more potent than carbon dioxide over a 20-year period. Reducing one ton of methane is the equivalent of 28 tons of carbon dioxide, according to a greenhouse gas equivalence calculator developed by the United States Environmental Protection Agency.

A 2020 study points out that emissions from livestock can be managed using red seaweed. The seaweed can inhibit the process that generates methane without harming the animal. Incorporating 0,1% and 0,2% of red seaweed in the diet of Brahman and Angus cattle would decrease methane by as much as 40% and 98%, respectively. 'Red seaweed reduces methane by a massive amount without having a detrimental effect on cattle,' said Van der Walt.

The practice has been implemented in other parts of the world, and Bahari Labs plans to trial incorporating red seaweed as a supple-

ment for animal feed in collaboration with regenerative (sustainable) cattle and sheep farmers.

The red seaweed is being grown in indoor tanks at two aquariums in Cape Town – one in Sea Point and another at the University of Cape Town. It is still in its early stages, but when it is time to scale, Van der Walt said the seaweed will be grown outdoors, similar to spirulina farms. It will not be harvested from the sea to prevent interfering with or damaging local marine ecosystems.

'We will be growing the seaweed on land so that we can properly control temperature, water flow and light conditions,' he said. This would also allow Bahari Labs to incorporate sustainable practices, like relying on solar power.

The long-term plan is to partner with corporates or animal feed producers. This would also help these companies to achieve their emissions reduction targets.

Besides reducing emissions, there are also other benefits. Livestock farmers in dry and arid regions would spend less on feed because animals eat less when on seaweed supplements. The cost savings would also help to boost profitability for farmers. 'Grain farmers who have lost their income due to extreme drought could transition to seaweed farming,' Van der Walt added. ■

Source: [https://www.news24.com/fin24/climate\\_future/solutions/sa-cattle-may-soon-eat-seaweed-to-help-cut-their-climate-changing-farts-20231111](https://www.news24.com/fin24/climate_future/solutions/sa-cattle-may-soon-eat-seaweed-to-help-cut-their-climate-changing-farts-20231111)

RPO NEWSLETTER, DECEMBER 2023

Photo: Amanda van Blerk



# Do not GIVE UP

**F**IRST-TIME ENTRANT IN GRAIN SA'S GROW FOR GOLD YIELD COMPETITION, JOB DUBE, WAS CROWNED THE BEST FOR MAIZE PRODUCTION IN KWAZULU-NATAL. DUBE'S YIELD OF 16,78 T/HA EARNED HIM THE FIRST PLACE IN THIS YEAR'S COMPETITION.

Dube's dream to develop a thriving and sustainable maize farming operation that will provide a sustainable income for his family, is coming true. By harvesting 500 kg/ha more than his next competitor, he earned his place on the top of the podium.

He is a project manager by profession and started farming in 2010. His farm Sandspruit, near Utrecht, covers 1 000 ha with 330 ha of arable land. Dube farms under the business Ekuphileni, meaning 'in life'.

Dube plants maize, soybeans and wheat. His summer crops are planted in a rotation system of 75% maize and 25% soybeans. He planted 75 ha of the winning cultivar P1197R. According to him, he did nothing special or different on this block, but followed his normal practices.

The soil type on the farm is silky clay. He follows conventional cultivation practices and planted the maize during the first week of November 2023 using a Monosem planter. The plant population was 70 000 at a row width of 76 cm. He harvested during June.

On all his fields planted to glyphosate-tolerant maize, he follows a standard weed control programme as advised by the AECl agent in the area.

He applied a macro element mixture of nitrogen (N), phosphorus (P), and potassium (K) at an application of 11,6% each or 1:1:1(35), combined with 0,5% zinc (Zn), and 5% sulphur (S). This was followed by a 5:0:1 NPK mixture with an addition of 6% S.

Dube received an average of 920 mm rain for the season, but supplements with irrigation from the Buffalo River and holding dams. According to him loadshedding presented enormous problems, not only with irrigation, but to his entire operation. Another big challenge during the past season was the very wet conditions with the result that he was not able to always follow his normal routine. 'I was not able to get into the fields to do what needs to be done on time.'

## BALANCE YIELD WITH PROFITABILITY

He believes that it is important to balance high yields with profitability. To manage this, he compiles a pre-season budget, look at the weather prediction for the season and plan according to the long-term yield average in the area. He also plants his own trials on the farm to compare new hybrids with each other to see which will do the best on his farm with his farming practices.



*The winner in the category for maize production in KwaZulu-Natal was Job Dube from Utrecht with a Pioneer hybrid, P1197R, and a yield of 16,78 t/ha. On the photo from the left are Roseline Nkosi (assistant farm manager), Job Dube and Derek Mathews (chairperson, Grain SA).*

Farming is very important to Dube – not only for himself and his family, but also for the area as he contributes to the welfare of other families by creating jobs in the area.

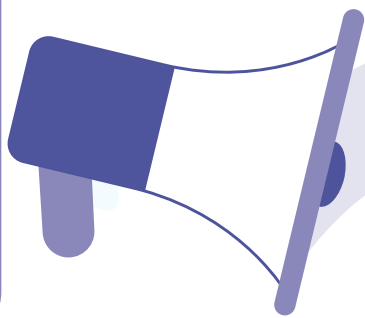
'I believe that a mentor is one of the biggest assets to any emerging farmer as the technical input they provide is critical to the success of a start-up farming project. Having access to knowledge is making an immense difference in my approach to farming. I have little doubt that without the input from a mentor, any emerging farmer will remain at that stage for ever.'

His advice for other farmers entering the agricultural sector is to just keep on trying and to do the best they can. That was one of the important things he took away from the mentorship programme he was involved in: 'Ensure that you have a good mentor. Apply the best farming practices as best as you can. Do not give up.'

*This article was first published in SA Graan/Grain December 2023/January 2024.*



**MAGDA DU TOIT,**  
SA GRAAN/GRAIN CONTRIBUTOR



# HAVE YOU HEARD?

## GRAIN SA CEO READY FOR A NEW CHAPTER

Dr Tobias Doyer, the new chief executive officer of Grain SA, joined the team on 8 January. Recognised as an accomplished and forward-thinking leader, he brings a wealth of expertise and capability to the Grain SA Group of Entities. With a proven track record of driving growth, strategy and innovation within the agricultural, insurance and academic sectors, Dr Doyer is well-positioned to lead Grain SA towards a new era of success.

He played a big role in reshaping the Agricultural Business Chamber (Agbiz) into an independent business representative organisation. Dr Doyer strategically positioned Agbiz as a proactive contributor to national agricultural and economic discussions. He also played a key role in formulating and sharing the vision and identity of the organisation – supported by its diverse stakeholders, including media, politicians, government bodies, farmers' organisations and Agbiz members.

Dr Doyer's vision for Grain SA centres around the positive contribution of the agricultural sector on the civil society and South Africa as a whole. 'The South African grain, rural and political environment is constantly changing, and it is imperative for us to inspire and make things happen. I am looking forward to my return to the sector and the road ahead,' he said.

With this clear direction, the Grain SA Group of Entities is ready to tackle the challenges of the ever-evolving agricultural landscape and capitalise on sustainable emerging opportunities.



## AND THE WINNERS ARE...

The **Agricultural Writers SA Awards** for 2023 were presented on Friday, 17 November, during a prestigious function in Stellenbosch. Dr Dirk Troskie was named the Agricultural Expert of the Year, Sophy Musabeni the New Entrant to Agriculture and Dewald te Water from Bethal in Mpumalanga the National Farmer of the Year.



*Food for Mzansi* presented its **Mzansi Changemakers Awards** at their fifth anniversary celebration. Four remarkable individuals were applauded for their unwavering commitment to propelling the farming landscape forward. They are Dr Innocent Sirovha (chief executive of AgriSETA), Free State farmer Nick Serfontein, Koos Janse van Rensburg (former managing director of the VKB Group) and Prof Christo van der Rheede (former chief executive officer of Agri SA).

The Agricultural Research Council (ARC) presented its **National Beef Performers Awards** on 23 November 2023. The Department of Agriculture, Land Reform and Rural Development is a key stakeholder in these awards since its inception. Apart from beef production, these two individuals were lauded for their mentorship roles:



*Naudé Pienaar from North West*



*Piet Mothepu from the Free State*

## WIN A CASH PRIZE

The *My Hero* series, a competition by Grain SA and John Deere, is your chance to acknowledge the heroes who fuelled your passion for the agricultural industry! It can be devoted parents, grandparents or farm workers. Maybe your spouse, a helpful neighbour or a wonderful mentor inspired you. Your story is a tribute to their lasting legacy, so why not enter the competition? You may win a cash prize of R2 500 and provide your hero with an exciting gift from John Deere. Scan the QR code to fill in the form.





# Corner Post

BY LOUISE KUNZ, ASSISTANT EDITOR

**W**ILLIAM SETLABA RAPHOTO FROM LICHTENBURG WAS ANNOUNCED AS THE 2023 PGP/ABSA/JOHN DEERE FINANCIAL NEW ERA COMMERCIAL FARMER OF THE YEAR. TO THIS HUMBLE FARMER THE AWARD IS A HUGE HONOUR.

He is thankful that he can make a living through his passion and attributes this passion to his late father, Rykie, who was an established farmer and a member of Grain SA. After completing a diploma in animal health from North West University in 2003, William joined his father on the farm and gained a lot of experience in the process. He took over the farming operation in 2020 when his father passed away.

This farming enterprise is a great example of succession farming with William following in his father's footsteps. His two sons, Tlotliso (12) and Realeboha (7), are already showing a keen interest in farming. 'They are the reason I have to get up when I face a challenge, so that they don't get disheartened and lose their passion.'

## LEARNING FROM THE BEST

'Grain SA has played the biggest role in our farming operation by teaching us better agricultural practices and how to deal with challenges,' the winning farmer says. He is very grateful to Phahama Grain Phakama (PGP) for their contribution to his success.

William regularly attends study group sessions and takes training seriously. 'I also look at what other farmers are doing and if I see something I don't know, I go and ask them.'

To William one of the best lessons he learned through his relationship with the Farmer Development Team was to put money back into the farm and not spend it on things that do not boost his farming operation. In 2023 he invested in another combine harvester which is contracted. The brand-new John Deere 5075E utility tractor which he won in the competition, has expanded his tractor fleet.

William believes that it is important to keep learning and continuously improve if you want

to make a success of farming. 'Farming is a learning curve and that there is always something new to learn no matter how long you have been farming.'

## WILLIAM'S STORY

### WHAT IS THE BEST THING ABOUT BEING A FARMER?

Being able to be involved in ensuring food security and job creation in South Africa.

### WHAT MAKES FARMING DIFFICULT?

One of the big challenges we as farmers face, is climate change, but with the help of PGP I have learned how to adapt methods to continue producing successfully. Fluctuating prices makes the marketing of produce difficult. With high input costs, we have to come up with ways to cut costs without taking any shortcuts which will affect the quality of our produce.

### MOST IMPORTANT LIFE LESSONS LEARNED

I learned the value of longstanding relationships from my father – whether it is a mentor, chemical advisor or friends. I have three farmer friends with whom I am in regular contact. We get together on a regular basis and communicate almost daily. We help each other sort out problems and challenges. ■



William Raphoto

## FARM FACTS

**Farm:** Lareystryd farm

**Nearest town:** Lichtenburg

**Region:** North West

**Size:** 210 ha of own lands, rents 300 ha

**Type:** Mixed – crops (maize and soybeans) and livestock (Bonsmara and Simbra cattle, Ille de France sheep, Dorper sheep for meat, goats)

## PGP'S CONTRIBUTION

- Joined PGP in 2005
- Itsoseng Study Group
- Became a member of 500 Ton Club: 2023

### Training courses completed:

- Maize production
- Introduction to sorghum production
- Introduction to dry bean production
- Farming for profits
- Contractor's course
- Basic principles for engine repair
- Maintenance for tractors and implements
- Technical competence

### A mentor's view:

Du Toit van der Westhuizen, regional development manager in North West, says William's passion is only partly responsible for his success. 'He is really a hard worker who is keen to learn and improve. He is always open to learn from others and has never been afraid to ask for advice and then apply what he learns. William also doesn't let stumbling blocks discourage him, but tries to find solutions to problems. He is always there for fellow farmers who need guidance.'

## 3 TIPS FROM A WINNER

- Take responsibility for any action on the farm – whether it was right or wrong, you are responsible.
- Do the right thing at the right time.
- Be open to new methods and adapt to climate change notes.

# A programme that is changing lives



## All you need to know about Congress

**REGIONAL MEETINGS WERE HELD DURING JANUARY AND FEBRUARY TO SHARE THE GRAIN SA GROUP OF ENTITIES' FOCUS AREAS FOR THE YEAR AHEAD. THESE TOPICS WILL ALSO BE ON THE TABLE AT THE 2024 CONGRESS ON 13 AND 14 MARCH. THIS EVENT OFFERS A WONDERFUL OPPORTUNITY FOR MEMBERS, GOVERNMENT OFFICIALS, ROLE-PLAYERS, ACADEMICS, PARTNERS AND STAKEHOLDERS TO INTERACT AT NAMPO PARK NEAR BOTHAVILLE IN THE FREE STATE.**

### WHAT IS THE CONGRESS?

The Grain SA Congress is the annual general meeting of members and is the highest authority of Grain SA. The Congress is convened annually on a date and place determined by the Executive.

The function of Congress is the consideration and discussion of the annual financial statements, auditor's report and the report of the Grain SA Executive. A chairperson, two vice-chairpersons and the Executive are elected during the proceedings. The Executive is the highest authority when Congress is not in session, and subject to the control and general policy of the congress.

### WHAT IS THE FUNCTION OF CONGRESS?

The function of Congress is:

- The consideration and discussion of the annual financial statements, auditor's report and the report of the Executive of Grain SA.
- The election of the chairperson and two vice-chairpersons.
- The election of the Executive.
- The appointment of an auditor and the approval of his fees.
- Handling of other special matters to be discussed.

### HOW ARE DELEGATES ELECTED TO CONGRESS?

Although many people believe that the Executive and its management committee are the highest authority in Grain SA, it is actually Congress. This is why it is so important for members to carefully consider who to nominate as delegates from their region and who will best represent farmers' interests at Congress.

Members of PGP pay annual membership fees which give them access to the privileges and benefits produced by the organisation. Commercial producer members also pay a commodity levy on all grain and oilseeds produced to Grain SA. They earn the right to influence decisions of the body through a constituted and democratic process.

At the regional meetings before Congress, delegates from the different regions will be nominated to attend. A delegate must be a bona fide farmer producing grain to the market – a person who knows farming issues in his region, who is able to understand the business of the organisation and who will speak up for the farmers' interests.

Delegates have the responsibility of voting on very important matters which influence the activities of the organisation in terms of work done, leadership, and even changes in the constitution. When chosen, delegates are informed of their rights and responsibilities when they are elected to represent their farming communities.

The farmer who attends Congress as a delegate must be a leader in his/her community, someone who will be your voice at the general meeting and who will return home to tell farmers in their region what was discussed and decided there.

### WHEN SHOULD LEVIES BE PAID-UP?

Membership fees and the commodity levy (if applicable) are paid annually for the period from 1 March to the end of February, when the financial year for membership fees and levies ends. The status of membership is determined by the payments received until the end of February that precedes Congress.

Only paid-up members can attend the Grain SA Congress as voting delegates, and they also qualify for free entry to Grain SA's NAMPO Harvest Day or other regional based events, like NAMPO Cape.

### WHAT ARE THE BREAKAWAY SESSIONS?

All producers attended separate breakaway sessions, where a variety of matters regarding different commodities – maize, winter cereals, sunflower/sorghum, soybean and groundnut – are discussed. This is a valuable opportunity where the focus is on crop-specific issues.



*Some of the special moments captured at the 2023 Congress.*





## Big smiles from the winners

**ON** 27 October, John Deere Financial played a significant community upliftment role in Lichtenburg, North West, by handing over a brand new John Deere 5075E MFWD tractor to William Raphoto, the 2023 PGP/Absa/John Deere Financial New Era Commercial Farmer of the Year.

The handover ceremony was marked by heartfelt sentiments from William, emphasising that the tractor is a symbol of triumph and hard work. To him, it represents the culmination of perseverance, dedication and unwavering determination.

Grain SA celebrated excellence in grain production at its annual gala awards evening, held on 20 October 2023. The winning farmers who were announced at the Day of Celebration in September were also honoured at this prestigious event. Here they are all dressed up in their formal attire.



*William Raphoto receives the keys of a brand new tractor.*



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1. Jurie Mentz with Portia Msibi, the Subsistence Farmer of the Year.
2. Graeme Engelbrecht (Dundee) and Nkosinathi Hadebe, the Smallholder Farmer of the Year.
3. Another winner from Graeme's region, Philani Khoza, the Potential Commercial Farmer of the Year, with Derek Mathews, chairman of Grain SA.
4. Du Toit van der Westhuizen (Lichtenburg) with William Raphoto.

## Roadshow EMPOWERS FARMERS

**DURING** September and October 2023, the team of the Research and Policy Centre of Grain SA hosted roadshows in Mpumalanga, the Free State and North West. The aim of the roadshows was to engage with producers on topics that are current on farm level, to create awareness about the findings of their research network and to showcase the research initiatives. Absa and John Deere sponsored these events.

Scientific information was shared to aid farmers with decision-making and get their inputs to ensure that the research is relevant. Various stakeholders from the agricultural industry also participated in this event. The theme for the roadshows – Climate, Agronomy and Plant Health – was based on the Grain SA research consortia and current research initiatives, as well as the challenges currently experienced by producers.



*Attendees of the Research Roadshow in Lichtenburg.*



*The Syngenta Seedcare team gives a seed treatment demonstration.*



"Cecelia Qokela looked after me as a child and basically raised me. Mzayfani Nonjingo taught me how to drive a tractor. For me, our good relationship is very important."

# PROUD TO BE A PART OF YOUR STORY

**FARMERS:** Jed van Niekerk working alongside the Brookside Farm beneficiaries Mzayfani Nonjingo; Zuko Qokela (*Cecelia's son*); Cecelia Qokela and George Majola (*the combine harvester driver*)

**FARM:** Brookside Farming, Harry Gwala Agri

**AREA:** Kokstad, KwaZulu-Natal

**PANNAR HYBRID USED:**  
PAN 4R-838BR (*Yellow Maize*)

**PANNAR REP:**  
Andrew du Plessis  
082 332 4870  
Southern KwaZulu-Natal



I'm Jed van Niekerk and I'm pleased to report that this is the third year that we've partnered with members of Brookside Farming. Rory Brydon provides financial support and advice and I provide the mechanical support, while Pannar kindly donated the seed. Over the course of the past three years, Brookside has become financially independent. So this year, they have been able to pay for the full crop up front on their own, and it's going very well. The beneficiaries are really hungry to learn and their knowledge has grown... and when someone is so eager to develop themselves, we are always willing to go the extra mile and help or support them wherever we can. We also received great advice from our Pannar rep, Andrew du Plessis. He selected the right variety for the farm and the soils, the yields we were aiming for and for our limited budget.



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