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PULA IMVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS



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A WORD FROM...

Jerry Mthombothi

DURING THIS SEASON, FARMERS HAVE EXPERIENCED MANY PROBLEMS SUCH AS HIGH INPUT COSTS, HOT DRY SPELLS IN JANUARY AND HEAVY RAINS FROM MID-FEBRUARY.

Many farmers may not be able to return to farming in the next planting season as a result of the drought that their crops suffered in January, followed by floods that affected the crops thereafter. The crops suffered in areas where heat waves were experienced, and as a result the maize did not grow well. Some of the maize was stunted and leaves dried up.

The maize that was not affected by the drought, as well as the maize that was recovering from the drought, was affected by the heavy rains from mid-February. The heavy rain has filled the water table very quickly, which resulted in serious water damage and the drowning of farmers' crops. Most of the crops were affected in such a way that many farmers will suffer a total crop loss.

Those farmers may struggle to go back to farming in the next planting season, especially the smaller farmers who did not insure their crops.

Farmers should try and limit their risks by planting their crops as early as possible in October or early November in the Highveld, depending on the rain. This is to avoid the tasselling of their maize during mid-January, when there can be hot dry spells that will disturb the pollination of their maize crops.

It is also very important to insure crops against hail damage, drought, frost and fire. Farmers should diversify by planting different types of crops at different times in one season. Those who can farm with both livestock and cash crops, must do so to spread the risk.

– Jerry Mthombothi is the regional development manager for the Mbombela office. ■

Combat **HARVEST TIME** losses

THERE IS A PROVERB WHICH STATES: 'WELL BEGUN IS HALF DONE.' IN THE CASE OF GRAIN FARMERS, THIS COULDN'T BE TRUER. IT IS NOT ENOUGH TO GROW A GOOD CROP IF ONE DOES NOT HAVE A PLAN FOR THE FINAL STAGES OF PRODUCTION, WHEN THE CROPS NEED TO BE HARVESTED AND SAFELY STORED OR SOLD.

Harvest time is the climax of a farmer's agricultural calendar. It is the season when he reaps the fruits of his labour and gathers the return on his investment of money, time and energy. It is often also a time of intense pressure and stress, as farmers use the narrow window of opportunity between perfect crop maturity, the changing season and erratic weather patterns.

Common problems that lower your prices at the silo door are:

- Broken seeds.
- Defective kernels which are shrivelled, obviously immature, frost damaged, heat damaged, have sprouted or have holes in the grain kernels, caused by insects or rodents.
- Discoloured kernels which have changed colour due to too much heat exposure and damage. The kernels will look darker, wrinkled, puffed or blistered.
- Foreign material in the sample, which is anything other than grain – such as glass, stones, dung or pieces of metal.
- Weed seeds in the grain sample.

TIPS TO CONSIDER

Too many farmers think that once the crop is mature it is not necessary to worry about weed control, but weeds influence the yields at harvest time and also the quality of the harvest. If weeds are in abundance, they slow the combine machine down, contaminate the grain and give it a bad smell, which will either result in a down-grade at the silo or additional costs to clean the grain and remove the seeds. Silo managers are particularly strict with seeds like the common 'olie-boom', which is poisonous for animals and humans. A team of 'choppers' through the field can drastically improve the quality of the grain delivered.



Harvesting using a mechanical threshing machine.

IMPROVING GRAIN QUALITY

Key factors to look at are crop maturity and general maintenance of the combine.

Crop maturity

It is important to know the maturing stages of the crop you are growing and to be certain of the moisture percentages that are suitable for harvesting and acceptable at the silos.

Sunflower: Physiological maturity in the sunflower plant is evident when the back of the plant's head has turned from green to yellow and the bracts are turning brown. This occurs about 30 to 45 days after flowering and when the seed moisture is about 35%. The total growing period from seeding to harvesting is 125 to 130 days on average. A common mistake is to wait too long to harvest, as the seeds then become too dry and even fall onto the ground, which results in unnecessary losses. Harvesting can begin once 80% of the sunflower heads have turned brown. Local co-ops will only accept the seed deliveries when the moisture is 10% or less.

The period between maturity and harvesting should be kept as short as possible to ensure that losses due to bird damage, lodging (falling over), head-rot diseases and shattering are kept to a minimum.

Maize: Maize can either be harvested by hand or, more commonly nowadays, with a combine harvester machine. In South Africa it is common practice to leave the maize standing in the fields until it is well dried. This is the most economical method for the farmer. Moisture levels of 12,5% to 14% are ideal. A small sample can be tested for farmers at the nearest silo. It is important not to leave the grain standing in the lands for too long, as it will lead to losses.

Dry beans: Dry beans are so named because they are normally left on the plant until the pods have dried. The entire plant is then pulled up, placed in the shade where possible and allowed to dry for an additional one to two weeks. The dried pods are then split up and the beans removed.

Advisers warn that to avoid severe harvest losses, farmers should begin uprooting the beans from the field when only about 75% of the



bean plants are dry. If the beans get too dry in the field, their pods tend to open on their own – causing the beans to fall on the ground and get lost for the farmer.

Experts recommend that the uprooting of dry bean plants should be done early in the morning and late in the afternoon, when the weather is not extremely hot, to avoid the cracking of pods. Dry bean plants that are delivered to farmers' homes from the field, must be placed on clean tarpaulins, and kept dry and shaded to prevent the pods from cracking and spilling more beans.

Machine maintenance

Because time is essential, it is important that farmers prepare properly for the harvest season to ensure that they can spend every available day harvesting and not wasting time fixing combine harvesters. Every lost day carries a price because the grain is losing weight and you will weigh in lower yields at the silo. You must ensure that all the seed is collected and ends up in the trailers headed for the market. Check the trailers for leaks and make sure the tyres are in a good condition.

Regular inspections of the combine are known to increase productivity and ensure less downtime during the busy harvest time. Checking the machine will lower the operating costs and improve the fuel economy.

THE HEADER

- The header platform should be set correctly to take in cobs or sunflower heads, but as few stalks as possible.
- Ensure that the cutter bar is sharp and cuts the stalks off cleanly. The threshing process should see the heads pass through the combine, with all the developed grain/seed removed from the head. The heads should be broken into several big pieces rather than being ground into smaller pieces, or there will be excessive trash in the grain sample.
- The pans in front of the platform must be well secured and in place.
- Guards on the sides and back of the header improve the efficiency and catch grain that would be flying off over the front and the back.
- The roller bar at the bottom of the header must be connected so that it pulls the severed plants down and into the machine's feeder.
- Carefully adapt the speed of the paddles to match the ground speed of the combine harvester – otherwise it causes unnecessary wastage.
- Settings on the sieves must be checked so that the resulting sample is clean – but not too clean. If the sample is too clean, it may be a sign that even some fully developed seeds are being lost through the back of the machine, where the air flow is too strong. There is a 4% allowance for foreign matter in a sample and this is what should be aimed for, rather than a 100% clean sample.

Note: The air speed for harvesting sunflowers is lower than for other grains due to the lightness of sunflower seeds. If the wind generated is too strong, it will blow even perfectly formed seeds right over the chaffer and sieve. The fan should be set so the airflow is enough to



During a farm visit, Jurie Mentz, regional development manager at the Louwsburg office, made this farmer stop the harvesting process to check the beaters, as too much grain was filtering through.

keep the trash 'floating' across the sieves or screens. Always check behind the combine and make sure that there are only empty seeds lying on the ground.

Another important consideration is the forward speed of the harvester, which should average 5 km to 8 km per hour. It should be decreased as the moisture content of the seed decreases or increased when the moisture levels are higher. This is done to reduce the shatter loss, as the sunflower heads feed into the combine. The drum speed should not be too fast, as it may cause too many seeds to break.

DAILY ROUTINES

It is very important to conduct daily maintenance checks, which include cleaning to keep the combine free of chaff and dust and conducting regular servicing. A compressor is useful to blow all the debris out of the combine's working parts.

- Examine the drive chain and belt tension.
- Check the feeder chain.
- Empty the rock trap if the combine has one.
- Open the cooler systems to check if any debris is restricting the air flow.
- Grease the rotor drive, the return auger bearings and the un-loader pivot.
- Check the tyre pressure.

Other routines best performed when the engine is cooled or before starting up:

- Check the engine oil level.
- Check the coolant level in the radiator.
- Examine the hydraulic reservoir sight glass.
- Drain the water trap on the fuel filter.

Attention to these details will result in optimal yields delivered. ■



**JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR**



Tactics to disrupt Sclerotinia

THERE IS NO MAGIC SOLUTION FOR MANAGING SCLEROTINIA STEM AND HEAD ROT OF SOYBEAN AND SUNFLOWER. DURING A SCLEROTINIA RESEARCH DAY ON 13 OCTOBER 2022, SEVERAL ROLE-PLAYERS DISCUSSED SOME INTEGRATED PEST MANAGEMENT (IPM) APPROACHES WHICH PRODUCERS COULD IMPLEMENT TO MANAGE EPIDEMICS.

Integral to developing an IPM system is to understand host-pathogen-environment interactions (referred to as the disease triangle) and factors driving disease establishment in the field. IPM calls for producers to protect crops while disrupting the disease triangle through (i) focussing on the strengths of the host, (ii) weaknesses of the pathogen and (iii) creating environmental conditions that are unfavourable for disease development. Disrupting the interactions or destabilising one of the three key factors (host, pathogen, environment) results in an incomplete triangle that mitigates or limits disease occurrence.

Plant disease will not develop if there is no viable pathogen, no susceptible host plant or if there are environmental conditions unfavourable for the pathogen. The purpose of this article is to provide producers with interventions for their IPM toolbox that could assist in decision-making for disrupting the Sclerotinia disease triangle.

KNOW YOUR ENEMY

A good understanding of the Sclerotinia life cycle and chain of events that lead to disease development is important for producers to intervene and slow the spread of the disease. The typical Sclerotinia life cycle includes the following stages (**Figure 2 on page 8**):

1. Sclerotinia is introduced into the field by sclerotia (black and hardened survival structures, normally found within infected soybean stems, sunflower heads or sunflower stems). Most often, disease occurs because of spores present in the field, rather than because of spores being blown by the wind from neighbouring fields.
2. When the environmental conditions are favourable for disease development (cool and moist), sclerotia germinate to either infect the roots via mycelia (white cottony filaments of the fungus) or to form mushroom-like structures called apothecia (which host the spores).
3. Spores are dispersed by the pathogen forcibly ejecting them when air currents move over the apothecia, spreading spores via wind. It is important to note that these spores are not as hardy as those of other pathogens (such as rust), and some studies have found spores to travel only very short distances (3 m to 100 m) from their point of origin.
4. Upon the successful dispersal, spores land on the susceptible tissue of the host plant to initiate infection. Spores then germinate, which enables them to enter the host and grow into host tissues. Successful disease establishment is marked by water-soaked le-

sions on stems and heads caused by cell wall-degrading enzymes produced by *S. sclerotiorum*.

5. Sclerotia form as the growing season ends, or when conditions are no longer favourable for the disease. Sclerotia formation is associated with diseased plant material and are dislodged to the soil surface, where they can germinate in following seasons if conditions are conducive. Sclerotia can survive in the soil for many years (eight or more). Therefore, the disease may build up over time.

Various tactics exist within each of the above strategies to disrupt the Sclerotinia triangle (Zadoks & Schein, 1979). Key tactics within the various strategies that were suggested at the Sclerotinia research day are discussed below.

Environmental conditions that limit disease formation

Sclerotinia thrives in a cool and moist environment. To disrupt the suitable environment for the pathogen, the formation of an overly dense soybean canopy should be avoided. The canopy provides the ideal microclimate for sclerotia to germinate to form apothecia. The apothecia release and spread spores to infect host crops.

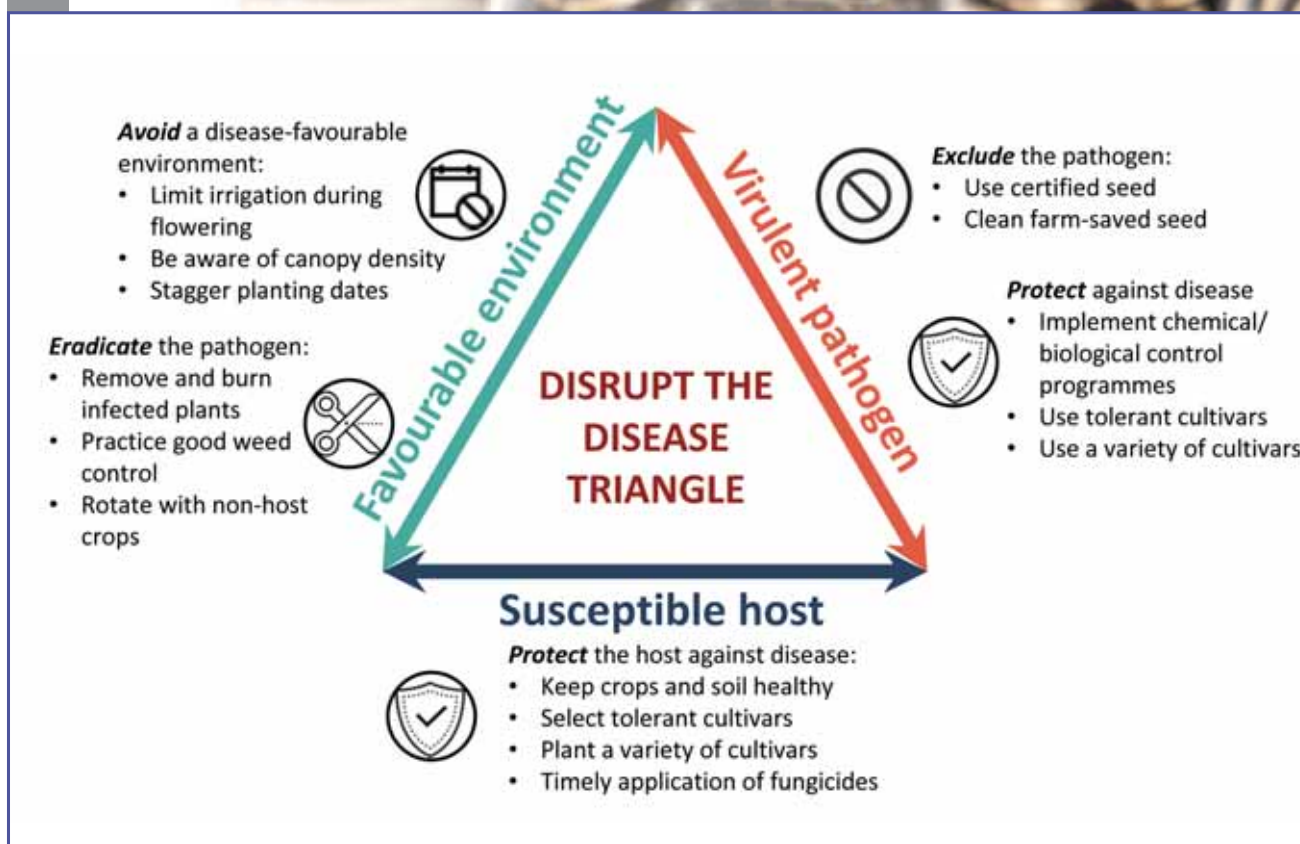
Tactics within the avoidance strategy which can disrupt the interaction between the pathogen and the conducive environment, include planting wider rows to minimise canopy density and avoiding the excessive use of nitrogen (as it promotes vegetative growth of plants, thus leading to the formation of a denser canopy). Minimising dense canopies will further allow for the chemicals and sunlight to filter through and penetrate the ground, reducing soil moisture and the exposure of sclerotia to optimum conditions to germinate.

Soybean and sunflower are normally susceptible to Sclerotinia diseases from flowering to flowers dying off. Therefore, planting earlier and staggering planting dates are recommended to avoid the co-occurrence of spore release during the rainy summer days and flowering. Staggering planting dates may therefore be a useful tool to distribute risk, as multiple planting dates may help to avoid infection windows. Additionally, avoid irrigating during the flowering period as this may favour the germination of sclerotia, encouraging apothecia development and ascospore release.

Support the host

Supporting overall plant and soil health can aid the plant in fighting off the disease, although this alone will not provide full protection against Sclerotinia diseases. Selecting cultivars which are well-adapted to a specific environment is pivotal to ensuring a stable yield, as soybean and sunflower cultivars are known to differ in their responses to different environments. Additionally, utilising the data generated from the ARC-Grain Crops cultivar evaluations, cultivars that perform stably across environments can be selected. This will help reduce the risk associated with unstable cultivar responses, as producers can understand what can be expected from a host.

The selection of resistant cultivars, where available, is always recommended as a chief tactic of host plant protection. Although, there



Sclerotinia sclerotiorum is the causal agent of Sclerotinia diseases of soybean, sunflower and canola. Sclerotinia can result in devastating yield losses, which can be as high as 80% in both soybean and sunflower.

are no soybean or sunflower cultivars that are fully resistant to Sclerotinia diseases, some cultivars are more tolerant than others. Tolerance (where varieties of a crop suffer less by way of losses than others at the same disease severity) is used in cases where complete resistance

is lacking. It is also recommended to plant more than one cultivar per season to mitigate the risk of disease spread.

Limit pathogen presence

It is important for producers to manage pathogen inoculum under field conditions. Inoculum refers to the spores released by apothecia (formed from sclerotia). Spores can also be blown by the wind from surrounding fields outside of a producer's control, although in the case of *S. sclerotiorum*, such long distances are unusual.

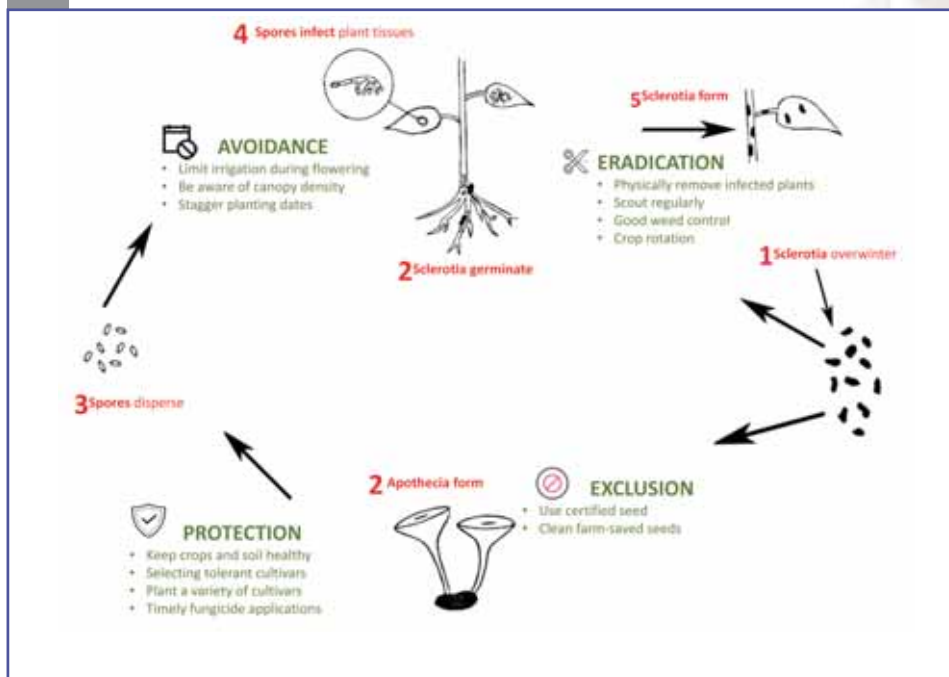
Scouting throughout the season is important to maintain records of where Sclerotinia diseases occur and to what extent. Producers can attempt to manage the inoculum load in a field by selectively eradicating or removing and burning heavily infected plants (if there are only a few) and planting non-hosts in following seasons to reduce sclerotia persistence.

Additionally, mapping out and keeping track of areas which are often infected, is a useful way to target specific areas and refrain from planting susceptible crops in those areas.

Weed control is also important, as many weeds are hosts to Sclerotinia. Those confirmed in South Africa are the common black-jack (*Bidens pilosa*), common cosmos (*Bidens formosum*), pigweed (*Amaranthus deflexus*) and tall khakibos (*Tagetes minuta*).

There are registered fungicides for the control of Sclerotinia diseases. However, these are limited for soybean and only a seed treatment is available for sunflower. Procymidone is registered against Sclerotinia stem rot of dry beans, green beans, soybeans and peas. Benomyl is a registered seed treatment for sunflower, but it

2 The life cycle of *Sclerotinia sclerotiorum*.



has been taken off the American and Australian markets due to the high toxicity.

In South Africa, certified seed may not contain more than 0,2% sclerotia, and seed treatments are applied to keep seed as healthy as possible. Planting certified seed can help limit pathogen presence in fields. When retaining soybean seed, be aware that saving seed from *Sclerotinia*-infected fields may lead to sclerotia in the seed being replanted in the next season. Therefore, seed sieving is recommended to reduce sclerotia loads. Furthermore, *S. sclerotiorum* is known to be seed-borne and this can be a particular risk for retained seed if it is not properly cleaned. Sclerotia harvested from the previous season can spread the disease across fields when replanted. Proper cleaning of equipment after harvesting infected fields is also important to remove sclerotia that may be lodged in the equipment.

WHAT TO DO

- Keep records of where *Sclerotinia* infections occur in each season. If possible, avoid planting susceptible hosts in those fields.
- Scout your fields.
 - From two weeks prior to flowering, inspect fields on a regular basis to see if apothecia are present. If you see apothecia, be aware that spores will be present and if flowering still needs to occur, plants are at risk for disease to develop.
 - After flowering, monitor fields for symptoms and signs of disease. If only a few plants show clear disease symptoms, remove and burn these to prevent the build-up of the pathogen in the field.
- Distribute your risks by planting a variety of cultivars. Planting at different dates may help to escape disease in some fields.
- Consider the tools above and how these can be used on your farm to disrupt the disease cycle.

SUMMARY

In managing *Sclerotinia* diseases, producers are urged to limit patho-

gen presence, support the host and create an environment which is unfavourable for disease development.

Contact Dr Lisa Rothmann at CoetzeeLA@ufs.ac.za or 079 270 9691 or Dr Mieke Human at miekie@grainsa.co.za or 067 016 9493 for further information. Visit the SASRN website at sclerotinia.co.za or Facebook page (<https://www.facebook.com/sclerotiniaZA>) for updates. ■



Characteristic white mycelium growth on the front of the sunflower head.



Scan the QR code to read the complete article on sagrainmag.co.za.

DR LISA ROTHMANN, UNIVERSITY OF THE FREE STATE, DR MIEKE HUMAN, RESEARCH AND POLICY CENTRE, GRAIN SA AND DR GODFREY KGATLE, RESEARCH AND POLICY CENTRE, GRAIN SA. ARTICLE FIRST PUBLISHED IN SA GRAAN/GRAIN, NOVEMBER 2022.



Change from surviving to *thriving*

WITH INCREASING INPUT COSTS AND UNPREDICTABLE WEATHER, FARMERS NEED TO WORK SMARTER IF THEY WANT TO HAVE A SUSTAINABLY PROFITABLE FARMING BUSINESS.

Most farmers are not very keen on administration because farmers want to be outside and farm. However, to have the one, the other needs to be in place – meaning that to be able to focus on doing what you love, you need to find a way to also get administration in order to not only to survive, but to prosper.

It is therefore of vital importance to register with SARS for tax. Read more about tax registration in the *Pula Imvula* March 2023 issue.

REGISTRATION

It is **compulsory** for a person to register for VAT where the value of taxable supplies made in any consecutive twelve month period exceeded or is likely to exceed R1 million. This means you have a turnover of more than R1 million in one year. If SARS finds that you have a turnover of this nature and have been avoiding tax, the penalties can be severe.

A person may also choose to register **voluntary** for VAT if the value of taxable supplies made or to be made is less than R1 million but has, under certain circumstances, exceeded R50 000 in the past period of twelve months. If you fall in this bracket (turnover less than R1 million) it is still advised to register as there could be other benefits that will be mentioned later on.

TAX CLEARANCE CERTIFICATE

Being tax compliant is not just good for you but will also be beneficial for the tax status of your enterprise. A tax clearance certificate is es-

entially a piece of official documentation that your business can get from SARS as proof that you have no outstanding tax at SARS. Having one of these means your business is in good standing with SARS. You can only have good standing if your returns are up to date.

How to attain a tax clearance certificate:

- If you are registered on e-filing with SARS you can attain it through that platform.
- Complete the applicable application form and hand it into a SARS branch. You can either post it to SARS or put it into a SARS drop-box.
- You can request your bookkeeper (who should also be a tax practitioner), to access the platform on your behalf and to request this certificate for you.

This certificate is only valid for one year from the date of issue.

PLEASE NOTE

The information provided is just a snapshot of a few basic things that you need to start getting in order to move your business to the next level.

Sources

<https://www.sars.gov.za/>

<https://www.patc.co.za/> ■



LIANA STROEBEL,
OPERATIONS AND TRAINING
MANAGER, GRAIN SA

WORDS OF
WISDOM



“At first people ate simply because they were alive and because food was tasty. Modern people have come to think that if they do not prepare food with elaborate seasonings, the meal will be tasteless. If you do not try to make food delicious, you will find that nature has already made it so.”

~ MASANOBU FUKUOKA
Japanese farmer and philosopher



WINTER CROPS can be planted in inland areas

SOUTH AFRICA IS A NET IMPORTER OF WHEAT, AS LARGE VOLUMES OF WHEAT MUST BE IMPORTED TO MAKE UP FOR THE SHORTFALL IN LOCAL PRODUCTION. DUE TO POOR PROFITABILITY AND THE HIGH RISKS ASSOCIATED WITH PRODUCTION, THE AREA UNDER PRODUCTION HAS DECLINED SIGNIFICANTLY OVER THE YEARS. AS A RESULT OF IMPROVED FARMING TECHNIQUES AND EFFICIENCIES, THE VOLUMES PRODUCED PER HECTARE HAVE INCREASED.

Field crop production in South Africa is divided into two main categories, namely summer crops and winter cereals. The most significant summer crops that are produced in the summer rainfall regions are maize, soybeans, sunflower seed, groundnuts and sorghum. Wheat, malting barley and canola are the most important winter cereals suitable for production in South Africa.

In South Africa wheat is produced either on dryland or under irrigation. The main wheat-producing provinces are the Western Cape (winter rainfall), Free State (summer rainfall) and Northern Cape (irrigation). The main uses of wheat are:

- Human consumption – for making flour for the bread industry.
- Industrial – important sources of grain for alcoholic beverages, starch and straw.
- Animal feed – bran from flour milling as an important source of livestock feed, grain as animal feed.

The Free State used to be seen as the breadbasket of the country because of the high volumes produced in the province. However, production in the region has diminished significantly over the years,

as farmers opt for crops with a higher income potential and lower associated risks. Now most of the winter cereal crops are produced in the Western Cape, which falls in the winter rainfall region.

Wheat forms the main income stream in the Southern Cape and Swartland districts, and this area now accounts for about half of South Africa's total area under production. There are, however, farmers in inland areas who are producing wheat successfully.

THE RIGHT CULTIVAR MAKES THE DIFFERENCE

Thobeka Khumalo, post-doctoral fellow at the ARC-Small Grain, says there are many crops which do better in the cooler months, so the production of winter crops in inland areas is definitely achievable.

She explains that although winter crops should be planted in the winter, some crops have an extended window period, depending on the location where the farmer intends to plant the chosen crop. 'Usually, these crops are best adapted to lower temperatures and longer days, and some can tolerate drier conditions. This means a reduction in input costs in terms of irrigation.'

According to Thobeka, the right cultivar is vital. 'It is obvious that all depends on the use of a perfect cultivar that is suitable for the farmer's climate and soil. A good choice of a cultivar – that is an improved cultivar with resistance against common pests and diseases – will further reduce the input costs relating to the maintenance of a field trial and guarantees a good yield.'

Chris Schoonwinkel, a former member of the executive of Grain SA, has been farming with wheat in the Wesselsbron area in the Free State since 1991. He agrees that cultivar choice is extremely important. 'However, several other aspects have to be taken into consideration before you make the decision to turn to wheat production,' says Chris.

SA Graan/Grain photo competition – Gerda Kock, May 2019



PIG DISEASES:

Know the difference



THERE ARE SEVERAL KEY DIFFERENCES BETWEEN AFRICAN SWINE FEVER, CLASSICAL SWINE FEVER AND SWINE FLU. THESE INCLUDE THE CLINICAL SIGNS THAT DEVELOP, THE WAY THE DISEASES AFFECT PIGS AND THE RISK OF HUMAN INFECTION. KNOWING THESE DIFFERENCES CAN HELP TO DIFFERENTIATE BETWEEN THE THREE DISEASES AND GUIDE APPROPRIATE CONTROL MEASURES.

African swine fever, classical swine fever (also known as hog cholera or European swine fever) and swine flu are three different diseases that can affect pigs, but their names are often used interchangeably. This can lead to oversights in how disease outbreaks are managed and can have serious ramifications for farmers and other affected stakeholders.

To help minimise confusion and promote better animal health, here is a summary to keep in mind when faced with disease outbreaks:

- **African swine fever** is a viral infection caused by the African swine fever virus.
- **Classical swine fever** is caused by a pestivirus, which is closely related to viruses that cause bovine viral diarrhoea in cattle.
- **Swine flu** is caused by subtypes H1N1, H1N2 or H3N2 of influenza A viruses.

All three of these viruses are highly contagious among domestic pigs and can spread rapidly between pig farms.

Both African swine fever and classical swine fever are high-impact diseases that should be reported to the World Organisation for Animal Health (WOAH). They are also controlled by the national Department of Agriculture, Land Reform and Rural Development (DALRRD). Only African swine fever is currently present in pigs in South Africa.

DISEASES

African swine fever

This disease is characterised as a haemorrhagic fever in domestic pigs that can kill up to 100% of infected animals. Pigs may develop a range of syndromes varying from peracute (severe, short duration and generally quickly fatal) to chronic and subclinical diseases.

Clinical signs that may occur with virulent virus strains include fever, loss of appetite, haemorrhages in the skin and internal organs, and in some cases, pigs may die without the development of clinical signs. Less virulent strains may cause mild clinical signs such as fever, depression and a reduced appetite, which can easily be confused with many other conditions in pigs.

Classical swine fever

Pigs with classical swine fever can present very similar clinical signs to African swine fever, and laboratory confirmation is important to discriminate between the two diseases.

Swine flu

Swine flu is an upper respiratory disease characterised by fever, coughing, sneezing, nasal discharge and laboured breathing. Animals usually recover quickly, and the mortality rate is low.

DIFFERENCES

Here are some key differences between these three pig diseases:

- A key difference between these diseases is that the African swine fever virus can be transmitted by soft ticks from the genus *Ornithodoros*, which occurs in warthog boroughs. African wild pigs such as warthogs, bushpigs and giant forest hogs do not develop any signs of disease when infected with the African swine fever virus, and together with the ticks can act as reservoir hosts to maintain the virus in a sylvatic pathogen transmission cycle (one that involves a non-human animal host and insects). All wild hogs, including warthogs and bushpigs, are susceptible to classical swine fever.



Pig diseases: Know the...



- The African swine fever virus and classical swine fever virus can survive for long periods in processed pork products, and pigs can become infected when eating swill that contains these products. Swine influenza viruses are not very hardy and cannot survive long outside the host.
- African swine fever and classical swine fever viruses are not known to cause disease in humans; however, swine influenza viruses can occasionally infect and cause flu-like diseases in humans, especially those who handle infected animals.

Pigs are known to be susceptible to avian, human and swine influenza viruses, which can lead to the development of new variant viruses capable of causing pandemics in humans. This was the case in 2009 when a human variant of the H1N1 virus emerged – this is the virus that is commonly referred to as swine flu in humans.

GET MORE INFORMATION

Further information can be obtained on the following websites:

<https://www.cdc.gov/flu/swineflu/influenza-in-swine.htm>

<https://www.woah.org/en/disease/african-swine-fever/>

<https://www.woah.org/en/disease/classical-swine-fever/> ■

PROF JANNIE CRAFTORD, DEPARTMENT OF VETERINARY TROPICAL DISEASES, FACULTY OF VETERINARY SCIENCE, UNIVERSITY OF PRETORIA

Winter crops can be planted...

- It is very important that the soil's nutritional status is correct, so check your soil status. 'No crop can grow if the soil is not healthy.'
- As with other crops, your soil preparation needs to be done correctly. Seedbed preparation is also important. With wheat a finer seedbed is needed because planting is done in a shallower seedbed.
- Wheat is planted in a fallow crop-rotation cycle. Soybean does extremely well when planted in crop rotation with wheat. 'You cannot plant wheat on the same field two seasons in a row. The ground needs to lie fallow for about ten to twelve months before you plant the next crop. So, if this is not an option for you, don't think about planting wheat.'
- Planting takes place from the beginning of May to July depending on which region you farm, so the soil must store enough moisture for the wheat to survive until the rain season begins in October/November. The ARC-Small Grain manual gives these dates by region. 'This manual is a must for every producer as it contains all the information you need for wheat cultivation,' says Chris.

One of the advantages of wheat production is that less fertilisation is needed than with maize, which helps to lower the input costs. The weed control programme is also not as severe as with maize. 'If you battle with a nematode problem, wheat is a great way of getting rid of it,' says Chris.

To be successful, the ARC-Small Grain reminds farmers that good yields and profitability can only be achieved through careful planning

and management. Higher yields imply higher profits, as the production cost per ton of grain declines relatively when the yield increases. André du Toit from Pannar Seed says the best cultivar in a growth class, reduced seeding density and following 'golden rules' can help wheat farmers to develop the plant's potential and cut expenses. ■

**LOUISE KUNZ,
ASSISTANT EDITOR**



HOW NON-COMPLIANCE could cost you in the long run

MOST PEOPLE SHOULD BE FAMILIAR WITH THE CONCEPT OF STEWARDSHIP IN AGRICULTURE BY NOW, ESPECIALLY WHEN IT COMES TO AGRICULTURAL PRACTICES ON FARM LEVEL, SUCH AS RESISTANCE MANAGEMENT AND INTEGRATED PEST MANAGEMENT. BUT STEWARDSHIP ENCOMPASSES SO MUCH MORE THAN THAT.

From a crop protection perspective, stewardship already starts at the research and development stage of the product lifecycle and continues all the way through manufacturing, storage, transportation and distribution, to responsible use and finally, empty container and obsolete stock management.

Stewardship is defined in the Oxford dictionary as the job of supervising or taking care of something, while in CropLife SA we refer to it simply as doing the right thing. In other words, stewardship is not just a checklist to tick when certification is needed, or something that needs to be done to comply with certain regulations, but rather a way of life. But what if, for some reason, the mere concept of doing the right thing is not motivation enough for some individuals to do their part in embracing stewardship? In those few cases, perhaps the following might serve as a gentle reminder of some of the possible consequences if stewardship is treated as optional.

LOSS OF PRODUCTS OR TECHNOLOGY

It is no secret that bringing a new crop protection product to the market is a time consuming (over a decade) and expensive (approximately \$250 million) exercise – and it is increasing over time. For instance, back in 1995 the development of a single successful product required the testing of 52 500 compounds, but since the year 2000, this figure has risen to around 140 000 compounds. In addition, the industry allocates huge resources not only to research and development, which have increased substantially over the years, but also to comply with manufacturing practices and to adhere to national and international standards such as ISO 14000 and 9000.

But why would this matter to a producer? And what does it have to do with stewardship? Well, to start with, it shows the lengths that the industry goes to in order to ensure that the crop protection products on the market have undergone the necessary testing for product performance, and more importantly, for human and environmental safety. But it also shows that bringing a new product to the market takes time, effort and money.

If we lose a crop protection product for whatever reason – be it non-compliance on the part of the user leading to ultimate bans, or loss of product efficacy due to resistance development – it is not that easy to just find a suitable replacement for that product. This refers to plant biotechnology as well, which takes an average of eight years and \$135 million to develop a new genetically modified (GM) product and pass it through the regulatory process.

With all the challenges and risks our producers are already facing on a daily basis, is loss of technology really one we want to add to that list? Especially if it is something that can be avoided so easily by incorporating basic stewardship practices, such as integrated pest management (IPM). IPM consists of three main components, namely prevention, monitoring and intervention. This means all the available tools and technologies need to be incorporated in a proactive and planned manner to manage pest levels as best as possible, without necessarily just eliminating pests from the onset.



MADE POSSIBLE BY
BAYER



How non-compliance...

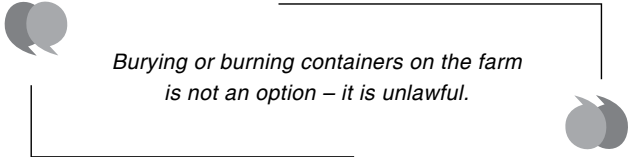
If intervention is the only option left, we need to rely on a combination of cultural, mechanical, biological and chemical pest control methods and not just one single magic bullet year in and year out to solve a pest problem. IPM is just a better approach all around – it promotes good agricultural practices, environmental sustainability and product longevity.

HUMAN HEALTH AND ENVIRONMENTAL IMPACT

If the thought of losing valuable active ingredients or GM traits due to non-compliance isn't enough, then perhaps knowing that non-compliance could have severe effects on human health or the environment, may do the trick. In this case we can use a few examples from the other end of the lifecycle approach, like responsible use.

CropLife SA holds regular training sessions for its members and often their clients (producers and farmworkers) about the responsible distribution and application of crop protection products. A number of useful resources have been developed and are available freely on www.croplife.co.za to use as training and awareness material.

The main reason for this is that crop protection products by their very nature are obviously hazardous to target organisms, but potentially also to non-target organisms, including humans, if all the necessary precautions and label instructions are not followed. This includes wearing the correct personal protective equipment (PPE), taking heed of the pictograms and colour bands on the label, ensuring the product is registered for use in South Africa, adhering to all the warnings and precautions, adhering to the preharvest intervals, taking note of pollinator warnings and paying attention to the particular resistance group, to name just a few.



*Burying or burning containers on the farm
is not an option – it is unlawful.*

Stewardship does not stop there, though. Even after the product has been used and only the empty container remains, the producer has a responsibility to make sure the containers are disposed of in such a manner that it does not pose a risk to human or environmental health. So, burying or burning containers on the farm is not an option – it is unlawful anyway. One can only imagine the environmental disaster that such practices can lead to. Repurposing or reselling these

containers are not options either, because they are still potentially hazardous. There have been several instances where families have succumbed to poisoning because they repurposed a pesticide container for foodstuff or other liquids.

The only acceptable way to dispose of empty pesticide containers is first to triple rinse them on the farm, which removes 99,99% of the original formulation – meaning the containers are nominally clean and can be considered non-hazardous. Once this has been done, they need to be handed over to and recycled by a CropLife SA-certified recycler. This means the containers are taken out of the system, recycled into other useful commodities and do not pose a risk to humans or the environment.

When looking earlier in the lifecycle towards product storage and transportation, there are also a number of rules and regulations that need to be followed to ensure that these products reach the intended destination and target safely. The National Road Traffic Act, 1996 (Act No. 93 of 1996) regulates the transport of dangerous goods. Within these regulations the specific duties and responsibilities of the consignor, operator and the consignee are detailed, along with many other particulars, such as the required placarding for all dangerous goods vehicles and the statutory documentation to be carried by the drivers of such vehicles.

Storage of pesticides is no different and SANS 10206:2010 stipulates several safety regulations that need to be complied with, even if the store is on the farm. All these regulations exist for a reason, namely to minimise risk and provide guidance and a framework in case something goes wrong. This is an issue that is all too easy to ignore because emergencies or accidents are rare. Things usually go right, so we tend to become complacent because of our optimism. This is why stewardship should be a proactive way of life. If something does go wrong that impacts another human's safety or negatively affects the environment and you did not dot all the i's or cross all the t's, that responsibility falls squarely on your shoulders.

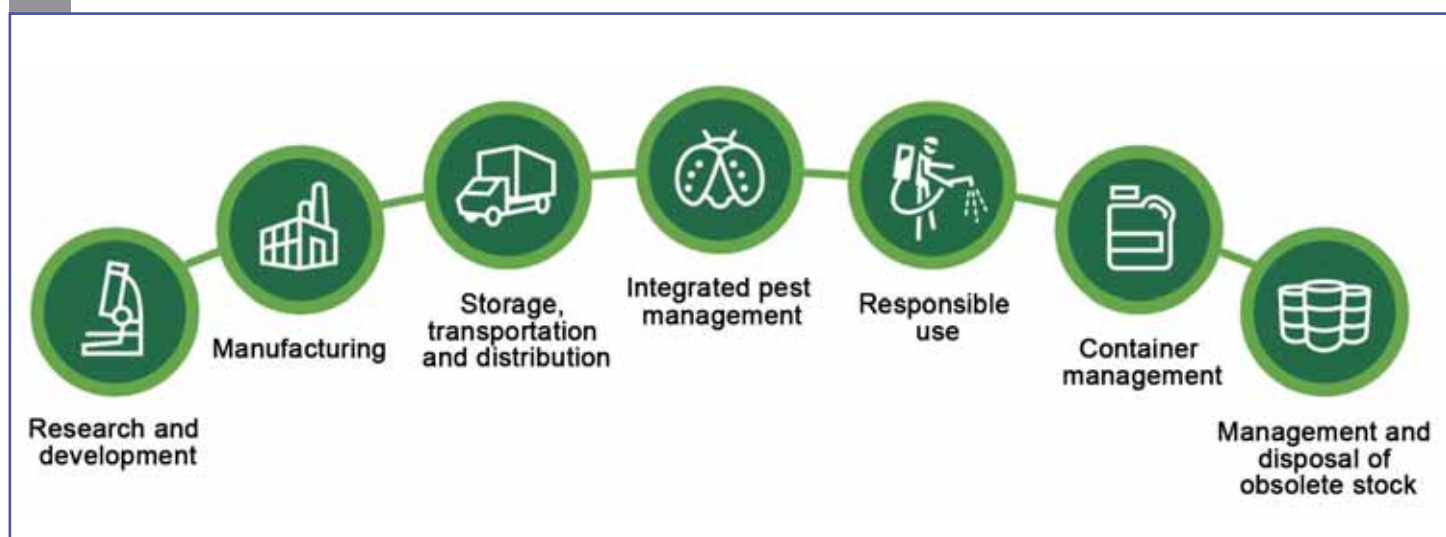
WRONG SIDE OF THE LAW

There are numerous acts and regulations in South Africa that govern nearly every aspect of the crop protection product lifecycle, all of which are aimed at ensuring things are done in the right way.

In addition to some of the regulations referenced earlier in this article, the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) places the obligation for the correct and proper use of a crop protection product squarely on the person who uses it. But Regulation R1716 also specifies that any



1 *The stewardship lifecycle approach.*



advice, recommendation or use that do not comply with the label instructions are 'off-label' and contravene the act; this includes verbal advice or recommendations. In other words, all parties involved in the sale, recommendation and application of a crop protection product have a responsibility to ensure that they follow the label-directed instructions to the tee.

Besides the fact that it is illegal, off-label use could also pose a major risk to the marketability of a producer's produce if the maximum residue limits (MRL) are exceeded because of deviation from the label instructions. These instructions have been developed through extensive research and field trials to establish what the preharvest interval and dosage must be to not exceed the MRL. If the MRLs exceed the destination's requirements, or worse yet, if residues are detected from a product that is not registered for that crop, a producer stands to have his entire consignment either quarantined or rejected entirely. This is a very expensive mistake, and no producer should be willing to take such a risk.

Another draft regulation that was promulgated on 30 March 2022, which is fully aligned with CropLife SA's stewardship principles and the lifecycle approach, is the Extended Producer Responsibility (EPR) regulation. This basically mandates all pesticide manufacturers to establish mechanisms for producers to dispose of empty pesticide

packaging and obsolete stock in a responsible and lawful manner. CropLife SA and its members are fully committed and geared to complying with these regulations. However, producers also have a responsibility to ensure they make use of these available mechanisms for disposing of these containers and stock.

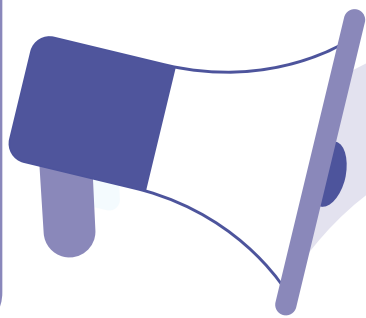
The list of laws and regulations go on and there are way too many to list in this article, but stewardship in general should not be confined to a carrot or stick approach. As mentioned previously, it must be a non-negotiable, proactive way of life for every role-player in the value chain – not just because it can affect a producer's pocket or that they can find themselves on the wrong side of the law, but simply because it is the right thing to do, for humanity, for the planet and for the future generations that rely on us to leave a better world. ■

**ELRIZA THERON, MARKETING
AND COMMUNICATIONS
MANAGER, CROPLIFE SA.**
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SA Graan
Grain



**MADE POSSIBLE BY
THE MAIZE TRUST**



HAVE YOU HEARD?

GRAIN SA NEWS

Regional meetings

A big thank you from Grain SA to each member who attended the regional meetings. Your time and valuable inputs are appreciated. Together, we are capable of wider perspectives, new ideas and a better future.

Congress

A highlight on Grain SA's calendar is the annual congress. On 8 and 9 March delegates, sponsors, the media and other guests gathered at NAMPO Park once again to discuss important issues pertaining to grain and oilseed production. The keynote speaker was Sam Rolland, director: Sub-Saharan Africa at the Economist Intelligence Corporate Network. Read more about the 2023 Congress in the June issue of *Pula Imvula*.



Jeremiah Mathebula, vice-chairperson of Grain SA, welcomed guests on the first day of the congress.



Congress is the perfect opportunity to reconnect with old friends.

RESEARCH MAKES A DIFFERENCE

More about hybrids

The Agricultural Research Council's (ARC's) Inter-Campus Hybrid Research Conference took place on 1 and 2 March this year. The conference, themed 'The heat is on: The weird and the wonderful research in the ARC', brought ARC scientists and researchers together under one roof to share knowledge, encourage collaboration and bring about new ideas that can take the ARC to the next level.

The conference also served as a platform for sharing research findings and developments that can assist South Africa in dealing with several challenges in the agricultural sector. In addition, Dr Litha Magingxa, the chief executive officer and president of the ARC, shared the current research the ARC has embarked on to mitigate food shortages and the electricity crisis in the country with the media. ■



Dr Nthabiseng Motete, group executive: Crop Sciences at the ARC, chaired the session on the second day.

Nematode interaction



The second Pan-African Nematology Workshop (PANEMA) took place on 1 to 3 March at the University of Mpumalanga in Mbombela. Nancy Ntidy, a nematologist at the ARC, explains the symptoms of nematodes to farmers and extension workers.

REMEMBER THIS DATE:

16 - 19 May 2023: NAMPO Harvest Day

POPULAR ON SOCIAL MEDIA

Cattle agent on TikTok

A cattle agent, Ollie Aadnesgaard, went viral in a recent TikTok video when he shared details of an upcoming market exclusively in fluent isiZulu. The response to the suddenly viral footage, which was simply uploaded to be an informational video, has stunned Aadnesgaard's expectations with thousands of comments and nearly 800 000 views. ■

Scan the QR code to watch it:



Corner Post

BY LOUISE KUNZ, ASSISTANT EDITOR

LONA KOBU (42), A SINGLE MOTHER OF A 13-YEAR-OLD DAUGHTER, IS DREAMING OF BECOMING ONE OF THE GRAIN SA FARMER DEVELOPMENT PROGRAMME'S SUCCESS STORIES. JUDGING BY THE IMPROVEMENT SHE HAS SHOWN IN ONE YEAR, THIS DREAM MAY VERY WELL BECOME A REALITY.

In the 2021/2022 planting season, Lona harvested five 50 kg bags of maize on a quarter of a hectare. During this planting season (2022/2023), she is expecting to realise about twenty 50 kg bags per 0,25 hectares – which works out at about 4 t/ha.

After completing her school career, Lona worked in the mining industry – but she always felt a calling to follow in her parents' footsteps and work the land to grow food. So, three years ago she decided to quit her job and realise her lifelong dream. Her parents, January (85) and Josephina (79), were subsistence farmers but are now too old to farm.

After joining Grain SA, she discovered that growing maize and vegetables does not just put food on the table, but that it can actually be a 'business' that puts cash in her pocket. Apart from maize, Lona plants tomatoes, spinach and green pepper. Surplus produce are sold in the community and the money she gets, buys what is needed to support her daughter and parents. Besides the crops, She also owns some cattle, goats and chickens.

Lona does all the farm work on her own, but she has a friend who helps her with the planting, which is done by hand. In turn, she helps her friend. She believes that farming is a wonderful career and that more people should get involved in agriculture. 'Everything is so expensive these days. If you farm, you can put food on the table and help others to have food too.'

LONA'S STORY

WHY FARMING?

It is just natural for me to be a farmer – it's in my blood. I love farming because it is life. It is wonderful to see your hard work pay off when the crops start to grow.

WHAT DIFFERENCE HAS GRAIN SA MADE IN YOUR FARMING OPERATION?

A huge difference! Since joining Grain SA and attending the study group meetings, my farming methods and agricultural knowledge have improved so much. I have attended four meetings and have learned more about

soil management, soil acidity, maize varieties, the fertilisation on maize, weed and pest control. We always used kraal manure, but now I can see what a difference store-bought fertiliser makes. I didn't even know that the soil should be analysed to see what is needed to improve the crops. I am learning how to farm properly now with these better production practices.

WHAT CHALLENGES DO YOU FACE?

At this stage, animals are my biggest 'enemy'. The birds and monkeys steal the seeds and eat whatever is starting to grow, and the cattle enter my field and eat my crop. I must be on the lookout all day to protect my crops.

WHAT IS YOUR DREAM FOR THE FUTURE?

I would love to have more land, so that I can produce more maize. Farming is all I want to do. ■

LONA'S THREE TOP TIPS

1. Check your soil. Healthy soil means healthy plants.
2. Learn from others, because knowledge is important.
3. Be on the farm. Scout your fields daily and make sure that everything is right.



FARM FACTS

Farm: Communal land
Nearest town: Burgersfort
Region: Limpopo
Size: 0,5 ha of communal land
Type: Mixed (plants maize and vegetables and has livestock)

GRAIN SA'S CONTRIBUTION

- Lona joined Grain SA in November 2021.
- She is a member of the Ribe Study Group.

Training courses completed:

Introduction to maize production (five-day course)

A mentor's view:

Jerry Mthombothi, regional development manager at the Mbombela office, who looks after farmers in Mpumalanga and Limpopo, says Lona is a promising subsistence farmer. "She is determined to improve her agricultural practices and listens to advise. I am sure when she increases her field up to 1 ha in the near future, she will be able to produce even more to support her family."



A programme that is changing lives



Farmers' days: A platform to share farming ideas

GRAIN SA IS AN ORGANISATION RUN BY FARMERS FOR FARMERS, AND INTERESTS NEED TO BE PROTECTED AND VOICES OF CONCERN MUST BE RAISED. THE GRAIN SA CONGRESS IS ONE SUCH PLATFORM FOR FARMERS TO DO THIS.

The Farmer Development team tries to schedule regular farmers' days with their members. These are not only opportunities to transfer knowledge, but also times to strengthen networks between fellow farmers and role-players in the agribusiness and services sector. Farmers' days are a great platform for farmers to come together, share ideas and find solutions to common problems.

FARMERS' DAYS IN FEBRUARY

The February meetings are especially important, as it is the ideal time to prepare delegates for the Grain SA Congress in March. It is also the time when those members are informed about their rights and responsibilities when they are elected to represent their farming communities at the congress.

On **6 February**, advanced farmers from the Dundee region met with the Grain SA leadership at the Nooitgedacht Agricultural Research Centre in Ermelo to elect a delegation for the Grain SA Congress in March.

Issues relevant to farmers were also discussed. The meeting session was informative and the farmers had an opportunity to table issues related to their farming operations, which included crop insurance and service fee rates on equipment and machinery. Grain SA

membership and the levy contribution were discussed and the benefits of being a member were explained.

Farmers also had the opportunity to engage in presentations related to agricultural research, development and economics. They learned how this information contributes to the farmers' ability to manage their farming operations better for improved yields and increased profitability of operations.

On **23 February**, advanced farmers gathered in Chrissiesmeer, Lothair, for a soybean farmers' day. It is beneficial for potential new era farmers to gain insights from other experienced farmers, so the Farmer Development team was grateful for the opportunity to meet.

Jantjie Randall, an established soybean commercial farmer, shared some valuable insights and highlighted the significance of proper planning as a farmer. These included being proactive about the following:

- Soil testing allows for the determination of nutrient deficiencies and corrective actions that can be implemented.
- Site-specific experiments on seed cultivars and chemicals were highly recommended, as this affords the farmer the opportunity to determine which cultivars and characteristic traits are best suited for the prevailing climatic conditions on the farm.
- Soybean seed was differentiated according to the growth period – early (4,5), medium (5,5) and long (6,5) growers. A longer growing period for soybean was advised, with planting in early November to allow ample time for the plant to mature.

The farmers were also encouraged to work at establishing good relationships. Networks are very important, as they create a knowledge pool that a farmer can draw from whenever in need.

AT GRASS ROOTS



A group of farmers attended a soybean farmers' day which was arranged by the Louwsburg regional development office.



The host of the day, Jantjie Randall, an established soybean commercial farmer, shares valuable tips about soybean production with the attendees.

Farmers improve their skills

STUDY GROUP meetings form an integral part of Grain SA's Farmer Development Programme and focus on knowledge transfer and skills development for the farmers.

On **1 February** regional development manager, Graeme Engelbrecht from the Dundee office, met with members of the Dukuza Central Study Group at Zam'ukuzenzela Community Centre to discuss planting progress.

Farmers enjoyed the meeting and participated in the lively discussions. They shared crop progress and discussed challenges and concerns they had with Graeme. A discussion was held about the maintenance of maize threshing machines ahead of the harvesting season. Farmers are also looking at the possibility of obtaining a study group planter to address challenges experienced with calibration, which affects planting patterns and the management of growing crops. A new team member, Phumzile Ngcobo, who is an assistant regional development manager, was also introduced to the farmers.

On **9 February**, Jerry Mthombothi, the regional development manager in Mbombela, met with the farmers of the Salubindza Study Group. He discussed the do's and don'ts of using a knapsack sprayer.

Another important point on the agenda was the importance of correct weed control using chemicals. The following topics were addressed:

- What is weed?
- Why is it important to control weeds on your crops?
- Why do weeds thrive?
- The reproduction of weeds.
- When should weed control start?
- Reasons for poor weed control.
- Factors that are affecting the choice of herbicides etc.



The Salubindza Study Group apply what they learned about the calibration of a knapsack sprayer.

Graeme Engelbrecht enjoying a day in the fresh air with the farmers of the Dukuza Study Group.



Keeping an eye ON YOUR CROP

FEBRUARY is always a busy month that sees the Grain SA team meeting with farmers all over the country.

The most important activity is crop monitoring to monitor progress, conditions and discuss issues. The team also started having discussions about preparing for the upcoming harvest season. A total of **64 study group contact sessions** took place and the Grain SA Farmer Development team did **134 on-farm visits** during this month.

Despite delays caused by the frequent heavy rains, the Grain SA Farmer Development office in Mbombela managed to plant a **trial plot** near Barberton. Bayer and Grain SA jointly funded this. A one-hectare plot was ripped, disced and planted by hand. The field was sprayed two days after planting with weedicide and pesticides against cutworm.



With the trial plot at Barberton, the team hopes that farmers will see the benefits of good soil preparation, planned spacing of rows, the ideal plant population and a regular spray programme. ■

