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GRAIN SA MAGAZINE FOR DEVELOPING FARMERS

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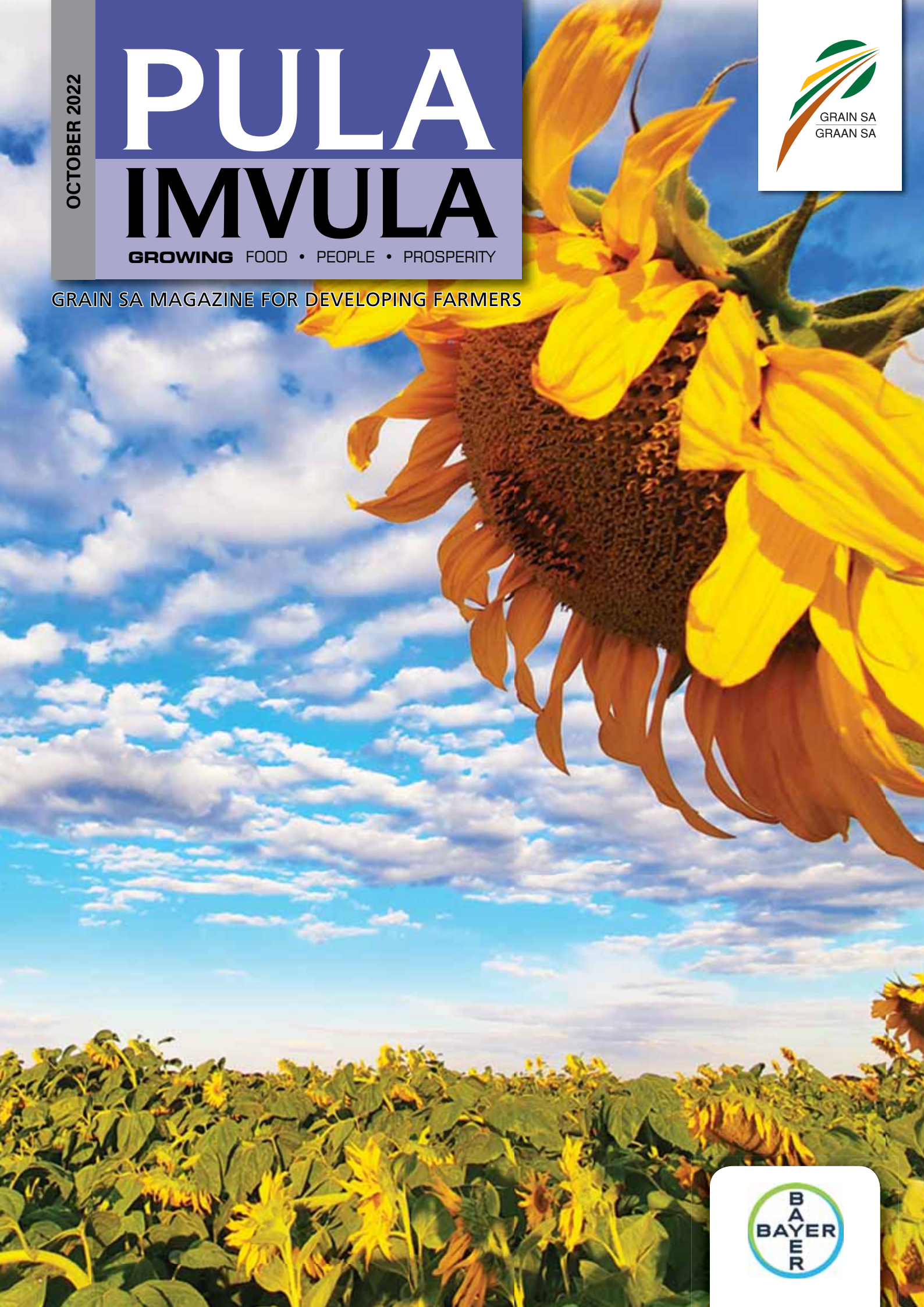

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A Word From...

Du Toit van der Westhuizen

WE CELEBRATED THE SUCCESS OF OUR FARMERS IN OCTOBER WITH A DAY OF CELEBRATION IN BOTHAVILLE. YOU DO NOT HAVE TO COMPETE WITH YOUR FELLOW FARMERS, AS THIS OFTEN LEADS TO DISAPPOINTMENT IF YOU DO NOT ACHIEVE THE SAME RESULTS. RATHER MEASURE YOURSELF AGAINST YOURSELF. LOOK AT YOUR PAST – WHERE YOU STARTED AND WHERE YOU ARE NOW. SEE IF YOU HAVE GROWN AT ALL.

Never hesitate to ask for advice if you do not understand something or do not know how to do something. Connect with experts to look at a problem with you and help you so that you can improve. Be honest with yourself and learn from the lessons of the past – if you know where you made a mistake during the last season, then you know you should not repeat it. For example, if you started too late with your soil preparation, make sure it doesn't happen again.

As far as the practical side of crop farming is concerned, your tractors should have been serviced by now. All repairs must also be up to date. Check equipment for diesel leaks, as diesel is very expensive and every drop wasted means less money in your pocket.

The lands must also already be prepared. Good rains during the last season resulted in good soil moisture. Control winter and summer weeds, so they don't use the soil moisture. It must be saved for when plants experience a period of moisture stress.

Inputs are much more expensive this year than in the past, so limit any losses through waste. Always think in terms of rands and cents by making sure you know what your inputs cost. If a fifth of a bag of fertiliser is wasted, it is approximately R200 that is 'thrown away'. If seed is stolen because it is not properly locked away, it is money in your pocket that is lost.

Make sure all the planters and sprayers are properly calibrated. If an uncalibrated planter uses 180 kg of fertiliser instead of 130 kg, it means that there will not be enough fertiliser for the crop.

May this season be as good as the previous one. ■

The leadership who puts grain farmers first

Part 2

GRAIN SA IS AN AUTONOMOUS AND VOLUNTARY COMMODITY ORGANISATION. IT ACTS COLLECTIVELY IN THE INTEREST OF THE ECONOMIC WELFARE OF SOUTH AFRICAN GRAIN PRODUCERS. THE LEADERS IN GRAIN SA WHO REPRESENT THE GRAIN PRODUCERS NEED TO BE WILLING TO SPEAK UP AND SPEAK OUT ON BEHALF OF THE FARMERS ON IMPORTANT ISSUES. MEET THE TEAM:

Ramoso Pholo

(Region 28)

This experienced New Era Commercial farmer grows maize, sunflower and beans in the Mooifontein district of North West. His nearest town is Lichtenburg, which is the base of Grain SA's regional development manager, Du Toit van der Westhuizen. Ramoso is one of the longest standing farmer members of Grain SA. He is a passionate farmer, who is determined to grow his farming business despite many challenges such as the devastating droughts North West has faced over the years. He is a member of the 500 Ton Club and a participant in Grain SA's Advanced Farmer Programme. Ramoso has been elected to serve on the Management Committee of the Executive that oversees important matters in the day-to-day running of the organisation.

Musa Thomas Sibiya

(Region 29)

Musa farms in the Gert Sibande District Municipality of Mpumalanga, which falls under the management of the regional development manager, Jurie Mentz from the Louwsburg office. He is a New Era Commercial farmer, who farms with grain and has a growing livestock component.

Musa has been an active member of Grain SA for many years and has been an involved study group member of the Pixley Ka Seme Study Group near Daggaskraal. His growth and success have seen him being recognised by Grain SA as a member of the 250 Ton Club. He has also participated in the Advanced Farmer Programme, which means he has had individual mentoring for his unique farming circumstances for a number of years now. It is this experience and success that have brought him into this leadership position.

Alfreda Mars

(Region 30)

Alfreda is a grain and livestock farmer who farms near Moorreesburg in the Swartland region of the Western Cape.

She developed her farming passion as a young girl working with her father who had land in Ceres and the Karoo. Apart from her farming responsibilities, she serves as a mentor for emerging farmers in the Swartland and Winelands districts. In 2017 Alfreda enrolled in the Syngenta Grain SA Leadership Academy to develop her leadership skills. She was elected as a member of the executive for region 30 in 2019 and is also a director of the Bredasdorp Park nonprofit company (NPC).

Maseli Lethuka

(Region 31)

This experienced older farmer has farmed with wheat, maize, beans and soybeans over the years, together with a livestock component. His farmlands are in the QwaQwa and Kestell regions of the Eastern Free State, where farmer development activities are managed by the regional development manager, Johan kriel. Maseli's many years of experience have seen him become a member of Grain SA's 500 Ton Club and a beneficiary of the Advanced Farmer Programme. Jacques Roux is the mentor who primarily advises Maseli with on-farm matters such as budget and seasonal input planning. In 2006 he completed Agri SA's 'Agriculture Leadership Development Programme'. He has gone on to serve on a number of committees and boards in service of the farming community.

Patrick Stuurman

(Region 33)

Patrick farms near Matatiele in the Alfred Nzo District and is an active member of the Ongeluksnek Study Group. An important characteristic of a leader is his willingness to stay informed, keep on learning and have his finger on the pulse of industry developments and issues. Earlier this year Patrick completed the 'Farming for profits' training course along with a number of other keen young farmers in his region. The trainer, Eric Wiggill, was particularly impressed by this group of learners and said they are very keen farmers. This season, Patrick participated in the Grain SA/AB InBev project and planted 50 ha of maize. He benefitted from individual mentoring from Luke Collier and Eric Wiggill throughout the season. ■

JENNY MATHEWS, MANAGEMENT AND DEVELOPMENT SPECIALIST AND EDUCATOR

HEALTH AND SAFETY **Part 4**

Fire-fighting: *Be prepared*

LEGISLATION REQUIRES AN EMPLOYER TO PROVIDE FIREFIGHTING EQUIPMENT AND SAFETY RULES TO GUARANTEE A SAFE WORKPLACE. THEREFORE, AN EMPLOYER MUST ENSURE THAT FIRE EXTINGUISHERS ARE INSTALLED WHERE NECESSARY. FIRE EXTINGUISHERS CAN PROTECT BOTH THE EMPLOYEES AND EQUIPMENT.

Different types of fire extinguishers (such as powder, CO_2 and foam) are available on the market. They also come in different sizes. A risk analysis will determine which type (and size) should be installed in your operation. It is also very important to have mobile water fire-fighting units on the farm. These units have to be tested regularly, even when fires are not a threat.

Employees must get the necessary training to ensure that they know how to handle an emergency situation. During training, employees should be shown how to choose a suitable fire extinguisher. The fire extinguishers should be placed in areas based on the material that must be protected. During training, employees must also learn how to handle wildfires and what they should look out for.

The employer must ensure that all fire extinguishers are serviced regularly by an SAQCC- and SABS-accredited company. The contractor must provide proof of accreditation to the employer. A proof of service must also be placed on the fire extinguisher to indicate that it meets the legal requirements.

Access to fire extinguishers must not be obstructed. Safety signs should be posted where the fire extinguisher is installed. Clothes or bags may not be thrown over fire extinguishers. All firefighting equipment must be inspected monthly. This inspection should be recorded on a register as proof that the system has been checked. Any problems must be reported to the manager/supervisor.

The safety of employees must always be the first priority. Employees can be trained when a fire at a building or vehicle is extinguished. Emergency numbers must also be placed in the workplace. In the event of an emergency, a designated employee should contact the emergency services. ■

CHARL SAAYMAN, HEALTH AND SAFETY CONSULTANT AT MEGA HEALTH AND SAFETY

Crop rotation is key to *sunflower production*

SUNFLOWER IS A CROP THAT, RELATIVE TO OTHER CROPS, PERFORMS WELL UNDER DROUGHT CONDITIONS. THIS IS PROBABLY WHY IT IS POPULAR IN THE MARGINAL CROPPING AREAS OF SOUTH AFRICA. THE CROP IS DROUGHT TOLERANT AND HAS RELATIVELY LOW INPUT COSTS.

Due to the short active growing period of sunflower, it has a planting window of three months, and it is also well suited in flexible crop rotation systems. In fact, it should only be planted in a crop rotation system – especially in the dry summer production areas.

Sunflower (*Helianthus annuus L.*) is an annual oilseed crop that is globally cultivated on a production area of approximately 26 million hectares, which results in ± 47,4 million metric tons of seed annually – an 8% share of the world oilseeds market. Sunflower oil is one of the world's major vegetable oils, often used in the food industry by the production of various related commercial products due to its high quality, high protein content and edibility.

The average area under sunflower cultivation in South Africa since 2009 (until 2021) is 552 000 hectares, with an average production of 715 000 tons over this period. The South African sunflower production area remains concentrated in the Free State and North West provinces, which together account for 80% of the national area planted (on average) over the past ten years.

The ability of sunflowers to produce relatively consistent yields under adverse weather conditions, along with their overall characteristics of drought tolerance, make this crop an attractive option for farmers in dryland production regions. Sunflowers can also produce a crop on marginal soils and with very little or no additional fertiliser.

SOIL REQUIREMENTS

Sunflower is relatively well adapted to a wide range of soil texture classes and can be produced successfully where the soil clay content varies between 10% and 55%. This crop is indeed one of the few crops that can be successfully produced on heavy clay soil. However, in South Africa sunflower is mostly grown on soil with a clay content of less than 20%.

The following soil characteristics may impair sunflower production if not managed:

- **Windblown sand**: Sunflower is susceptible to wind damage during the seedling stage. High temperatures of the soils may limit emergence.
- **Crusts**: A soil inclined to crusting can seriously limit emergence.
- **Waterlogged soil**: During the first four weeks after planting, sunflower is sensitive to waterlogging.
- **Soil acidity**: Aluminium and manganese toxicity are associated with acidic soils. Sunflower is one of the most tolerant crops to manganese toxicity, but it is very susceptible to excessive aluminium. Soil with a pH of <4,5 (KCℓ) should be avoided, because this is the threshold where dissolved aluminium increases rapidly.

CLIMATIC REQUIREMENTS

Sunflower is adapted to a wide temperature range and is mainly produced in semi-arid regions globally. The oil concentration and oil quality are influenced by the temperature. Moderate temperatures during the seed-filling period favour a high oil content and quality.

Germination temperatures

It germinates from 10°C to 31°C, while the optimal germination temperature is about 26°C. Under South African conditions, the soil temperature is usually not restrictive to germination. However, high soil temperatures can affect the seedling vigour, especially in sandy and sandy-loam soils.

Growth temperature

The temperature is the most important factor determining the developmental rate of sunflower. As it gets warmer, the growth rate increases. Sunflower can tolerate extreme temperatures. During the seedling stage, it is moderately frost resistant and can survive at -2°C. After the six-leaf (V6) stage, it is very susceptible to frost. During the seed-filling stage, it can again survive temperatures as low as -2°C.

Water requirements

In comparison with other agronomic crops, sunflower is relatively drought tolerant. The effective and deep root system is a contributing factor to this tolerance. In comparison with other crops, such as maize, sunflower has the unique characteristic that it has a very low production starting point. This means that grain production theoretically begins at about 80 mm water use.

Sunflower yields are relatively low during favourable conditions and high water use. The low-yield starting point is the most outstanding characteristic of sunflower that makes it possible to produce sunflower economically in drier environments and on low-potential soils.

MANAGEMENT PRACTICES

Soil preparation

Sunflower reacts positively to good soil preparation. This crop is very sensitive to unfavourable conditions during and shortly after germination, as well as to weed competition. A fine seed bed and effective weed control are thus extremely important for ensuring a good stand.

Planting dates

Planting can occur from the beginning of November until the end of December in the eastern half and until mid-January in the western half of the Highveld. Possible planting dates are determined by the occurrence of rain.

A number of factors need to be considered when deciding to plant or not, namely:

- The possibility of frost damage.
- Drought during grain filling.
- Bird damage.
- The possibility of a high soil temperature during emergence.

A farmer planning to plant sunflower as the main crop should consider planting during November and no later than the end of December to reach the target yield. Sunflower planted later in the season, especially during January, will have a lower yield potential.

Plant population

Evenly spaced plants at the appropriate population is the basis for a

high yield. The yield potential determines the appropriate plant population. Higher potential conditions require higher plant populations. It has been proved in practice that populations of 30 000 to 45 000 plants per hectare are the best.

Planting depth and technique

Sunflower seed is planted relatively shallow. In soil with a high clay content, seed is planted 25 mm deep and in sandy soils 25 mm to 60 mm deep.

Cultivar choice

The cultivar choice is an essential aspect in the production proses, since the yield of two cultivars grown side by side often differ with as much as 0,5 ton ha^{-1}. A sound cultivar choice is a simple and cheap way to optimise sunflower production. The seed yield is the most important measure when evaluating cultivars.

The following factors must be considered when choosing the right cultivars:

- High yield potential, especially in terms of oil mass.
- High oil content.
- Good standability (well-developed roots and strong stalks).
- Even plant height.
- Disease resistance.
- Length of growing season.

Fertilisation

Sunflower normally reacts well to nitrogen (N) and phosphorus (P) fertilisation where these elements are deficient in the soil. It is essential that any fertilisation programme is based on a soil analyses. This will not only lead to accurate fertilisation rates but can also limit unnecessary costs.

Although sunflower's potassium (K) uptake is high, fertilisation with K is usually unnecessary. Yellowing of the lower leaf tips of the plant usually indicates a K deficiency, which progresses to dying of the leaf tips, while the leaf base remains green. These leaves will eventually fall off.

Fertiliser application – depending on the expected yields and the residual soil N – varies in practice from none in N-rich soil to 140 kg N ha^{-1}. An N excess, or over-fertilisation, can cause excessive water consumption, fungal diseases, lodging and a drop in grain oil content.

A micro-element deficiency such as iron, manganese, copper, zinc and chlorine should first be identified through a plant analysis before a corrective fertiliser is applied. When fertilising where there is no deficiency, the yield will not increase. In fact, the risk exists that micro-elements may even reach toxic levels. An independent expert should be consulted to assist with the diagnosis and correction of the deficiency.

Weed control

Sunflower is very sensitive to weed competition, particularly in the young stage. If weeds are not effectively controlled during the first six to eight weeks after emergence, up to 50% of the potential yield may be lost.

Disease control

The spread of sunflower diseases varies from year to year, depending on climatic conditions. Certain diseases are more prevalent in dry years, while the development of others is aggravated by cold and wet conditions.

While many diseases can affect sunflower, the only one of real economic importance is *Sclerotinia* head rot. The most effective and economical way of controlling diseases is to plant resistant cultivars and to follow sound agricultural practices such as crop rotation, planting only treated seeds and sanitation by removing diseased plants from the land. ■

DR SAFIAH MA'ALI, SENIOR RESEARCHER: ARC-GRAIN CROPS, POTCHEFSTROOM

Prevent Sclerotinia in oilseed production

THE NEW PRODUCTION SEASON IS AT HAND AND FARMERS MUST CHOOSE WHICH CROPS TO PRODUCE, WHEN TO PLANT AND HOW TO PRODUCE THE CROPS. IT IS IMPORTANT TO UNDERSTAND THE RISKS OF EVERY CROP.

In the 2021/2022 production season, sclerotinia created a huge problem for sunflower and soybean farmers. In North West some sunflower fields had up to 80% infection, which had a major impact on the sunflower income.

One risk that influences all crops is the weather. It is important to understand the rainfall probabilities and the general distribution of rainfall over the season. In the western production regions, the probabilities of a midsummer drought are high and farmers must take note of it. It is important to schedule your crops and planting dates around these expected midsummer droughts.

To manage the potential risk of a disease, the disease triangle must be understood and managed. If a host plant that is susceptible to a relevant disease, the disease-causing pathogen and the specific environmental requirements for infection by the pathogen are present at the same time and at the right stage, it can lead to the outbreak of a disease.

In sunflower and soybeans, the development of diseases associated with *S. sclerotiorum* is highly dependent on a conducive environment – cool, wet conditions and denser canopies (planting density and row spacing), where air circulation is limited. This creates a favourable microclimate for disease development. Soybeans and sunflower are especially susceptible to Sclerotinia during flowering. Therefore, if apothecia is present one to two weeks before flowering, it is likely that spores will be present during this stage of the plant's lifecycle.

SCLEROTINIA

Sclerotinia may occur in the 2022/2023 production season. What can a farmer do to prevent it? Unfortunately, there is not a simple solution yet. When Sclerotinia attacks a plant, it is very difficult to spray the crop – so a farmer must try to prevent Sclerotinia in the crops.

The prevention of Sclerotinia is a difficult task and all aspects of grain production must be incorporated to prevent the disease. This will start with the choice of cultivars, planting date, fertilisation of the crop and regular scouting for apothecia in the crop.

Cultivar selection is used to manage a given plant period's flowering date more effectively. By using a planting package of two or more hybrids for a given planting period, the flowering date can be optimally managed. Where Sclerotinia is present, not all the sunflowers will be flowering at the same time. This should prevent Sclerotinia from infecting all the plants.

In such a package, make use of growth class and flowering period differences between hybrids by using medium and medium-late hybrids that will flower at different times. Also use single-cross and three-way hybrids in the package to optimally manage the percentage of the planting that is in flower on a given day. This will lower the risk of Sclerotinia.

The second thing that farmers must do is the selection of ferti-

1

Water-soaked lesions on sunflower.

2

Cotton-like mycelium on sunflower heads.

lisers. Make sure that the crop is fertilised so that it can withstand stress. It is important not only to apply nitrogen (N), phosphorus (P) and potassium (K), but also calcium (Ca), sulphur (S) and copper (Cu). These micro-elements will help the plant in a stress period, whether it is drought or too much rain.

Farmers must rotate their crops. Where sunflower with a high percentage of Sclerotinia occurred, sunflower must not be planted on that field again for at least three years. The soil cultivation will also help to prevent Sclerotinia. The ploughing of the field will help to prevent Sclerotinia, but if there was Sclerotinia the chances of getting Sclerotinia is very high. Covering crops can help to lower the Sclerotinia risk.

Weeds will always be a problem. Therefore, the optimal control of weeds is very important. Some weeds such as cosmos and other broadleaf weeds are known to be hosts for Sclerotinia. The weeds put the sunflower under stress, which will lead to Sclerotinia infecting the plant.

Make sure that you do everything possible to manage the stress levels of the crop.

To manage Sclerotinia effectively, the early detection of apothecia is important to help farmers taking steps before symptoms are observed. Initial symptoms include water-soaked lesions (**Photo 1**). These lesions develop into white cotton-like mycelium on sunflower heads (**Photo 2**) and soybean pods, as well as in and on the stems (**Photo 3**) of both sunflower and soybean. Ultimately, as the disease progresses, the white mycelium develops into melanised hardened sclerotia (**Photo 4**). This hardened sclerotia provide a manner for the pathogen to survive between seasons and under non-conducive conditions.

Once apothecia is observed, be aware that disease development is likely during favourable environmental conditions. Observing apothecia is often critical to the decision to implement disease management. For help to identify apothecia, mail a photo to Dr Miekie Human, research and policy officer at Grain SA, at *miekie@grainsa.co.za*.

There are a limited number of registered fungicides for soybean and sunflower in South Africa. These include azoxystrobin, benomyl, cyprodinil, epoxiconazole, fludioxonil, procymidone and pyraclostrobin. Benomyl is currently registered as a seed treatment for sunflower, whereas procymidone is the only active ingredient registered for Sclerotinia stem-rot control on soybeans. A registered label for soybean rust, with the active ingredients pyraclostrobin and epoxiconazole, suggests that the fungicide may reduce Sclerotinia stem rot (AVCASA, 2019).

The decision to spray or not is dependent on weighing the risk present, which starts with being alert to the presence of apothecia. Don't assume that Sclerotinia is easy to manage. The best advice is to prevent it and to apply good farming practices.

For more information, please contact Corné van der Westhuizen from Pannar Seed on 082 570 8240 or Dr Miekie Human at *miekie@grainsa.co.za*, or visit the website of the South African Sclerotinia Research Network (SASRN) at *www.sclerotinia.co.za*. ■

3

Sclerotinia stem rot.

Photo: Dr Lisa Rothmann

4

Melanised hardened sclerotia.

PIETMAN BOTHA, INDEPENDENT AGRICULTURAL CONSULTANT, AND CORNÉ VAN DER WESTHUIZEN, AGRONOMIST AT PANNAR SEED

Climate forecast for the 2022/2023 summer season

Photo: Dijan de Waal

MOST OF THE COUNTRY RECEIVED AVERAGE TO ABOVE-AVERAGE RAINFALL SINCE ABOUT 2020. FLOODING OR WATER-LOGGED CONDITIONS OCCURRED IN SOME AREAS, CAUSING DAMAGE TO CROPS AND INFRASTRUCTURE. THE VERY WET CONDITIONS SINCE 2020 ARE IN CONTRAST TO THE SEVERE DROUGHT CONDITIONS OVER LARGE PARTS OF THE COUNTRY FROM ABOUT 2014 TO 2019.

WHY IS THE CLIMATE SO HIGHLY VARIABLE?

It makes farming in South Africa very difficult – ranging between the extremes of severe drought or very wet conditions for consecutive seasons. The most important factor that is responsible for these fluctuations is the so-called ENSO (El Niño Southern Oscillation), with the two main components of El Niño and La Niña. El Niño is the abnormal warming of the central Pacific Ocean and La Niña the cooling of this area.

It is a very large area in the ocean and if there are more heat energy or less heat energy available, it can change the climate systems overlying this area. Although this happens thousands of kilometres from South Africa, is it responsible for shifts in rainfall patterns not only over South Africa but over the world.

The impact of El Niño over South Africa is usually drier conditions and with a La Niña present, wetter conditions. La Niña conditions started to develop in the spring of 2020, causing favourable rainfall conditions initially over the eastern and central parts of the country but gradually spreading to the western parts.

Although La Niña is favourable for rainfall over the summer rainfall area of South Africa, the impact is not always the same across the country – like for instance in the Eastern Cape, where poor rainfall conditions are still causing severe drought after more than two years of La Niña conditions.

RAINFALL

What can we expect for the next summer season?

La Niña conditions are still present, and it is expected that it will last

until at least the end of 2022 or beginning of 2023. It will only be the third time since 1950 that there will be three consecutive La Niña events, because La Niña events are usually lasting only one season – starting from about September and ending in about March/April.

What does this mean in terms of rainfall for different parts of the country, especially the summer grain areas?

- **Mpumalanga, Gauteng, Eastern Free State and northern parts of KwaZulu-Natal:** Average to above-average rainfall is expected from about October to January. It is possible that heavy rains can again cause very wet and water-logged conditions from about November. Drier conditions are possible from about February 2023, with the forecast of the current La Niña that will weaken from early 2023.
- **Southern parts of KwaZulu-Natal and northern parts of the Eastern Cape:** Average to above-average rainfall is possible until about December, but average to below-average rainfall is expected in the second part of the summer from about January/February 2023.
- **North West, Limpopo and the central to western parts of the Free State:** Below-average rainfall is expected until about September/October, but average to above-average rainfall is expected from about November to January. With the expected weakening of La Niña, there is a high probability for drier conditions from about the second part of February 2023.
- **Northern Cape, interior and southern parts of the Eastern Cape as well as northern interior of the Western Cape:** Average to below-average rainfall is expected until about October, but the rainfall conditions are likely to improve from November/December before a very dry spell is possible in the pre-winter period from about February/March 2023.
- **Winter rainfall region:** Below-average rainfall is highly possible for the winter rainfall region from about April 2023, indicating the start of a new dry cycle.

THE EFFECT OF CLIMATE CHANGE

Although global warming is evident, there are also impacts on the rainfall and it can even be responsible for lower temperatures in some areas for specific times of the year.

Higher rainfall amounts in the summer rainfall area are shifting towards the summer months (November to April), at the expense of the winter and spring rainfall (May to October). The percentage of rainfall in the winter and spring decreased for a district such as Wesselsbron in the Free State – from about 25% of the total rainfall from 1970 to 2000, to less than 10% since 2008. This is one of the main reasons why dryland winter wheat production in the Free State is not viable anymore.

The summer rainfall (sum total for November, December and January increased from about 40% of the total annual rainfall (seasonal 1 July to 30 June) from about 1990 to about 50% of the total rainfall currently. This is very significantly favouring summer crop production.

There are also shifts in the last dates of frost in some areas. The last dates increased in the most recent two decades, with between 10 and 30 days later. This means that the average last dates of frost for a district such as Douglas in the Northern Cape shifts from about 10 September before about 2000 to about 7 October currently.

It increased the risk for frost damage on winter wheat in especially the irrigation areas of the Western Free State and Northern Cape to levels that put profitability in jeopardy. It urged crop insurers to cease frost insurance on winter crops or only selectively provide cover in some areas. This is also a severe risk for early planted summer crops and crops such as pecan nuts and grapes.

SUMMARY AND RECOMMENDATIONS

- Average to above-average rainfall is expected from about October/November until January/February over most of the summer rainfall area.
- Below-average rainfall is expected for the winter of 2023 for the winter rainfall region, indicating the start of a dry cycle.
- The risk for late frost in the central to southern parts of the country is very high and frost may occur until October.
- The turning point of the current wet cycle towards a drier period is probably reached in the winter rainfall area but will most probably start to develop from about 2023 in the central to western summer rainfall area. ■

JOHAN VAN DEN BERG,
INDEPENDENT AGRICULTURAL METEOROLOGIST

WORDS OF WISDOM

'You don't concentrate on risks. You concentrate on results. No risk is too great to prevent the necessary job from getting done.'

~ CHUCK YEAGER
US air force officer and record-setting test pilot

Do your homework before buying a tractor

THE CAPITAL LAYOUT FOR FARMING IN TERMS OF TRACTORS AND MACHINERY IS VERY HIGH. A NEW TRACTOR CAN EASILY COST R1 000 000 – AND THIS DOESN'T INCLUDE THE PRICE OF THE IMPLEMENTS, WHICH MUST ALL STILL BE BOUGHT AFTERWARDS. THEREFORE, IT IS IMPORTANT TO MAKE SURE THAT THE TRACTOR YOU BUY WILL MEET YOUR NEEDS.

If the tractor is too big or too small for the farm's work needs, it is going to cost you dearly. To find and buy the right tractor or tractors for your farm is a difficult task, but it can be done. Ask the following question: How many and what tractors should I buy?

FIELD CAPACITY

For every cultivation activity and every tractor size, there is a field capacity listed. The field capacity is how many hectares a tractor can work on a 10-hour day.

With just a few calculations, you can determine a tractor's field capacity. The field capacity in ha/10-hour day = speed in km/h x working width in metres x field efficiency. The field efficiency factor allows for time spent on turning on the headlands, refuelling the tractor, filling seed and fertiliser bins on a planter amongst others, and therefore it is measured as a decimal. In practice, if the field efficiency is one that would mean the tractor would work the whole 10-hour day without stopping or turning.

Farmers know that this is seldom possible. Over a number of field studies done, it was determined that with a tractor only pulling implements where there is no need to upload or offload fertiliser or seed, the turning at the headlands and refuelling the tractor will take up 17% of the working time. This means that only 83% of the possible work could be done.

With planting, the uploading of the seed and fertiliser can take up to 40% of the time. With the spraying of the crop, only 60% of the time available can be used to spray and the rest of the time is for filling the sprayer. From these efficiency figures it is clear that farmers must make sure that everything is done to make it possible to increase the efficiencies of the actions.

With this knowledge, the question of which combination of tractors to buy can be answered. In **Table 1** and **Table 2** the average field efficiencies for the different operations are given. In practice, these figures might differ from the actual values, depending on how efficiently the operations are carried out, but it is a very good norm. Provision has also been made in the tables for different soils. In the table of field capacities, the column 'kW required' gives an indication of the actual power required to carry out the operation at a specified field capacity. It should be kept in mind that a naturally aspirated engine working under Highveld conditions can only deliver approximately 80% of its rated power as measured at sea level. A turbocharged engine is assumed not to lose any power with an increase in altitude.

Therefore, if the table indicates that 40 kW is required, a tractor with an advertised rated power of 40/0,8 = 50 kW has to be used. If the tractor is fitted with a turbocharger, a 40 kW turbo-charged tractor would suffice.

A recommended tractor size is specified at some places in the table of field capacities. This is for certain operations where the physical size of the tractor (and not the power of the tractor) determines the field capacity for the operation.

- In Mpumalanga and the eastern parts of the summer rainfall area a rule of thumb is that a farmer will need between 0,75 kW/ha and 1 kW /ha grain produced.
- In the western regions of the summer rainfall area of the country farmers get along with between 0,5 kW/ha and 0,75 kW/ha grain produced. This is mainly because of the time available to do primary cultivation and to be on time to plant the crop.

Example

Farmers can make use of contractors to do some of the work, but preferably every farmer must be geared to do his own planting and spraying within the planting window of the crops, which is normally 20 working days. If a farmer is planting 100 hectares and the planting must be done in 20 working days, this would mean that at least 5 ha/day must be planted. To plant 5 ha/day, a 5 ha seedbed must be prepared, 5 ha must be planted and 5 ha must be sprayed.

Two 50 kW tractors, such as a Ford 6600 or Massey Ferguson 188, should be enough to do all the work in time. One tractor can prepare the seedbed and one can plant and do the spraying. It is calculated that a 50 kW tractor can prepare a 20 ha seedbed, plant between 18 ha and 26 ha and can spray at least 26 ha per 10-hour day.

So, this can work if one tractor starts with seedbed preparations and the other one starts to plant. The tractor used for planting can then be used to do the spraying of the planted crops later in the day. The next day, the tractor which was used for the seedbed can do the spraying while the planting continues.

If both tractors can do the ploughing of the fields and one tractor can do between 5 ha/day and 7 ha/day, it would mean that the field will be ploughed within 20 days.

By making use of the field capacity figures in the tables, farmers can determine which combination of tractors to buy. These figures can also be used to check whether the farmworkers are doing their job.

1 *Table of field capacities for a boom sprayer.*

Implement	kW required	Speed (km/h)	ha/10-hour day	Tractor size (kW)
Boom sprayer (N = 60%)				
6 m boom	20	6	22	40
8 m boom	25	6	29	50
12 m boom	25	6	43	50

2 *Table of field capacities for different implements.*

Implement	kW required			Speed (km/h)	ha/10-hour day	Tractor size (kW)
	Sand	Firm soil	Loose soil			
Field cultivator (75 mm depth at N = 83%) and **light disc harrow** (65 mm depth at N = 83%)						
Width 1,6 m		24	28	8	10	30 - 35
3 m		36	43	8	20	45 - 54
3 m		45	54	9,2	23	56 - 68
3,7 m		48	57	9	28	60 - 71
4,5 m		55	64	10	38	68 - 80
6 m		70	80	10	50	88 - 100
Chisel plough (200 mm depth, 300 mm, spacing and N = 83%)						
Width 2,2 m	38	48	60	5,5	10	48 - 75
3 m	47	60	74	5,5	14	59 - 92
3,4 m	60	71	108	7,0	20	75 - 135
4 m	70	82	125	7,0	23	88 - 156
4,5 m	88	105	170	7,6	29	108 - 188
Maize planter (full fertiliser and N = 60%)						
2 x 0,91 = 1,82 m (mounted)	21	20	19	8	9	35
4 x 0,91 = 3,64 m (mounted)	33	40	29	8	18	40
4 x 0,91 = 3,64 m (trailed)	50	46	44	12	26	55
6 x 0,91 = 5,46 m (trailed)	74	68	65	12	39	75
Mouldboard plough (250 mm depth and N = 83%)						
2 x 406 = 0,81 m		34		5	3,37	35 - 40
3 x 406 = 1,22 m		40		5	5,0	50
4 x 406 = 1,63 m		48		5	7,0	60
5 x 406 = 2,03 m		60		5,5	9,0	90
5 x 406 = 2,03 m		72		7	12,0	125

As a tractor is expensive it is important to ensure you buy the right tractor to meet your needs.

PIETMAN BOTHA, INDEPENDENT AGRICULTURAL CONSULTANT

Know your pests:
African maize stalk borer

LEPIDOPTERAN PESTS SUCH AS STEM BORERS CAUSE MAJOR DAMAGE IN MAIZE FIELDS, RESULTING IN SIGNIFICANT YIELD LOSSES. IT IS IMPERATIVE THAT FARMERS CAN IDENTIFY THESE PESTS TO MANAGE THEM EARLY WITH THE RIGHT SET OF TOOLS.

Moth flights begin in October and occur throughout South Africa, except in the coastal regions and Lowveld areas. Three moth flights occur per year, with the middle one the largest. Under favourable conditions, the lifecycle can be completed in seven to eight weeks.

Female moths lay egg batches in rows (ten to 80 eggs) between the stem and leaf sheath, which take seven to nine days to hatch. The egg batches are white when first laid but darken as they age. The first larval instars migrate into young leaf whorls to feed, producing characteristic small holes or 'windowpanes', or transparent leaf patches. Young larvae are dark brown in colour and become lighter as they mature, with characteristic small black spots along the body. Although older larvae can tunnel extensively into the stems, they prefer the tasselling stage. Larval feeding lasts for four to six weeks before pupating, after which adult moths soon emerge and repeat the cycle again.

DAMAGE

This is regarded as the most serious stem borer pest of maize. It poses additional risks to humans and animals, as crop damage due to larval feeding often increases susceptibility to secondary infections such as Fusarium rot.

Larval feeding on the growing points of plants results in die-off of central leaves in the whorl, which dry out and cause withered 'dead hearts' symptoms. Due to tunnelling by adult larvae, stems are often weakened as they are hollowed out and become filled with frass, causing them to break under windy conditions. Larvae can also bore into the maize cobs and feed on the seed, leaving visible frass deposits.

A young Busseola larvae causing windows in whorl.

Dead heart.

Larvae feeding on tassels and in maize cobs.

Colour variation of Busseola larvae, from light to dark.

Emergence holes in a maize stalk.

THE HOW TO of planter maintenance and fine-tuning

Part 1

POOR MAINTENANCE OR MAINTENANCE FOCUSSED IN THE WRONG AREAS CAN ULTIMATELY CAUSE AN UNEXPECTED OR EARLY FAILURE OF A PRODUCT. OFTEN THESE MAINTENANCE ISSUES ARE RELATIVELY EASY AND BUDGET-FRIENDLY TO FIX, BUT ARE OVERLOOKED FOR VARIOUS REASONS.

On planters, other than just causing a failure, not doing maintenance can cause extreme yield losses as well as negatively affect the benefits of the technology producers invest in to ensure that they plant correctly. A planter is made up mainly of moving components which are exposed (in season and out of season) to some of the harshest conditions. Often a rusted shaft or wobbly cutting coulter can draw attention away from the finer more serious maintenance points. One of the easiest tests or trials to do in practice is a flag test (**Photo 3, see on page 16**).

A flag test is where plants are marked with different colour flags as they emerge and then the cob weights at the different times of emergence are recorded. What the test generally reveals is 0,5% yield loss per hour. Once a late-emerging plant is a full leaf stage behind, it equates to 50% yield loss and anything after that is basically an expensive weed.

Discussed below are the three most overlooked but also most important maintenance areas on planters that can cause poor germination and an uneven emergence.

SEED DISC SPACING

On the majority of planter brands a system of two seed discs touching each other is used to open the furrow in the soil where the seed is then placed. The relation between these two discs is extremely important to ensure a clean, uniform V-shaped furrow to place the seed into. When seed disc spacing is not correct and dirt is able to move between the seed discs, a few issues are caused:

1

Planter minimum measurements.

2

Shimming the discs.

- A **W** instead of a **V** is created, which means the seed then lands at an uneven height and because it is not sitting in the centre of a clean uniform furrow, it also makes closing the furrow and ensuring good seed to soil contact difficult. This is not good for germination.
- A gap between the seed discs allows for dry surface dirt to fall into the furrow and make contact with the seed.
- Dirt moving between the seed discs can often also be the cause of seed discs jamming when the moisture level picks up a bit.

Incorrect seed disc contact can be caused by the following:

- The bearing hole on a seed disc was not punched centre at the factory.
- A seed disc is not perfectly flat from the factory.
- Seed discs wearing over time.
- Worn bearings and worn shafts.
- Incorrectly shimmed discs.

To correct this issue, first check that the seed discs are not damaged or worn out of spec (different planters have different minimum measurements on seed discs – see **Photo 1**). Then check that the seed discs, bearings and shafts are not worn or damaged. If new discs must be ordered, check that all the discs are straight and that the holes are centre to the discs. Only then the discs can be shimmed. To do this, use two standard business cards (**Photo 2**).

Insert one card at the top of where the two discs make contact and one at the bottom, just light enough for the contact point to hold the cards. Then measure the distance between the two cards. The aim is to achieve 6 cm contact between the cards. If the gap between the cards is too small, remove shims and if it is too big, add shims to ensure 6 cm of contact.

DEPTH GAUGE WHEEL SPACING IN RELATION TO THE SEED DISCS

This is often a much-debated topic regarding what type of depth gauge wheel is best (close to the seed disc or far away from the

Figure 1: Depth gauge wheel spacing in relation to the seed discs.

seed disc). The most common is a depth gauge wheel that makes light contact with the seed disc. When there is a gap – big or small – between the gauge wheels, it allows for dry dirt to make its way between the disc and gauge wheel causing a 'rooster tail' effect of dry dirt in the rim or lip of the gauge wheels. This dirt then flicks up from the gauge wheels and lands in the furrow contacting the seed, causing germination problems (**Figure 1**).

As the planter wears – or even on a new planter – the spacing between gauge wheels and seed discs can change. Reasons include the following:

- The gauge wheel arm mouldings/fabrication on the new planter is slightly out.
- Rubber tyres are worn.
- The gauge wheel arms are bent.
- The bearing/shaft is worn.

To ensure the correct gauge wheel spacing, check that the arms aren't bent, the tyres aren't worn past their respective wear marks and the bearings are still in good condition. Then lift the planter, place blocks under the gauge wheels and lower the planter back down onto the gauge wheel blocks. Then use the respective planter's type of adjustment to adjust the gauge wheels to where the gauge wheel is making light contact with the seed disc at ground-engaging height, but is also still able to rotate.

ZEROING THE DEPTH SETTING ON A PLANTER

All the different planter brands have different depth-setting systems. However, all of them follow the same principles and unfortunately all of them have similar shortfalls and points of wear. On average, the depth system is made up of four or five components, which allow

Maintenance issues are relatively easy and budget-friendly to fix.

producers to control and alter the height which the gauge wheels can travel upwards. In turn, this can cause the seed discs to move downwards into the soil, creating a furrow for the seed at the depth that was set using the allocated marks on the row unit. Unfortunately, all these components are susceptible to wear or on a new planter, can be caused by non-uniform fabrication which will alter the actual seeding depth in relation to the depth mark that was chosen.

Unfortunately, due to the rush and chaos of planting season, a planter is often pulled into the land and then stopped after a 100 m or so. Two or three rows are then checked for seed depth and all the

3

Conducting a flag test.

row units are adjusted accordingly. However, since not all of them are worn or fabricated in exactly the same way, some row units will be caused to plant at different depths to the others and not the desired depth that it was set on.

Earlier, the flag test and losses involved with uneven emergence were explained. Uneven planting depth is a direct cause of uneven emergence. So, if there is a variance of 1 cm to 2 cm (even on a brand-new planter) from one row unit to another, it is safe to say that the particular row unit has the potential to cause at least a 12% yield loss. When it is worked out what tonnage that specific row unit is expected to bring in, 12% becomes a substantial loss. So, remember that the correction costs nothing and actually takes very little time to complete.

HOW TO ZERO A PLANTER'S PLANTING DEPTH

Use a 2 inch x 4 inch beam (because most planter manuals will have a 2 inch setting position). Then cut the beam into lengths of 30 cm – two lengths per row are needed (try to do three rows at a time). Set the row units on their '2 inch' setting and then slide the beams under the gauge wheels and lower the planter units onto them (**Photo 4**).

4

Zeroing a planter's planting depth.

Confirm that the parallel arms are level and that the lock-out bar has full 'tight' contact from the gauge wheel arms and that the seed discs are contacting the floor. If the lock-out bar is not tight or has any play, adjust the depth handle up until it takes up the slack. If the seed discs are not touching the ground, adjust the depth down till the seed discs contact the floor while still maintaining 'lock out' on the lock-out bar. Keep adjusting the units until there is full lock out and the seed discs are contacting the ground.

This then becomes the 'zero' depth position on the planter. One row unit's depth setting position will be different to another. Make some form of mark using a paint pen or marker on the depth lever. When one now goes into the land and see that the seeding depth needs to be adjusted down or up, those adjustments can be made per row unit from the 'zero' mark, ensuring that the desired depth is obtained when ground contact is maintained. A row unit like the Precision Planting Row unit has a brilliant feature where it allows one to reset the depth using a nut system on the lock-out pin. This means one doesn't have to continuously mark or make note of where the zero/even-depth position is and can ensure one is always planting at an even depth across the planter.

Like anything in life, ensuring a correctly built foundation and due diligence to the fine-tuning and basics of a machine, can have major impacts on the future return on investment values that are upgraded and built onto planting systems. ■

It is important that the seed discs touch the ground.

JASON LUCEY, CEREALIS,
FIRST PUBLISHED IN
SA GRAAN/GRAIN, AUGUST 2022.

FMD outbreak leads to ban *on cattle movement*

THE MINISTER OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT, MS THOKO DIDIZA, HAS TAKEN THE DECISION TO SUSPEND ALL MOVEMENT OF CATTLE IN THE COUNTRY TO CONTROL THE CONTINUED SPREAD OF FOOT-AND-MOUTH DISEASE (FMD).

South Africa is currently experiencing 116 outbreaks of foot-and-mouth disease (FMD), involving farms, feedlots and communal areas in KwaZulu-Natal, Limpopo, North West, Gauteng, Mpumalanga and the Free State.

The suspension means that cattle may not be moved from one property to another for any reason for a period of 21 days, which is reviewable weekly.

> *Perpetrators who are illegally moving cattle will be prosecuted for contravention of the Animal Diseases Act.*

The minister acknowledges the efforts made by farmers, communities and industries to curb illegal movements of animals from known positive areas, and to improve biosecurity on animal holdings. However, the disease continues to spread, with 15 new properties and two new provinces affected in the last two weeks alone.

The ban will be declared in the *Government Gazette*. Any disregard for the movement ban is a criminal offense. The only exceptions will be for veterinary permits for:

(i) Cattle for direct slaughter at registered abattoirs.

(ii) Slaughter for ritual purposes.

"Cattle that are already at shows, auctions and on their way into the country, will be given 48 hours to be permitted to move to their final destination after being sold. The local state veterinary office should be contacted for these permits," said Minister Didiza.

She warned perpetrators who are illegally moving cattle that they will be prosecuted for contravention of the *Animal Diseases Act*, 1984 (Act no. 35 of 1984).

The minister recognised the major disruption that the movement ban will cause in the normal business of many sectors. For this reason, the ban is only applicable to cattle, as the movement of cattle was identified as the main cause of the continued spread of the outbreaks. However, the public is reminded that all cloven hoofed animals can spread the foot-and-mouth disease virus, and the movement of sheep, goats, pigs and cloven hoofed game animals should also be handled with the necessary caution.

Animals showing suspicious clinical symptoms (salivation, blisters in the mouth, limping or hoof lesions) must not be moved under any circumstances. Members of the public must contact their District State Veterinary Services or their private veterinarians immediately. ■

SOUTH AFRICAN GOVERNMENT, PRESS RELEASE, 16 AUGUST 2022

1 ***Signs of foot-and-mouth disease.***

Cattle	Sheep	Pigs
Slobbering and smacking lips.	Sudden, severe paralysis.	Sudden paralysis.
Shivering.	Prefers lying down and unwilling to rise.	Prefers lying down.
Tender and sore feet.	Stands in half-crouching position, with hind legs brought well forward, reluctant to move.	Squeals loudly when made to move.
Reduced milk yield.	Blisters on the hoof.	Blisters form on the upper edge of the hoof.
Sores and blisters on feet.	Blisters on the dental pad and/or tongue.	Blisters may develop on the snout or tongue.
Raised temperature.		

Effects of climate change on soybean productivity

SOYBEAN IS THE MOST GROWN LEGUME IN THE WORLD AND THE FIFTH MOST WIDELY CULTIVATED FOOD CROP. JUST OVER 300 MILLION TONS ARE PRODUCED ANNUALLY, WITH 1,89 MILLION TONS PRODUCED IN SOUTH AFRICA DURING THE 2020/2021 SEASON.

Recently, an international research team used ten different soybean crop models to assess the potential impact of future elevated temperature and CO^2 concentrations on yield. Five sites were selected across the globe, including the USA (two locations: Arkansas and Iowa), Argentina, Brazil, and France, based on varying conditions and availability of high-quality historical data for model calibration (**Table 1**). The first three countries are the biggest producers, accounting for 80% of total soybean production.

OUTLOOK FOR SOUTH AFRICA

Climate change will pose challenges to soybean production in South Africa, and breeding cultivars with essential stress tolerance traits will be important. Warmer regions are predicted to benefit more from increased CO^2 but are also at higher risk of temperatures that negatively affect growth and development. Drought effects will constrain benefits from CO^2 fertilisation, and negative climate impacts are expected to be more pronounced in commercial crops already growing close to their full genetic potential.

Breeding programmes that include global collaboration to achieve important genetic improvements for adaptation, will be key. Collecting data on cultivar performance and growth conditions (soil, weather, pests and diseases, management practices) in a centralised, producer-controlled data platform can help harness big data insights into optimal adaptation strategies.

1 ***Baseline average total precipitation and daily temperature and solar radiation over the soybean growing season for each site studied.***

Location	Azul (Argentina)	Auzeville (France)	Ames, Iowa (USA)	Brasilia (Brazil)	Fayetteville, Arkansas (USA)
Temperature (ºC)	19,8	21,2	21,7	22,7	25,0
Solar radiation ($MJ/m^2/d$)	24,2	20,9	20,2	18,7	20,1
Köppen-Geiger climate classification	Cfa temperate - without dry season - hot summer	Cfb temperate - without dry season - warm summer	Dfa cold - without dry season - hot summer	Aw tropical - savanna	Cfa temperate - without dry season - hot summer
Cultivar maturity group (MG)*	4	1	2	6	4

**In South Africa MG 4 cultivars are planted in cool/moderate areas, MG 6 in moderate/warm areas*

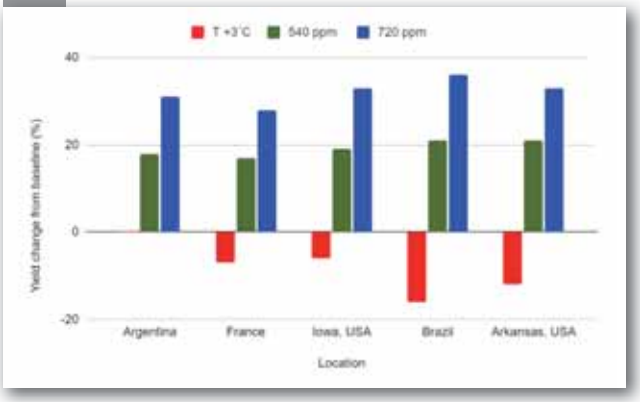
KEY FINDINGS

Yield decreases of 16% for Brazil, 12% for Arkansas, 7% for France, and 6% for Iowa were predicted in response to a +3˚C increase in temperature (**Graph 1**). In Argentina, the coolest location studied, yield was estimated to decrease by only 0,2%. Large yield decreases were estimated for a +9˚C increase in temperature: for example, a 29% decrease for Argentina and a 49% decrease for Brazil. Average yield reductions of up to 5% for every 1˚C increase in temperature were estimated.

The length of growing season was generally predicted to decrease due to faster development, but for some models growing season duration decreased for +3˚C and/or +6˚C, and increased again for the most extreme temperature increase of +9˚C. While the optimum temperature for soybean growth and photosynthesis is 25˚C to 30˚C, average daily temperatures above 30˚C slow down pod-set, seed development and crop maturation, all of which influence yield negatively.

Increased CO^2 concentrations led to a positive yield response from soybeans. Together the models estimated a 17% to a 23% yield increase at 540 parts per million (ppm) across all the sites. A doubling of carbon dioxide to 720 ppm was estimated to result in an average yield increase of 36%. Increased yields at a CO^2 concentration of 540 ppm compared to 360 ppm were greater for locations with a higher growing season temperature.

2 ***The negative impact of increases of temperature by 3˚C may be offset by the benefits of increasing carbon dioxide concentrations on soybean yield (expressed as percentage change from baseline).***



RESOURCE

Kothari, K *et al*. 2022. Are soybean models ready for climate change food impact assessments? *European Journal of Agronomy, 1*, 135:126482

DR MICHAEL VAN DER LAAN, UNIVERSITY OF PRETORIA.
FIRST PUBLISHED IN SA GRAAN/GRAIN, JULY 2022.

Dr Ntladi has great plans for groundnut breeding in SA

SINCE HIS APPOINTMENT AS RESEARCHER: GROUNDNUT BREEDER AT THE AGRICULTURAL RESEARCH COUNCIL (ARC) IN AUGUST LAST YEAR, DR SOLOMON NTLADI HAS NOT LET THE GRASS GROW UNDER HIS FEET. BEING PREVIOUSLY EMPLOYED IN THE PRIVATE SECTOR – IN COMPANIES LIKE AB INBEV – AND WORKING IN SEVERAL AFRICAN COUNTRIES, DR NTLADI IS WELL AWARE OF THE VALUE CHAIN AND ITS IMPACT ON SOCIETY.

First on his list was to tackle the depleted infrastructure at the ARC premises in Potchefstroom. Through various role-players he arranged for the glass house and cool rooms to be updated in order to run a proper commercial breeding programme.

GROUNDNUT INDUSTRY GETS ATTENTION

He then met with stakeholders and producers in the South African groundnut industry to determine their needs.

One of the challenges emerging from these conversations, is groundnut's long maturity period of approximately 150 days. As the local production of groundnuts has fluctuated greatly over the past 20 years, steps also need to be taken to up the yield.

Other factors that need to be addressed in the cultivation of new breeds, specifically for South African conditions, are disease resistance, the shape of the nut (it should be round and not oblong) and high oleic acid* content.

Dr Ntladi then obtained germplasm from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India, one of the foremost growers of groundnuts in the world. These are now planted in Malawi.

He obtained more germplasm from the Centre Régional d'Excellence sur les céréales sèches et cultures associées de l'Institut Sénégalais de Recherches Agricoles (ISRA/CERAAS) in Senegal and the University of Georgia in the USA. The plan is to start planting on a large scale at the Makhathini research station in KwaZulu-Natal to evaluate the performance and adaptability of the germplasm. The best lines will then be used in a breeding programme to address the mentioned challenges.

Dr Solomon Ntladi, researcher and groundnut breeder at the ARC in Potchefstroom, is passionate about breeding a cultivar that will lead to groundnut farming in South Africa becoming sustainable.

As a village boy growing up in rural Limpopo, it is of extreme importance for Dr Ntladi to succeed in breeding a plant for local conditions. His dream is to see South African groundnuts competing on the international market and in the process create more job opportunities. ■

**Oleic acid is a mono-unsaturated fatty acid which is known as a good fat, reducing the amount of LDL (bad cholesterol), whilst boosting the levels of HDL (good cholesterol).*

KARINA MULLER, CONTRIBUTOR.
FIRST PUBLISHED IN SA GRAAN/GRAIN, JULY 2022.

The Corner Post

Mampho Thaele

BY LOUISE KUNZ, ASSISTANT EDITOR

MAMPHO ADELINE THAELE (46) IS A FINALIST IN THE POTENTIAL COMMERCIAL FARMER OF THE YEAR COMPETITION. APART FROM BEING A PASSIONATE LADY, THIS MOTHER OF THREE IS ALSO A FOSTER MOTHER WHO HAS, SINCE 2008, TAKEN IN NINE FOSTER CHILDREN TO OFFER THEM A CHANCE AT A BETTER LIFE.

Mampho is the eleventh of 13 children. She was raised by her grandmother in Thabong Township near Welkom as her parents worked on a farm in the Marquard district in the Eastern Free State. When her four children were big enough to stay with their grandmother she found a job at a guest house in Welkom where she was put in charge of the other workers. When the guesthouse was sold she found work on a farm where she worked as a domestic worker for eleven years, dreaming of the day that she would be the farmer working the lands.

MAMPHO'S STORY

WHERE DID YOUR INTEREST IN FARMING ORIGINATE?

I used to spend school holidays on the farm in Marquard with my parents. I just loved it. The huge cows and the pens where the pigs were kept fascinated me. I was also in awe of the huge tractors and implements as they worked the lands and loved the smell of the soil when I was sent to take food to my father where they ploughed. When I had to go back to the township I used to cry. I have always dreamed of having a place of my own. As a child I used to plant vegetables in the yard and looking after the chickens.

HOW DID YOU BECOME A FARMER?

In 2014, the farm Perlot was purchased by the DRDLR and the lease contract was given to the Thaele family. My uncle, Pule Jan Thaele, was put in charge of the farm. He was already very old and sick and because he knew how passionate I was about farming he gave me the job of farm manager. This was a dream come true – I was now a farmer. I didn't care that the lands were overgrown with grass and weeds – the farm was ours and I would make a plan.

AND WHAT WAS YOUR PLAN?

I heard about Grain SA's study group meetings and attended my first meeting on 30 July 2015 in Welkom. I learned so much about farming – about soil, fertiliser, weed and grass control and much more. Suddenly I knew that it all was beginning to come together. The Grain SA Farmer Development Programme saved my career as a farmer. I also completed a National Diploma in Animal Production to learn more about cattle.

HOW HAS YOUR FARMING ENTERPRISE DEVELOPED?

Last season (2020/2021) I was part of the AbInbev Project and I planted 50 ha and realised a 4,8 t/ha yield. I am now part of the Standard Bank and Sacta project and planted 210 ha of which 160 ha was sunflower 160 and 50 ha was maize. I have diversified and also grow vegetables and have a piggery. The pork is sold in my own butchery in the Thabong township – it is called Black Move butchery.

WHAT IS YOUR DREAM FOR YOU FARMING OPERATION?

I would love to utilise all the arable land on the farm and plant it under cash crops. The rest can be used as pastures – if there is more grazing, I will definitely be able to grow my livestock component as well. I would love to get a title deed so that I can get finance to repair my three tractors. My big dream is to become a commercial farmer.

FARM FACTS

Name: Perlot Farm
Nearest town: Hennenman
Region: Free State
Size: 391 ha in total (305 ha of arable land)
Type: Mixed – crops (maize, sunflower) and livestock (pigs and cattle)
Other business enterprises: Piggery, butchery

GRAIN SA'S CONTRIBUTION

Training courses completed:

- Advanced maize production and marketing.
- Farming for profits.
- Introduction to soybean production.
- Resource assessment and farm planning.
- Introduction to groundnut production.

Growth as a farmer:

'Although I love everything about farming, I love planting more than the livestock side because I have the best team on my side. With Grain SA I can't go wrong. I thank God for Mr Johan Kriel. He is always there to advise me. I think he saw potential in me and pushed me to become the best I could be. For the new season (2021/2022) I have new mentors, Johan and Jacques Roux who also have a lot of experience, that is why I say I have the best team!'

A programme that is changing lives

A TEAM that is passionate about farming

GRAIN SA'S FARMER DEVELOPMENT TEAM CAN ASSIST YOU IN YOUR QUEST TO BE A BETTER, MORE SUCCESSFUL FARMER. THE TEAM IS ACTIVE AND IN THE FIELD, WORKING AT GRASSROOTS EVERY DAY. THIS TEAM BRINGS EXPERIENCE, KNOWLEDGE, EXPERTISE AND A COMMITMENT TO EQUIPPING EVERY LEARNER TOWARDS BETTER AGRICULTURAL PRACTICES AS WELL AS BUILDING A RELEVANT NETWORK OF SUPPORT AROUND EVERY DEDICATED DEVELOPING GRAIN FARMER.

FARMERS' DAYS

The farmers' days provide an opportunity to get farmers together – along with a network of input suppliers, service providers and support groups, including leaders from the different government departments. Demonstration trial sites are often visited, where information can be exchanged with other farmers, input supply companies, local extension officers and other sector stakeholders who are strategically invited to these days.

The exposure and information to which farmers are exposed cannot be under-valued – particularly for the subsistence and small-scale developing farmers, who are being introduced to a broader support network beyond the Grain SA Farmer Development team.

The following farmers' days were held recently:

- **Dukuza near Bergville:** A total of 61 farmers attended this information day, organised by the Dundee regional office, which is managed by Graeme Engelbrecht. Farmers from Dukuza Central, Thabhane, Maswazini, Isandlwana, Inkosana and Oliviershoek study groups were invited. Discussions included new season action plans, chemical use for weed control, different cultivars, safety precautions and chemicals, diseases in maize and the requirement of 'refuge' planting for GMO crops. Attendees were also informed about farmer support from the government.
- **Rockmount Farm near Estcourt:** Another 67 farmers from Mhlungwini and Mtshezi study groups attended this information day. The team leading discussions included members of the Department of Agriculture in KwaZulu-Natal, Grain SA, Pannar and the Cedara FET College. They looked at the coming season, and how to assist farmers with solutions to the problems they experienced during the planting season.
- **Kambi Siyazondla study group:** This farmers' day was attended by 50 farmers and stakeholders. Colbert Timakhwe, a farmer, spoke about his experience growing green mealies for the market. Sandile Khumalo from Bayer, Muzi Hlongwane from Kynoch Fertiliser and a representative from the Department of Rural Development and Agrarian Reform gave presentations to the farmers.
- **Sehlakwane near Elandslaagte:** Jerry Mthombothi, regional development manager at the Mbombela office, arranged a farmers' day which was attended by 67 farmers. Speakers included key representatives from the Department of Agriculture in Limpopo, Bayer and Kynoch. Jerry and Dr Sandile Ngcamphalala (Grain SA Farmer Development lead) also addressed the farmers with a word of encouragement.
- **Bethlehem:** In the Free State, 20 farmers met with industry role-players which included a few commercial farmers who shared their expertise with the attendees: Hannatjie Human, a commercial-scale livestock farmer in the Free State, who is working with the Kaallaagte farmers on their beef cattle; Dirk van Rensburg, who is an old friend of the development programme; Dr Jack Armour and Francois Wilken both from Free State Agriculture. Steyn Groenewald from the Red Meat Producers Organisation also promised support. Ntate Johan Kriel from Phahama Grain Phakama, Grain SA's new farmer development body, explained the new organisation and its role in the development of the grain farmers in the Free State. The fact that farmers have to diversify in their farming operation was highlighted throughout the day.

AT GRASS ROOTS

At the farmers' day at Rockmount, the female farmers outnumbered the male attendees.

A demonstration on soil sampling being watched by the Siyachathula study group.

A Farmer Development team member was there when Mthethwa Lethiwe Derril was pulling soybeans from wet patches in the field.

Get involved and grow

THE SA's Farmer Development team believes in working closely together with farmers and key industry role-players to build supportive networks around developing farmers. During July 2022, the team implemented the following interactions with and for developing farmers:

- A total of **95 on-farm visits** to give one-to-one mentoring and guidance and do planning for both the harvesting and marketing of the crops grown this past season, as well as planning and preparation for the new season, as it is time to take soil samples and buy new seasonal inputs.
- A total of **58 study group meetings** for developing farmers.
- In June and July a total of **13 training courses**, which were attended by 250 farmers and farmworkers. The courses ran over five days, offering knowledge transfer and skills development in theory and practical sessions.
- **Six farmers' day events** in different regions during June and July 2022, which were attended by 317 farmers.

The opportunities are available. It is up to you to get involved, seek knowledge and get equipped. Focus on accomplishing the success you are aiming for, whether it is returning top yields per hectare, building your livestock component, buying a new tractor, learning more about grain marketing or acquiring new workshop skills – and believe that you can achieve it.

Set yourself realistic goals with achievable timelines. When you tailor your mind to what it is you want to achieve and dedicate the time to reaching this goal, it is easier to accomplish and easier to keep working hard. Constant personal growth and knowledge acquisition are important aspects of every farmer's life, no matter how long or how new in the game.

During June a farmers' day which was arranged by the Mthatha office took place in Kambi. It was attended by 50 members of the Siyazondla Study Group.

A bright yellow tent was erected for the farmers' day at Sehlakwane. It was arranged by the Mbombela office.

At Dukuza in the Bergville area, the regional development manager of the Dundee office, Graeme Engelbrecht, spoke to the farmers.

Training in the LIMELIGHT

GRAIN SA has a wide range of training courses and there is something to suit all developing farmers and their farm workers. Training helps to develop best practices to ensure sustainable farming.

The team is in the field and ready to guide and equip farmer members – reach out and the team will willingly meet and lend a hand! Talk to your regional development manager about what training you would like to see in your region; and get your farming community inspired and educated.

Fanie Pienaar presented an on-farm maintenance and support course on welding at NAMPO Park near Bothaville, which was attended by 20 learners.

Farmers gathered in Ficksburg in the Free State for the 'Farming for profits' course.

The Siyachathula Study Group learned more about planter and boom-sprayer calibration at their training course.

When attending a course, you receive a training manual to ensure you can revisit what you learned.

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