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PULA IMVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS

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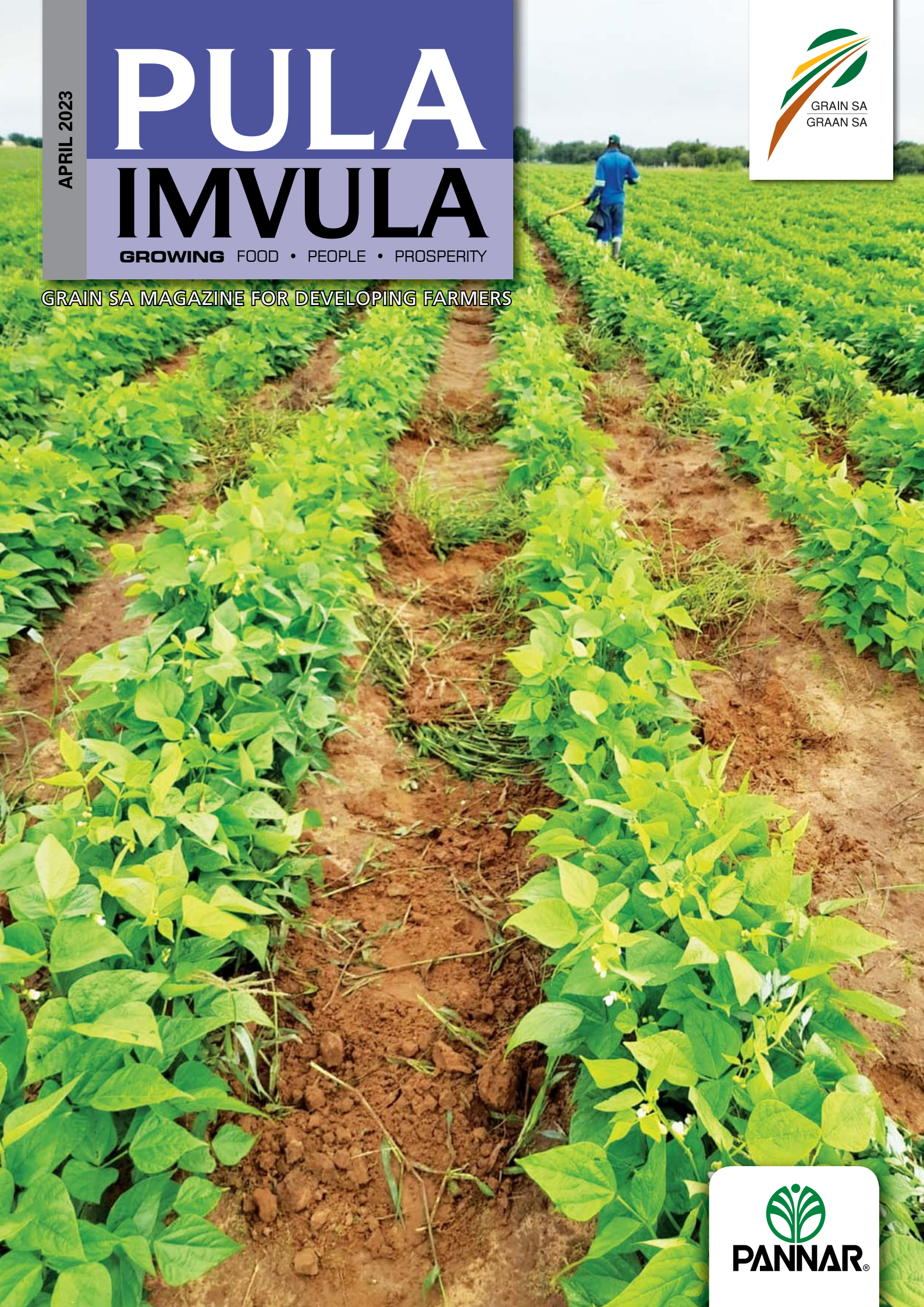

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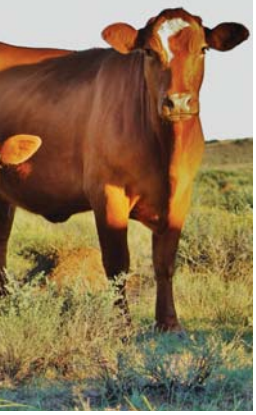


A Word From...

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.

WHITE BEAN PROJECT empowers developing farmers

WHITE BEANS ARE A NUTRITIONAL POWERHOUSE, PACKED WITH FIBRE AND PROTEIN. THEY ARE A GOOD SOURCE OF MICRONUTRIENTS SUCH AS COPPER, IRON, FOLATE, MAGNESIUM AND VITAMIN B6. THESE BEANS ARE HIGH IN ANTIOXIDANTS AND HAVE MANY HEALTH BENEFITS. CONSUMERS ARE BECOMING MORE AWARE OF THESE HEALTH BENEFITS, SO IT IS A GOOD TIME FOR FARMERS TO LEARN HOW TO GROW AND MARKET THIS SUPERFOOD SUCCESSFULLY.

Grain SA is proud to support the Schoeman Group initiative, which assists and mentors developing farmers participating in the small white bean project known widely as Zamukele, which means 'adopt' in isiZulu.

THE ZAMUKELE PROJECT

Kallie Schoeman, chief executive officer of the Schoeman Group, a leading commercial farmer and proud member of Grain SA, says the Zamukele project aims to empower emerging dry bean farmers towards becoming commercial farmers.

Established in 2017, the project identifies and supports farmers of small white beans by providing access to mentorship, technical advice, certified seed, fertiliser and local and international markets. Farmers are provided with the seed and fertiliser at the start of the growing season and then they make payment for these inputs after the crop has been harvested. The project participants are effectively contract growers, as they know that whatever they harvest will be marketed to the Schoeman Group.

Kallie believes there are many people with a love for soil and a true passion for farming. But, he says, that alone is not enough! You must find someone who can guide you – someone with experience. When doing this, one learns from experience, avoids making costly mistakes and the farm enterprise becomes more sustainable.

According to Grain SA's regional development managers, this system is working well and is giving many small farmers a great start. The same team from the Schoeman Group's Zamukele project sends out expert extension officers, who visit the farmers frequently during the growing season and are well equipped to advise them.

The Grain SA team of managers and mentors further supports the farmers who participate in this project through trainers in the field, who travel to the regions to present a course designed by

Petrus Tsotsetsi from Kestell is one of the farmers who is part of the Zamukele Project.

Elna and Kallie Schoeman, Rhamosa Polo, Athalia Lolwane, Ramodisa Monaisa, Petrus Tsotetsi and Success Mdluli, Zamukele project manager.

Grain SA, 'Introduction to dry bean production'. The farmers who have attended these courses report that they have found them very useful and that the new knowledge has given them more confidence. The Zamukele programme also has other strategic partners who assist farmers with additional input support, such as:

- TriFert, who supplies fertiliser at the start of the season and deducts the money owed to them when the farmers deliver their bean crops.
- Laeveld Agrochem has developed a spray programme for optimum bean production, ensuring that the farmers use the correct dosage.
- Agri Technovation provides leaf nutrition recommendations, soil samples and fertiliser recommendations.
- Pannar provides seed discounts and assistance.

Each farmer receives five visits from the project mentors, who visit them at critical times during the production stages. At the end of the season, the farmers deliver their dry white beans to the bean plant in Delmas. Here the beans are cleaned and sorted and then supplied to the food processing industry.

MARKET DEMAND

It is very important for farmers to familiarise themselves with the consumer demands for the crop that they wish to grow. There is no point producing something when there is no demand, for that commodity. It is equally important to find out who will buy your product before you even plant the seeds.

The demand for dry white beans has seen tremendous growth in South Africa and abroad. South Africa consumes 45 000 tons of beans per year, and countries such as the United Kingdom consume 359 000 tons of beans per year.

The Schoeman Group has identified this as an opportunity, so in anticipation of the growth in demand a cleaning facility, which delivers directly to canning factories, was set up in Delmas. The cleaning plant has the latest in grain sorting technology and can produce 18 tons of canning grade beans per hour.

With the plant established, they have aimed to ensure a steady supply of dry white beans. This prompted the project with contracted farmers around the country, with both commercial and developing farmers.

White beans are a difficult crop to grow, its grading process is stringent and the risks are high. However, the Schoeman Group supports bean farmers by offering a fixed price before they plant to avoid price fluctuations.

ACKNOWLEDGEMENT FOR HARD WORK

The Schoeman Group held a day of celebration on Wednesday, 7 September 2022, to honour the developing farmers who had achieved outstanding successes in the Zamukele programme this year. They are:

- Grain SA board member, **Ramoso Pholo** from Lichtenburg in North West, who achieved the best yield, averaging 1,6 t/ha.
- Another farmer from Lichtenburg in North West, **Athalia Lolwane** – wife of the late Thando Lolwane, a previous Grain SA Developing Farmer of the Year – is now farming in her own right and produced the cleanest grain with no foreign material.
- Former Grain SA vice-chairman and member of the executive, **Ramodisa Monaisa** from Gelukspan in North West, was recognised as the farmer whose production has improved the most over the past three years.
- Farmer **Petrus Tsotetsi** from Kestell in the Free State was acknowledged for the best maintained fields, which he kept weed-free throughout the season.

Results such as these are encouraging and show that there is enormous potential in the new era farmers – it is just waiting to be unlocked and encouraged. Grain SA is inspired by role-players such as the Schoeman Group, who is making an impact for positive growth in the sector. ■

JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR

SA soybean prices show an *upward trend*

IN THE PREVIOUS SEASON, WE SAW LESS THAN POSITIVE SOYBEAN PRODUCTION ALL AROUND THE WORLD. SOUTH AMERICA HAD ONE OF ITS SEVEREST DROUGHTS IN A VERY LONG TIME, WITH THE UNITED STATES OF AMERICA (USA) FOLLOWING CLOSE BEHIND – WITH LESS SEVERE DROUGHT, BUT WITH A DECLINE IN SOYBEAN PRODUCTION.

Up until the 2018/2019 season, soybean production has been more than the consumption – which led to carry-over stocks to increase yearly. Consumption has been increasing yearly and from 2019/2020 to 2021/2022, consumption has levelled or was higher than the production, which meant that to satisfy the demand, carry-over over stock had to be used. Together with the drought experienced in the 2021/2022 production season, this left carry-over stock at an extremely low level.

THE COMING SEASON

The world was looking at the USA to increase low carry-over stock with their previous harvest, but this was not the case.

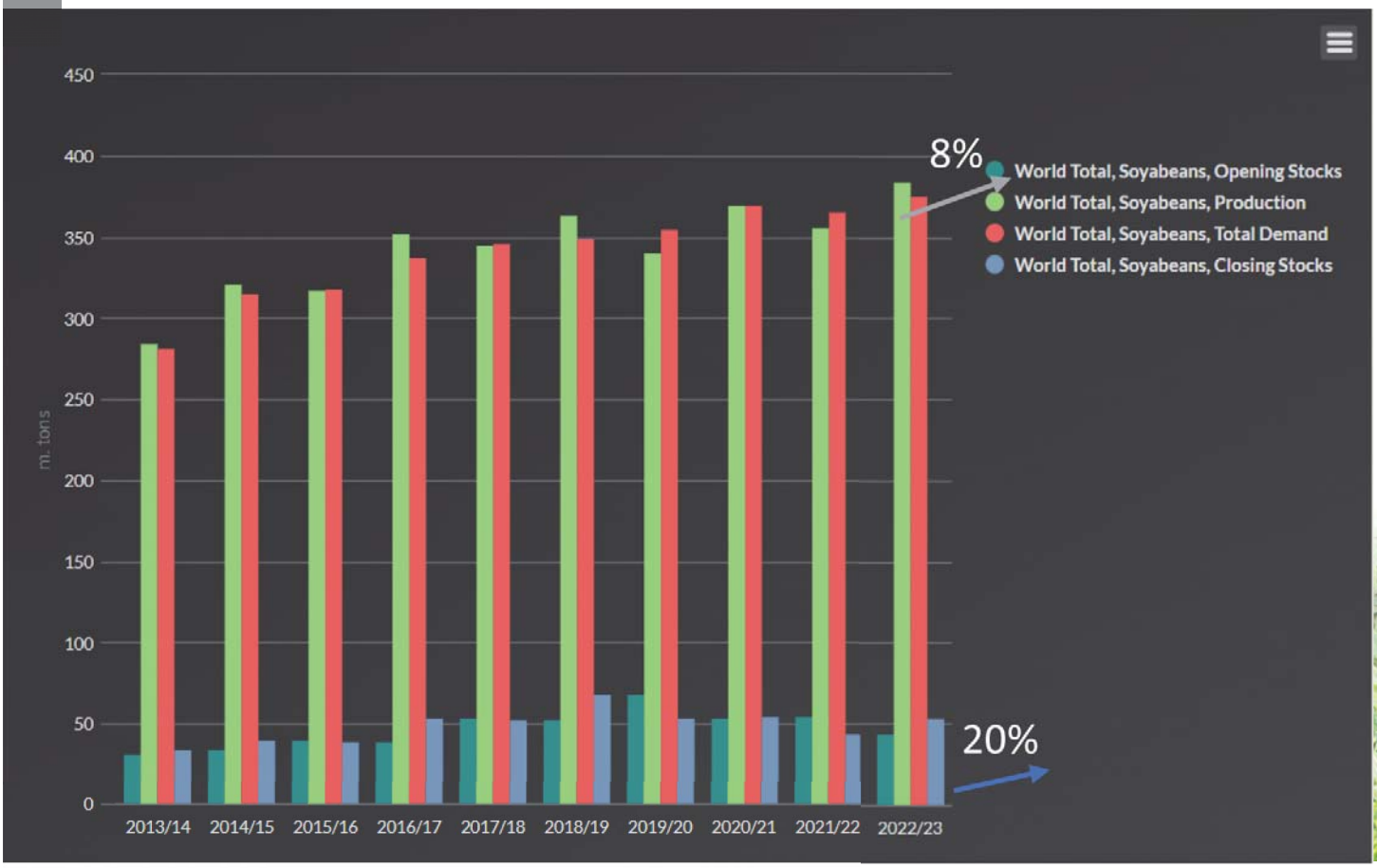
- In Argentina, soybean production is not looking well as widespread drought continue to hamper the yield. Argentinian farmers are also currently reserved sellers, as they are in anticipation of another preferential soybean exchange rate or 'soybean dollar'. Many individuals speculate that this preferential exchange will be part of the Argentinian agriculture policy for the rest of 2023.
- Brazilian farmers have also been reserved sellers lately. This can be seen by the fact that only 41% of soybeans in the Motto Grosso have been marketed up until mid-January, compared to the average of 54%.

Drought in Argentina and Southern Brazil, the high production cost and the recent downward revision of the 2022 USA crop tempered the selling pressure. Brazilian farmers are expecting strong demand from local processors.

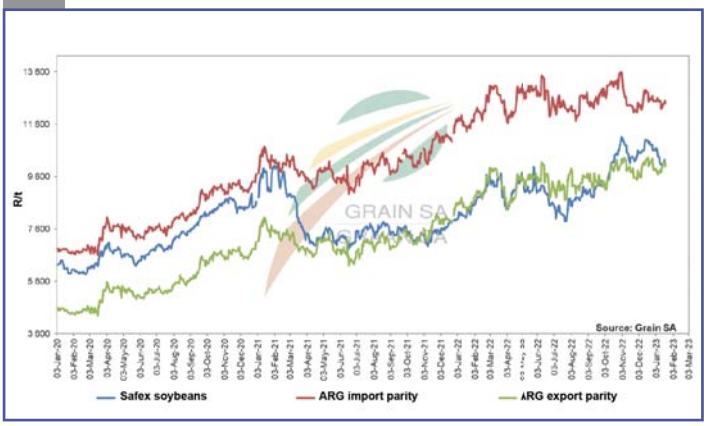
THE LOCAL MARKET

Graph 1 compares the local Safex price of soybeans to the Argentinian import and export parity prices. For most of the previous year, the

1 ***Supply and demand of soybeans in the international market.***



2 ***Prices of Argentinian soybean seed delivered in Randfontein.***



local Safex prices were on par or slightly below the Argentine export parity.

Argentina was in a position where farmers were reserved sellers of soybeans; and the country was unable to get enough raw material to process locally and had to start importing soybeans to meet the local and international demand. This low supply led to increasing soybean prices, which also benefitted our local market and has led to some exporting to increase Safex prices to export parity.

When the 'soybean dollar' scheme was introduced, farmers sold their product and the supply was restored, which put pressure on the prices. South African prices remained on an upward trend while Argentine prices fell, and for the last part of the previous year up until now, South African soybeans are slightly higher priced than Argentine soybeans.

While the Safex prices are higher than the Argentine and/or Brazilian soybean prices, exports will not be as favourable as there are cheaper origins. ■

CHRISTIAAN VERCUEIL, JUNIOR AGRICULTURAL ECONOMIST, GRAIN SA

Keep it clean *and tidy*

CLEANLINESS IN THE WORKPLACE IS OF GREAT IMPORTANCE TO AVOID EXPOSING EMPLOYEES UNNECESSARILY TO INJURIES DUE TO AN UNTIDY AND MESSY ENVIRONMENT.

All farm workers are responsible for good housekeeping. An employer must ensure that storage facilities are available for tools and equip-ment. Stacking and storage must meet all the necessary requirements. It is also the responsibility of everyone who uses the tools to clean it before putting it back in the designated storage facility. When good housekeeping is maintained, employees will not have to search for items that need to be used.

> *All farm workers are responsible for good housekeeping.*

Electric cords should not be left on the floor, as this can be a health hazard. Any leakage such as water, fuel or oil should be cleaned up immediately to avoid a slippery surface in the workplace.

Bulk bags, as well as 50 kg bags, must be stacked and stored according to Safety Regulation 8. This will ensure that the workplace is tidy at all times. Empty oil and chemical containers may not be burned or buried, so the employer must draw up a policy for handling empty containers.

Rubbish bins must be available for waste. These must be emptied and cleaned regularly to avoid attracting pests and rodents. ■

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

SOYBEAN FARMING: To measure is to know

SOUTH AFRICA'S SOYBEAN PRODUCTION FOR LAST SEASON WAS ESTIMATED AT 2,2 MILLION TONS. THIS CAN BE VALUED AT OVER R20 BILLION AT A PRICE OF R9 200/T AT FARM LEVEL. LAST SEASON'S NATIONAL AVERAGE YIELD WAS 2,37 T/HA FROM A TOTAL OF 925 300 HECTARES PLANTED. DRYLAND PRODUCTION YIELDS OVER ALL AREAS AVERAGED 2,25 T/HA AND IRRIGATED LANDS AVERAGED 3,4 T/HA. COMPARE THESE TO THE YIELD REALISED WITH YOUR PREVIOUS HARVEST.

Production losses of seed formed from the reproductive phase to harvesting are estimated to be between 5% and 10% around the world; and can run as high as 15% to 20% for late combining and other factors. On a national basis, this implies a financial loss of between R1 billion and R2 billion per season. At the average yields shown above, the potential on farm financial losses is between R1 000/ha to R2 000/ha for dryland production and R1 500/ha to R3 000/ha for irrigated production.

Farmers growing 100 hectares of dryland soybeans can thus improve their income by R200 000. The current production costs are high, with an increased financial risk to insure a reasonable profit margin. It is certainly worth looking at last season's production and harvesting methods to assess which aspects can be improved for the 2022/2023 production year.

REDUCING PRODUCTION AND HARVESTING LOSSES

Crop insurance

Soybean crops must be insured, as even light hail after maturity can cause huge seed losses. This is your best financial strategy to mitigate a crop income loss. It is critical that you have a good relationship with your insurer so that your crop can be made a priority for a quick hail assessment, determining the damage percentage to avoid combine harvesting being delayed any longer than necessary.

Combining on time

The cultivar choice is critical in managing future problems that can arise at harvesting. Planning in reducing potential losses begins at planting. Soybean varieties are available in different maturity classes, which means that if the different maturity class cultivars are planted on the same day the growth season for each would be hugely different. Some mature early and some later. Soybean plants flower in response to a shorter day length.

Harvesting at the right stage could differ by three weeks or more between the cultivars planted. If the rainfall pattern is early and the conditions for planting in October and early November are ideal, plant several different varieties. Choose some that you know are suitable and have been proven for yield in your farming region, as well as the soil and climatic conditions on your farm. Always record in detail the planting and harvesting dates, and the final yield for each cultivar planted on your farm. Do so for the current season if you have never kept relevant records.

One of the most important considerations coupled to the cultivar choice is to know your own combining capacity. Make sure that you have a well-maintained combine equipped correctly and set up for soybeans. Owning your own combine is the most ideal option. If not, use a very reliable combine contractor. Inform him of your planting programme and possible harvesting dates and areas to be combined.

In many instances, soybean yields have been reduced just due to late combining. Some varieties might yield well but shatter easily after the pods are mature. Even light rain on these pods can cause it to peel open. The pods can be heard cracking in the lands while the combine operator waits for the moisture content to fall enough to start working.

LOOKING AT YOUR CROP NEAR MATURITY

Start closer inspections of your seed pods at the fifth reproductive phase (R5) stage, where the pods are almost fully formed and green. If opened, you will see the tiny young seeds. Usually, two to three seeds can be counted and in favourable conditions with effective pollination, up to four seeds per pod can be found. You can use this as a basis to do a yield determination near or at maturity. Monitor the pods until combining to be able to harvest the crop at the optimum moisture percentage. The ideal is with most of the pods being mature, with seed testing at about 13% to 15%.

MACHINE SETTINGS AND MANAGEMENT

The efficiency of the combining process is dependent on the condition of the crop at the time when the combine can enter the land. Be on the lookout for the following causes or categories of seed losses:

- Preharvest losses from loose beans or beans that have already detached from the plant.
- Beans that are attached to the plant at harvest, but which never get into the combine.
- Shatter loss from loose beans and detached pods, resulting from the cutting ground speed being too fast.
- Stubble loss with beans remaining on the pods still attached to the plants due to the cutter bar being set too high.
- Lodged stalk loss from beans that have fallen over and the remaining in pods not cut at all.
- Loose stalk loss from beans remaining in pods attached to the stalk, which were cut but not delivered to the threshing mechanism on the combine.
- Cylinder loss from beans that pass through the combine but remain in the pod, as the cylinder spacing to bars is too large.
- Lastly losses occur from threshed beans which go out of the combine with the trash.

Photo: Martin Budgen

It is extremely important to monitor the settings on the combine and ability of the operator to adjust all the elements on the machine to avoid any of the problems shown above. It is advisable not to combine at night unless several people are monitoring possible breaks on the machine and the effects on harvesting efficiency. Huge unseen losses can occur from rushing to night harvesting.

Always consult you combine settings manual so that any machine error losses can be minimised. Always check the pathway behind the machine and constantly confer with the combine operator to find out how he is doing.

PROCEDURES FOR CHECKING LOSSES

To do a combining efficiency check, the combine cutting and threshing pattern must be checked by analysing a cut strip well into the land at a position that is representative of the crop in a particular land. The combine is reversed after cutting the test area. The possible yield and condition of the crop are measured in front of the cutting table, below the cutting table and behind the spreaders.

The number of pods counted in each position is compared to the standing crop. As a guideline, 43 pods per square metre on the ground behind the combine is equal to a loss of about 120 kg/ha.

Make yourself a square metre from round rod and place it at various positions to make counting and comparison easier and faster. The square metre tool can be used to do a quick yield assessment of the land in several representative places. Losses using modern combines can be limited to about 3%.

CONCLUSION

Always monitor and measure the results of combining before and after the machine has been through the land. Remeber: To measure, is to know. ■

RICHARD MCPHERSON, AGRIBUSINESS AND PROJECT MANAGEMENT CONSULTANT

Crop scouting leads to a better yield

SCOUTING IS THE PROCESS OF MONITORING CROP DEVELOPMENT IN EACH OF YOUR FIELDS. THIS IS DONE TO EVALUATE CROP CONCERNS AND ECONOMIC RISKS – FROM GERMINATION AND EMERGENCE ISSUES TO IDENTIFYING POTENTIAL PESTS AND DISEASE THREATS. IT IS A WAY TO EXAMINE ALL ASPECTS OF CROP PRODUCTION TO ACHIEVE AN OPTIMUM YIELD.

Ideally, farmers should scout their own fields to know first-hand how their crops are performing, rather than leave it to farm workers who visit the fields regularly. Nowadays farmers also rely on experts from extension services and input companies to assist with the field scouting and quickly identify problems. Those experts often have better knowledge, so farmers must not hesitate to phone them and ask for advice.

Why should the spotlight be placed on scouting?

- A detailed assessment of your crop conditions and pest populations is needed on a weekly basis during the growing season.
- Your goal is to have an accurate picture of your crop every week.
- Accurate field scouting will also ensure chemicals are only used when the economic and environmental factors are right.
- Be sure that the experts you rely on are unbiased. Grain SA provides unbiased guidance and doesn't profit from sales or performance – the team only wants the best yield possible to be achieved by the farmers.

SCOUTING PATTERNS

It is not possible to inspect an entire field, so randomly select enough sample sites within a field to be consistently observed throughout the season. When walking through a field, it is also recommended to have a general scouting plan and walk through the field in either a 'Z' or 'W' pattern.

PREVIOUS FIELD HISTORY

You should keep history records for each field about the following:

- Land location.
- Field name.
- History of previous crops grown there.
- Soil fertility problems or nutrient deficiencies, any soil problems.
- Previous problems with insects.
- Past weed types and populations, herbicide-resistant weeds.
- Previous disease problems.
- Previous herbicides and herbicide groups used.
- Crop yields.

The previous history can be very important when assessing crop problems.

For the current crop year, keep record of the following information:

- List the specific crop variety.
- Planting date and planting rate.
- Fertiliser used (including types, rates and placement).
- Tillage operations.

GETTING STARTED

Field scouting starts **before planting**. Farmers note the soil moisture and look for signs of common weed populations. This helps to decide if, when and what herbicides to spray for weed control prior to planting.

After planting, scout for crop germination and emergence. Is crop emergence patchy – what conditions are causing patchy emergence conditions? Is the seedbed moisture adequate for germination or is the topsoil hard and crusting in a way that is affecting crop emergence?

During crop germination and emergence, watch for seedling diseases and insects feeding on the roots or emerging leaves.

After full crop emergence, conduct plant stand counts at a minimum number of observation sites. Ask yourself if the target plant population was achieved? What caused the problem? Learn from your observations.

CROP SCOUTING

Weed scouting

Scouting for weeds should start as soon as weeds appear in the field and continue. Scouting fields before planting helps one to plan weed control. Once assessing crop emergence, determine the infestation levels of weeds. With good scouting information, you can select the best herbicides for effective control.

Disease scouting

Scouting for diseases and insect damage can often be done at the same time and includes careful observation of the roots, stems, leaves and seed pods/heads.

- Roots: Examine the roots and the base of the stem for browning and general health.
- Stem sampling: Examine stems for signs of diseased material or lesions. Split stems to examine for discolouration caused by pathogens.
- Leaf sampling: Leaf diseases tend to cause the most damage at the seedling and flowering stages of plant growth.

- Head/pod sampling: As the heads or pods are developing, carefully examine it for signs of pathogen material or lesions.

If you are unsure of the crop disease, take pictures and send them to your advisor for diagnosis.

Insect scouting

Scouting for insects needs to start at the time of crop emergence. When the population level of an insect nears the threshold level and damage is observed, a rapid decision is needed for optimal control.

- Root damage: Clean away soil from a plant's roots and check for insects such as wireworms, cutworms and maggots.
- Foliage damage: Examine individual leaves and pay attention to the upper leaves, looking for the presence of insects and assess any visual damage.
- Seed head and pod damage: Examine the surface of the seed head or pod for signs of feeding or puncture by insects. Open seed pods to examine the inside of pods and check seeds to see if they are shrivelled.

Good crop scouting takes some time and effort, but the economic improvement in crop production through good in-season decision-making and improved procedures in the future make it time and effort well spent. It requires a knowledge of crop biology, weeds, insects and diseases. Remember, your field scouting skills will improve as you gain more experience. Seek assistance when you identify issues and need solutions. ■

JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR

How to minimise AFLATOXIN PRODUCTION

GROUNDNUTS, LIKE ALL LEGUMES, ARE IMPORTANT IN FIXING ATMOSPHERIC NITROGEN IN THE SOIL, A CRITICAL AND OFTEN LIMITING NUTRIENT FOR OTHER NON-LEGUMINOUS CROPS IN DEGRADED OR NUTRIENT-POOR SOILS. THIS MAKES IT AN EXCELLENT ROTATION OR INTERCROP WITH MAIZE IN NUTRIENT-POOR SANDY SOILS.

The groundnut (*Arachis hypogaea* L.) is an important food and fodder crop in farming systems of developed and developing countries. The seed is high in oil (close to 50% for many varieties) and protein (~26%) and is an important source of vitamins and dietary fibre.

In South Africa, groundnuts are primarily produced by large-scale commercial producers and subsistence farmers in certain parts of the country. Of the groundnuts produced by large-scale commercial producers, roughly 80% is used for consumption, whereas the rest is crushed.

Groundnuts are consumed as groundnut butter, crushed and used for oil, or simply consumed as a confectionary snack (roasted, salted or in sweets). Resource-limited farmers, especially in the northern and eastern parts of South Africa, grow groundnuts mainly for their own consumption. Groundnuts are an important source of nutrition in the northern KwaZulu-Natal and Mpumalanga areas.

The crop can also contribute to more viable and sustainable cropping systems in other parts of the country. Recently, researchers at the ARC-Grain Crops have received reports from processors regarding high levels of contamination and high aflatoxin levels in groundnuts resulting in serious financial losses to the local industry.

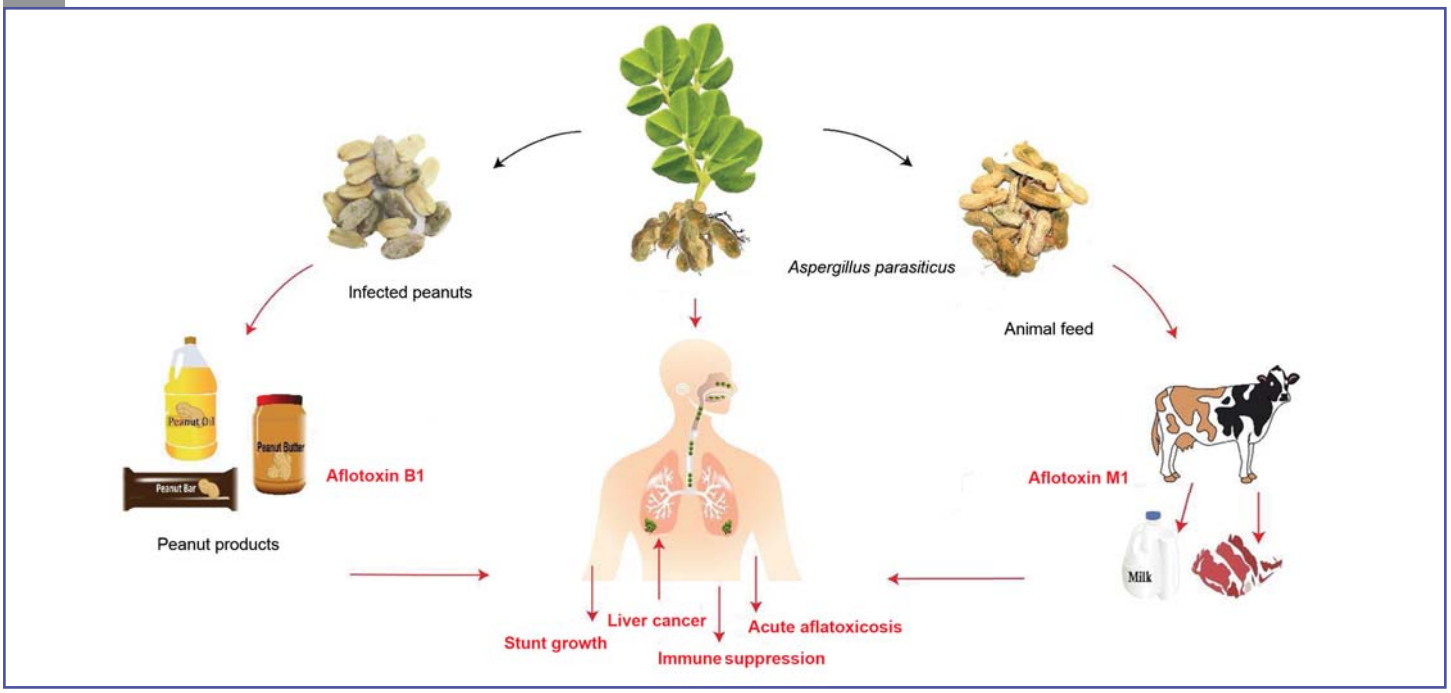
PRODUCTION OF AFLATOXINS

Many agricultural commodities are susceptible to several diseases caused by fungi, viruses and insect pests. Fungi survive in the environment (soil, air and water) and can easily find their way into crop products, especially when prevailing weather conditions are suitable for infection.

Some fungi can contaminate certain crops with toxins they produce that are called mycotoxins (myco = fungus; toxin = poison). The fungi *Aspergillus flavus* and *Aspergillus parasiticus* are the most common sources of contamination and mycotoxin production (aflatoxin) in groundnuts the world over (**Photo 1**).

When aflatoxins are consumed via contaminated crops/products, they can have several negative health effects on humans and livestock. Despite a lot of funding being poured into research projects to control this disease and the production of aflatoxins, high incidences of aflatoxins causing disease in humans and animals worldwide are still being reported.

1 ***Sources of aflatoxin occurrence and its flow in the food chain to affect humans.***



Source: Alam et al.*, 2020*

In groundnuts, high aflatoxin levels pose human health risks and are also a barrier to expanding trade and commercial use of groundnuts both locally and internationally. Eating food contaminated with aflatoxins leads to aflatoxin poisoning called aflatoxicosis. Regular consumption of low dosages for a long time (chronic exposure) leads to liver damage, immune suppression, malnutrition and stunted growth in children, while sudden high-level ingestion of the toxin can lead to death (**Figure 1**).

Aspergillus spp. infection and aflatoxin contamination are more evident where there are high temperatures, high moisture, moisture stress, poor harvest and post-harvest management and inadequate storage structures (**Photo 2**).

Although there are several control measures for aflatoxins, these are, unfortunately, not always effective. Control measures to be considered include several practices but integrating these practices into a disease management system is optimal in reducing infection and aflatoxin production.

PRE-HARVEST AFLATOXIN MITIGATION STRATEGIES

Use of resistant varieties: The most effective strategy for the control of aflatoxin contamination is the use of resistant varieties. At present, no groundnut variety is completely resistant or immune to *Aspergillus* species, but moderately resistant varieties are available for production. Nevertheless, this requires the continued screening of new groundnut varieties that enter the market. Some cultivars may show reduced *Aspergillus* infection, but they are susceptible to aflatoxin accumulation.

Timely irrigation: Groundnuts in South Africa are primarily produced on dryland fields. When climatic conditions are so that temperatures remain high during the groundnut growing season, infections may increase. High temperatures and drought create conditions conducive for *A. flavus* and *A. parasiticus* infection and aflatoxin production. Therefore, it is recommended that timely irrigation of the crop for pathogen management be considered where possible. Irrigation not only relieves drought stress, but also decreases soil temperature.

1

Aspergillus *spp.-infected groundnuts in the pod showing typical yellow/green fungus growth on the nut and the pod.*
Photo: Dr Ranajit Bandyopadhyay, IITA, Ibadan, Nigeria

2

Groundnuts harvested at Vaalharts showing* Aspergillus *spp. infections.
Photo: Maria van der Merwe, ARC-Grain Crops, Potchefstroom

Commercial bio-control products: The application of bio-control agents can effectively control *A. flavus* and *A. parasiticus* invasion and aflatoxin production. This is where non-aflatoxin-producing strains are used as a bio-control system. Although these strains infect the groundnuts, they inhibit the growth of aflatoxin-producing pathogens in the groundnuts when preventatively applied.

Calcium: The application of calcium has been shown to be able to reduce levels of aflatoxin contamination in groundnuts.

Insect management: During the crop growing season, various insects can transfer *A. flavus* and *A. parasiticus* propagules (spores) from infected pegs and flowers to healthy plants. Also, insect-infected groundnut kernels are more likely to experience pre-harvest *Aspergillus* infection and aflatoxin contamination. Therefore, the scouting and timely management of groundnut-infesting insects are an important control strategy. Insects can also infect harvested products during storage. During this stage, insect pests can be controlled by applying chemical pesticides.

Early harvesting: Timely harvesting can limit the level of aflatoxin contamination. Rain late in the growing season generally leads to an increase in fungal growth and aflatoxin contamination. Early harvesting will differ from area to area, taking into account each area's prevailing weather conditions. Early harvest is not possible in certain areas and may not be the most economical decision, depending upon production conditions. Producers need to consider the impact of all harvesting decisions on resulting crop economic value.

Rotation: Groundnut rotation with a non-host crop is an effective strategy for breaking the infection cycle to reduce *Aspergillus* inoculum in the field. When selecting a suitable crop for rotation, most importantly, the crop should not be a host to insect or fungal pests that infect both crops. Graminaceous crops, except for maize which is a known host, would be the most suitable rotation crop for groundnuts.

Cultural practices: The application of farmyard manure and lime reduces pathogen infection and aflatoxin accumulation in groundnuts.

Weed management: Certain weeds as well as volunteer crops, such as cowpea and maize, act as alternate hosts to *Aspergillus* species. Therefore, the proper management of weeds is a vital disease control strategy.

POST-HARVEST AFLATOXIN REDUCTION STRATEGIES

The post-harvest and pre-processing period is vital for groundnuts in terms of minimising pathogen growth and aflatoxin production. The following storage management strategies focus on reducing fungal inoculum by creating an environment that is non-conducive for infection.

> *The proper management of weeds is a vital disease control strategy.*

Storage conditions: Generally, aflatoxins are more concentrated in groundnut seeds. Aflatoxin-producing pathogens infect stored seeds and produce toxins when the pod moisture level is above 8% and the ambient temperature exceeds 25°C. Dry pods to 7% moisture content to control the growth of aflatoxin-producing pathogens. After drying, pods can be safely stored at 70% relative humidity and between 25°C to 27°C temperature for nearly one year. Insects and pests can infect groundnuts during storage and should be controlled via the application of chemical pesticides.

Equipment sanitisation: Pathogens can survive in the soil or mud attached to harvesting equipment. Remove soil from harvest equipment before exiting the field to limit the spread of pathogens from field to field. Harvesting and drying equipment, including storage bins, should be properly sanitised before each use.

Packaging: Packaging material and processing significantly influence aflatoxin production in groundnuts. Quality deterioration and aflatoxin production in groundnuts can be controlled by using hermetic zero oxygen packing.

Separation of infected and healthy pods: Groundnut pods or kernels damaged by insect pests or mechanical injury during digging or threshing are more susceptible to fungal infection during storage. Identify and destroy the damaged, shrivelled, misshaped, or contaminated pods and seeds.

Producing aflatoxin-free groundnuts ensures food safety. The health and economic well-being of a producer and consumers of groundnut products are an important investment in the agricultural sector. The use of good crop production practices and post-harvest handling techniques together with non-toxigenic strains can effectively reduce aflatoxin contamination and maintain the quality of the produce. Such efforts would then open up opportunities for producers to access rewarding markets that currently have stringent quality standards.

REFERENCE

Alam T, Anco DJ and Rustgi S, 2020. *Management of Aflatoxins in Groundnut.* Available at *https://lgpress.clemson.edu/publication/management-of-aflatoxins-in-peanut*

DR BRADLEY FLETT, ARC-GRAIN CROPS, POTCHEFSTROOM

Manage employees to LIMIT RISKS

IN SOUTH AFRICA EMPLOYEE MANAGEMENT IS REGULATED BY A NUMBER OF LABOUR LAWS. IT IS APPLICABLE REGARDLESS THE NUMBER OF EMPLOYEES AND WHETHER THEY ARE PERMANENTLY OR TEMPORARY EMPLOYED.

Employee management is extremely important in maintaining the profitability and sustainability of your business. Adherence to the labour laws is non-negotiable, as non-performance creates a business risk for employees.

POTHOLES OF EMPLOYMENT CONTRACTS

The **first pothole** is not having proper employment contracts to use when employing staff. This is the most important document in the employment relationship and is a must-have document.

If used effectively, an employment contract is extremely useful to positively guide the relationship between the employer and employee. However, the inappropriate use of employment contracts will create potholes in your employer-employee relationship. Without proper contracts it becomes difficult to settle disputes and to deal with conflict.

Make use of a contract, even if you only employ someone on a temporary basis for a day. This may seem to be unnecessary, but it will be to your advantage if any disputes arise.

When labour inspectors visit your farm, they will usually inspect your employee contracts first. Should you not have employment contracts in place or if they do not meet the legal requirements, a more intense inspection of all the other required documents – such as an attendance register, your remuneration system, salary slips and leave register – can follow.

The **second pothole** is if all the employment conditions are not in line with the labour laws, which set the minimum employment conditions. For instance, the *Basic Conditions of Employment Act (BCEA)* makes provision for a minimum of 15 working days' annual leave, thus the employer is not allowed to only provide ten days.

Also be aware of the following two other major problems that may develop and disturb the relationship:

- An employer may never alter or change an employment contract without the consent of the employee. Any change to a contract necessitated by a business-related reason must be agreed upon and confirmed in writing. This may be done by either revising the original contract or by adding an addendum to the contract.
- Problems can occur if your employment contracts are not kept up to date. The national minimum wage changes every year. Currently a proposal for an increase of the minimum wage for 2023 is on the table. When the revised minimum wage is published, you will have to update your employment contracts.

Maintaining your employer-employee relationship will contribute greatly towards your farm's sustainability and profitability and ensure a working environment with reduced conflict and misunderstanding. ■

MARIUS GREYLING,
INDEPENDENT AGRICULTURAL MANAGEMENT CONSULTANT

WORDS OF WISDOM

'Investments in agriculture are the best weapons against hunger and poverty, and they have made life better for billions of people.'

~ BILL AND MELINDA GATES

EU SURVEY sheds light on unique farming CHALLENGES

AN INNOFOODAFRICA (IFA) PROJECT WAS LAUNCHED IN AUGUST 2020 AS A MULTIDISCIPLINARY PROJECT TO TACKLE CHALLENGES IN AFRICAN AGRO-PROCESSING VALUE CHAINS. THE FOCUS OF THE PROJECT IS ON CLIMATE-SMART CROPS AND SMALLHOLDER FARMERS. THE PROJECT LEADER IS VTT TECHNICAL RESEARCH CENTRE IN FINLAND, WITH FIVE EUROPEAN PARTNERS AND 13 AFRICAN PARTNERS FROM KENYA, UGANDA, ETHIOPIA AND SOUTH AFRICA.

The IFA project is funded by the Horizon 2020 research and innovation programme of the European Union (EU), under grant agreement number 862170. South African partners include the University of Pretoria as academic partner and Delphius Technologies & Consultancy CC as commercial partner. As part of the survey among farmers in KwaZulu-Natal (KZN), the University of KZN College of Agriculture, Engineering and Science (CAES) became involved in partnership with Delphius Technologies and the University of Pretoria.

Surveys form an important part of the project, especially to understand the needs of smallholder farms, which supply a vast amount of Africa's food. By collecting survey data, production challenges can be better understood – including the need for value addition and waste stream beneficiation. For example, pest control and shelf-life challenges are common issues on smallholder farms, where existing solutions are either unaffordable or unpractical. Innovation is needed to address these challenges.

Information about the commercial sector of maize farming in South Africa is readily available and regularly updated by the South African Grain Information Service (SAGIS, *https://www.sagis.org.za*) and other commercial bodies. However, it is difficult to obtain accurate data on smallholder farms in the informal sector.

The IFA project aimed to get a better understanding of the current situation, including the challenges facing the informal sector, in order to identify opportunities for improvement. The results can assist policymakers on decisions in terms of future farmer support through agricultural extension services or funding mechanisms.

Maize was selected as the model cereal for South Africa because it is a major staple agricultural crop. The ideal situation would have been to do a survey in all the provinces, but due to a limited budget only farms in KZN were surveyed.

STUDY AREA, SAMPLING AND PARTICIPANTS

The study was conducted in three locations from December 2021 to January 2022: Swayimana and Nhlazuka, which fall under the uMgungundlovu District Municipality, and Umbumbulu, which is within the Ethekwini district. These areas have an average annual rainfall of 700 mm to 1 000 mm, with frequent thunderstorms and intermittent dry spells. The area is classified as having above average agricultural potential in the KZN region, and it is well adapted for the production of a range of both industrial and food crops.

About 300 randomly selected households from each location were targeted. Focus group discussions were conducted in each location, comprising ten key informants including individuals who had great knowledge about the villages, farms, crops, local conditions and problems in the district. The selection of this group was done in consultation with the local municipal and tribal leadership. Primary data was collected using participatory methodologies through a structured survey.

RESULTS

The results of 842 farms were included in this survey.

- 78% of farmers planted white maize.
- 10% planted yellow maize.
- 12% planted both yellow and white maize.
- 22% of farms planted only maize, while 78% did intercropping.

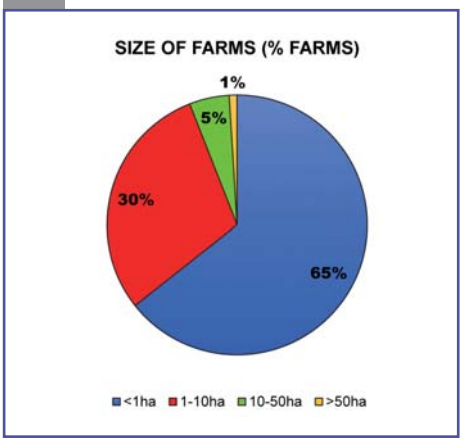
Most of the farms were quite small (**Graph 1**), with 65% of them less than 1 ha. Most of the planted maize (74%) was used as human food and eaten as a vegetable (corn on the cob) – **Graph 2**. Currently, very little maize is sold from these farms (1%), indicating that almost the entire crop is used for own consumption.

In terms of crop losses, 33% of the farms had losses of less than 10% and only 0,1% indicated a loss of more than 80% for the 2021/2022 season. Crop losses happened for many reasons, including diseases, insect damage, damage by animals and birds and even theft.

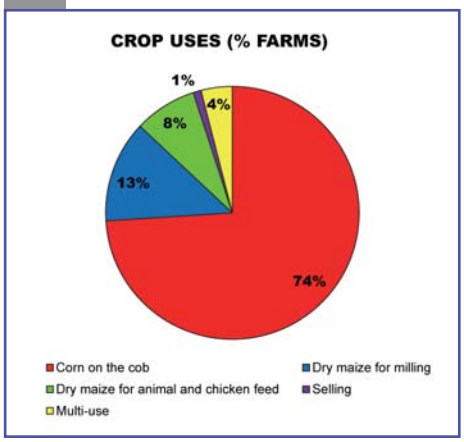
The extent of damage caused by three major maize pests, including stem borer, maize weevil and larger grain borer, is shown in **Graph 3**. Unfortunately, in a large percentage of cases there was no data available on the pests. This could be due to a lack of knowledge to identify the pest and a lack of recordkeeping, which is a common reality for informal farmers. However, it is concerning that 5% of farms had more than 80% of the crops lost due to stem borer.

Most of the losses will be used as compost or animal fodder (**Graph 4**) as part of the side streams (leaves, cobs etc). The in-

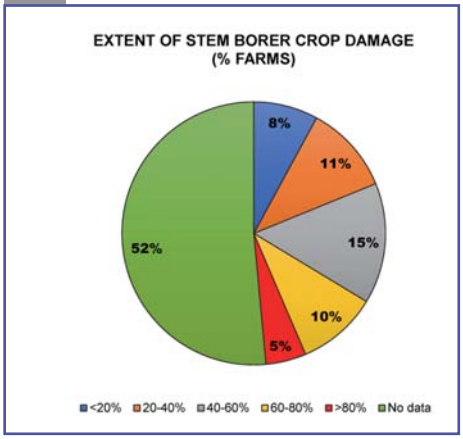
1 ***Farm size.***

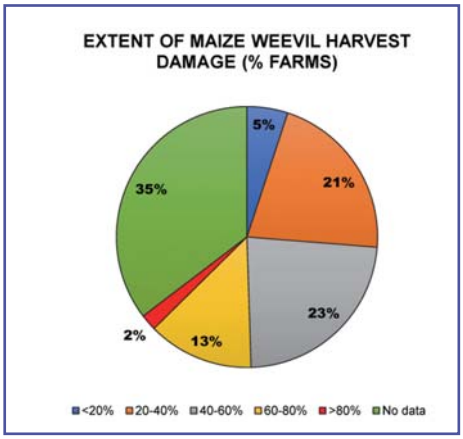


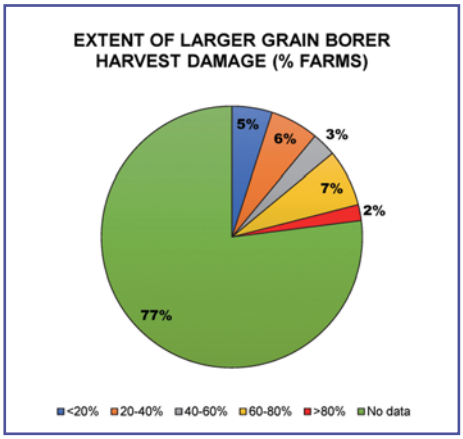
2 ***Crop uses.***



3 *Damage due to pests.*







formal farmers do not have the cash to buy fertiliser or animal feed and therefore none of the crop is wasted, as composting and animal feeds must come from any side streams available. A well-designed composting system adds value to the soil and is therefore an opportunity for improvement.

Feedback from the respondents has indicated that the biggest problem causing losses in general is from all types of insect damage. The lack of funding prevents farmers from implementing effective pest control systems. A total of 32% of farmers indicated that additional funding will greatly assist them (**Graph 5**), but it is also interesting to see that many farmers indicated a need for crop insurance and security. Only 5% indicated a need for irrigation systems, probably because the KZN area receives very high rainfall.

Many farmers (12%) indicated that better market access will benefit them the most. A very low percentage indicated that currently selling their maize is a symptom of a logistical challenge in getting the produce to the markets in the urban areas, linked to existing bad road infrastructure in the area.

CONCLUSION

In conclusion, the biggest benefit to the farmers (apart from funding) will be to investigate options for novel and affordable pest control systems, which will greatly reduce existing crop losses. Research is needed for better utilisation of current waste streams as compost streams to replace expensive fertiliser.

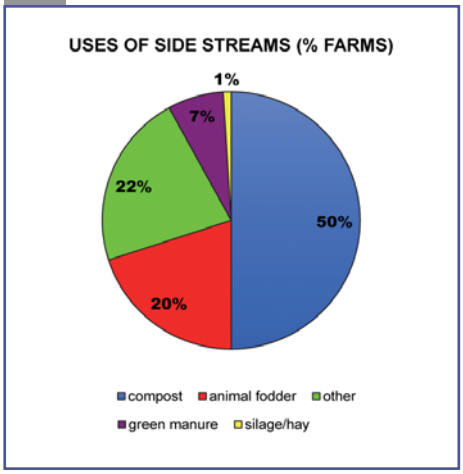
Research into the use of eating maize as a vegetable needs better support – as it is a major crop due to its reliability and cultural significance. The planting of disease-resistant, quick-growing varieties specifically developed for this application is an opportunity to increase yield and food security, especially if the maize can be marketed better in the large urban areas.

The results shown here are only a selection from a much larger dataset and more information is available from the corresponding author.

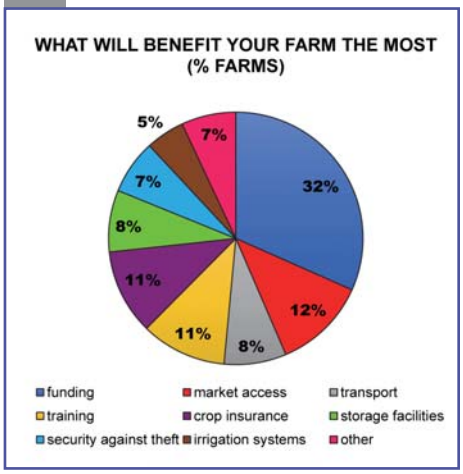
** This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 862170.*

DRS C ERASMUS, DELPHIUS TECHNOLOGIES AND CONSULTANCY CC; AIT SHAYANOWAKO, UNIVERSITY OF KWAZULU-NATAL COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE; PO MAGUTU, UNIVERSITY OF NAIROBI ENTERPRISES AND SERVICES LTD; MR MJ ROSSOUW, DELPHIUS TECHNOLOGIES AND CONSULTANCY CC.

4 *Uses of damaged crops.*



5 *What farmers need.*



WHITE MOULD

– a dark cloud over soybean production

SCLEROTINIA STEM ROT, ALSO KNOWN AS WHITE MOULD OF SOYBEAN, IS CAUSED BY THE FUNGAL PATHOGEN *SCLEROTINIA SCLEROTIORUM* AND IS A COMMON, WIDESPREAD AND DESTRUCTIVE DISEASE IN SOYBEAN PRODUCTION AREAS IN SOUTH AFRICA. THE DISEASE OCCURS WORLDWIDE IN SOYBEAN FIELDS.

Certain areas are more prone to this disease than others because it is favoured by prolonged wet and cool weather during flowering of the plants. It may occur sporadically and vary in severity depending on factors such as climate patterns, soil types, cultivars and cultivation methods. This is the same pathogen that causes Sclerotinia head rot and stem rot of sunflowers.

More than 500 plant species, including a number of crops and weeds, are hosts to *S. sclerotiorum*. Crops identified as non-hosts include the graminaceous crops such as maize, sorghum, wheat and other small-grain crops. Sclerotinia stem rot was first confirmed in South Africa in 1979, but it occurred long before then. Initially, it was very prominent in soybean fields in the eastern Mpumalanga production areas. From there on it has steadily moved west until it is now found in soybeans throughout the production area as far west as the Northern Cape in irrigated fields.

Losses result directly from loss of yield or indirectly from reduced grain quality, particularly in soybean fields where the plant canopy is dense and prolonged periods of wet weather similar to that during February 2022, are experienced. The disease also manifests as black sclerotia contaminating harvested seed. Local losses due to Sclerotinia on soybean are estimated to be as high as 60% during certain seasons and in certain localities. During dry seasons infections are minimal on the plants, but the sclerotia may still survive in the soil for up to seven years until conditions are once more favourable for infection of the next soybean or sunflower crop. Unfortunately, this disease is extremely difficult to manage and varietal resistance is only a partial solution to the problem.

SYMPTOMS

Infections can occur at any time during flowering of the plants and symptoms of this disease can be observed on leaves, pods, seeds and stems. Visual symptoms occur when the crop canopy between rows closes, resulting in the ideal humid microclimate for infection and disease development. Plants that formed the crop canopy will reveal a cottony, white mycelial mass growing on stems, leaves and/or pods (**Photo 1**).

Lesions develop on the stem nodes and side branches during or after flowering. These infected stems often become soft and watery and are covered in white, mouldy growth that inspired the alternate name of white mould. As the disease lesions increase and expand, the stem and above plant parts become a greyish green colour, which wilt and die. Scattered dead plants can sometimes be seen standing upright in infected fields, but generally plants are killed in patches within the field.

1

White cottony mycelial growth on infected stems.

Stems appear bleached and sometimes shredded from advanced decay. Large, hard and black sclerotia (visually similar to rat faeces) form from the white mycelium growing on plant tissues and in the stem pith (Photo 1). Seeds in diseased pods are usually shrivelled, may be infected by the fungus or are replaced by black sclerotia. The seed is usually contaminated with sclerotia when infected plants are harvested, affecting grain quality.

DISEASE EPIDEMIOLOGY

Infection occurs by ascospores (carpogenic) or mycelial (myceliogenic) germination. For carpogenic infection, the sclerotia germinate near the soil surface during high soil moisture conditions and produce small tan to grey mushroom-like structures, called apothecia (often confused with bird's nest fungi which also grow in fields – **Photo 2**). These apothecia produce and release the ascospores into the air where they are carried by air currents to the soybean plant flowers after they have died. Ascospores require a film of water and a nutrient base such as dead or senescing flower tissue to germinate and grow before plant infection takes place.

Dead flowers are infected by the ascospores, which then spread into the stems of the soybean plants. Infection often starts in the stem axils on lodged, senescing flower tissues. Myceliogenic infection occurs when sclerotia germinate in the presence of exogenous nutrients and produce hyphae that invade non-living organic matter. The mycelium subsequently penetrates the host cuticle by mechanical pressure. Infection may also occur through wounds caused by insects or through other injuries on the roots or stem base.

Soybeans are most susceptible to infection by the fungus during early reproductive growth stages where dying flower petals remain attached to the developing pods. A film of water on the plant surface promotes lesion development and increases the amount of tissue damage. Initial disease development requires lengthy periods of cloudy, humid, rainy weather. The greater the density of the plant

2

Spore-producing apothecia which develop on sclerotia buried in the ground.

canopy, the more favourable the environmental conditions for disease. Sclerotia will be formed as the mycelium grows in and on the plant tissues and these sclerotia can survive for a period of up to seven years in the soil, particularly in dry soil conditions.

MANAGEMENT

Variety selection

An important control strategy for Sclerotinia stem rot of soybeans is proper variety selection. It is advisable to choose less susceptible varieties or varieties which have shown high yield under disease pressure when planting in soils with a history of the disease. Certain varieties have been screened by Prof Neal McLaren from the Free State University. None were totally resistant to the disease, but they did vary in susceptibility, with some showing slower disease development over time than others.

Ranking of cultivars according to disease incidence did not correlate over planting dates, seasons or localities, but differential responses of cultivars to the pathogen under different environmental conditions were evident. Using regression statistics to analyse cultivar reactions over different plantings, soybean cultivars could be divided into three different groups, namely those linearly related to disease potential, those highly susceptible even at low disease potentials and those with various degrees of resistance despite increasing disease potentials. The use of slow disease-developing cultivars reduces the speed of the epidemic within a crop.

Canopy management

Under low to moderate disease pressure, white mould infections and growth increase with a decrease in row spacing or if cultivars are planted that readily close the crop canopy. Disease risk reduces on 40 cm row spacing compared to that on 20 cm spacing, except under high disease pressures where row spacing may have no effect on disease severity. Even though narrow rows favour high yield in soybean production, it usually have higher disease levels than wider rows. With this in mind, producers need to find an economical balance between disease repercussions and potential yield.

Crop rotation

A portion of the pathogen population dies yearly because of adverse weather conditions or the activities of other soil organisms. Rotation with a non-host crop such as maize, wheat, sorghum or other grass crop will lead to a decline in the fungal population in or on the soil and thus reduce the risk for severe disease because it reduces initial levels of inoculum in the form of sclerotia.

Minimum tillage

Deep ploughing can bury sclerotia deep enough so that they can no longer germinate and release spores. However, buried sclerotia are known to survive longer than those left on the soil surface. Subsequent ploughing can bring them back near the soil surface where, if still viable, they can produce apothecia and release spores into the air. In contrast, minimum tillage and no-till practices favour the natural decline of the sclerotia populations in the absence of a susceptible crop.

Biological control

Contans® WG (*Coniothyrium minitans*) is a commercial biological control product developed for the control of *Sclerotinia sclerotiorum* in agricultural soils. For optimum application and efficiency, application must be done during pre-planting or at post-harvest on the stubble of a previously diseased crop, where it must be incorporated in the upper soil layer. Contans WG should be applied at least three months prior to soybean flowering in order to have the greatest impact on sclerotia. By parasitising the sclerotia, they reduce initial inoculum levels for the following soybean crop.

Chemical control

Seed treatments may be used to reduce the spread of Sclerotinia stem rot in the field. Fungicides such as Benomyl and thiophanate-methyl can provide good control of Sclerotinia if applied correctly and properly. However, there are limited fungicides registered for control of Sclerotinia and timing is critical to successful control.

These control measures should not be regarded as 'silver bullets' to control the disease. It is important to integrate as many as possible of the control measures into an integrated management system to successfully control Sclerotinia on soybeans. It is, however, important to note that weather conditions and the microclimate under the crop canopy are the primary drivers behind inoculum production and disease development.

PRODUCER PARTICIPATION

The South African Sclerotinia Research Network (SASRN) will appreciate the participation of producers in an online survey, which is supported by Grain SA, the Department of Science and Innovation (DSI) and the Oil and Protein Seeds Development Trust (OPDT). To participate in the online survey, please use this link: *http://sclerotinia.co.za/survey.*

For more information: contact:

- Dr Lisa Rothmann, administrator of SASRN, at the University of the Free State: 079 270 9691.
- Dr Bradley Flett of the ARC-Grain Crops: 082 920 9733 or *FlettB@arc.agric.za.*

Soybean producers are requested to take part in the abovementioned online survey so that SASRN can obtain reliable feedback over various seasons on the estimated damage and potential yield loss caused by this devastating disease. Producers' feedback will be greatly appreciated as this assists researchers in identifying aspects requiring more research and making relevant decisions on funding and research. ■

DR BRADLEY FLETT, ARC-GRAIN CROPS, POTCHEFSTROOM.
FIRST PUBLISHED IN SA GRAAN/GRAIN, APRIL 2022.

HAVE YOU HEARD?

NEW APPOINTMENT

MJ Swart has been appointed as regional development manager: Farmer Development and marketing in the Western Cape. He will be stationed at Grain SA's Paarl office.

WHO IS YOUR HERO IN AGRICULTURE?

Remember to put your agricultural hero in the spotlight in Grain SA and John Deere's brand-new series for *SA Graan/Grain* readers. You may even win a cash prize. A 'My Hero' winner can be a local producer; or even your grandfather or father who showed you the ropes. It can be a farm worker who has helped you achieve success or any role-model who made in a difference in your farming career.

Scan the QR code to read more about the competition and to submit your entry.

STUDY ONLINE

Efforts to upskill farmers and farm workers have received a major boost with the recent launch of an online animal health academy. MSD Animal Health and the International Agricultural Academy for Africa International Agricultural Academy for Africa (i3a) launched this new virtual animal health academy in January.

According to Jacques van Rensburg, MSD Animal Health's national training manager, the academy, South Africa's first online accredited industry-related academy that specialises in animal health, makes it possible for students from across Africa to enrol for the MSD industry-related qualifications. Jacques added that the practical fieldwork training will take place over five days. "Once we know where in southern Africa students are based, we will be able to arrange for fieldwork training at a venue close to them."

Source: AgriOrbit

NEW CASES OF FMD REPORTED

The latest report of the Department of Agriculture, Land Reform and Rural Development (**DALRRD**), states that two new cases of **foot-and-mouth disease** (FMD) have been reported to the World Organisation for Animal Health this month. There are currently 120 active cases of FMD in KwaZulu-Natal, seven in Limpopo, 17 in North West, four in Gauteng, 40 in the Free State, and one in Mpumalanga. The Northern, Western and Eastern Cape are the only provinces where no cases have been reported.

A WORLD FIRST MADE IN SOUTH AFRICA

The world's first agriculture-focussed satellite, EOS SAT-1 called AgriSat1/ZA-008, was launched on 3 January 2023 by US aerospace company SpaceX at Cape Canaveral in Florida. The imaging satellite built by a South African company, Dragonfly Aerospace, will be providing the agriculture and forestry industry with high-quality data.

The company mentioned that images obtained from Dragonfly's EOS SAT-1 will deliver valuable information for applications such as harvest monitoring, seasonal planning and assessments that analyse information such as soil moisture, yield prediction and biomass levels. Such information will have important environmental benefits for the planet, such as helping to maintain biodiversity and to prevent natural habitats from being diminished for crop growth.

Scan the QR code to watch a video about the advantages the satellite offers.

Corner Post

BY LOUISE KUNZ, ASSISTANT EDITOR

MONIWA BADGE SKOSANA WAS BORN IN 1953 IN CAROLINA, MPUMALANGA. HIS PARENTS WERE BLESSED WITH SIX SONS AND TWO DAUGHTERS. DUE TO A LACK OF FUNDING HE WAS NOT ABLE TO ATTEND SCHOOL AND HAD TO STAY AT HOME AND WORK WITH HIS FATHER, A LIVESTOCK FARMER. HIS FATHER USED OXEN TO PLANT HIS 20 MORGENS AND BADGE USED TO HELP HIM.

His lack of education motivated him to work hard to become successful. At the age of 14 Badge started working for a commercial farmer as a general worker. when he was 18 years old he learned to drive a tractor – a little Massey 35. "I think that ignited my passion and gave me a dream of one day having my own farm and producing food," says Badge.

In 1976 he started to work for a company that laid water pipes all over the country. Determined to uplift himself he started a construction company in 1994 which build roads mostly in Mpumalanga and Limpopo. In 2011 his son Temba took over the construction company and when he leased land from the government his childhood dream of becoming a farmer could at last become a reality.

BADGE'S STORY

YOU ARE NOW 70. ARE YOU GOING TO CONTINUE FARMING?

At the age of 70 I am still just as passionate about agriculture as I was when I was a young boy, but I am going to slow down. I am slowly handing over duties to my son Andile (27), who is just as dedicated and passionate about agriculture as his father. I am really happy that I have a son to take over so that all my hard work won't go to waste when I retire.

WHY DID YOU CHOOSE FARMING?

A business based on agriculture and cultivating the land is so rewarding because you can see the result of your hard work. A farmer's product provides food for people and we have the opportunity to provide jobs and help the community.

HAVE THERE BEEN CHALLENGES ALONG THE WAY?

Finances has been one of the biggest challenges and then the veld fires that people start during the dry season which destroys the grazing. One of the most difficult times has been the death of my eldest son, Musa Steven in 2014. I try to always remain positive amid challenges.

ARE YOU INVOLVED IN YOUR COMMUNITY?

I am always willing to help those in need and provide maize meal and food to the needy in our community.

WHAT IS YOUR DREAM FOR THE FUTURE?

I would love to motivate young people to see a future in agriculture and to teach them to use soil in a sustainable way. If they put on their boots and work hard, they can all be good farmers. I also hope that my son will one day own his own farm as I never had that honour.

BADGE'S THREE TOP TIPS FOR FARMING

1. Work hard and always put in the extra effort.
2. Do the right thing at the right time.
3. Plan properly to achieve your goals.

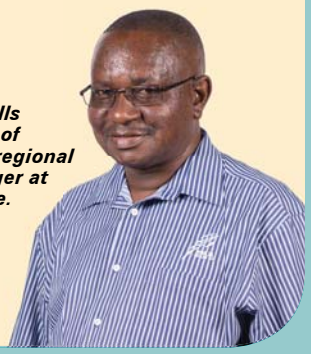
FARM FACTS

Farm: Kleinwater 301
Nearest town: Witbank
Region: Mpumalanga
Size: 1 545 ha leased from the government for 30 years – 640 ha of arable land for planting and the rest for grazing
Type: Mixed (plants maize and soybeans in a crop rotation system/livestock – cattle, goats and chickens)
Yield: Maize (5 t/ha) and soybeans (2 t/ha)

GRAIN SA'S CONTRIBUTION

- Badge joined Grain SA in 2015 at a farmer's day near Balmoral.
- He became a member of the 1 000 Ton Club in 2022.

A mentor's view:
Jurie Mentz, regional development manager at the Louwsburg office, has seen Badge overcome difficult times through passion and dedication. He says Badge is a motivated farmer who has grown his farming enterprise over the years and a lot of farmers look up to him. Badge is very positive towards Grain SA and is grateful for the assistance he has received.



From 2023 Badge falls under the guidance of Jerry Mthombothi, regional development manager at the Mbombela office.

Use TRIAL PLOTS to measure success

TRIALS ARE A WONDERFUL WAY OF SHOWING FARMERS WHAT IS THE RIGHT THING TO DO. THE REGIONAL DEVELOPMENT MANAGERS IN THE VARIOUS REGIONS CONTACT INPUT SUPPLY COMPANIES AND INVOLVE THEM IN THE TRIALS.

Every effort is made to plant and manage the trials in a way that is both progressive and technologically advanced, while at the same time within the reach of developing farmers. Farmers can then monitor the progress of the trial plots and see for themselves how successful their strategies are.

Grain SA's main aim is to establish trial plots to demonstrate the best practices of the training received by the farmers through its training courses and study group sessions. The demonstration plots expose farmers to different modern technologies and practices – for example, the correct soil preparation, good soil management and fertilisation, wise cultivar selection, timeous weed and pest control and good harvesting methods.

These trials show the importance of good farming practices and are also useful to introduce farmers to climate-smart farming adaptations such as soil heath, conservation agriculture and no-till farming methods and efficient weed control.

Grain SA believes that many of the methods employed by top commercial producers are equally achievable by smaller growers. There is a need for more partners to assist Grain SA towards achieving these goals. Grain SA is happy to report that during the 2022/2023 summer cropping season, 13 trial plots in different regions have been planted.

Partners joining Grain SA in this project are Bayer, Pannar, the Oil and Protein Development Trust (OPDT) and various individual producers who have either donated land, mechanisation or supplied chemicals or fertilisers.

These demonstration trial plots are found as follows:

Province	Regional office	Donor	Manager	Trial site
KwaZulu-Natal	Kokstad	Bayer	Luke Collier	Shutte Park Farm
KwaZulu-Natal	Kokstad	Bayer	Luke Collier	Altona Farm, Swartberg
KwaZulu-Natal	Kokstad	Bayer	Luke Collier	Yonaroo Farm, Kokstad
KwaZulu-Natal	Louwsburg	Bayer	Jurie Mentz	Louwsburg
Mpumalanga	Louwsburg	OPDT	Jurie Mentz	Carolina
Mpumalanga	Louwsburg	Bayer	Jurie Mentz	Carolina
Limpopo	Mbombela	OPDT	Smangaliso Zimibili	Stoffberg
Mpumalanga	Mbombela	OPDT	Smangaliso Zimibili	Badplaas
Mpumalanga	Mbombela	Bayer	Jerry Mthombothi	Dundonald
Limpopo	Mbombela	Bayer	Jerry Mthombothi	Legolaneng
Mpumalanga	Mbombela	Bayer	Jerry Mthombothi	Badplaas
Limpopo	Mbombela	Bayer	Smangaliso Zimibili	Syferfontein
Limpopo	Mbombela	Bayer	Smangaliso Zimibili	Sehlakwane

AT GRASS ROOTS

Farmer Gua Abram Makhunga from the Louwsburg area inspects his maize and soybean fields.

Mentor Timon Filter visited Sizwe Innocent Ngwenya, another Louwsburg farmer. His soybean crop is growing well. It is now time for foliar feeding.

Grain SA team took care of Janu-worry

JANUARY – or as it is often called, 'Janu-worry' – is truly a time for farmers to watch and worry about how the seeds are germinating, whether the plant population is ideal, if the rainfall is regular enough, if weed control has been adequate and whether there are pests bothering the plants – among other things.

Grain SA's regional development managers and mentors were out in the fields – doing the watching, worrying and problem solving alongside the farmers. Their vast collective experience is helpful to developing farmers. The Grain SA team also has connections to a wide network of expertise to which farmers can be introduced.

During the month of January, Grain SA's team made **119 farm visits** to the fields of advanced farmer members. Their activities included GPS mapping of fields, finalising input orders and organising crop insurance. Countless field inspections were conducted to monitor crop emergence, weed control and topdressing.

The main aim of these visits is to timeously note any issues, alert farmers to problems and discuss potential mitigation measures. Where necessary, Grain SA likes to network with service providers in the different regions, who also help farmers to monitor their crop progress and offer expert advice, which is monitored to ensure there is no bias. One of Grain SA's primary roles is to act as a watchdog on behalf of the farmers.

During a farm visit in the Amersfoort region, regional development manager, Jurie Mentz, advised a farmer that his maize was looking good but very yellow and in need of topdressing.

Farmer Godfrey Mbhele's population needed to be set down a bit.

Mentor Chris de Jager visited Tracylee Green Thompson who farms in the Dundee region. Unfortunately the second planting burndown did not work well. She is busy respraying with Roundup and herbicide.

Guidance on WHAT TO DO IN THE FIELD

THE team conducted **37 study group meetings**. This is essentially a check-in with small-scale farmers to remind them of what to do, when to do it and how to do it. It includes some field inspections at the small field plots of study group members. Mentors will highlight problems and discuss remediation where practical, especially with regards to weed control and fertilisation.

The visits during January particularly highlighted the mid-season drought which many farmers in the Mpumalanga region experienced. Some farmers reported that no rain had fallen for four to five weeks. This was evident in the impact on the crops in the region.

Jacques Roux, regional development manager, visited farmer David Thamae who received a lot of rain in January. His lands were very wet and although the soybean crops are looking good, he was advised to spray the crop as soon as possible.

Mentor Paul Wiggill visited a farmer in the Dundee region to check on the soybean planting. The population was a little high, so it was set down. The planting is going well and urea will be applied as topdressing.

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