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PULA INVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS



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A WORD FROM...

Derek Mathews

GRAIN SA HAS ASKED FARMERS TO TELL US FIRST-HAND WHAT THE CHALLENGES ARE THAT THEY ARE FACING. THROUGHOUT THE COUNTRY THE ANSWER IS THE SAME – INPUTS ARE TOO EXPENSIVE WHICH MAKES IT DIFFICULT TO MAKE ANY PROFIT.

I long for the day when we don't need to ask anyone for funding. Our industry should be profitable enough so that we have our own funds to pay for our own inputs. Grain SA is focusing on influencing all stakeholders to achieve just that. The only way we can truly develop new farmers is by helping them become profitable to the point where they can enjoy the fruits of their labour and stand proud of their own successes not being dependant on government for assistance or handouts from anyone.

The old story of government funding always coming late is one that seems to have no solution. Politicians are simply not farmers in most cases and don't seem to understand what it does to a farmer's business if you assist him at the wrong time. We continue to try and improve on this question, but it seems to fall on deaf ears. If we have our own funds that will no longer be a problem.

This brings me to another important matter. I want to encourage you all to take your Grain SA membership seriously. Grain SA is your voice and only if we stand together and work towards the same goal will we be successful.

As a voluntary association that relies on its members to pay for the services it needs, it is very important that we support our organisation by paying our levies on all the tons of grain we grow. You must remember that your representation is measured by the levy contribution you make. We make it possible for small scale farmers to be members via the study groups, but even they should also pay levies if at all possible.

The climate will always change from dry to wet years and back to dry years. Every year will have its own challenges – that's farming.

Until next time, stand tall and use your voice (Grain SA) to make a difference today and for your children tomorrow. ■

Look after your harvester for better results

A COMBINE HARVESTER IS A COMPLEX MACHINE THAT GATHERS, THRESHES AND CLEANS GRAIN. TO DO THIS THE IMPLEMENT NEEDS A POWER SOURCE WHICH IS THE ENGINE. COMBINES NEED TO BE PROPERLY EQUIPPED AND ADJUSTED FOR THE CROP TO BE HARVESTED. TO INCREASE THE EFFECTIVENESS AND EFFICIENCY, THE MACHINE'S DOWNTIME MUST BE MINIMISED AND PROPER MAINTENANCE MUST BE DONE IN TIME.

Adjustments are important to minimise harvest losses and deliver a high-quality grain crop. The goal of proper adjustments is to achieve a smooth, even flow of crop material moving through the combine. Before you begin, get a comfortable chair, sit down and start reading the operator and workshop manuals of the combine. Begin with the manufacturer's recommended settings and make adjustments according to the condition of the crop.

SAFETY AND MAINTENANCE

Safety and maintenance will save you time, money and tears. Always work safely around combine equipment and follow safety instructions in the operator's manual. Many farm accidents happen around the harvesters.

Before harvest, follow the maintenance checklist provided by the manufacturer and inspect for any worn parts. If you already knew last season that the parts needed to be replaced but did not buy them you may want to kick yourself now because you will find that the parts often cost more than last season.

Start from the front of the harvester and first do the maintenance on the tractor or the engine. Change the oils and filters and make sure it is in good working condition.

The harvester stood in the barn for most of the off season and needs to be properly cleaned. Mice and rats make nests in the machines and it needs to be removed. Grease all the grease points and again oil the chains. Lubrication is important for the machine. Make sure the belts and chains are on tension and not cracked or damaged.

A header needs special attention. Examine the roller chains on a maize head or the knives on a cutter bar head for soybeans and small grains. In the threshing and separation area, check the rotor and concave for wear or damage. Look at the condition of the sieves in the cleaning shoe area and check for sharp edges on all augers which can lead to grain damage. Replace any worn parts as necessary for an efficient harvest.

MAIZE HEADER

The header is the first contact point with the crop and can be the largest source of grain loss. It cuts and gathers the crop.

On a maize header, gathering chains pull stalks back into the header, stripping rolls pull the stalks down, and deck plates pop ears off the stalks. Stripping roll spacing should be set according to stalk thickness. Deck plates need to be properly adjusted to minimise ear and kernel loss. Set deck plates as wide as possible without losing ears or shelling maize off the ear.

Gathering chains pull ears into a cross auger that delivers them to the centre of the head where they enter the feeder house. Auger clearances must be properly set to work efficiently.

When harvesting, it is important to match the feeder house and maize head gathering speed to the combine drive speed. If the gathering speed is too slow, maize stalks entering the header will be pushed forward and ear loss can occur. If the gathering speed is too fast, ears can be damaged with kernel loss as they impact deck plates. Speed settings are correctly matched when stalks are pulled straight down after entering the header and ears are gently snapped off without damage.



Look out for changes in crop and field conditions while harvesting and make adjustments accordingly.

There are aftermarket companies like Cerealis Precision that provide replacement spare parts that can help to increase the effectiveness of the machine.

FEEDER HOUSE

The feeder house is where the grain first enters the combine. Proper adjustments and settings need to be made according to the crop. It is important to set the proper height position of the feed drum to prevent grain damage.



Set the feed accelerator at a low speed so that whole ears are moved into the combine to start the threshing process. If the accelerator speed is set too fast, maize cobs can break apart and kernels can be lost before the threshing process begins.

THRESHING AND SEPARATING

Adjustments to threshing and separating parts of the combine are important for an efficient harvest. Threshing requires a balance between rotor speed and concave clearance. The cylinder or rotor speed is the leading cause of grain damage by the combine. Use the lowest possible rotor speed that will shell the grain. When setting the rotor speed and concave clearance, begin with factory recommended settings as a starting point and fine-tune for the crop and field conditions.

A properly adjusted rotor speed and concave clearance will detach most of the grain from the cob. If the rotor speed is too fast, maize ears will break apart and kernel damage can occur resulting in cracked grains and fines entering the grain tank. If the concave clearance is too wide, complete threshing will not occur and similar results as with excessive rotor speed will occur with lots of split cobs showing up in the tank.

For good threshing and separation, follow these guidelines:

- Keep the rotor chamber full to minimise harsh grain contact.
- Keep rotor speeds as low as possible for proper threshing to occur.
- Close the concave spacing to increase threshing capability.
- Only increase the rotor speed as a last resort.

GRAIN CLEANING

After threshing, the grain is separated from the non-grain crop material by the chaffer and shoe sieves as well as the cleaning fan. The chaffer is the upper sieve that allows all grain and unthreshed cobs or pods through to the shoe sieves which allows only grain to pass. Unthreshed crop portions go into tailings and return to the rotor cage for rethreshing.

Sieve and fan settings are critical to deliver a clean, high-quality end product and should be set to specifications. If the fan speed is too low, you will see pieces of stalks and cobs in the grain tank. If the fan speed is too high, you can lose grain out the back of the combine. Sieve adjustments should work in tandem with fan speed for best results. ■

For more help contact your harvester manufacturer and an experienced mechanic that can repair the harvester. It is a specialised machine, so it makes sense to get someone with knowledge to repair and setup the machine.

PIETMAN BOTHA,
INDEPENDENT AGRI-
CULTURAL CONSULTANT





How to keep your farm A SAFE WORKING PLACE

HEALTH AND SAFETY IN THE WORKPLACE ARE REGARDED OF SUCH IMPORTANCE THAT IT IS REGULATED BY THE OCCUPATIONAL HEALTH AND SAFETY ACT (NO. 85 OF 1993) (OHS Act). BOTH EMPLOYERS AND EMPLOYEES HAVE A RESPONSIBILITY TO ENSURE THAT THE REGULATIONS ARE CARRIED OUT PROPERLY.

The working conditions on a farm is demanding and hazardous and accidents and injuries will occur. Injuries can be costly in terms of the possible cost of treatment, time lost, lower productivity and inconvenience.

Rather than to discuss any detail regarding the use of first aid in the workplace, we will concentrate on practical aspects from the act to manage health and safety in the workplace as required. The aim being to reduce injuries and accidents which will reduce the negative impact thereof.

Employers are required to provide and maintain (as far as it is reasonably practical) a working environment which is safe and without risks to health. To achieve this an employer should identify hazards and risks or dangers present in the workplace and take steps to eliminate or mitigate these hazards.

A hazard is defined as 'a source of or exposure to danger' and danger is defined as 'anything that may cause injury or damage to persons or property'. Make sure that buildings are free of accumulations of rubbish, litter, junk and other things which could start or feed a fire, or can cause people to fall or slip.

SAFETY TRAINING AND TOOLS

Have you ever discussed health and safety aspects with your employees? Employers must ensure that all employees understand the requirements of the act which is to the benefit of all concerned.

It is expected of an employer to provide the proper tools, equipment, machinery and/or implements to perform the required task or job and that these are properly maintained and in working order. Employers must ensure that employees are properly instructed on how to use machinery, how to ensure safety, and that precautions are adhered to. Are shields and guards always in place when operating machinery and/or tools?

Employees need to be trained properly to perform their tasks with the correct and suitable tools and be properly instructed about the tasks.

It is also expected from the employer to have a first aid box available. The contents of a first aid box are prescribed in the act. It is also highly recommended that one of the employees be trained as a first aider. This is in any case a requirement should you have ten or more staff members.

RECORD-KEEPING

Should an incident occur, it is crucial to follow the correct procedures in handling and reporting the incident to avoid penalties. Any serious injury or death on duty must be investigated by the employer and reported to the Compensation Commissioner within seven days. Minor injuries where no professional medical attention was required does not have to be reported. However, keep records of such injuries. This could be helpful to identify a possible irresponsible employee or the use of unsafe tools.

The second act related to injuries and accidents in the workplace is Act no. 130 of 1993 Compensation for Occupational Injuries and Diseases Act (COIDA). In essence it is compulsory insurance cover for employers should any of their employees die, sustain an injury, or contract an occupational disease during their employment.

This fund is controlled by the Compensation Commissioner and administration of reporting, penalties, collections etcetera is handled by the Department of Labour. It is compulsory for all businesses with one or more employees (whether temporary, full-time or on contract) to register with the Compensation Fund and to make the necessary annual contributions.

If registered, an employer is protected against possible civil claims by affected employees. Should an employee be absent from duty because of an injury he/she must still be remunerated but the employer may claim the remuneration from the compensation fund.

Managing on-farm health and safety properly will have a positive influence on employees. You show you care for your employees and have their wellbeing at heart – and that could be cost-saving. ■



MARIUS GREYLING,
INDEPENDENT AGRICULTURAL
MANAGEMENT CONSULTANT

A MARKETING PLAN that suits your needs

MARKETING IS THE PERFORMANCE OF ALL BUSINESS ACTIVITIES INVOLVED IN THE FLOW OF GOODS AND SERVICES (IN THIS CASE GRAINS AND OILSEEDS) FROM THE POINT OF INITIAL AGRICULTURAL PRODUCTION UNTIL THEY ARE IN THE HANDS OF THE ULTIMATE CONSUMER.

Marketing involves more than just sales, but also financial goals, risk determination, investigating different price and delivery strategies and marketing opportunities. The purpose of this article is to explain the basic principles of a marketing plan. Good marketing requires planning, sales discipline, access to good market information and a sound grasp of all pricing and delivery alternatives.

Be careful of using the 'wait and see' approach – a tendency to wait for the price to peak at its highest level. If you keep on waiting for an 'even better price' you may just end up missing the best price.

Producers need to be more proactive in terms of marketing their crop. Due to the volatile nature of agricultural commodity prices, producers need to develop, draft and adjust a marketing plan as production and price circumstance change. Work on marketing plans that suit your individual situation, as there is no generic marketing plan that works for everyone.

FACTORS TO BE CONSIDERED IN A MARKETING PLAN

Financial goals: Having a financial goal helps a producer to determine the return on investment that they would like to achieve in that season. For instance, a producer can use a return of 20% on capital to calculate the price level at which certain marketing decisions must be made.

Expected production cost and crop insurance: A producer should have a crop budget, that entails future conduct, expressed in physical and financial terms. This will require planning based on historical data, assumptions and experience. Crop budgets help to determine cost per hectare. Since there is so much uncertainty in the market, a producer should realise that his budget is subject to change and should rather use it as a management tool. It will assist a producer to determine break even prices, compare different plans,

plan cash flow position and to make decisions about when and how to invest. Crop insurance, although an additional expense, helps a producer to manage risk, should the worst occur.

Risk appetite and financial position: Producers need to determine their risk appetite beforehand and if they are speculators or risk managers. Although producers are supposed to be risk managers, unfortunately some can put themselves in a position of being a speculator.

The difference between risk managers and speculators is as follows:

- **Risk manager**
 - o Focus on business growth and long-term prosperity.
 - o Regard marketing plan as part of business.
 - o Knows what break-even price levels are.
 - o Does not dwell on the 'lost' opportunity.
- **Speculator**
 - o Endeavours to price grain at the highest level for the season.
 - o Focuses on day-to-day price movements.
 - o Calculates 'loss' so as not to sell at the highest price.
 - o Focuses the planning prospect on short term profit.

Cash flow needs: A marketing alternative needs to be weighed against a producer's cash flow needs. A producer's cash flow needs will determine which marketing alternatives are available to them, due to timing of the cash flow. Certain instruments may require cash outflow when the producer does not have sufficient cash flow to maintain the instrument, while other alternatives may only bring cash flow after a producer needed the cash.

Seasonal movements: Seasonal price movements can help determine how a producer will formulate a marketing strategy. Seasonality is a well-known trend in grains. Grain prices tend to be lower during harvesting due to abundant supply while prices can follow a higher trend closer to the end of the marketing season, when supply is less or when shortages could arise.

Market knowledge: It is important that a producer understands market activity, so that they can make decisions about when to sell and how to take advantage of the opportunities arising from market fluctuations. Producers need to understand the fundamentals and technical aspects. This includes analysis on supply and demand, factors affecting supply and demand like stock levels, export activity, weather conditions and consumption patterns, locally and internationally. Technical insights are based on price trend analysis and repetition of price movements. This kind of information can be obtained from traders.

Storage capacity: A producer may consider storing grain and wait for a possible better price opportunity. However, a producer should be familiar with carrying costs that the decision involves and what the present trading in spreads is between the harvest date and planned selling date. ■



IKAGENG MALULEKE,
AGRICULTURAL
ECONOMIST AT GRAIN SA





Marketing of maize: Planning ahead is crucial

WHEREAS IN THE PAST THE SELLING OF MAIZE WAS A LOT EASIER WHEN THE FARMER WOULD GROW THE MAIZE, DELIVER IT TO THE LOCAL CO-OP AND GET MONEY FOR HIS CROP AT A REGULATED MARKET PRICE, NOWADAYS MARKETING NEEDS TO BE CAREFULLY PLANNED AHEAD OF TIME TO MAXIMISE OPPORTUNITIES IN YOUR ENVIRONMENT.

A proper grain marketing plan requires the producer to calculate his price target – the price that makes the effort and risk worthwhile. This means covering costs and also earning profits otherwise the exercise is not worth the effort. Different marketing strategies must be identified to achieve the target prices. This could take several different forms or be aimed at one buyer, but it should be flexible regularly reviewed.

WHERE CAN I MARKET MY MAIZE?

When considering where to market maize we need to think about the uses of maize, like who uses it, how and where it is used. Apart from household use, maize can be marketed in a number of ways. In South Africa the leading grain buyers are co-operatives like NWK, Senwes, Suidwes, TWK, Afgri and GWK. There are also many private buyers who you could market your maize to like maize milling companies, feed companies, feedlots, piggeries, chicken farms and small scale hawkers. You may also have successfully marketed your maize yourself by selling green mealies or by building relationships with reliable traders. All possible markets need to be investigated.

There are a number of options to consider when deciding where to sell your maize:

Locality: Because of high transport costs we need to find where the closest market would be. You may receive less rand per ton but by eliminating transport costs you could still make a good profit. Marketing opportunities for maize produced by farmers living close to big centres or major roads are less complicated than for those living

in remote regions like the foothills of the Drakensberg. Many small scale farmers are growing stronger because of improved knowledge and using modern technologies in farming. Unfortunately they are still facing challenges at harvest because there are no silos to store their crop so they have to load the grain directly onto trailers and cope with poor roads to the markets. Their marketing channel holds many challenges and may compromise their ability to compete for top prices in the market.

Time of the year: Maize is almost always readily available in South Africa, even if the harvest is not good. This means traders seldom have to go far to find the maize they need. Farmers have to compete for the best prices and those who live in remote areas may have problems selling their crops. Anticipate the challenges and make plans ahead of time.

Price: The market place for our grain is dominated by a central role-player known as the South African Futures Exchange (Safex) which serves as a buying and selling platform. A certain expertise is necessary to use this futures exchange effectively; as a result many farmers rely on agents' advice or to do the trading on their behalf. Commercial maize farmers should make an effort to understand how Safex operates.

Location differential: It is important for farmers to know what the location differential is. The location differential is essentially the transport cost in moving your grain from your farm to the central point for grain trading at Randfontein in Gauteng, so Safex subtracts that cost off your payment. If a local business buys grain from Randfontein he would pay location differential too. Sellers must understand this is a point for negotiation and the location differential fee could be a shared cost. Being informed empowers the negotiation process.

Product: Remember even before we plant a maize crop we need to identify which products are in demand in your area. Perhaps there is a feed company in your area which would be a buyer of yellow maize. Or maybe there is a maize milling operation in your area which would buy white maize. These are crucial factors to consider.

Size of the harvest: When a bumper harvest is realised, traders



can pick and choose so prices are likely to be depressed. This influences on-farm profitability levels. Overproduction depresses prices and can make the process of growing maize unprofitable. This is why it is no good planting more maize than you can use if a market has not been identified.

EXPORT MARKET OPPORTUNITIES

Many stakeholders question why we want to sell into the export market. South Africa annually produces more maize than our internal consumption, even in drought years, so we need a steady flow of maize out the country. This export market serves to balance out those years of overproduction which cause our maize prices to decline. Stable grain prices empower farmers to plan better and to make more secure decisions about how much maize they will plant each new season.

YOUR OWN ROAD MAP

Don't wait until the grain is in your hands before you plan how you will sell your maize. Having a marketing plan means you will have a

road map developed. It outlines your objectives. It empowers you to make better marketing decisions and you have clearly identified how much risk you are able to tolerate.

The grain you produce is your livelihood. It is crucial for you to make the effort to market it as well as you can. Use all the available resources to find the best buyer which will translate into the best profit margins. Don't instinctively sell your maize to the easiest and most convenient outlet. With a bit of marketing strategy you will increase your potential income and possibly forge new business relationships which will be beneficial into the future. ■



JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR

WORDS OF
WISDOM



What helps luck is a habit of watching for opportunities, of having a patient but restless mind, of sacrificing one's ease or vanity, of uniting a love of detail to foresight, and of passing through hard times bravely and cheerfully.

~ VICTOR CHERBULIEZ
French author (1829 - 1899)





BEWARE OF THE SPREAD of resistant Palmer amaranth

ONE OF THE MOST AGGRESSIVE WEEDS THAT HAS EVER INVADDED SOUTH AFRICA, THE PALMER AMARANTH (*AMARANTHUS PALMERI*), HAS BEEN CONFIRMED ON A MAIZE FARM IN THE POTCHEFSTROOM DISTRICT, NORTH WEST. THIS WEED, WHICH IS ALSO KNOWN AS THE PALMER PIGWEED, IS RELATED TO OTHER INDIGENOUS AMARANTHUS SPECIES.

The threat posed by this weed compared to its indigenous relatives is that it is resistant to at least six herbicide modes of action and cannot be controlled, for example, with glyphosate (amongst others).

The weed was discovered in the Douglas District of the Northern Cape in 2018 and initially identified by weed scientist Prof Charlie Reinhardt with the aid of DNA analysis. The most recent discovery of the Palmer amaranth in Potchefstroom is of serious concern because it means the summer rainfall grain farming areas are likely to be invaded by this weed that will jeopardise crop production.

CROPLIFE SA SHARES ADVICE

CropLife SA urges all crop farmers and crop advisers to expend all efforts to eradicate the Palmer amaranth and all other *Amaranthus* species that occur on farms. The reason for such drastic measures is that the Palmer amaranth hybridises with other *Amaranth* species and transfers its herbicide resistance to such hybrids. The Palmer amaranth also progressively develops resistance to herbicide modes of action that have been used successfully thus far, and therefore leaves farmers with little options to combat the invasion.

Maize farmers are at severe risk of losing their crop fields to this weed if they do not take immediate action to eradicate the weed and to prevent it from seeding. Failure to eradicate the Palmer amaranth at farm level will result in devastating weed impacts on crop production.

CropLife SA also engaged the Department of Agriculture, Land Reform and Rural Development by requesting the minister in writing (September 2018) to declare the Palmer amaranth as an invasive species under the Conservation of Agriculture Resources Act, 1983 (Act No. 43 of 1983), involving officials in the Palmer amaranth action committee, and following up with written communications. A draft regulation to this effect was published on 24 December 2020 but the department has not formally promulgated the regulation to put control measures into effect yet. ■



This is what the weed Palmer Amaranth looks like.

Photo: Prof J Vorster, SAHRI, UP

Scan the QR code to read an article
about this weed which appeared in the
March 2022 issue of SA Graan/Grain.



DALRRD NEWS LETTER MARCH 2022



BLS symptoms observed on maize leaves collected from the Dundee area.

Photo: Pieter Bruwer

BLS on seedlings

– cause for concern

BACTERIAL LEAF STREAK (BLS) IS A FOLIAR DISEASE OF MAIZE CAUSED BY THE BACTERIUM *XANTHOMONAS VASICOLA* PV. *ZEAE*. BLS WAS FIRST REPORTED IN SOUTH AFRICA IN 1949 AND CAN GENERALLY BE FOUND IN THE WARM AND DRY MAIZE PRODUCTION AREAS SUCH AS NORTH WEST, THE NORTHERN FREE STATE AND SOUTH-WESTERN AREAS OF GAUTENG DURING CERTAIN FAVOURABLE SEASONS.

The disease is becoming a serious problem in the Amersfoort/Wakkerstroom area. An outbreak was reported during the 2020/2021 maize growing season on the farm of Ghini Greyling, who noticed the lesions.

Early in the 2021/2022 season it was also reported in Dundee. Symptoms of BLS were already being noticed on young plants in the Dundee area under irrigation. However, the occurrence of the disease on seedlings is surprising, suggesting that BLS might be seed-borne. Symptoms observed on this field (see photo) are typical of this disease.

MORE ABOUT THE DISEASE

The disease can occur sporadically and environmental conditions play a major role in disease intensity. Symptoms on maize plants can be observed at all plant growth stages, but are most severe from just prior to and after flowering. Initial symptoms appear as dark streaks on the leaves. These enlarge to form narrow yellow streaks, which begin to show necrotic lesions within the lesion. Streaks can be 2 mm to 3 mm wide and vary greatly in length. These lesions reduce the photosynthetic ability of the leaves, which inevitably results in yield losses.

Pieter Bruwer, agronomist at Langfontein Seeds (Eastern Highveld and Northern KwaZulu-Natal), is collecting samples to confirm if infections are due to BLS and to determine the areas infected. Just before flowering, a complete survey of this area will be done by Dr Henry Njom (ARC-Grain Crops, Potchefstroom) with the assistance of Pieter. During this survey, isolates will be collected as often as possible together with supporting information such as cultivar, GPS coordinates, damage severity and climatic weather (rainfall and temperature).

These leaf samples will be brought to the laboratory for the pathogen to be isolated. The disease will be confirmed using PCR and compared to one another after sequencing to determine any isolate variation in isolates collected. Further studies will be done to screen various maize genotypes for resistance to the disease and to ascertain whether the pathogen is seed-borne.

Anyone observing such symptoms from any maize-growing area is welcome to contact Dr Bradley Flett at 082 920 9733 or Dr Henry Njom at 071 096 4382 at ARC-Grain Crops, Potchefstroom. ■

**DRS BRADLEY FLETT AND
HENRY NJOM, ARC-GRAIN
CROPS, POTCHEFSTROOM AND
PIETER BRUWER, AGRONOMIST:
LANGFONTEIN SEEDS (EASTERN
HIGHVELD AND NORTHERN KWA-
ZULU-NATAL). FIRST PUBLISHED IN
SA GRAAN/GRAIN FEBRUARY 2022**

SA Graan
Grain



MADE POSSIBLE BY
BAYER

ANIMALS MATTER, so be sure to vaccinate them

WE DEPEND ON PETS FOR COMPANIONSHIP AND ON LIVESTOCK FOR FOOD, SO IT MAKES SENSE TO LOOK AFTER THEIR HEALTH AND WELL-BEING AS CAREFULLY AS WE WOULD WITH OUR OWN HEALTH – AND THIS INCLUDES HAVING THEM VACCINATED.

‘Animal lives are just as important as human lives, and healthier animals mean healthier humans,’ says Dr Alison Lubisi, research team manager of the Diagnostic Services Programme at the Agricultural Research Council – Onderstepoort Veterinary Research.

RABIES

The intricate connection between human and animal health has come into sharp focus with the recent increase in the number of human rabies cases reported in South Africa. Rabies is one of the deadliest diseases in the world, but the National Institute for Communicable Diseases says that unlike most other vaccine-preventable diseases, rabies vaccines can be given for both pre- and post-exposure to rabies.

Dogs and cats must get regular rabies shots by law. ‘Rabies is endemic in South Africa, and we’ve seen horrific cases in humans, with rabid dogs biting small children. It is mostly fatal,’ says Dr Lubisi, who is also a veterinarian, virologist and former reviewer of vaccine dossiers.

She points out that companion animals and production animals are an essential link in the public healthcare chain. This ties in with the ‘One Health’ approach advocated by the South African Veterinary Council (SAVC), the regulatory body for the veterinary and para-veterinary professions.

TIME TO VACCINATE

Certain vaccines are optional, but the core vaccines are mandatory for dogs and cats every year. These are combination jabs such as:

- The DHPP for **dogs**, which protects them against canine distemper

virus, canine adenovirus-2 (infectious canine hepatitis and kennel cough), canine parainfluenza virus and canine parvovirus (which affects puppies severely).

- **Cats** need to get a combination vaccine that protects them against feline viral rhinotracheitis, feline calicivirus and feline panleukopenia virus.

Vaccination against feline hepatitis virus-1 is also core in South Africa.

Similarly, **livestock** farmers and owners of companion and performing animals such as horses must vaccinate against controlled animal diseases such as brucellosis, foot-and-mouth disease and African horse sickness, as applicable to them by law. Farmers must also vaccinate against economically important infectious diseases that are prevalent in their geographic areas and those that are common for their production systems.

‘Vector-borne diseases that can be transmitted from animals to humans such as Rift Valley fever, as well as non-zoonotic diseases such as blue tongue and lumpy skin disease, may need to be prevented in livestock in certain areas through regular vaccinations as well as booster shots during high-risk seasons,’ she says.

WHY IS VACCINATION IMPORTANT?

- It’s essential for pets and production animals to be vaccinated because disease-causing pathogens or germs spread quickly and are not only transmitted through direct contact. ‘In the case of kennel cough, for example, the germs causing it are also airborne and a mere cough can release it into the air. Disease-causing pathogens or germs can be in the soil, water, animal excretions, on the surfaces of utensils, in the air – anywhere,’ explains Dr Lubisi.
- Puppies and kittens should be vaccinated early to give them the best chance of survival, and thereafter once a year.
- In the case of livestock, vaccinated, healthy animals mean higher productivity (and potentially profits) for farmers, benefitting the local economy and taking care of both food security and food safety, as well as ensuring a flow of animal products for export.

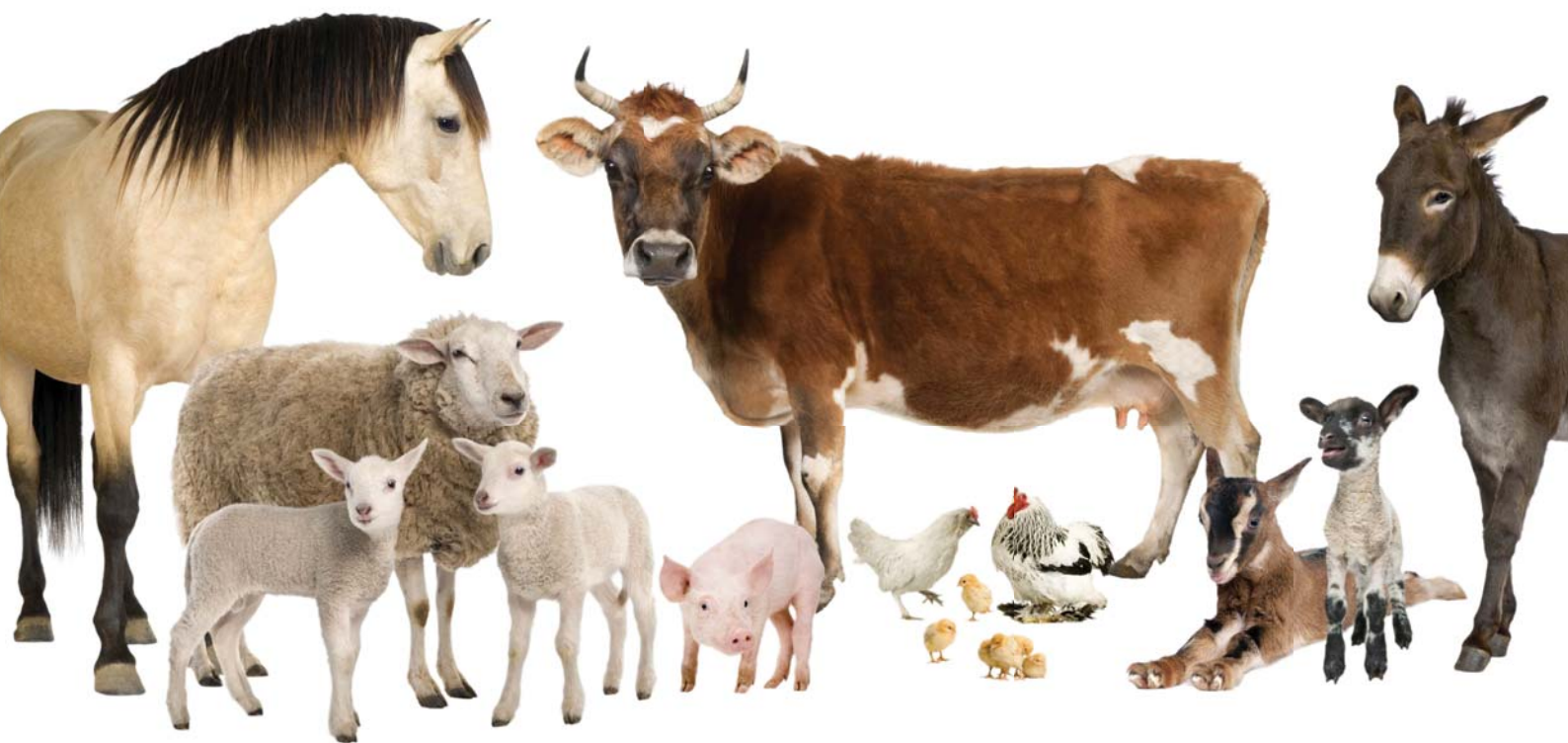
MORE ABOUT THE SAVC

The South African Veterinary Council (SAVC) is a veterinary statutory body in South Africa, with powers and functions for the registration of persons practising the veterinary and para-veterinary professions. The SAVC has legal authority over the practising of veterinary and para-veterinary professions, and for matters connected therewith.

The South African Veterinary Board, which is the predecessor of the SAVC, was established in 1933 in terms of the *Veterinary Act (No. 16 of 1933)*. The SAVC then later became an independent, self-funding statutory body in 1982 under the *Veterinary and Para-Veterinary Professions Act (No. 19 of 1982)*. The current SAVC, therefore, has a proud and rich history of playing a role in the regulation of the veterinary profession in South Africa.

It is compulsory in South Africa for all practising veterinary and para-veterinary professionals to be registered with the SAVC, as stated in the *Veterinary and Para-Veterinary Professions Act*. The SAVC is therefore the custodian of the veterinary and para-veterinary professions in South Africa. It enables the veterinary team to practise ethically by setting and monitoring veterinary standards, to create a safe environment for animals and people.





- The primary dose of a vaccine introduces an animal's immune system to an antigen that stimulates antibody production and other immune responses, followed by a booster shot a few weeks later. According to Dr Lubisi, this is so the immune response can increase and build a memory of the disease-causing germ, so it reacts quickly when it comes around again. 'There may be minor side-effects, such as swelling at the vaccination site – but allergic reactions are rare,' she says.

HOW IS AN ANIMAL VACCINE DEVELOPED?

Similar to how vaccines for people are developed, animal vaccines require a painstaking amount of research, development and trials by experts with multidisciplinary knowledge before they are approved for commercial use. Dr Lubisi says the ideal vaccine is protective, safe, cost effective, easy to administer, stable in the environment and affords long-lasting immunity.

Types of vaccines include those using a weakened live germ, those using an inactivated or dead germ, and those using genetically modified and engineered germs.



A candidate vaccine needs to first undergo feasibility studies and small-scale laboratory trials to establish the protective response it elicits, its safety, and the practicality and costs of manufacturing it at large scale.

'The laboratory and real life are not the same thing – you need to test the candidate vaccine on a large scale in the field and provide acceptable field and laboratory data before a vaccine gets registered. A lot of work and sweat go into it. Vaccine production is very expensive, and care needs to be taken to get it right,' says Dr Lubisi.

Educating the public about this pressing public health issue is critical, she adds. 'We find that vaccine hesitancy really comes down to a lack of proper knowledge, so we need to continually educate pet owners and farmers about the importance of getting their pets and livestock vaccinated.'

She says it's also vital for people to be aware of the threat of disease-causing pathogens or germs mutating if left unchecked. 'Animals need constant booster shots, or they might not be protected against new strains. Globalisation and global warming are real; we have seen how germs and diseases change their characteristics and behaviour over the years, sometimes even crossing between species.'

'I vouch for vaccines. We need to keep telling the good stories and raising awareness. It's very important to get everyone on the same page, for the benefit of us all.' ■

For more information about why it's important to vaccinate animals against rabies, scan the QR code to visit the SAVC's website.



PRESS RELEASE BY THE SOUTH AFRICAN VETERINARY COUNCIL (SAVC)



MADE POSSIBLE BY
BAYER

SA producers keen on PRECISION AGRICULTURE

THE INCESSANT COST-PRICE SQUEEZE WHICH FORCES PRODUCERS TO CONTINUALLY INCREASE THEIR PRODUCTIVITY AND REDUCE INPUT COSTS, PROMPTED THE AUTHOR IN 2021 TO RESEARCH ADOPTION RATES, FARM-LEVEL BARRIERS AND PERCEIVED BENEFITS OF PRECISION AGRICULTURE TECHNOLOGY.

Surveys were distributed among 37 producers and across five provinces (for the study done in 2021). The data was collected in a variety of ways, including interviews, email responses and online surveys. In the sample, adoption rates were found to be 65% for guidance, 51% for section control and 49% for variable-rate application. This compares favourably to the international literature, which estimates the aggregate adoption of these technologies at between 29% for variable-rate application and 59% for guidance in maize production.

RESULTS OF THE STUDY

However, the South African adoption rates still leave ample room for improvement, especially amongst smaller farms which were underrepresented in this study. It was found that producers who use precision farming technology believe that the technology has clear benefits with respect to increasing productivity and efficiency. Concerning the producers who do not use precision agriculture technology, responses were mixed, creating the impression that this subset of producers is unclear about the extent of the benefits and for some producers the suitability of the technology, given the computer literacy of their operators.

Barriers

The barriers to the adoption of precision agriculture technology are often considered to be age and education. This was not prevalent in the study as producers who adopted precision agriculture technology had a higher mean age than those producers who did not use any form of precision agriculture technology as seen in **Figure 1**. More significant barriers revolved around agronomic factors, including the use and understanding of the information behind these precision agriculture systems.

Variable-rate application

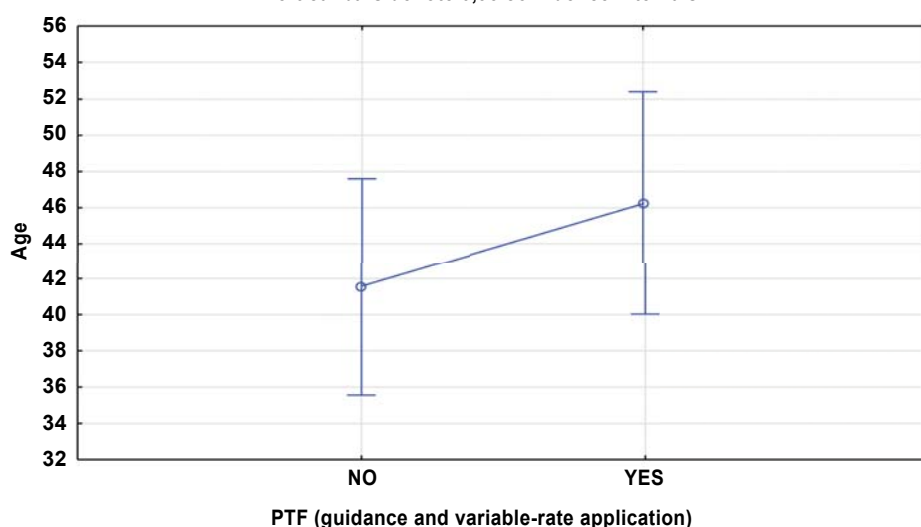
In terms of variable-rate application (VRA), 56% of producers that do not use VRA, agreed that it would help their farm management. A further 83% agreed that it would increase in-field speed and thus result in greater productivity. Mixed results were obtained from questions where producers did not have sufficient knowledge and/or experience with precision agriculture, as shown with the results on the execution of prescription maps, generation of prescription maps and other activities relating to data management.

Concerning adopting precision agriculture technology over the short to medium term, 68% of producers who do not utilise precision agriculture technology agreed that they intended to equip their machinery with such technology with section control, VRA or guidance during their next machinery replacement cycle. Thus, there is a trend towards the greater adoption of precision agriculture in the short- to medium-term future.

1

ANOVA relationship between age and the use of VRA.

PTF (guidance and variable-rate application); LS means
Current effect: $F(1,35) = 1,1911$, $p = 0,28$ Mann-Whitney U $p = 0,38$
Effective hypothesis decomposition
Vertical bars denote 0,95 confidence intervals

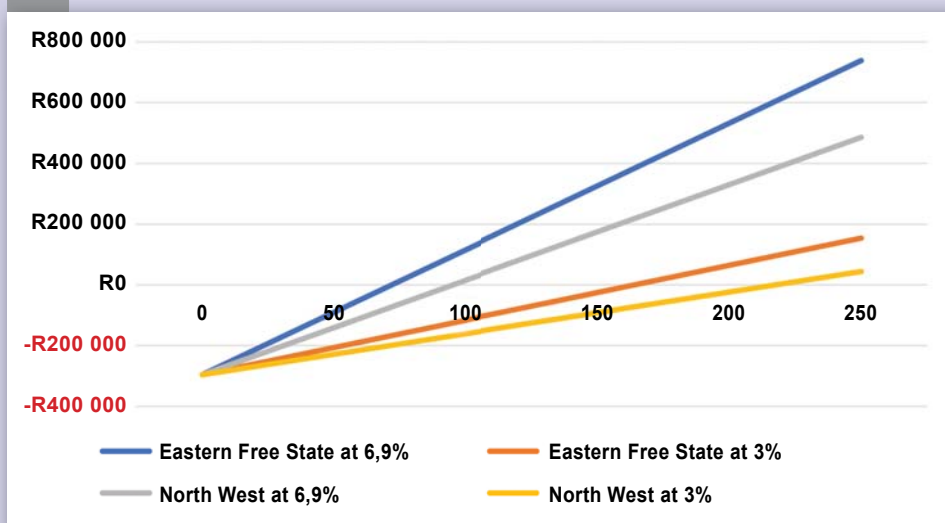


PRODUCERS' PERCEPTIONS

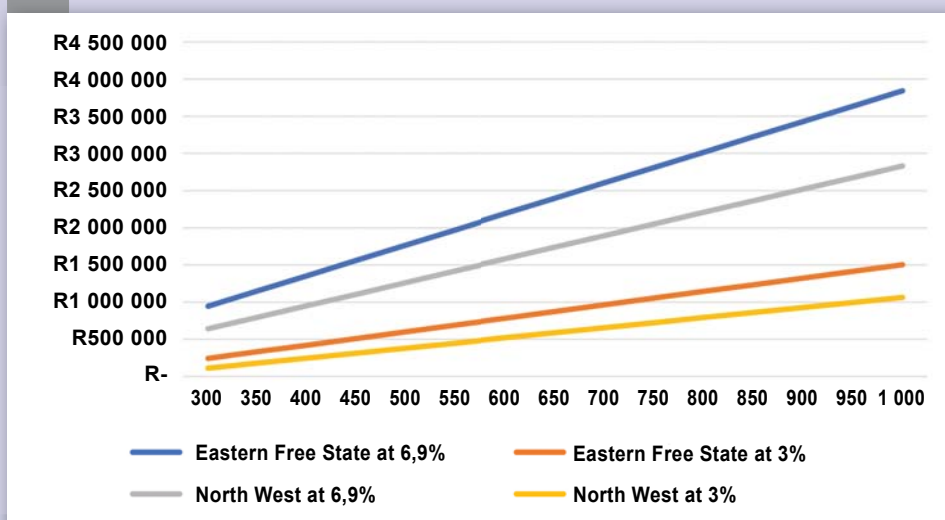
Producers that use precision agriculture technology see clear benefits in improved yield, decreased yield variability, efficient input and resource allocation, improved in-field speed and productivity. Research was conducted into whether producers have the perception that precision agriculture technology influences the quality of grain produced. This question had an intriguing response with 46% of producers agreeing that precision agriculture does improve grain quality.

Average perceived increase in yield from the use of precision agriculture was 6,9%. This 6,9% increase in yield will take the average yield in the 2018 season from 5,50 t/ha in the Eastern Free State to 5,88 t/ha. The additional 380 kg of maize produced will result in an R827,69 increase in gross income per hectare. This increase per year will result in the break-even point of one full precision agriculture package (VRA, section control and auto-steer) at 80 ha of maize production in the Eastern Free State, depreciated over five years. Similarly, in North West, a 6,9%

1 Net profit expressed over five years for hectares planted from 0 through to 250.



2 Net profit expressed over five years for hectares planted from 300 through to 1 000.



increase in yield results in an increase from 4,25 t/ha to 4,54 t/ha. The extra 290 kg will result in an R618,57 increase in gross income per hectare. The break-even point for one full precision agriculture GPS system is 100 ha of maize production per annum, depreciated over five years. GPS pricing for a system was taken at an average across multiple providers for a system that can execute VRA, section control and auto-steer, including the unlock keys for the latter. However, this does not include the yearly subscription.

BREAK-EVEN CALCULATION

The break-even calculation mentioned above focusses on the production of maize without factoring in any other on-farm expenses which can take priority. **Graph 1** illustrates the net profit from the perceived benefits of using precision agriculture technology over five years on up to 250 ha. It illustrates the break-even point of a single GPS system with the capability and unlock key for VRA as well as section control.

From Graph 1, it can be seen that the break-even point in terms of annual hectares planted correlated to around 80 ha in the Eastern Free State at an increase in yield of 6,9%. An increase in yield of 3% in the Eastern Free State correlates to a break-even point of around 160 ha planted annually. In North West, an increase in yield at 6,9% correlates to a break-even point in terms of hectares planted at 100 ha, while a 3% increase in yield results in a break-even point of 225 ha. **Graph 2** is an extension of Graph 1. However, it extends further and illustrates the net profit through to a 1 000-ha production system.



Country's first FARMER REGISTER launched

MS THOKO DIDIZA, THE MINISTER OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT, LAUNCHED THE MUCH AWAITED COUNTRY'S FARMER REGISTER ON 21 FEBRUARY THIS YEAR. THE DEPARTMENT DECIDED TO UNDERTAKE THIS IMPORTANT TASK, TO UNDERSTAND ITS CLIENT BASE BOTH IN TERMS OF SIZE AND SCALE OF OPERATION.

In 2019/2020, Statistics South Africa released the Agricultural Census which covered mainly the commercial sector. 'While this was encouraging, we were still short of data about smallholder producers in our country. The aim of the survey was to get data that will tell us where the smallholders are in the outreach, their demographics, production as well as their contribution to employment,' said Minister Didiza.

To ensure that this work meets the statistical requirement, the department had to work with Statistic South Africa on the development of the model. The department also had to work with the Provincial Departments of Agriculture because this is where, on a daily basis, farmers receive their services.

'In 2020, we had 95 501 registered farmers in our register. This number is further delineated in terms of provinces. One interesting feature is that in some provinces there are more female producers,' said the Minister.

In terms of age category, the department found that during the year 2020, KwaZulu-Natal had more young farmers, followed by Eastern Cape. With regard to operation or farmers' production, the register has confirmed that more smallholder and subsistence farmers are involved in livestock production, followed by crops and mixed farming.

'This tool is important because it will enable us as government in terms of support as well as monitoring the performance by government and farmers themselves,' concludes Minister Didiza.

The farmer register covers attainable smallholder farmers across provinces and it is important to note that not all farmers were reached in this phase of the register, due to COVID-19 lockdown restrictions. Farmers registration is ongoing, as the department is still attracting more farmers on its database in all the provinces.

The data collected to some extent includes households, subsistence, medium-scale and commercial farmers based on the following farming activities: Cultivation of crops and horticulture, livestock production and a combination of the above (mixed farming). ■

MEDIA RELEASE BY THE DALRRD ON 21 FEBRUARY 2022

SA producers keen...

POLICIES RELATED TO PRECISION AGRICULTURE

There is always scope for policy improvement in the agriculture sector, especially concerning how food is produced for the country. VRA does not only allow for the efficient allocation of input resources, but also reduces the environmental impact of these resources. This is done by applying the correct quantity of seed, fertiliser and chemicals to a specific soil type, soil depth and soil potential across a single field.

Single rate application can often over-apply fertiliser and chemicals to a specific area of the field as the single rate refers to the average soil conditions of the field and not the specific conditions within the field. With a single rate application, there is often leaching of chemicals and fertilisers, which can be degrading to the environment if not applied correctly. It would therefore be beneficial for the Department of Agriculture, Land Reform and Rural Development (DALRRD) to implement a subsidy or incentive for producers practising VRA as well as contractors providing the opportunity for small farmers to execute VRA without having to purchase the technology themselves.

There is also scope for the implementation of a subsidy regarding the other forms of precision agriculture technology, where not only

inputs are perceived to be used more efficiently, but also fuel. If producers are using fuel more efficiently, it will have a reduced impact on carbon dioxide emissions and be sustainable for the environment. It will therefore be beneficial for the DALRRD to implement a subsidy or incentive programme for the use of section control and guidance and not only VRA.

A possible policy for the support concerning the adoption of precision agriculture technology could allow the DALRRD to sponsor training programmes for operators on farms to enable them to obtain an education on the systems and their usability. This will help reduce the barrier of operator literacy with regards to precision agriculture technology. ■

TIM BLAKER,
MSC STUDENT, STELLENBOSCH
UNIVERSITY. FIRST PUBLISHED
IN SA GRAAN/GRAIN MAY 2021

SA Graan
Grain

THE CORNER POST

SPHEPHELO KHUMALO

Two (or more) heads are better than one



THE FIRST WINNER IN THE SMALL-SCALE MAIZE FARMER CATEGORY OF GRAIN SA'S GROW FOR GOLD NATIONAL YIELD COMPETITION WAS GARDNER KHULEKANI KHUMALO WHO WAS FEATURED IN THE FEBRUARY 2021 ISSUE OF *PULA IMVULA*. THERE ARE HOWEVER TWO OTHER KHUMALOS WHO ARE PART OF HIS SUCCESS STORY – FATHER LUCKY AND SPHEPHELO (38), GARDNER'S TWIN BROTHER. THIS FATHER AND SON TEAM WAS ALSO A FINALIST IN THE 2020 GRAIN SA/ABSA/JOHN DEERE FINANCIAL NEW ERA COMMERCIAL FARMER OF THE YEAR COMPETITION.

FROM GENERATION TO GENERATION

The twins were born into farming and are proud to be fourth generation farmers. With farming running through their veins, they began farming at a very young age and learned to drive a tractor as teenagers. While still at school they were already growing vegetables on a 7 ha-piece of land belonging to their grandparents.

Although their father, Lucky, obtained a BA degree in agriculture before he joined his parents on the farm, Sphephelo says as there was never any doubt that farming was their career choice, neither of them completed any tertiary studies. Their passion determined their destiny. 'My grandfather lived out his passion as a farmer, and always says he never worked a day in his life.' Sphephelo is however worried that there won't be a fifth generation to take over from him as his four children are not yet showing any interest in farming.

I know most people in our shoes split the responsibility, but it works for us to share the responsibilities.

The Khumalos farm on Lisbethdale Farm, their own 672 ha farm in the Dundee region in KwaZulu-Natal, which they purchased in 2011 after successfully applying for a loan at Ithala Bank. They also lease three other pieces of land in the area, of which 190 ha is on a neighbouring farm. This gives them a total of 550 ha of arable land where they produce maize and soybeans trading as Mgodeni Farming Primary Cooperative. They dream of expanding in the near future and hope to buy the neighbouring land they are currently leasing.

Sphephelo believes that farmers need to be resilient and able to adapt as 'farming is a risky business'. This season they planted 280 ha of maize and 190 ha of soybeans. Due to the torrential rain, they suffered crop damage. 'There are however areas where the yield is looking very good as we have learned to spread the risk by not planting all our hectares at the same time,' he says. 'Early crops are more likely to be hit by the hail,' he explains and adds that the first area was planted at the

end of October last year. 'Our last seed went into the soil on 4 January.'

On average they realise 5,5 t/ha to 6 t/ha on their maize and 2 t/ha on their soybeans. Their best achievement on soybeans has been 2,8 t/ha and on maize it was the winning result of 8,01 t/ha for which they received the Grow for Gold award.

Apart from crop farming, they also farm with cattle for beef production. The sheep and goats are only for their own table. On Lisbethdale Farm the responsibilities are shared. 'I know most people in our shoes split the responsibility, but it works for us to share the responsibilities. I do the record keeping when I knock off.'

OPEN TO LEARNING

Lucky joined Grain SA in 2015 and the twins have also become members of this organisation that have helped develop them into better farmers thanks to the support and mentorship of regional development manager, Graeme Engelbrecht and mentor Chris de Jager. The input of helpful commercial farmers in the area has also played a big role in their development.

Sphephelo says Chris has helped shape them into the farmers they are today. 'Chris has taught us a lot. We were farming in the old-fashioned way that we had learned from our forefathers,' he says about their farming ways which would not all be considered as good agricultural practices. Through Grain SA's Farmer Development Programme they now employ better agricultural practices. 'We have learned to take care of our soil which has helped us reach the potential yield for our lands.'

Soil sampling was never done. Now they take soil samples after the harvest and as Chris taught them how to analyse the results, they can make the necessary applications to rectify any imbalances. 'We just used any fertiliser that was available. Soil sampling shows us what is missing in the soil.' Learning about the importance of water conservation has also made a huge difference in their farming enterprise. They also follow a strict and effective spraying programme.

Chris ensured that their knowledge about technology improved. They practice precision farming and although it is expensive at the onset, they know that it will save costs in the long run. Better agricultural practices mean a higher yield and more money in the bank.

Sphephelo believes that farming is a hands-on job and says you cannot call yourself a farmer if you are not in the field. 'Farming is not as easy as it looks – it is hard work with 16 hour days during the planting season'. The hard work is however worth it – not just for Sphephelo, but for the whole Khumalo team. ■



LOUISE KUNZ,
PULA IMVULA CONTRIBUTOR

A programme that is changing lives



Early WEED REMOVAL is important

GRAIN SA'S FARMER DEVELOPMENT TEAM IS CONTINUOUSLY ASSESSING THE RISKS BEING FACED BY DEVELOPING AND POTENTIAL COMMERCIAL FARMERS. OUR PROGRAMME HAS A NUMBER OF TOOLS WHICH CAN BE EMPLOYED TO MITIGATE THE RISKS AND LEAD NEW FARMERS ONTO A MORE VIABLE AND SUSTAINABLE PATH.

Conducting crop inspections is one of the tasks of the field officers. They also educate farmers about the importance of soil health and **early weed control in summer crops**. Weeds lower crop yields by competing for soil moisture, nutrients, space and sunlight. Good weed control management in summer crops is therefore essential for the production of high-yielding and profitable crops. For high cost and high value irrigated crops, competition for light and nutrients is even more important.

Yield losses caused by weeds can vary enormously – from almost negligible yield loss to the complete loss of a crop. Farmers must aim to reduce weed numbers and then keep them controlled with an ongoing control programme throughout the season. Management practices that combine all of the available methods are the key to successful weed control.

Weed control must start with pre-season practises and even as far back as during the previous growing season where weeds should not be allowed to seed down. If at all possible, ploughing should be done in the winter for maximum moisture control or at the least a disking should be done in early spring to control those early germinating weeds. Another good way of controlling the early spring weeds, is to have a good sprayer set with the correct nozzles and then to apply a good quality herbicide like Roundup.

Good crop rotation systems, rotating herbicides and by combining both chemical and non-chemical weed control methods are all arrows in the quiver in the war against weeds. It is also important to control weeds along fences, contour banks, waterways, irrigation channels and other non-cropping areas.



As the tractors kept getting stuck in the mud, farmer Boy Nzimande of Sterkfontein near Amsterdam had to make a plan. The farm workers had to do weed control by hoeing the fields manually.

Crops need to be able to benefit maximally from the nutrients naturally in the soil and from the fertilisers applied at planting, in order to develop strong roots that will result in a hardy strong plant. If the little seedlings are forced to share those nutrients with young weeds, especially invasive and strangling grasses, it is going to remain a weak plant which will struggle for the rest of its life and will never yield what it was supposed to.

The control of weeds post emergence is critical. It is a big mistake to neglect weed control practices and risk sacrificing as much as 20% of the potential crop at this stage of plant development.

Weeds also cause harvest problems. They influence the plant so that the actual quality of the grain is reduced. Weed-seed contamination of grain can also mean your harvest is downgraded and your fields will experience a re-infestation which will negatively influence the next crop.

Grain SA believes we are making a difference which will lead to transformed farming practices through our consistent and reliable interactions with farmers. We are always looking for like-minded stakeholders willing to contribute to this important work and we are truly grateful for the incredible partnerships we already have.

AT GRASS ROOTS



Simphiwe Mabuza looks proudly at his soybean field. His hard work has paid off.



Luke Collier, regional development manager in the Eastern Cape's Kokstad office with Mr Mbuthu on his farm.



Reginah Hlatshwayo planted maize on 1 ha by hand. The maize was at tasseling stage when the photo was taken. She had some water logging problems, but weed control was done properly so her crop is looking good.



Gondo Alfred Manqoba from Koornfontein Farm in Mpumalanga is satisfied with his healthy soybean harvest.



Practical knowledge and skills are needed to farm

NOT only does the Grain SA Farmer Development team believe in face to face mentoring encounters with our farmer members but we also are always identifying knowledge gaps. The team identifies courses that will empower and upskill farmers in the different regions. These are life changing for many farmers and transform their farming possibilities and opportunities! Courses are delivered in indigenous languages at an appropriate level for a particular community. They are intended to make an immediate and practical difference to farmers on the farm and in the farm office.

A total of **48 training courses** were held during January and February on the following topics:

- Advanced sunflower production and marketing (1 course)
- Introduction to groundnut production (1 course)
- Introduction to maize production (7 courses)
- Introduction to soybean production (2 courses)
- Nixtamalisation (30 courses)
- Practical skills course: Planter and boom sprayer calibration (7 courses)

The nixtamalisation course is hugely popular with farmers and their families. It teaches them new and diverse ways of utilising maize in previously unknown ways in their households and has inspired a number of small entrepreneurs to bake – and to grow small businesses.



Attendees at the nixtamalization course learn how to make masa.



Neil Kirk presented a practical skills course for farmers in the Mthatha region to teach them more about planter and boom sprayer calibration.



These Limpopo farmers all completed the introduction to maize production training course.

Fighting weeds

DURING February field officers were primarily busy with farm visits to conduct crop inspections. A lot of work is being done to educate farmers about the importance of weed control and soil health. In most of the reports, farmers are being encouraged to practice chemical weed control and ensure they apply top dressing, particularly since the heavy rains have caused leeching.

A total of **267 contact meetings** with farmers to mentor and advise them on the status of their crops and whether action is required to ensure success. Farm visits and study groups were held in these regions:

- Dundee – 32
- Kokstad – 26
- Free State – 31
- Louwsburg – 61
- Maclear – 5
- Mthatha – 85
- Mbombela – 27



This farmer has started to spray the waterlogged land with a post-emergent. Hopefully with this spray and a top-dress he can get a better yield.



Grain SA taught this farmer from Joffrey Farm near Louwsburg to do the calibration himself after he asked for assistance with weed control on his maize fields.



Bringing modern technology to farmers – drones spray the fields with weed control chemicals.



In order to control weeds and pest this farmer is busy spraying his soybeans.

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