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PULA
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GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS

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English, Tswana, Sesotho, Zulu and Xhosa.

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If he had not helped a neighbour who reached out to him, his life would have turned out very differently and he might even have lost his farm.

A Word From...

Du Toit (Thabo) van der Westhuizen

AT THE TIME OF READING THIS ARTICLE MOST OF US SHOULD NEARLY BE FINISHED WITH THE HARVESTING PROCESS. A GREAT YIELD MAY HAVE BEEN REALISED AND MANY OF US WILL WANT TO SPOIL OURSELVES AS A REWARD FOR A JOB WELL DONE.

I know that as farmers we want to take a break when we have a good yield, but this is not the year to do it. I once met a man who said that in a tough year one must tighten the belt, but in a good year you must tighten it even more. I am not talking about not spoiling yourself just a little. Beware of spending money on things that you need – rather spend money on things without which you cannot survive.

This season we saw good yields with good prices and it is very important to use this opportunity to rather spend money wisely and plough it back into your farming enterprise, than to waste it.

Extra cash offers farmers the perfect opportunity to do the necessary maintenance on equipment – that which could not be done properly in the past due to a lack of funds.

Spend money to correct your soil fertility status such as liming and adding phosphate and other required elements to your soil. Remember, no matter what yield was realised, you need to put back into the soil as fertile soil is one of the most important assets to a farmer. Beware of mining the soil. You can have the best equipment and lots of rain, but without soil fertility you will not have a good harvest again.

If you do have some extra money diversify your farming operations with additional farming units to support a more stable cash flow. ■

COUNT THE COST to make a profit

EVERY FARMER NEEDS TO CAREFULLY CALCULATE WHAT THE SEASON'S INPUTS ARE, SO YOU CAN ULTIMATELY COMPARE YOUR EXPENSES TO THE 'RETURN' ON THE CROP AND ANALYSE WHETHER THE EXERCISE WAS WORTHWHILE AND PROFITABLE IN SOME WAY – WHETHER IT IS IN MONEY IN THE BANK OR FOOD IN THE STOREHOUSE.

Often farmers just go from one season to the next doing their best with what they know without carefully measuring their costs to find out if all the effort has been fruitful, or to find out if there is something that could have been done more efficiently to save costs.

Every farmer has his own unique set of circumstances and must look at the big picture to count the expenses that are incurred in running the different farming projects. Each different farming activity must be counted and then assessed as an overall farming operation.

BUDGET PLANNING

Budgets are simply a formal means of organising relevant economic information to help you make business decisions. Enterprise budgets that list receipts of goods bought, costs and net returns for a single product are a fundamental planning and analysis tool that every business needs.

They say, 'To measure is to know'. Maize production costs and returns per hectare planted must be measured. Every farming operation can be costed by analysing **variable** and **fixed costs**.

Fixed costs are expenses that stay the same regardless of what you produce. Examples include all land and other rental lease payments, buildings, permanent worker salaries, insurances, property taxes, interest expenses if you have active higher purchase agreements or loans, depreciation – because every vehicle you own will be valued less each year – repairs and maintenance and potentially some utilities like electricity and water.

Annual operating inputs are relatively straightforward. They are 'annual' inputs because unlike buying a tractor or a planter which lasts many years, these are all used up every year and must be bought again for a new season. For the grain producer these include costs like lime, fertiliser, herbicides and pesticides, seed, irrigation water, labour, fuel and even cost of contracting machinery, implements and repair and maintenance budgeting. The cost of these fluctuates depending on market prices from one season to the next. These inputs can be changed during the production process to bring about changes in output.

The Barberton farmers take delivery of their seed.

Even the children appreciate the gift.

Budget supporting information

The budget planning must also include potential yield and income results that you expect to achieve according to past seasons averages.

- What is the average yield t/ha in your area?
- What is the current price for maize in R/kg?
- What is your anticipated yield next season?
- Can you find price projections for next season?

Practise drawing up a budget

Start at the beginning and draw up a potential budget for direct inputs based on one hectare. It could typically look something like this:

Direct inputs	Price per ha	Total ha	Total cost
Lime			
Fertiliser			
Seed			
Herbicides			
Pesticides			
Fuel and oil			

Other questions the farmer needs to ask and record for accurate budget planning:

- Access to land: Do I have to pay land rent or taxes?
- Contracting fees: Do I have all the machinery and implements I need to get the job done or will I need to hire contractors or other labour?
- Soil management: What does it cost me to have soil sampling done? How will I apply lime and fertilisers. What will this cost me? Will I use machinery or labour to clean the fields?
- Spraying costs: Knapsack or boom spray? What is my spray programme? How many times do I plan to spray my fields this season?
- Transport costs: What will it cost me to collect and deliver inputs (with labour) to my fields to get my crop off the lands?
- Harvesting costs: How will I harvest? Will I need extra labour? How will I store the grain? Will I have threshing costs, or will I contract a combine harvester? What fuel cost will be incurred?
- Labour costs: When will I need to pay for labour – permanent labour force versus seasonal labour costs? Do I need to buy food and clothing or safety gear?
- Repairs and maintenance: Where do I usually have to spend money on repairs and maintenance services to keep my vehicles and machinery in good operating condition?
- Electricity: Will I use electricity?
- Water: Will I pay for water at any stage?
- Marketing costs: How much will it cost me to get my produce to market? Will I need packaging for anything? Do I have storage costs? What transport costs might I incur to get my grain to my sheds or to the local silos or mill?

These are just a few questions to ensure that the accurate information is collected. A budget plan begins with the planning for the new season. Remember it is critically important to accurately **measure each cost along the way** and keep the receipts and records of every cent you spend on producing the crop. It is important to know if you are growing your business. Accurate information empowers us to make better decisions for the future. ■

JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT
SPECIALIST AND EDUCATOR

Manage soil acidity with LIME

MAIZE PRODUCTION IS THE FUNCTION OF SEVERAL FACTORS LIKE CLIMATE, FERTILISATION, ACIDITY AND CULTIVATION. ACIDITY IS DETERMINED FROM THE SOIL SAMPLE INFORMATION AND SEEN IN SOIL PROFILE STUDIES. MAIZE PRODUCTION IS LIMITED BY SOIL ACIDITY ONLY WHEN TOXIC LEVELS OF ELEMENTS SUCH AS ALUMINIUM (AL) AND MANGANESE (MN) ARE PRESENT AND NOT NECESSARILY A LOW PH.

Aluminium toxicity is predominantly associated with soil acidity, while manganese toxicity is rarely associated with soil acidity, although both forms of toxicity can sometimes occur simultaneously. The danger of Al toxicity in maize only exists when the pH (KCl) is less than 4,5 or the pH (H_2O) is less than 5,5. Al toxicity is determined by the ratio of Al and hydrogen (H) to the total of potassium (K), calcium (Ca), magnesium (Mg) ions. This ratio expressed as a percentage, is known as acid saturation.

Yield losses will increase as acid saturation increases above 20%, since water and nutrient uptake are then impaired. No grain yield is expected at 80% acid saturation. Under conditions where both Al and Mn toxicity occur, Mn toxicity will be sufficiently neutralised if soils are managed below 20% acid saturation.

Lime is used to correct the pH and acid saturation levels. Lime requirement is aimed at reaching acid saturation levels of between 0 and 15% in order to provide a buffer against re-acidification and Al toxicity.

The managing of acid saturation below 15%, should however be thoroughly considered. To use more lime application than what is necessary to lower acid saturation to 0% is for instance a costly process.

It is however important to determine up to what depth soil acidity prevails in the soil and to what depth it should be neutralised before the lime and gypsum rate is calculated.

QUALITY OF LIME

Lime quality includes aspects like:

- Calcium carbonate equivalent (CCE) in hydrochloric acid (HCl);
- CCE in a resin (Rh method);
- particle size; and
- pH (KCl).

Soil acidity neutralisation under field conditions is not influenced by these individual values, but only through multidimensional, mathematical equations including all aspect. However, liming materials with the highest CCE (HCl), CCE (Rh), the largest portion of fine particles and the highest pH (KCl) should be the best to neutralise soil acidity under field conditions. Evaluate your lime in terms of these factors as well as the cost delivered to your farm.

TYPE OF LIME

Dolomitic and calcitic lime are available in the market. The Mg status of the soil will determine which one is needed. Dolomitic lime is recommended in favour of calcitic lime when the Mg status of the soil is low (<40 mg kg^{-1}) or relatively low in comparison with the Ca status, unless the Mg requirement can be met by the use of Mg containing fertilisers.

LIME REQUIREMENT AND APPLICATION

Precision farming is the way to go in future and is also the best way to apply lime. This can only be done if precision sampling is done and the lime can be precision applied. It is more costly, but the return on the investment is worthwhile. In a field both dolomitic and calcitic lime can be recommended and applied with precision liming. Most of the lime and gypsum sources are listed in the *Grain SA Grain Guide* (find it on the *sagrainmag.co.za* website). In the *ARC-Grain Crop Maize Information Guide* lime recommendations according to required change in acid saturation, the cation exchange capacity of the soil and quality of some lime sources can be found.

The price of lime, transport costs, soil incorporation costs and moisture content of the lime should also be taken into consideration. Act No. 36 of 1947 determines that 100% of the particles of a standard lime should be <1 700 µm and 50% <250 µm. In case of microfine lime, 95% of particles should be <250 µm and 80% <106 µm. The minimum allowable calcium carbonate equivalent (CCE [KCl]) for both limes is 70%. Compare the technical information of the different lime sources and make a financial decision.

A well calibrated lime spreader is needed to apply the lime. If the lime is applied at a variable rate with precision implement the necessary maps and data is also needed. Apart from quality, lime reaction in the soil is highly dependent on mixing the lime thoroughly with the soil. This is achieved by first disking, followed by ploughing or deep ripping. If it is possible lime should be applied and worked in at least two months prior to planting to ensure that lime reaction is complete at planting.

Strip liming can also be done if strip acidification has been identified by soil sampling. It is important that the lime is applied on the right strips. If the controlled traffic practices with fixed tracks is applied it can be an alternative. Lime should be applied at least two months prior to planting in a strip of 300 mm over the row and incorporated into the soil.

SUBSOIL ACIDITY

Subsoil acidity is a growing problem and lime also helps for it as long as it reaches the subsoil. The using of implements that deposit lime deeply – that is specially adapted rippers or deep ploughing – is effective but costly. A surface application of gypsum can be used, but discuss this with your lime representatives. Gypsum replaces Mg from the top to the subsoil and dolomitic lime should therefore be applied with gypsum to restore the topsoil Mg. Gypsum will need one or two seasons before it reaches the subsoil and therefore, deep incorporation of lime is often a quicker solution.

IMPACT OF LIMING ON HERBICIDE IN SOIL

It is important to understand that lime will have an effect on herbicide in the soil. Some herbicide will become available and can damage the crops. It is important to discuss the liming process with the seed and fertiliser representatives. Crops like sunflower, dry or soya beans can be affected negatively with the replacement of herbicide molecules by lime.

For more information, the *ARC-Grain Crops Maize Information Guide*, the *Grain SA Grain Guide* and the FERTASA Fertiliser Handbook can be consulted. The fertiliser representatives in your area an also help with information. ■

PIETMAN BOTHA, INDEPENDENT AGRICULTURAL CONSULTANT

Soil testing
helps you plan for the next season

ONE OF THE TOOLS AVAILABLE TO FARMERS TO IMPROVE CROP PRODUCTION YIELDS FROM THEIR EXISTING FARMING LANDS, IS SOIL TESTING. THE TEST WILL SHOW THE CURRENT STATUS AND BALANCE OF NUTRIENTS AVAILABLE FOR CROPS ON THE LAND OR IF DONE AFTER HARVESTING THOSE TO BE PLANTED IN THE NEXT SEASON.

Soil testing is essential for the accurate planning and budgeting for the fertilisation programme to be used for the next crop in the production cycle.

In aiming to produce optimum and profitable grain crops, other factors such as the prevailing climate on a particular block of land, average rainfall received per annum, effective rooting depth, soil structure and classification, cultivation practices, the presence of any chemical or physical impediments for proper root growth, general soil tilth and fertility must be considered.

Previous fertilisation regimes must be evaluated as to their impact on the actual yields realised. The amount of various nutrients used, applied as fertiliser, must be 'calibrated' or compared to previous soil tests, targeted yield, fertiliser recommendations, fertiliser applied at planting and additionally side dressed to the actual yields harvested. This analysis will indicate if there were adequate soil nutrients available or not. If not the fertiliser levels of relevant nutrients can be increased for the next crop.

REASONS FOR SOIL TESTING

The soil test will show how the measured fertility levels for the various plant nutrients compare to a range of theoretical or known acceptable levels for crops yields to be matched to the soil potential. Guidelines for achieving these on different soils with different yield potentials have become reasonably well known, in practice, over 70 years of chemical fertiliser use throughout South Africa.

It is important to assess the maximum crop potential of a soil type and depth. A 'Bainsvlei' soil with a topsoil depth of 1,5 m on top of a clay level has a high potential of perhaps 6 t/ha of maize. This cannot be compared to a 'Westleigh' of 0,6 m on clay with a 3,5 t/ha to 4,5 t/ha yield potential. A poorer soil in terms of depth in a high rainfall area might also produce an average of 5 t/ha to 6 t/ha. This soil will thus require the same amount of available nutrients.

Once the production target of land has been determined the soil test results can be used to plan the level of the fertiliser nutrients to be applied. Unless proven from past farm production records or experience that fertilising for maximum yields always works, it is usually financially prudent to only fertilise for the long-term average yields realised. In a good rainfall year with a long term build-up of fertility it has been shown that higher yields are usually realised.

The soil test shows the balance of nutrients in a soil, but not the possible yield potential taking all the factors discussed above into account. Soil test results must be evaluated in this context so that the optimum amount of fertiliser can be given to the next crop.

SOIL TEST FACTORS OR COMPONENTS

Soil tests results usually show, as a minimum, levels of pH or acidity either measured in a water or potassium chloride medium, phosphate (P), potassium (K), calcium (Ca), magnesium (Mg) and sodium (Na) – all in mg/kg, as well as the Ca/Mg ratio, the total Ca plus Mg counts divided by the K ratio, the total cation exchange or availability levels and clay content, zinc levels, sulphur (S) and carbon percentage if requested.

Once you receive your test results from different soils and differing yield potentials the levels can be compared to the accepted norms.

Phosphate

The accepted norms for phosphate (P) are categorised as follows:

- Low: Less than (<) 15 parts per million (ppm).
- Medium: 15 ppm - 25 ppm.
- Medium-high: 25 ppm - 35 ppm.
- High: Greater than (>) 35 ppm.

An adequate level for phosphate for crop production is 25 ppm.

These norms for all other nutrients are usually shown in the test results form. The required fertilisation levels can then be calculated from tables that show the extraction or nutrient needs of crops at various yield levels.

Nitrogen

An allowance of 20 kg - 25 kg of nitrogen (N) per ton of your crop target yield per hectare can be provided for in addition to the recommendations for P and K in the fertiliser programme.

Consult an experienced farmer or an agronomist to confirm any recommendations for fertilisation made using your soil test results. ■

RICHARD MCPHERSON, AGRIBUSINESS AND PROJECT MANAGEMENT CONSULTANT

WINNERS share their secrets to success

EVERY YEAR GRAIN SA FACILITATES THE GROW FOR GOLD COMPETITION FOR MAIZE, SOYABEANS AND SUNFLOWER IN DIFFERENT REGIONS OF THE COUNTRY. FOR THE 2020 COMPETITION 46 WINNERS WERE ANNOUNCED AS REPORTED IN THE *SA GRAAN/GRAIN* MAGAZINE OF DECEMBER 2020/JANUARY 2021.

Of the winners ten have provided more detailed information regarding their crop management. When considering their detailed information, it was very interesting to find that all of them basically apply the same principles. However, in the practical application of the principles there were differences because they farm in different regions – with differences in climate and rainfall, different soils, and personal preferences plays a role.

GENERAL MANAGEMENT

What stood out is that the ten farmers all had the same objective regarding their crop production: **Improve production** every year to be able to farm profitably and sustainably.

Secondly, **time management** was emphasised. Everything was done in time and on time. Implements were serviced and overhauled in time to limit wasting time on repairs during the production season. Inputs were obtained timeously. Seedbed preparation, weed control and pest control were done in/on time.

In terms of **production management** there is a strong focus on acquiring suitable information. None of the farmers were ashamed to get information off farm from service providers, neighbours, mentors, study groups or other knowledgeable persons. On farm they all do their own research and evaluate cultivars and different production techniques.

Record-keeping is done meticulously, and they all apply the concept: 'If you do not measure, you cannot manage'. All aspects of production are measured. Information regarding climate as it occurs on their farms is also gathered. Records of temperature, rainfall, average date of first rainfall, average date of first frost, occurrence of hail, and so forth are available. In this regard the high-tech implements used for precision farming plays a major role. All information for each year is available and considered in terms of what can be done better.

As far as **financial management** is concerned strict management of input costs is applied. Inputs are applied as planned and according to budget and all know what their input costs per hectare are.

WINNING PRACTICES

Special attention is paid to the soil, specifically **soil health** – soils are mapped and soil sampling done on a regular basis to guide the use of fertiliser. All farmers apply the principles of minimum soil disturbance and keeping soils covered. Crop residues and/or cover crops are used for this purpose. Thus, **regenerative farming** is taken seriously.

To apply **precision farming** advanced high-tech implements are used extensively to plant at the correct depth at the planned plant population, to apply fertiliser according to soil variances and needs, to apply weedicides and pesticides and when harvesting. During the growing season leaf analysis are used to indicate any deficiencies and the possible occurrence of diseases.

All apply **crop rotation** suited to their environment and soils to reap the benefits there-off. Diversifying in more enterprises plays a major role in the overall success of these winners.

CONCLUSION

What can you take from this to apply on your own farm, whether you farm on one hectare or a thousand hectares? Bear in mind that available funds, personal experience and abilities will play a role to the extent you will be able to use the tips.

To be practical:

1. Set yourself an objective/goal because without an objective/goal you have no direction.
2. Do everything on time and in time and as correctly as possible.
3. Obtain as much as possible information of all facets of your production management.
4. Plan and organise everything to the best of your ability and put your plans on paper. Implement accordingly and apply thorough control throughout the season. Analyse your results to determine what you can do better.
5. Improve soil health. Apply the principle of minimum soil disturbance by using tine implements. Keep soil covered as much as possible using crop residues and/or cover crops.
6. Get your soils mapped and take soil samples regularly to be analysed. Fertilise according to the results of the soil sampling.
7. Apply precision farming which basically means to do everything as precise as possible with the means available. The use of advanced high-tech implements can be incorporated as funds become available.
8. Keep all records meticulously.
9. Apply crop rotation and diversify your farming if and as possible.

Remember assistance is available – make use of it. You can also be a winner. ■

MARIUS GREYLING, INDEPENDENT AGRICULTURAL MANAGEMENT CONSULTANT

Promising season ahead after a superb 2020/2021

THE 2020/2021 MARKETING YEAR THAT ENDED ON 30 APRIL MARKED THE END OF A GOOD SEASON FOR SOUTH AFRICA'S MAIZE PRODUCTION. THE HARVEST YIELDED A CROP OF 15,3 MILLION TONS, WHICH IS THE SECOND LARGEST AFTER THE 2017/2018 CROP OF 16,8 MILLION TONS AND 35,7% HIGHER THAN 2019/2020.

On average, the local market demands about 11,2 million tons of maize, with about 5,6 million tons for human consumption, 5,6 million tons for animal feed and the rest for gristing.

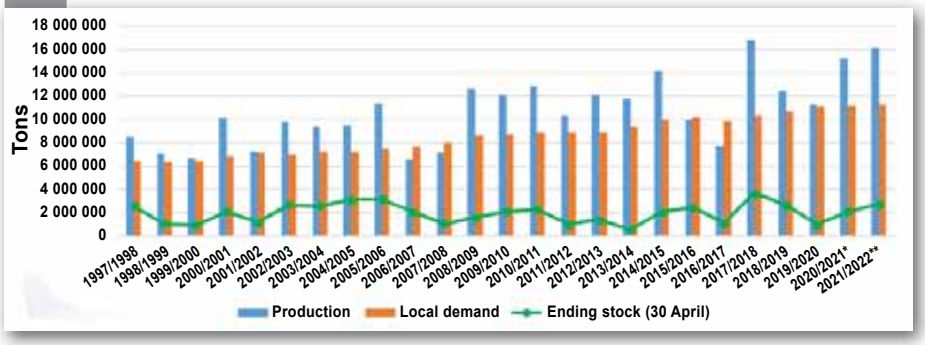
The exports for the 2020/2021 season totalled 2,8 million tons which is 55% more than the 2019/2020 season. The majority of white maize was exported to Zimbabwe (370 113 tons), Botswana (239 289 tons), Mozambique (132 075 tons) and Italy (127 901 tons). The top destinations for yellow maize were Korea (363 625 tons), Taiwan (323 189 tons), Zimbabwe (144 813 tons) and Vietnam (106 068 tons).

Closing stocks also rose significantly for the 2020/2021 season to 1,94 million tons which is 94% higher than the previous season. With average processing of about 935 000 tons, these stock levels were enough to last just over two months. Despite the bumper crop, higher exports and closing stocks, prices remained resilient at export parity levels, mainly driven by international factors, like China's demand for feedstock and unfavourable weather conditions in certain parts of the world.

Looking at prospects for the new season that started on 1 May 2021, according to the Crop Estimates Committee's fourth production estimate, about 16,1 million tons of maize is expected for the 2021/2022 season with 8,9 million tons of white maize and 7,1 million tons of yellow maize. If realised, this will be the second-largest crop on record for South Africa (**Graph 1**). With the expectation of a good harvest this season, local demand is approximated to increase moderately by about 1%, driven by the category for human consumption. Exports are expected to remain relatively the same at about 2,8 million tons. Ending stocks are estimated to increase by 41% at the end of the season, which would be sufficient for almost three months of demand.

The harvest season for maize is in full swing and producers are working hard to get the product into silos. With the expected bumper crop, the Safex price is currently at the export parity level. The expectation is that there should be a bit of pressure on prices, following historical trends during the harvest period. However, if the previous season is anything to go by, there could still be some spill over from the international markets, which would support prices higher for the next few months. This can be attributed to drought conditions in Brazil and parts of the USA. In addition, China is demanding significant amounts of maize from the USA, which is squeezing global supplies, sending international prices to an eight-year high. The local average price movement between May 2020 and May 2021 was 34% for yellow maize and 28% for white maize. ■

1 ***Supply, demand and ending stocks of maize in South Africa.***



Source: Grain SA, SAGIS and NAMC

IKAGENG MALULEKE, AGRICULTURAL ECONOMIST AT GRAIN SA

WORDS OF WISDOM

Agriculture is the most healthful, most useful, and most noble employment of man.

~ GEORGE WASHINGTON
(former American president)

Careful maintenance improves yield

THE EXCLUSIVE PURPOSE OF A PLANTER IS TO DISTRIBUTE SEED AND FERTILISER IN A SPECIFIC QUANTITY AND AT A SPECIFIC DEPTH EVENLY ACROSS A FIELD. AS THIS IMPLEMENT DETERMINES THE HARVEST POTENTIAL OF A FIELD DURING PLANTING, THE MAINTENANCE, SERVICE AND REPAIR OF PLANTERS ARE EXTREMELY IMPORTANT.

It is essential for planters to function without problems throughout the planting season so that as much as possible of the area can be planted in optimum conditions. The smaller details should be looked after carefully so that the planter can work as well as possible. After all, any adjustments to a planter after planting has been completed cannot improve the potential. A planter is a precision machine and must be managed accordingly. In this regard there are a few important matters to note before planting starts.

SEED METERING MECHANISMS

The seed metering mechanisms are the heart of any planter. Today there are meters like the Vset by Precision Planting that can plant with 99,5% accuracy. There are MeterMax calibration test banks available to test measuring mechanisms.

The optimum planting speed and errors (for example skipped seeds and double seeds) can be determined at a specific plant population.

If the planter unit places too much pressure on the soil, it causes soil compaction, which limits root development.

You can also make sure that the seed sizes that are used can be planted accurately. It has been proven that the accuracy of the metering mechanisms can improve by up to 10% if they are serviced and tested with a machine like the MeterMax teststand. Take the metering mechanisms and enough of the seed concerned to a testing institution or a MeterMax representative timeously to have them tested.

PLANTER BEAM AND PARALLEL ARMS

The height of the planter beam from the ground is also important. This affects how the planter unit moves across the ground.

With folding planters you should also ensure that all the beam sections are level. The parallel arms of the planter units must be horizontal to the ground. Also make sure that the bushes are not worn and that the bolts are fastened properly. Wear and tear causes the angle of the seed tube to change, which then affects how consistent the spacing of the seed is. There can be a 30% crop loss if the spacing between plants is not the same.

The beam height will also affect the operation of the down-force springs and how smoothly or evenly the row unit moves across the ground. If the planter beam is too high, the springs will not allow the row unit to make good enough contact with the ground. This leads to an uneven planting depth, which causes uneven emergence. Plants emerging on first day of emergence have a much higher ear weight than plants that emerge a day or two later. Plants with thinner stems and smaller or even no ears are the result (**Photo 1**). If the planter beam is too low, the springs will place to much force on the soil. The consequent soil compaction will affect the root development of the crown roots of the plant (**Photo 2**).

Planter beam

In addition to the beam height, pay attention to the height at which the planter towing bar is attached to the tractor towing bar, as this affects the orientation of the row unit. The planter beam must be more or less horizontal to the ground. This ensures that the furrow openers maintain the right depth and the seed tube is located on the row unit at the right angle.

If the planter beam leans forward, the planting depth can be too deep, the closing wheels at the back cannot function correctly and the closing action cannot take place properly. The seed will also be unable to fall through the seed tube 'freely', as they hit the sides, which harms the seed spacing.

DRIVE

- Check all chains, bearings and gears and be on the lookout for wear and tear.
- Chains and bearings that are rusty, stiff or worn must be replaced. Problems with or jerky driving cause poor operation of the metering mechanisms, which leads to poor plant population and spacing.
- The tyre pressure of the planter wheels and the contact drive wheel is very important and they must be inflated according to the planter manufacturer's specifications. This affects the plant population dramatically.

Because of uneven emergence the stem thickness differs.

COULTERS

Check the coulters. Bearings are one of the weak spots and should therefore be checked carefully and replaced if necessary. The bottom touch point where the two coulters touch each other must be between 25 mm and 40 mm. The diameter of the coulter itself should not be less than 370 mm – replace the coulters if this is the case.

Take the number of hectares to be planted into account. The coulters should be able to complete the entire planting process. If the diameter of the coulters is too small, it can cause the seed furrow to form incorrectly, which would affect the depth of the seed placement. It is very important to plant the seed at the same depth.

DEPTH-CONTROL WHEELS

It is the task of the depth-control wheels to control the planting depth. If the seeds are not placed at equal depth, they are not in the same environmental conditions (moisture and temperature). This means that the seeds do not germinate at the same time and that the plants therefore will not emerge at the same time. Even emergence is vital for optimal yield (Photo 2).

It is also important to set the row units on the planter to zero. Place the depth-control wheels on blocks of wood of 5 cm thick on hard, level ground. Then set the depth settings so that the coulters just touch the ground. This is done for each row unit and the 5 cm plant-depth setting is then known. Usually none of the rows is the same.

SEED TUBES

The seed tubes should be checked for wear and tear and damage too, particularly at the bottom and where the sensors are placed. The seed tube has a major influence on the placement of the seed in the seed furrow. Wear and tear usually occurs at the bottom of the seed tube. Replace if necessary.

CLOSING WHEELS

Check the closing wheels too. Replace bushes that are worn so that the planter tail with the closing wheels is firm and does not move from left to right. This will ensure that the seed has good seed-soil contact and ensures rapid water absorption.

Also look at the alignment of the closing wheels. Lower the planter and tow it forwards on a hard surface for a few metres. Check that the line the coulters make is exactly in the middle between the closing wheels. It is advisable to replace some of the rubber wheels with steel spoke wheels to break up any smear layer or compaction that may be caused by the depth-control wheels or the coulters. This will result in better root development.

Seed firmers can also be installed to place kernels at the bottom of the seed trench, achieve good seed to soil contact and ensure a more even emergence. It is important for the operation of the closing wheels to be checked during the planting process. If there is air pockets in the planting furrow, all the seed will not have good soil contact and an uneven emergence will result. If the closing system is too heavy, it can also prevent seedlings from growing, resulting in poor emergence.

ROW CLEANERS

Consider the use of row cleaners if you are planting in a lot of plant material. Floating row cleaners, moves freely up and down and follows the contour of the soil. It must be installed on every row and set to remove only material and not soil. If wet soil lies on top, this can cause depth-control wheels to clog and change the planting depth. If plant material lies in the seed furrow together with the seed, it will remove the moisture from the seed and the kernel will germinate later than the other seeds.

PLANTER MONITOR OR CONTROL SYSTEM

The planter monitor on the planter is vital to know what is happening with the planting process. Make sure the wiring has not been damaged and, if so, repair or replace it. Thoroughly clean the seed tubes and seed sensor eye. Ensure that if a radar pulse is used for speed, it is correctly calibrated. Also make sure that the monitor has been set up correctly for the planter, row width, number of rows and planned plant population.

Good farming practices remain extremely important to ensure optimal yield. With a well-serviced planter the planting process will be successful. ■

ANDRIES BOTHA, TECHNICAL MANAGER, CEREALIS PRECISION. LOURENS VAN RENSBURG, MANAGER, CEREALIS TECHNOLOGY INSTITUTE. FIRST PUBLISHED IN SA GRAAN/GRAIN AUGUST 2020

CORRECT USE OF TYRES limits compaction

TO MAKE A SUCCESS OF CROP FARMING, THE SOIL MUST BE TILLED EFFICIENTLY AND SUSTAINABLY. THE AIM IS TO CREATE OPTIMAL SOIL CONDITIONS FOR THE GERMINATION OF SEED AND THE FAVOURABLE GROWTH OF CROPS TO PROVIDE MAXIMUM CROP YIELDS.

Soil is probably the most important asset in crop farming, and the quality of the soil is definitely a key factor in increasing grain yields. The issue of soil compaction and its effect on grain production is well known, but there is not always clarity about the factors that can increase compaction or which principles can be applied to limit or minimise soil compaction.

SOIL COMPACTION

Soil compaction is caused by two factors in particular:

- Surface compaction as a result of the average force between the tyre and the soil surface.
- Deeper compaction as a result of the total weight of the tractor and other implements.

The movement of agricultural machinery in fields causes the soil to compact. Most producers are aware that the heavier the load on tractor, combine harvester, unloading trailer and implement tyres is, the more compaction occurs in the soil. The influence of factors like tyre type (cross-ply or radial), tyre width, tyre diameter, double versus single tyres and wheel loading on soil compaction is not always understood. Although the total load on the tyre as well as the tyre pressure affects the compressional stress on the soil, tyres that are too hard have a bigger effect than large loads.

TYRE AND SOIL DISTORTION

When a tractor drives across soil, the tyres and soil distort and the soil is compacted. The depth of the track is determined by the hardness of the soil, the load on the wheel, tyre pressure, tyre diameter, tyre width and forward speed. The lower the tyre pressure, the lower the soil compaction will be. However, there are limits to the permissible distortion of the tyre, because too low tyre pressure can cause the tyre to distort too much, which reduces the life of the tyre.

Ground pressure that causes compaction in fields increases as the wheels cut deeper. The pressure increases faster on firm soil (no-till and reduced-till) than on loose soil (ploughed fields) because the wheels cut deeper into loose soil and spreads the mass over a larger area.

The wheel of a tractor running in a ploughing furrow will have the same effect as on firm soil. This compaction increases as a plough pan is formed that gives way increasingly less. The effect of compaction increases as the moisture content of the soil increases.

DISTORTION AND COMPACTION OF SUB-SOIL

The pressure under a tyre is distributed through the soil more or less elliptically and reduces with depth below the tyre (**Figure 1**). Compare the pressure distribution below a tyre moving across a hard and a soft surface.

The following can be seen on a soft surface:

- The wheel makes a deeper track.
- Soil pressure is distributed sideways to a lesser extent.
- The pressure and therefore soil compaction is distributed to deeper layers.
- The wetter the soil is, the greater is the vertical pressure distribution below the tyre.

HARDNESS OF SOIL, SOIL PRESSURE AND WEIGHT

The extent to which a wheel causes deep tracks and compacts soil depends on the hardness of the soil and the pressure exerted on it. Great weight on a wheel will therefore mean that the wheel leaves a deep track in soft soil, which causes great rolling resistance. Hard soil can resist high soil pressure without the wheel leaving a deep track, with accompanying low rolling resistance.

Factors playing the main role in soil compaction are the optimal loading of the tractor or other implement, together with the correct tyre pressure. For a given tractor weight and tyres that are used within the specifications and the manufacturer's recommendation, optimum flotation and minimum compaction will occur at the lowest pressure required to handle this weight. The reason for this is that the average pressure between the tyre and the soil is more or less the same as the tyre pressure. This means that the higher the tyre pressure is, the greater is the compaction caused in the soil.

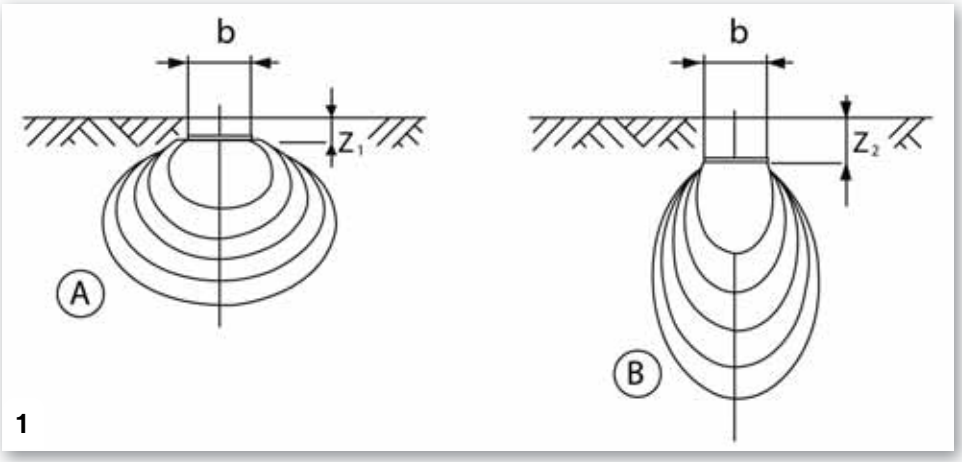


Figure 1: Pressure distribution under tractor tyres in hard (A) and soft (B) conditions.

TYRE DIAMETER, WIDTH AND PRESSURE AND DOUBLE WHEELS

With the same diameter, a wider tyre has a larger contact area on the soil and this leads to lower soil pressure. A tyre with a larger diameter also has a bigger contact area than a smaller tyre of the same width. With the same load on both tyres, the soil pressure and the depth of the track for the bigger tyre will be less. The greater the diameter of a tyre, the lower the rolling resistance is too.

With double tyres or wider tyres, better flotation can be obtained, with the accompanying lower compaction. If a double set of tyres is used, the contact area is doubled and the soil pressure is cut in half. Because the weight carried by each tyre is reduced by half, the tyre pressure can be decreased, which reduces compaction even more. With a double set of tyres on an axle it is essential for all the tyres on the axle to be used at the same pressure and percentage of water (if required) to ensure optimum results. It is also important to take soil types and structures, together with optimum moisture conditions, into account in order to limit compaction.

TYPES OF TYRES

Cross-ply tyres have been mostly replaced by standard radial tyres over the years. Radial tyres offer benefits like better traction at lower tyre pressure, with the accompanying reduction in compaction.

To get the best performance from the tyres, producers must constantly change the tyre pressure to adapt to the specific conditions. The adjustment of tyre pressure is essential and depends on the weight and the type of work being done, like primary soil tillage (ripping, ploughing and planting in no-till conditions) and secondary soil tillage (weed control and seedbed preparation). This could mean that the tyre pressure even has to be changed a number of times a day, for instance to drive from one farm to another, because of the use of mounted versus towed implements, and soil conditions. Because this is a nuisance and wastes time, the tyre pressure is usually adjusted to the most difficult conditions. Because the tyres are not used in the ideal configuration all the time, productivity suffers.

The manufacturers of Low Sidewall Technology (LSW) tyres claim that these tyres can handle 40% more weight or the same weight at 40% lower tyre pressure. Their technology uses wheel rims with a larger diameter and a lower tyre profile.

However, this new technology costs considerably more than standard radial tyres. Every producer will have to calculate for himself whether the benefits of using these tyres justify the additional costs.

TO SUMMARISE

It is important for every tractor and other implement to be loaded correctly within the specifications and for the tyre pressure to be checked for each application. The few minutes this takes can reduce soil compaction and wear and tear on the tyres and save many litres of fuel – which increases profitability.

It is also important to use the correct combination of tractor and implement for the tillage concerned so that the tractor can work effectively at the correct speed and the engine can operate as close to full strength as possible. Where possible, tillage should be done when conditions are optimal to ensure that soil compaction is limited to the minimum, tillage is effective and unnecessary wear and tear and diesel consumption are prevented.

None of the above is possible unless the operators are well trained in handling the tractor, combine harvester or other implement. ■

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DIRK LOTTER, RETIRED AGRICULTURAL ENGINEER.

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DUNG BEETLES
are indicators of biodiversity

DUNG BEETLES CONTRIBUTE TO ECOSYSTEMS AS IMPORTANT DECOMPOSERS – RECYCLING NUTRIENTS AND CARBON INTO THE SOIL. THEY ARE ALSO GOOD INDICATORS OF DIVERSITY WITHIN AN ECOSYSTEM, BECAUSE THEY ARE SENSITIVE TO CHANGES IN THE ENVIRONMENT AND THE ASSEMBLAGE COMPOSITION CHANGES AND ADAPTS QUICKLY TO ENVIRONMENTAL CHANGES.

Apart from the obvious global challenges such as climate change and ensuring future food security in a rapidly changing environment, decreasing global biodiversity is also a very serious challenge.

According to the 2019 UN Biodiversity report[1], human activities affect global biodiversity to such an extent that a million species will be threatened with extinction within the next decade. Diversity within ecosystems is vital for these systems to function optimally.

When species disappear from ecosystems, these systems cannot function properly and run the risk of collapsing. When this happens, food security is at risk since functioning ecosystems are necessary to produce food. To ensure future global food security, research will have to also focus on the current state of global as well as local biodiversity and production practices that will support and protect local biodiversity in the long term should be identified.

DUNG BEETLES

To determine if conservation agriculture (CA) supports biodiversity in ecosystems, the dung beetle assemblages were monitored in CA systems at Reitz and Vrede in the Eastern Free State and compared to those in conventional agriculture (CT) systems in the same areas.

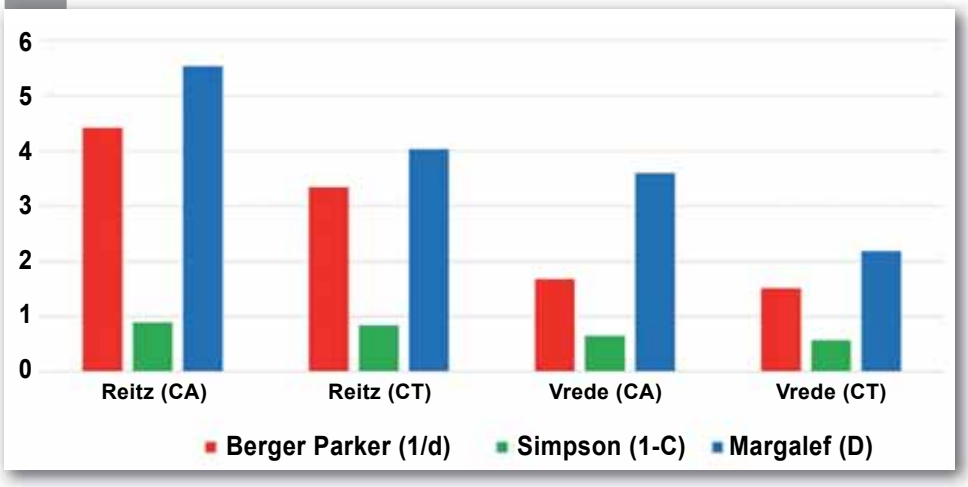
Diversity in dung beetle assemblages was monitored during January/February 2020 with dung-baited pitfall traps on farms where CA is practised and on neighbouring farms where CT production practices are used. The CA practices followed include no-till, limited use of agrochemicals, the use of a diversity of cover crops in the cash crop and the incorporation of livestock in crop fields, while CT practices are characterised by ploughing and reliance on agrochemicals and monocultures.

Three diversity indices were used to measure different components of diversity (dominance, relative distribution of species and species richness) within these systems (**Table 1**).

1 ***Diversity indices and their measurement.***

Diversity index	Measurement
Berger Parker (1/d)	Dominance
Simpson (1-C)	Relative abundance of each species
Margalef (D)	Species richness

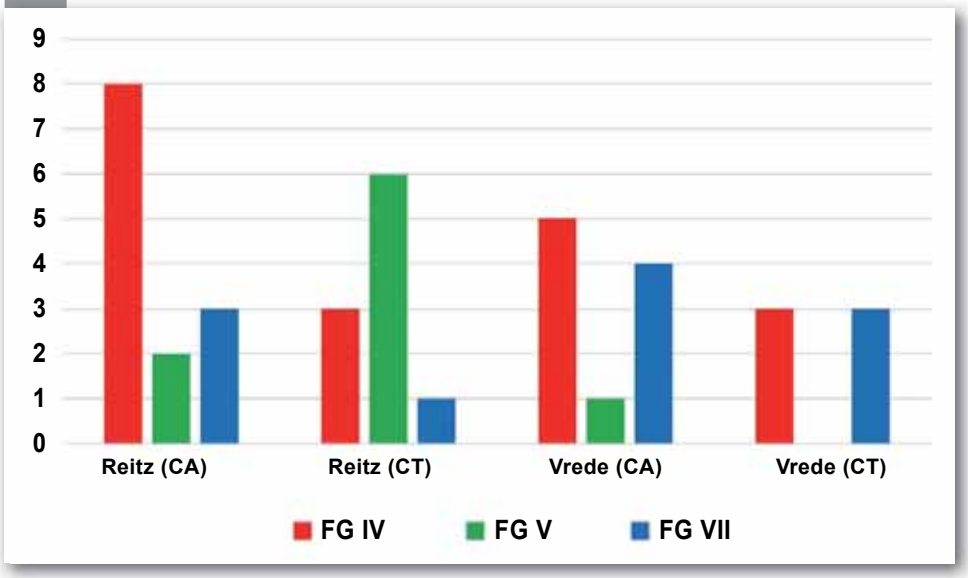
1 *Diversity indices (Y-axis) for dung beetle assemblages in CA and CT systems at Reitz and Vrede.*



2 *Total feed consumption.*

Functional group	Total feed consumption (kg/300 birds)	Duration of dung removal
I	Large telecoprids[1] > 400 mg dry weight	10 min to 24 h
II	Small telecoprids < 400 mg dry weight	10 min to 24 h
III	Fast-burying paracoprids[2]	6 h to 24 h
IV	Larger slow-burying paracoprids > 10 mg dry weight	Up to 6 weeks
V	Smaller slow-burying paracoprids < 10 mg dry weight	Up to several weeks
VI	Kleptocoprids[3]	Not applicable
VII	Endocoprids[4]	Many weeks

2 *Species distribution within functional groups in different CA systems and CT systems at Reitz and Vrede.*



All three diversity indices show that different areas in the Eastern Free State support different levels of local biodiversity. Overall a higher level of diversity is supported in the Reitz area compared to the Vrede area, irrespective of production practices (**Graph 1**). Within the different areas, however, CA practices support a higher diversity than CT practices.

Dung beetle assemblages are divided into different functional groups (FG) I-VII, based on size and the manner and speed at which dung is broken down (**Table 2**). The species distribution of dung beetles between the different FG was higher in the CA systems than the CT systems at Reitz and Vrede, respectively, indicating that these systems also support a higher functional diversity (**Graph 2**).

Due to different environmental conditions some areas can support a higher overall biodiversity, but production practices also influence this biodiversity. The current state of biodiversity will have to be determined for each specific area and management practices will have to be adapted based on the specific area to support local biodiversity.

SOURCES

- *The 2019 UN Biodiversity report http://www.fao.org/3/CA3129EN/CA3129EN.pdf*

Funding for research on the dung beetle assemblages in CA systems in the Eastern Free State was provided by the Maize Trust.

DR ASTRID JANKIELSOHN, ARC-SMALL GRAIN, BETHLEHEM.

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RECYCLE FARM PLASTIC – it is the right thing to do

A MOUNTAIN OF UNRINSED CONTAINERS ON A FARM IS NOT ONLY UNSIGHTLY, IT IS UNLAWFUL AND A SERIOUS HUMAN AND ENVIRONMENTAL HEALTH RISK. DO NOT OFFER THE ANTIFARMING LOBBYISTS TOOLS TO PORTRAY PRODUCERS AS ROGUES OR POLLUTERS BY NOT RECYCLING EMPTY CONTAINERS AND SEED BAGS. ALL FARM PLASTICS NEED TO BE RECYCLED; IT IS THE RIGHT THING TO DO.

Most pesticides that are supplied to producers are packed in HDPE (high density polyethylene) containers, while seed is supplied in woven PP (polypropylene) bags. Estimated quantities of HDPE entering the agriculture sector is around 8 500 metric tons and seed bag PP is around 2 000 tons.

All these plastic containers and bags are recyclable and are highly sought after by the recycling industry. There is no need for agriculture to pollute the terrestrial, aquatic or marine environment with empty pesticide containers or seed bags.

RECYCLING CONTAINERS AND BAGS

Recycling starts on the farm. Triple rinsing is a requirement to cleanse empty HDPE pesticide containers efficiently, while a simple rinse with running water will clean a seed bag to the point where it is safe for recycling.

It is a pity that some producers burn or bury such materials on the farm, especially with the global concern about pollution and waste management. CropLife SA has guidelines on triple rinsing and cleansing of seed bags on the website (*www.croplife.co.za*) under container management.

It takes less than three minutes to triple rinse a HDPE container and less than two minutes to cleanse a seed bag.

AFTER CLEANING – WHO AND WHAT THEN?

There is a network of CropLife SA-certified plastic recyclers on *http://www.croplife.co.za/Collectors_Recyclers*. These recyclers take the triple-rinsed empty HDPE containers and seed bags and recycle them into other commodities.

Laws and regulations that govern waste in South Africa classify such cleansed containers and seed bags as non-hazardous, meaning it does not require special permits for transport from the farm to collection points or to recycling plants.

Service providers who collect containers and bags need not be licensed, provided they only collect triple-rinsed empty containers and thoroughly cleansed seed bags. Transporting unrinsed containers fall squarely within the ambit of the regulations for dangerous goods transportation and such transporters must be licensed as such.

Recyclers that operate processing plants where the plastic material is further cleansed and processed into pellets and re-manufactured into other commodities such as 'plastic wood', plastic furniture, storage bins, pallets, decking materials, troughs and so forth, must be licensed by the environmental authorities. There is no issue with any of the service providers that are certified by CropLife SA and producers can rest assured that these individuals and companies operate according to the policies and statutes of the country.

Plastic materials that arrive at the recyclers are sorted into the different types before being processed. The HDPE and PP from the agricultural sector are treated with great respect, because it is valuable material and generally much cleaner than the other plastic materials that are collected for recycling.

DO NOT GET CAUGHT BY FLY-BY-NIGHT OPERATORS

As expected, not all collectors and recyclers of waste plastics play by the rules. Producers are cautioned against dealing with service providers that are not certified by CropLife SA, because there is no guarantee that such service providers work legally and responsibly.

CropLife SA issues a certificate of approval to each certified plastic recycler, which he or she is obliged to show producers before being allowed to take empty containers or seed bags. The service provider must also issue the producer with a CropLife SA certificate of adequate empty container disposal every time the producer disposes of containers or bags via a CropLife SA-certified plastic recycler.

Some of the unscrupulous operators take containers from producers and sell them as water and food containers. This goes against all principles of human safety and cannot be tolerated. Producers should contact CropLife SA and report such incidents immediately. ■

DR GERHARD VERDOORN, OPERATIONS AND STEWARDSHIP MANAGER, CROPLIFE SA.
FIRST PUBLISHED IN SA GRAAN/ GRAIN SEPTEMBER 2020

THE CORNER POST

DU TOIT (THABO) VAN DER WESTHUIZEN

You sow what you reap

THE PHRASE 'A CLOSED HAND CANNOT RECEIVE' IS A BIBLICAL WISDOM THAT APPLIES TO EVERYDAY HUMAN ACTIVITIES – IF YOU ARE NOT WILLING TO GIVE SOMETHING OF YOURSELF, YOU CANNOT EXPECT ANYTHING IN RETURN. GRAIN SA'S DEVELOPMENT COORDINATOR, DU TOIT VAN DER WESTHUIZEN – BETTER KNOWN AS THABO TO FARMERS IN THE NORTH WEST PROVINCE – IS A FIRM BELIEVER OF THIS STATEMENT. IF HE HAD NOT HELPED A NEIGHBOUR WHO REACHED OUT TO HIM, HIS LIFE WOULD HAVE TURNED OUT VERY DIFFERENTLY AND HE MIGHT EVEN HAVE LOST HIS FARM.

TIMING IS EVERYTHING

After completing his school career in Lichtenburg, Thabo studied agriculture at the Potchefstroom Agricultural College. He began his farming career working for a commercial producer for seven years, whereafter he ventured into his own farming enterprise. Although finance was a big stumbling block at the onset, his farming enterprise grew and by 2012 he was planting more than 2 000 ha on land which he rented from tribal chiefs in Bophuthatswana. 'Unfortunately, the climatic conditions were not favourable, and I thought I was going to lose everything by 2013.' This is when his story began.

In December 2012 his path crossed with that of Rykie Raphoto, who was part of the Recap Programme, a joint venture between Grain SA and the Department of Rural Development and Land Reform. Rykie was in desperate need of a planter. 'He wanted to buy my planter, but at that stage I was already busy planting.'

Thabo suggested that while he was busy planting sunflowers, Rykie could borrow his maize planter as the planting window was running out. Once Thabo had planted his sunflowers, Rykie could then borrow the sunflower planter.

That same evening Willie Kotze, the previous operations manager of the Grain SA Farmer Development Programme, phoned and asked him to become a mentor for a group of farmers who had lost faith in their mentor. Although Thabo knew the farmers well, he had no knowledge of the Grain SA Farmer Development Programme.

He joined the programme in December 2012 and also did a training course in February 2013. Shortly afterwards the post for North West's development coordinator was advertised and Thabo was blessed to be employed in this position.

Thabo says that he often shares this testimony at farmers' days. 'The point I want to make is this: You can only receive with an open hand, a hand that gives. Nobody can receive with a fist. If I had not helped Rykie, my story would be a very different one.'

A FARMER WHO IS A MENTOR AT HEART

The bond that forms between a farmer and his mentor or development coordinator is special. 'When farmers tell you that you will not be able to retire but will have to do this job until you die as they will never let you go, then one realises the level of trust that has been built up over the years.'

Thabo plants maize, sunflowers, soybeans, groundnuts, potatoes, tef and sugar beans. 'I decided to turn my farming enterprise into an experimental farm. I plant different crops so that my farmers can learn what works and what doesn't.' He also has feedlot cattle and a chicken incubator to teach the farmers the importance of generating cash flow.

He believes that the following practices are a recipe for farming success:

- Cash flow is of the utmost importance. He tries to encourage farmers to have some way of generating a monthly income because a person cannot survive on the harvest alone. Cash flow is the heartbeat of a farming operation.
- Knowledge is very important, so don't be shy to ask questions in order to learn. Look at what your neighbour is doing, ask him for advice. You may think people do not want to share, but have you asked them? Theory in a book can be placed on a bookcase, but what makes the difference is what is learned in the field. Even a successful commercial farmer was once a beginner farmer.
- Your attitude makes a big difference. If you are not prepared to get dirty, you are not a farmer. You need to go down on your hands and knees and dig in the ground, if necessary, to see if the seed has been placed correctly. You cannot farm from your stoep.

MAKING A DIFFERENCE BRINGS REWARDS

Thabo is grateful to his parents for the way they raised him. His father was a minister with a passion for agriculture, who bought a small piece of land where they spent their weekends and holidays. It was here where he learned to speak Tswana. 'I learned from a young age to work hard. My parents also taught me to respect others, irrespective of differences.'

To Thabo being part of the Farmer Development Programme is one of the most inspiring experiences. 'Working with developing farmers has opened my eyes and enriched my life through valuable life lessons. My reward lies in the inspiration I get from seeing the difference that my involvement makes,' he shares.

His biggest inspiration came from an elderly deaf and mute farmer, who started attending the study group meetings after a visit from Thabo. 'Monsanto had gifted the study group members with 2 kg bags of seed. The chairperson asked if he could take a bag for his neighbour, who had a garden plot. When I heard that he and his wife were deaf and mute, I wanted to meet him. I had to use a form of sign language to explain to him what to do.'

Thabo later returned with fertiliser. This man managed to harvest 40 bags of maize, which was enough for his own use and for that of his extended family. He even had enough to sell to supplement his pension. 'It is stories like this that enrich my life and make this job worthwhile.' ■

LOUISE KUNZ,
PULA IMVULA CONTRIBUTOR

A programme that is changing lives

Together we are making a DIFFERENCE

THE MONTH OF MAY IS ALWAYS A BUSY ONE FOR US! IT IS THE CULMINATION OF THE YEAR'S HARD WORK AS THE SUMMER CROPS ARE HARVESTED AND SIMULTANEOUSLY THERE ARE IMPORTANT PREPARATIONS TO MAKE FOR THE NEW SEASON SUCH AS SOIL SAMPLING AND SOIL ANALYSIS, AS WELL AS NEW SEASON BUSINESS PLANNING THAT MUST BE DONE.

FARM VISITS

May saw our Grain SA Farmer Development team out on distant rural roads to visit farmers and advise on monitoring crops and measuring grain moisture content as well as checking on the harvesting activities and advising farmers on the safe storage of grain and oil seeds. The team made **49 farm visits to farmers in the advanced farmer category**. (Some photographs are shown under At Grass Roots at the bottom of this page).

TRAINING COURSES

Training courses are an integral part of our risk management and development programme. During May we presented **seven five-day courses** (sponsored by the Maize Trust and the Oil and Protein Development Trust) to **132 learners**.

Workshop skills were presented by trainer Chris de Jager at Daggakraal near Volksrust and trainer Fanie Pienaar to farmers near Kestel in the Free State. This included working with welders, power tools, hand tools and spray painting.

Trainer Timon Filter presented **Resource assessment and planning** at the Driefontein Hall while Rutland Study Group members received training on **Tractor and farm implement maintenance**. The **Intro to soybean production** course was taught by Timon Filter at the Kraansbank Community Hall, Mpumalanga whilst trainer Elias Dladla taught on the **Introduction to maize production** at Groblersdal.

Here is some feedback from two of the farmers who attended the course on soybean production:

During training farmers learned how to use a tractor, how to calibrate a boom sprayer and which nozzles to use.

Mbongisenin Khanyile: 'All what we learned on this course was perfect – thanks a lot to Grain SA and the Maize Trust. Even the meals were very good. We really enjoyed every moment of this class. The practical was good for me, because now I know how to set the planter and how deep to plant my soya. I say thank you a lot to be able to learn more as a young farmer.'

Siphamandla Mtshali: 'We really enjoyed being taught by Mr Filter. We will go and observe in the field how soil samples are taken and we also looked at soil depth and how to establish that.'

SCHOOLS PROGRAMME

Grain SA Farmer Development has a team of educators who visit schools to enlighten learners about the benefits of agriculture. (See photograph on next page.) Amongst others the value agricultural production adds to our lives is discussed as well as some diverse career opportunities in the sector which include so much more than farming.

Several DVD's have been made and presented to the learners. There are so many good stories that still need to be told about agriculture. There is no denying the power of our digital presentations to captivate and inspire young people. The DVD's have links on our YouTube channel and can be accessed by anyone with access to the internet.

AT GRASS ROOTS

During the team's visit to Abel Mahlaba who farms near Reitz, it was soya harvest time.

Mentor Jurie Mentz was there to oversee the soya harvesting on Kalkbank, the farm of Nkosi Jeremiah Obrey in Mpumalanga.

Crop inspection was done during a farm visit to Lethuka Maseli from Kestel, a Standard Bank project participant.

Alfred Manqoba participated in the post harvest discussion and planning during farm visits in Mpumalanga.

Let's look at study group activities

THE study group meetings form a very important aspect of the Farmer Development Programme and include both lessons and visits to fields. Our team had **109 contact sessions** with members around the country. Here is some of the action.

Masoing SG is a new Grain SA study group in Limpopo. It is being led by the team from Nelspruit under Jerry Mthombothi. Farmers were helped with membership registration and thereafter they were given a lecture on soil management.

A study group from Mbhongweni in the Kokstad region have finished harvesting their maize. They had to get the cobs off the fields as quickly as possible to avoid risk of damage by livestock. Cobs have been taken to their homes to complete the drying process.

Metzelfontein farmers in the Louwsberg area busy harvesting with the guidance of provincial coordinator, Jurie Mentz.

Although the maize of the Zangotshe farmers (Kokstad region) was not 100% dry, they were forced to harvest as their fields are not fenced. Farmers were afraid of damage from roaming livestock.

Connecting our YOUTH to agriculture

CHEF and author Alice Waters said: 'We have to bring children into a new relationship with food that connects them to culture and agriculture.' This is what Grain SA's Schools Programme is trying to achieve.

The global population is expected to increase to 9 billion by 2050 with the youth, aged between 15 to 24 years, making up at least 14% of this total. According to the Food and Agriculture Organisation, rural youth are the key to future food security. Unfortunately, around the world few young people see a future for themselves either in agriculture or in living in rural areas. Most of the world's food is produced by smallholder farmers who are ageing – and older farmers are less likely to adopt new technologies, which are necessary for sustainable farming.

One of the major misconceptions which needs to be addressed, is that the youth still perceive agriculture to be an 'old-fashioned' industry. In reality access to technology, information and better communication, together with improved equipment, are changing the way things are done. There is therefore an urgent need to engage youth in agriculture which can only happen if there are visionary policymakers who create opportunities for young people to be informed in a way that they see value and hope in the sector. Young people need to be able to see themselves as part of an agricultural evolution which will guide and sustain themselves and their communities into the future.

During May the team of youth educators visited 68 schools to teach them about the power of agriculture to produce food, fuel and fibre for our general well-being.

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