PULA IMVULA

GRAIN SA
GRAAN SA

FEBRUARY 2017

>> GROWING FOOD >> GROWING PEOPLE >> GROWING PROSPERITY >>

PANNAR®

PULA IMVULA

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NKGONO JANE SAYS...

IN THIS ISSUE...

February is one of the quietest months in the calendar of the grain farmer – the winter crops have not been planted yet and the summer crops are growing. There is not much that you can do to help the crops now as they must develop and set seed for you to harvest.

Farming is not only about planting and tending the crops however. This month can be put to good use if you repair fences and buildings, and maintain your tractors and equipment. It always pays to do repairs before the damage is large – the English expression 'A stitch in time saves nine' – is still relevant today. If you do minor repairs and maintenance continuously then you will avoid a number of larger breaks that cost you a lot of money and down-time.

The winter crop farmers will be preparing to plant the next crop – we know that the 2016 season was a good one for the wheat and barley farmers in the Western and Southern Cape and we hope that this year will also be good for them. Remember not to cut corners – do everything that you do well.

Next month we will be having the Grain SA congress. During this month, you will be invited to regional meetings. Please make an effort to attend as Grain SA is a member organisation and the involvement of members is necessary to keep the organisation alive and vibrant. Remember that only paid up members are entitled to go to the congress – please make sure that you are paid up. If you are unsure about this, contact your development co-ordinator who will be able to assist you in this regard.

Marketing of maize might be a challenge – if you have not made plans yet, please do so. We would like you to get the best possible price for your crop so that you reap the rewards of your hard labour.

February is a good month for planting trees – this is not something that everyone does but it is becoming increasingly necessary for us to plant trees for our environment. Let us all plant at least one tree this month – you may not live to sit in its shade, but the shade that you are enjoying today was most likely planted by someone else – this is something we do for future generations.

Front page photograph taken by Johan Kriel

Seven frequently asked questions regarding the GRAIN SA CONGRESS

The annual Grain SA Congress will be held on 8 and 9 March this year. Pula Imvula asked Jaco Minnaar, Grain SA's Chairperson, to answer some questions that are frequently asked.

What is the Congress and how is it constituted?

The Grain SA Congress is the annual general meeting of members and is the highest authority of Grain SA. Congress is convened annually on a date and place determined by the Executive. The Congress is scheduled to take place on 8 and 9 March 2017 at NAMPO Park, Bothaville.

What is the Congress and how is it constituted?

The function of Congress is:

- The consideration, discussion and approval of the annual financial statements, auditor's report and the report of the Executive of Grain SA;
- The election of the chairperson and 2 (two) vice-chairpersons;
- The election of the Executive;
- The appointment of an auditor and the approval of his fees; and
- Handling of other special matters to be discussed.

How are delegates elected to Congress?

The Constitution makes provision for representation on the basis of paid levies per region for commercial regions. The number of delegates per region are amended annually by the calculation of the three year sliding average of levy payments per region.

After consultation with the representatives of the Farmer Development Working Group on 28 September 2016, it was agreed to that the delegation to Congress from the four developing regions, be calculated by taking into account the number of paid up 250 Ton Club members from these regions. The delegates from these regions will therefore be as per **Table 1**.

At the regional meetings before Congress, delegates from the regions will be nominated to attend Congress.

When must membership fees be paid-up?

Membership fees and the commodity levy (if applicable) are paid annually from 1 March to the end of February, when the financial year for membership fees and levies ends. The status of membership is determined by the payments received until the end of February that precedes Congress.

No payments for membership fees will be accepted on the day of registration for Congress or during the Congress.

The current membership fee for commercial members is R1 000 plus VAT as well as the commodity levy. The membership fee for study group members is R30 per annum.

Members who do not adhere to the requirements for membership, may not:

- Attend Congress as voting delegate; or
- Be nominated to serve in any official capacity. Such a person may only attend the Congress as an observer. Please ensure that paid up commercial members are elected as delegates to Congress.

Table 1: The delegation from developing regions are made up as follows:

Region	Executive Member	Delegates
Region 28	Maseli Letuka	12
Region 29	Gift Mafuleka	7
Region 30	Ramodisa Monaisa	3
Region 31	Israel Motlhabane	12
Total		**34**

It will be recommended to Congress 2017, that the constitution be amended to provide for only two categories of membership, ie commercial members who produce at least 100 tons of grain for marketing, and study group members who produce less than 100 tons of grain.

Enquiries regarding the status of membership can be addressed to Patricia or Elray at 086 004 7246.

Can I attend the regional meetings before Congress?

Notice of regional meeting before Congress will be sent out via the Grain SA and regional offices.

All grain producers are welcome to attend the regional meetings and ask questions to Grain SA staff and office bearers. Only paid up commercial or study group members may vote at regional meetings.

Who can vote at Congress?

Only members whose membership fees and the industry levy are paid up by the end of February 2017, qualify as a voting delegate to Congress.

How are the chairperson, two vice-chairperson's and Executive elected?

Congress must annually elect a chairperson and two vice-chairpersons from the delegates to Congress, and they must remain in office until the conclusion of the Congress following the Congress at which they were elected.

A person may be nominated and elected as chairperson or vice-chairperson of Grain SA, only if that person has been delegated as paid-up delegate to Congress by the region represented.

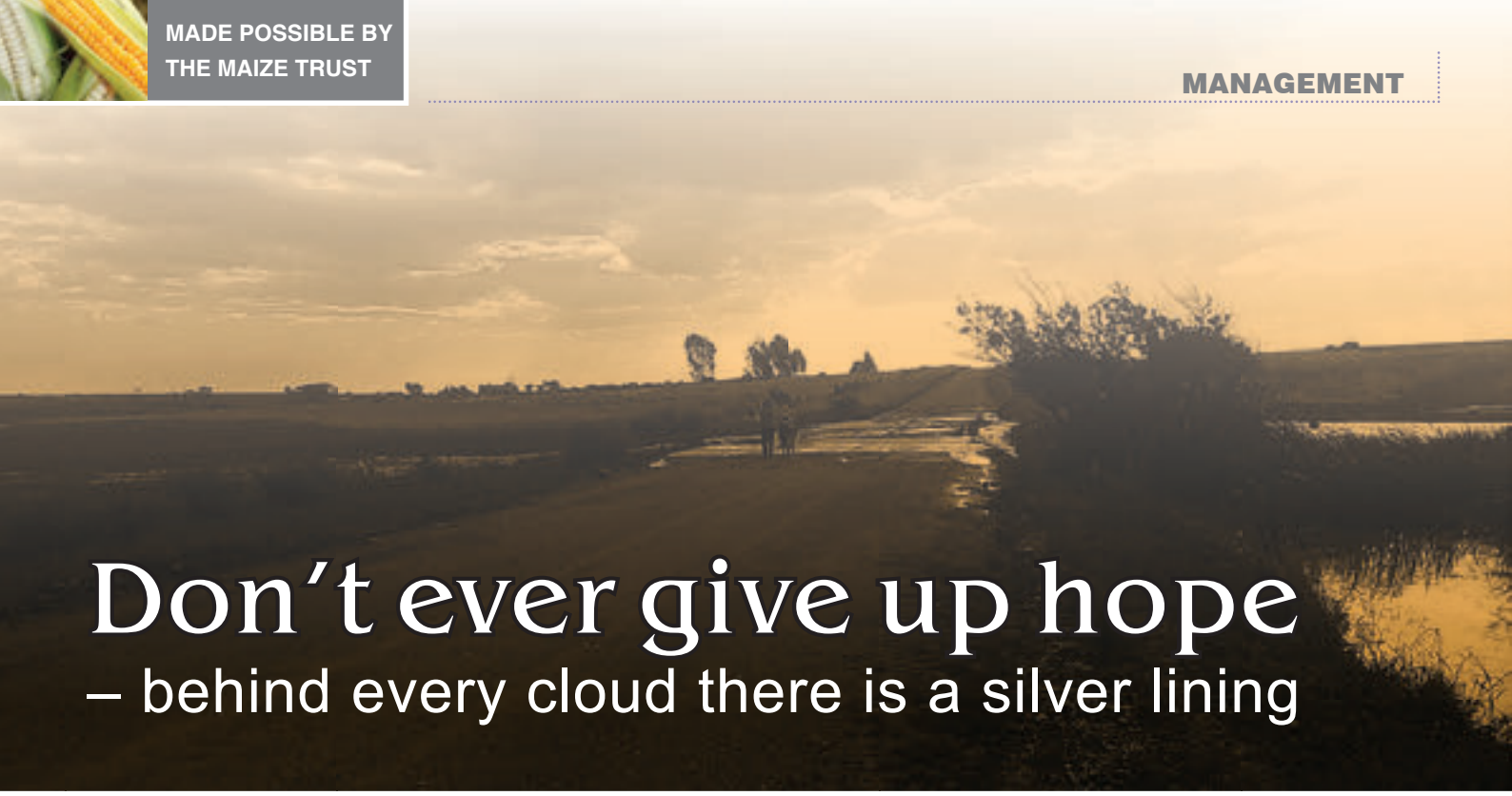
If the chairperson or first vice-chairperson is not representative of developing producers, the second vice-chairperson to be elected, must be representative of developing grain producers.

One representative for each region (1 to 31) are elected to the Executive for a term of two years. The members of the Executive of regions are nominated during Congress by the relevant region's delegates, and elected by them by closed ballot.

It will be recommended at the 2017 Congress that one additional member must be elected to the Executive, representing developing producers.

The Chairperson, two vice-chairpersons and the additional member do not represent a region.

Article submitted by Jaco Minnaar, Chairperson: Grain SA. For more information, send an email to jaco@compuking.co.za.



Don't ever give up hope
– behind every cloud there is a silver lining

Have you ever heard someone say: 'One day when I retire, or when I have enough money, I am going to take it easy – I might go farming.' Sure, the lifestyle on a farm must be more attractive than the hustle and bustle of the city. BUT how wrong is the perception that farming is stress free and an easy way to earn a living? It's not just tough – it's tougher than tough!

No matter how well a farmer manages his risk profile, nature is unpredictable and uncontrollable. Our dreams are regularly shattered by the elements. (In the past few years, the persistent drought and heat has been crippling). Grain farmers are particularly vulnerable. Farming is not for the faint hearted – you know that!

Farming is the most essential of all professions. Without the farmer and his/her tenacity there would be no food – without food there can be no life. And yet, farming is also the most humbling of all professions – there are no boundaries in the way nature amazes, humbles and disciplines a farmer.

> *"No situation remains the same for ever – change is inevitable, no matter how long it takes.*

I am sure we are all familiar with the lessons from the Bible regarding times of abundance and times of famine – about saving in the good times to provide for bad times. But the same lesson also tells us that no situation remains the same for ever – change is inevitable, no matter how long it takes. At this stage in South Africa, it can only get better – **I HOPE!**

When we wake up in the morning we HOPE it's going to rain, we HOPE our seed will germinate, we HOPE the bank manager will…, we HOPE…and HOPE…and HOPE. Hope and faith is all a farmer has to hold onto.

Consider these three quotes of encouragement by Confucius (Chinese philosopher 551BC - 479BC):

- *'Our greatest glory, is not in never falling, but in rising every time we fall.'*
- *'It does not matter how slowly you go so long as you do not stop.'*
- *'The man who moves a mountain begins by carrying away small stones.'*

Look for that cloud…Never give up HOPE – even if you have to start all over again.

Article submitted by Raymond Boardman, Farmer and Mentor at Buckingham, Ventersdorp, North West Province. For more information, send an email to rhboardman@gmail.com.

Pula Imvula's Quote of the Month

Keep away from people who try to belittle your ambitions. Small people always do that, but the really great makes you feel that you, too, can become great.

~ Mark Twain

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Prevention and control of Stalk borer in maize

Maize is the most widely produced crop in South Africa, grown extensively in the Free state, Mpumalanga, and the North West as well as most other provinces but in smaller expanses. In this country, we rely on maize as our staple diet. It is a commodity which forms a large part of our economy which is why we need to look after it carefully.

This can prove challenging sometimes as nature likes to throw a curve ball occasionally. All living organisms have enemies, even the maize plant. We need to learn how to defend our crops against these enemies to the best of our abilities. In this article, we will briefly outline the challenges of dealing with Stalk borer in our maize crops.

Identification of Stalk borer in maize

The best method to identify whether there is a Stalk borer infestation in your maize, is to scout and inspect your land. Try and scout in a grid pattern to get an overall picture of the field. Once you have finished scouting the field you should try and quantify the damage into a percentage which will help you determine if it would make economic sense to spray a chemical control measure.

How do you look for Stalk borer infestations? A farmer can pick up evidence on the maize from as early as three weeks. The most prominent sign to look for is holes on the leaves in perfect formation. This is referred to as 'shotgun' damage. As their name suggest the caterpillars feed primarily in the stalk of the maize plant. At tasselling stage the caterpillars do also sometimes drop on to the maize cob and feed on the cob itself or at the base of the ear. If this is the case a farmer can sometimes pick up premature fallen ears of maize, cutting of the energy supply to the ear of maize.

Another method of identifying infestations is to look for the physical caterpillars in the plants. One can walk through the field at night and identify weather there are small grey and white moths present. The grey moth is the male and the white moth is the female. Moths fly at night and lay their eggs on maize plants between the leaf sheath and the stem on the youngest fully unfolded leaf. Eggs hatch into caterpillars, which move into the growing points, where they start to feed.

African maize stalk borer.
Photo provided by Annemie Erasmus, ARC Grain Crops Institute, Potchefstroom

Control of Stalk borer

Once the farmer has determined that there is in fact a bad infestation of stalk borer in his maize crop (usually over 10% of plants) he will need to determine a plan of action. The primary method of control is by chemical application. The farmer will use an insecticide intended for control of stalk borer and broadcast it by using a boom spray. Before the farmer applies the chemical, he should be sure of the exact purpose of the chemical as not all poisons are the same. Some work on direct contact and others are systemic poisons which aim to kill larvae in the leaves and in the stems of the maize plant. Remember that all poisons are dangerous and should be handled with extreme caution and care. Wear gloves, a face mask and protective glasses when dealing with any chemical.

Prevention

Modern agriculture has made huge advances in cultivar development. Some maize cultivars have now been genetically modified to withstand infestations of Stalk borer. This is a big help to the farmer in controlling pests. It does however come at a price. GM maize seed cost considerably more than standard non-GM seed. When planting, standard maize seed the best method of prevention is being proactive. Scout your fields regularly to inspect for infestations of Stalk borer and take quick action when you identify a problem.

> *"The best method to identify whether there is a Stalk borer infestation in your maize, is to scout and inspect your land.*

Remember that Stalk borer and other insects have the potential to destroy thousands of Rand's worth of your crop. So, don't sit idle. Make sure that you are always aware of what is going on in your field.

Article submitted by Gavin Mathews, Bachelor in Environmental Management. For more information, send an email to gavmat@gmail.com.

101 Years of rainfall records – a valuable resource for crop production

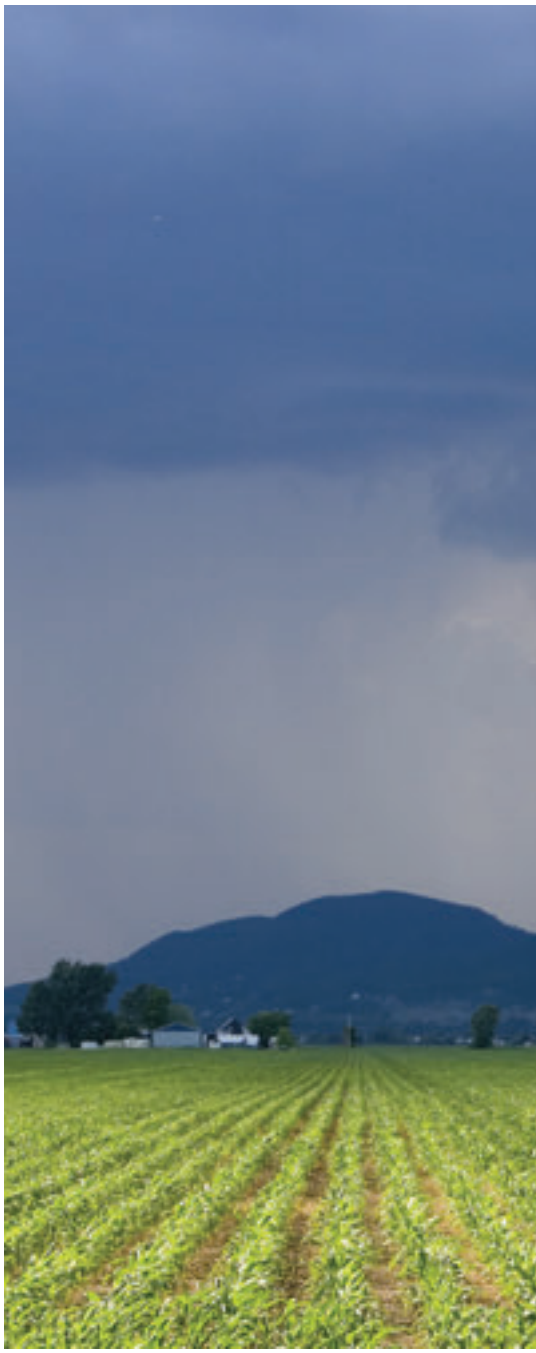
In Pula Imvula November 2016 the article 'Keep rainfall records to reduce risk' which was about keeping rainfall records and assessing the moisture content of your soil, can be read in conjunction with this article.

Many thanks must be extended to the Johnson family farming at Waterland for providing a 101 years of rainfall data. The Johnson family has farmed in the Eastern Free State and must be congratulated for being able to keep meticulous rainfall records over three generations of farmers for this extended period.

Rainfall records can be used in many ways. Knowing the long term annual and monthly patterns can be used in the broader aspect of calculating the probable runoff into large farm dams and water usage in general and for crop production planning on your farm. On larger farms the farmer should keep records at various locations depending on land use in low and high potential cropping sections and areas mainly used for planted pastures and natural veldt.

The conservation of moisture in the soil with the rainfall received in a long term crop and pasture rotation will be critical to the success of any farming operation. The huge costs and risks involved in producing crops can be mitigated by using the most optimum soil and moisture conservation cropping methods.

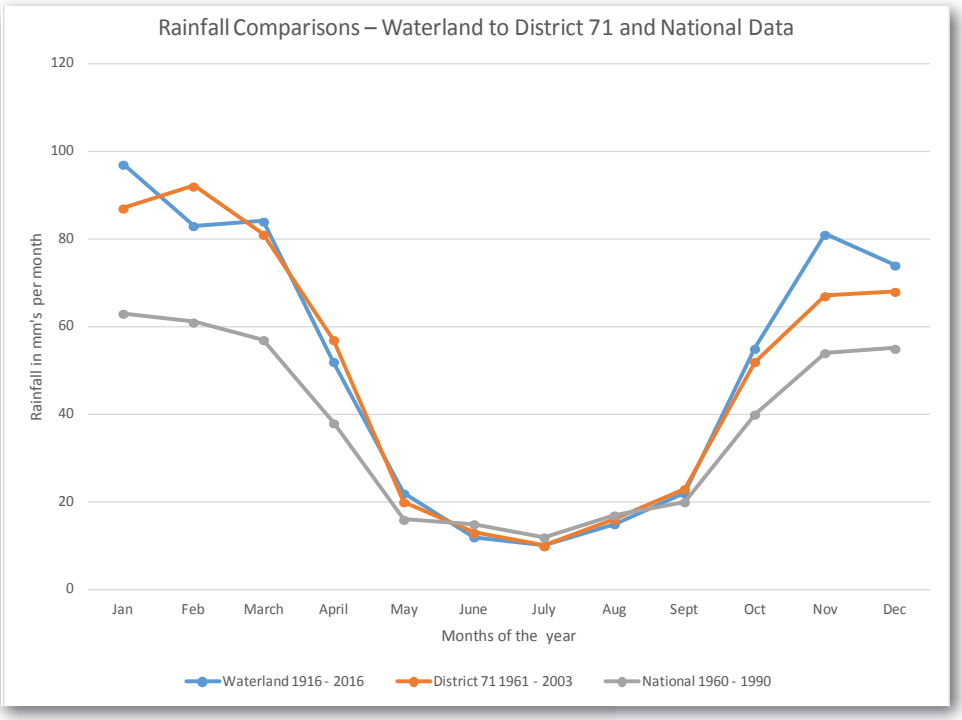
> *"Knowing the long term annual and monthly patterns can be used in the broader aspect of calculating the probable runoff into large farm dams and water usage in general and for crop production planning on your farm.*



Looking at your rainfall records

Graph 1 shows the monthly rainfall received on the farm Waterlands over a period of 101 years complied from the daily and monthly records compared to the district and national rainfall averages.

Graph 1: Monthly rainfall received on the farm Waterlands over a period of 101 years.



A wealth of information can be gleaned by analysing the data in various ways. Although the long term average is 607 mm/year the lowest rainfall received in a calendar year was 313 mm and the highest at 980 mm/year. The long term average for Waterlands is 607 mm compared to 585 mm/year for the larger rainfall district 71 within which the farm is found

> *The conservation of moisture in the soil with the rainfall received in a long term crop and pasture rotation will be critical to the success of any farming operation.*

and the national average of 448 mm/year. Not shown is the Free State average of 590 mm per year. South Africa is a so called arid land with a comparatively low rainfall compared to other countries.

However, the distribution of rainfall into higher falls in the crop producing area allows for the commercial production of dry land grain crops if good water conservation farming practices are followed. In areas where an average of 600 mm/year to 650 mm/year of rainfall is received and depending on the soil potential, cultivation of economically crops can be economically viable. An important factor is the distribution of the rainfall within the winter and summer production seasons and which rainfall can be effectively used for a particular crop's optimal yield. The graph shows that there is a very consistent pattern between local rainfall on a farm or district and our national annual pattern.

Rainfall and crop rotational planning

The analysis of the Waterland records show that 471 mm of rain or 78% of the total rain, over the long term, is received in the November to April summer production season and 136 mm in the winter fallow or non-growing season. The summer crop can be evaluated for the water usage and yield potential within the constraints of the 471 mm of rain potentially receivable in the growing season. Maize needs between 500 mm and 800 mm of water to produce a crop ranging from 3,5 t/ha to 6 t/ha depending on cultivar, soil potential and heat units received in your production area. With good conservation practices it is possible to store most of the 136 mm of rainfall in the lands between crops.

Thunderstorms of over 50 mm in the summer production period will result in some runoff of excess moisture that the soil can absorb. If we have, for example, 50 mm of runoff per annum we only have 421 mm of moisture available in the summer season plus the portion of winter rainfall saved in the soil for crop growth in any of the summer crops. The total estimated moisture available can be then used to more accurately estimate the optimum yield targets to be established for each crop.

Given the soil depth and rainfall amount and pattern it would not be wise to fertilise or increase inputs to aim for a 5 to 6 ton maize crop. These yields would only be probably achieved once or twice in 30 years when above average rainfall was received. A 3,5 t/ha target would be more realistic in these circumstances.

Conclusion

Use an accurate evaluation of your specific long term rainfall records, keeping patterns in mind for the planning of more realistic and economically viable crop yield targets.

Article submitted by a retired farmer.

The four legs of a business

Raymond Ackerman built Pick n Pay on a management philosophy of a four-legged table. The four legs of his table are the people (human resources), the merchandise leg (production), the promotion leg (marketing) and the administration leg (including finances).

Each leg had to be strong enough to keep the table upright, and of the same length, enough to keep the table balanced and level. If any one of the legs wobbles, the table tilts; if a leg collapses the table falls. The table settings placed on this flat, secure base are the day-to-day activities and operations of the business.

Remember in practice management means to plan, organise, implement and control (management task) all management areas properly. The management areas being production-, marketing-, purchasing-, financial-, administrative-, human resource-, public relations-, asset and stock-, and general management. At the same time, whilst applying each of the management tasks – the farmer/manager must also be the good leader, who can take decisions communicate internally and externally, delegate work, co-ordinate sections, motivate his employees and maintain discipline both informally and formally.

The story behind Ackerman's philosophy is that the table represents a business and the legs certain areas of management. Ackerman realised it is very difficult to manage all areas of management to perfection and he decided to concentrate on four areas – the four legs of his business. These areas should be managed properly to keep the business stable and running properly. If only one management area (leg) is not managed properly the business will not run as smoothly as it should and will eventually succumb to failure.

In view of a modern outlook to business, let's redefine this idea to one where each management area is seen as a table built on the four legs of planning, organising implementing and control. Your business can then be represented by nine tables – the nine management areas – stacked in the form of a pyramid. Think of the human pyramids we used to build as kids, when the guy at the bottom caves (normally the arms of this kid gave in), the whole pyramid came crashing down. Are you doing the right things in your business to support all the tables to keep your business pyramid upright?

For the smaller farmer who does most of the work himself it is all the more difficult to manage every area to perfection. Therefore, the message is that you should focus on four, crucial tables (management areas) on which the rest will stand or fall. Then focus on managing these areas to the best of your ability to build the necessary stability and strength. If these tables are functioning properly they will support the other tables. Most businesses, such as a farming business stand on the four tables of production, marketing, finances and human resources. You cannot do everything to perfection yourself, thus focus on these areas or the ones you choose. Each table has a role to play, and it is the bosses' job to keep the balance and get everything working.

> *"Circumstances differ from year to year and therefore your management needs constant adjustment.*

Are your table tops level? If one leg is longer than the other legs, the table will slant, and a slanted table is not a good one on which to place the table settings. For instance – did you plan the work of each area properly but then neglected the implementing of your plans. Such as you have planned to plant 30 000 maize seeds/ha but eventually only some 20 000 were planted.

While all the tables are vital to the survival and prosperity of your business, the marketing table is often the one that collapses first because of poor legs. 'Easy to make, difficult to sell', as the saying goes. If this table collapses the other tables will eventually follow suit. The market is ruthless, it has no sentiment, and this table is the one that is often the most difficult to keep level. The marketing boards of yesteryear resulted in famers not needing to develop marketing skills, and deregulation has thrown them into the deep end. Therefore, always apply the principle – 'never produce any product before you have not secured the marketing of that product'.

The concept of Ackerman's table in today's world has a further oversimplification. In the business world of today, especially agriculture, the tables stand on a surface that is ever changing and shifting – because of for instance political insecurities, marketing challenges, cost-price difficulties, and the climate. The legs need constant attention, and the table settings need constant re-arrangement.

Remember the only constant today is change – keep working on the legs of the tables – planning, organising implementing and control. Circumstances differ from year to year and therefore your management needs constant adjustment.

Article submitted by Marius Greyling, Pula Imvula contributor. For more information, send an email to mariusg@mcgacc.co.za.

Success under irrigation

The climate and environment greatly influence the development and yield of maize. With production under irrigation we can manipulate some of the environmental and managerial variables to optimise production.

This information is provided to emphasise the critical production practices including efficiency and timing needed for optimum growth to achieve higher yields and profits.

Cultivation

- An even soil surface is an advantage.
- Excessive runoff can be a problem and is often due to a compaction layer.
- If the soils are prone to runoff, perform a 'wet-rip' before the V5 growth stage. It increases water infiltration and aeration – irrigate soon afterwards as plants can rapidly go into moisture stress.

Planting and plant population

The goal is uniform germination to minimise inter-plant competition. This is determined by the proper and efficient functioning of your planter. Ensure that it is set up and calibrated correctly before planting and monitor performance regularly throughout the planting process. The goal of planting is to obtain uniformity:

- Even soil seedbed, plant spacing, planting depth, soil contact, fertiliser placement and irrigation.
- Good contact between the seed, soil and moisture is a function of the planting depth and pressure wheel setting.
- Optimal germination will take place above 15°C.
- Formation of a crust and clods are unfavourable.
- Good weed control is critically important in the plant's early development stages.

Fertilisation

- Check application regularly.
- Fertigation is effective.
- Avoid nutrient deficiencies at all times.
- Beware of a high salt index and fertiliser burn when band placing.
- Band placement improves early vigour.

Nitrogen

- For high yields, 280 - 350 kg N/ha is recommended.
- Apply ± 20% at planting.
- If application can be done through the irrigation system, the balance of the nitrogen can be applied as six topdressings depending on the soil type. The amount can be gradually increased as plants become more mature.

Recommended top-dressing timings

- After emergence, at about the three leaf stage.
- Five to six leaf stage.
- Ten to twelve leaf stage.
- Eighteen leaf stage.
- Tassel emergence.
- Just after flowering.

Water scheduling: Uniform application

- Check uniformity and physical delivery of the sprinkler package.
- Sprinkler lifetime is limited and should be checked at least every five years. Make sure the sprinkler package can supply enough water in the critical times.
- The most critical time is one week before pollination up to and completion of grain filling. Apply water at the right time and right amount/growth stage.
- Water application is a function of soil type, climate and root development.
- Check uniform wetting of the field.
- Irrigate until 80% of the husk leaves have turned brown.

Corrective management practices may be necessary under the following circumstances

- Heavy rainfall after planting and before emergence.
- Large variation between day and night temperatures.
- Low night temperatures.
- Strong winds.
- Crusting.
- Leaching of fertiliser.

Apply quality control regularly without exception.

Guidelines

Intra-row spacing	15 cm - 13 cm (not less than 12 cm between plants)
Plant population	80 000 - 90 000/ha for ultra-early hybrids
Planting depth	5 cm - 8 cm
Planter	Plant slowly, ± 5,5 km/hour to ensure uniformity

Article submitted by Peet van der Walt, Advertising Manager, PANNAR SEED (PTY) LTD, South Africa. For more information, send an email to peet.vanderwalt@pannar.co.za.

Correct spacing of groundnuts is essential

A good population of groundnuts adapted to the harvester.

Dense spacing

Before the ideal population of groundnuts can be examined, one should first look at the issue of too dense spacing: why it is detrimental to the plant and what the effect is on the development of the groundnut plant. Groundnuts that are spaced too densely will be planted less than 37 mm from one another.

The competition for light, nutrients and moisture is the most important effect of too dense spacing. Plants growing under these circumstances therefore usually develop very poorly.

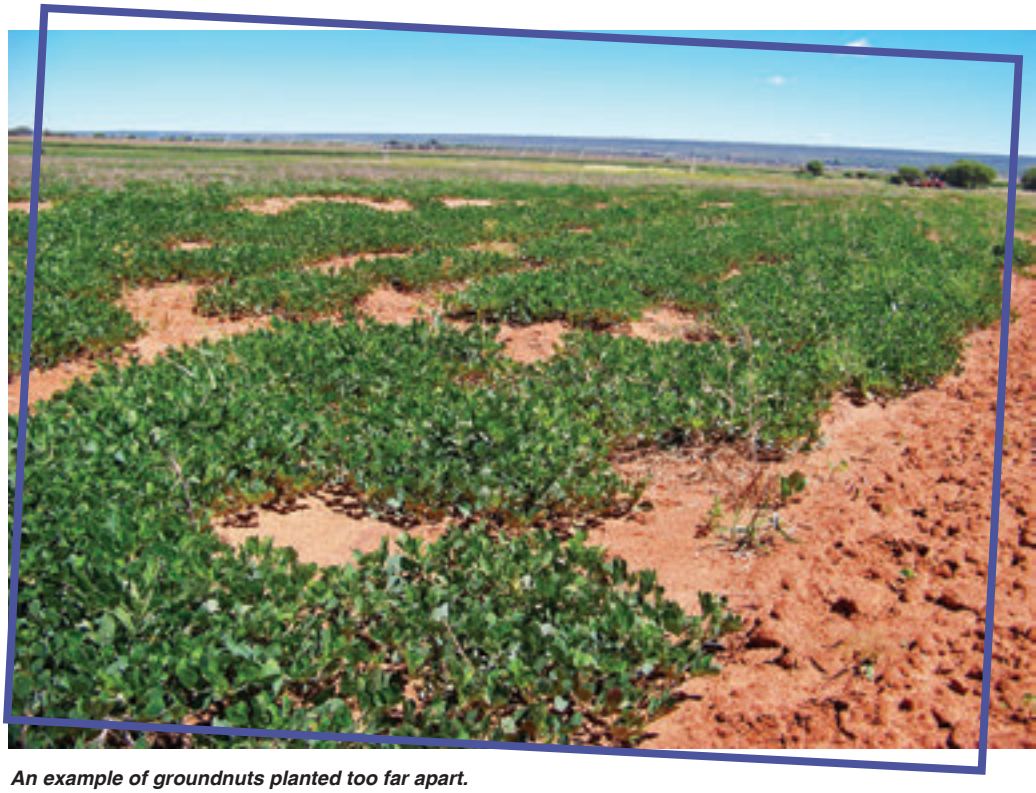
A single stem forms, carrying only a few pods or, in extreme cases, none at all. The development of lateral branches is limited and the absence of lateral branches on the first two nodes of the main stem means a loss of more than 80% of the potential production.

With an overly densely spaced plant population like that, the plants are forced to produce on higher nodes on the main stem. These nodes develop later and produce pods that are immature on harvesting and provide an inferior product.

The literature has often reported on the advantages and disadvantages of different plant spacings for groundnuts, but this leaves the farmer with more questions than answers. The crux of the matter remains: Yield remains the most important factor, but it has to be cost effective.

Input costs can skyrocket, with seed costs being one of the main expenses. In the past it was not strange to see groundnut fields looking like they had literally been sown like wheat. Seed and manual labour used to be cheap back then, but currently it is a huge expense for the farmer.

Technology makes the farmer's life easier, because the difficulty of calculating plant population is almost something of the past. By pushing a few buttons the planter is quickly informed what is expected and, in return, the planter informs the farmer of any problems during the planting process. If only all farm planning could be sorted out by pushing a few buttons…



An example of groundnuts planted too far apart.

These were planted too sparsely.

Sparse spacing

Sparse spacing can be even more detrimental to groundnut yields. Plants spaced too sparsely are more susceptible to rosette virus contamination. This happens because single plants are colonised by aphids and leafhoppers.

A contaminated plant appears small, stunted, yellow and rosette like. The development of the sparsely spaced plants is otherwise normal, with more lateral branches than correctly spaced plants. Therefore, a large number of pods are produced per plant, which falsely leads farmers to believe they will have a higher yield.

The higher production of pods per plant does not compensate for the lower plant population per hectare, and the yield is consequently also much lower. These sparsely spaced groundnut plants also grow flatter, which makes leaf spot control more difficult.

Correct spacing

The big question therefore remains: What is the correct spacing? According to research, there is a material increase in yield as the spacing is adjusted, up to the point of 75 cm between rows and between 37,5 mm and 75 mm inner-row spacing.

The optimal inner-row spacing is therefore 50 mm to 70 mm. Once this spacing is changed – be it closer or further apart – a reduction in yield as high as 15% can be expected.

Inter-row spacing is another important factor that needs to considered. In general the farmers feel that the row width is mainly determined by the available moisture.

The other determining factors of row width are the facilitation of disease control and the harvesting process. The adaptation of row widths with the groundnut harvester used by the farmer is very important to reduce harvest losses and to facilitate the harvesting process.

The use of twin-row plantings has also become very popular among farmers, but again the above-mentioned factors as well as all other factors should be taken into account. Before switching to a different row width, it would be wise to plant a test planting and to then compare the yield. It has been found that big differences exist between different farms – especially regarding management practices. Therefore, find out exactly what works on a specific farm.

Good seed

To obtain the best yield, good seed needs to planted with a suitable planter in wet soil at the right time. 'Good seed' in this context means seed that is not damaged, with a high germination potential.

This seed should also show good growth vigour. It very important to treat all seed to be planted with a fungicide before plant time. This practice protects the young, germinating groundnut plants against soil-borne pathogens and fungi and increases the emergence success of the seed.

With new technology at the farmer's disposal, the correct plant population and depth are factors that can be addressed with the push of a button. Precision planters have removed many headaches from the planting process.

Groundnut calculation

Many farmers regularly ask if there is still enough time left to expect a good yield – particularly when the season is late and the groundnut growth period of 150 days needs to be taken into account.

In order to answer this question, a groundnut calculation must be done. Bear in mind that once groundnut seed has been planted, it takes the seed between 10 and 14 days to germinate and become visible in the field.

The groundnut plant then apparently stops developing completely for 21 days before it actually starts growing actively. However, during this time of visual arrest, the root system forms, and farmers should not be overhasty and needlessly apply strange substances to the groundnuts.

After approximately 35 to 42 days, the first flowers will appear and the first crop of the groundnuts forms. This first crop takes between 60 and 90 days to reach maturity – depending on the weather.

By making this groundnut calculation, the farmer can determine if there will be enough time from planting to the estimated harvest to form a good yield.

The correct plant time varies from year to year and also from area to area. Depending on the prevailing minimum temperatures and the available moisture, the plant time stretches from approximately middle October until the end of November. However, one has to keep in mind that the optimal plant time is actually around the middle of November.

Therefore, there is much more than plant spacing to keep in mind when groundnuts are planted. Proper planning stretches from before plant time until after harvesting.

Article submitted by Loureine Muller, ARC-Grain Crops Institute, Potchefstroom, for SA Graan/Grain February 2016. For more information, send an email to salomonl@arc.agric.za.

Integrated crop and pasture-based livestock production systems

This article highlights a specific crop species that can play an imperative role in conservation agriculture (CA)-based crop-pasture rotations. Besides improving the physical, chemical, hydrological and biological properties of the soil, such species, including annual or perennial cover crops, can successfully be used as animal feed.

Livestock production systems are in many ways dependant on the utilisation of forage species, in this case as an annual cover crop, and can therefore become an integral component of CA-based crop-pasture rotations. It is imperative to identify a plant species fulfilling the requirements of a dual purpose crop, i.e. for livestock fodder and/or soil restoration.

This article focuses on a tuber cover crop with crop potential used to improve soil conditions and to provide high quality forage for ruminants.

Mammoth Purple Top leafs (middle).

Brassica rapa L., turnip or raap

Fodder turnips are a member of the mustard family. They have large bulbous (round) or tapered roots of which a large percentage of the root is exposed above the soil and is available to grazing animals. These turnips are very attractive forages to ruminants as they are rich in carbohydrates. The turnips' foliage is erect and succulent and is normally grazed in the first grazing cycle, followed by the roots.

The two most popular cultivars grown in South Africa are Mammoth Purple Top and Green Globe. Turnips are biennial crops which generally form seed the second year or even late in autumn if planted early in spring. Turnip leaves are usually light green, thin and sparsely pubescent (hairy).

In addition, a white-fleshed, large bulbous or tapered root develops at the base of the leaf petioles. The storage root varies in size but usually is 7,5 cm to 10 cm wide and 15 cm to 20 cm long.

Agro ecological distribution

Turnips are known to be cold-hardy and drought tolerant. The most vigorous root growth takes place when low temperatures are prevalent. Turnips are resistant to moderate frost and short periods of moisture stress. The leaves of these plants maintain their nutritional quality even after repeated exposure to frost. This species can produce a good crop even when receiving a rainfall as low as 350 mm - 500 mm per annum. Higher production yields can be obtained if irrigation is applied.

Turnips grow best in a moderately deep loam, fertile and slightly acid soil. Turnips do not do well in a soil that has a high clay content, is wet or poorly drained. For good root growth turnips need a sandy to loam soil that is loose and well aerated.

Soil fertility and weed control are crucial for high productivity. Nitrogen (N) and phosphorous (P) are the most important elements in forage production, levels of 75 kg to 120 kg N/ha and 60 kg P/ha for the growing season is normally recommended. If soils are low in potassium (K), application of 30 kg/ha to 60 kg/ha is recommended. Turnips will grow well in soils that have a pH range of 5 to 6,5.

The sowing density of turnips is 2 kg/ha to 4 kg/ha which can result in yields of between 5 t/ha to 10 t/ha depending on environmental and management conditions. The higher seeding rate will result in a higher proportion of leaves to roots in turnips. Turnips can be drilled, broadcast or aerial seeded. Oats and other small grains can be seeded with Brassicas as a cover crop mix.

Management and utilisation

Turnip seed is very small and it is critical that it is planted into a fine, firm and weed free seedbed with adequate moisture for germination and emergence. This species can also be seeded into the stubble of a previous crop with minimum- or no-tillage. When seeding into an existing crop, be sure to suppress the crop, since turnips do not compete with other species like grasses.

As with any crop, weed control is very important, especially during drought years when weeds compete with crops for water. Turnip seed does not germinate well in soils with too high temperatures and prefers temperatures of around 10°C to 15°C. This supports the planting of turnips into stubble as soil temperatures beneath plant material are lower.

Turnips can provide grazing at any time during the winter and autumn depending on the seeding date. This species can be used as a good foggage crop, which means it retains its forage quality well into the early winter even after extreme cold temperatures have occurred.

Turnip plants are ready for grazing or green feed when the forage is about 30 cm tall (70 to 90 days after planting). The pasture

Mammoth Purple Top leafs and tubers.

should be grazed for a short time and the livestock removed to allow the plants to regrow. A strip grazing system is desirable to ensure complete grazing.

The forage quality of turnip is outstanding with exceptionally high protein content and can be regarded similar to concentrate feeds. Bearing the latter in mind, precautions should be taken to prevent any animal health problems. Livestock should not be starved when put onto a field of turnips, as this will cause animals to over indulge causing serious metabolic disturbances.

Animals should be conditioned to turnips so that a healthy rumen microbial population can develop to ultimately digest the high levels of protein in forage turnips. Feeding low quality hay with high fibre content can facilitate optimal utilisation of turnips. Turnips could be grazed in approximately 60 to 90 days after planting depending on varieties.

Soil conservation and health benefits

Turnips just like many other Brassicas provide a 70% to 80% soil coverage. These species are well known for their ability to capture soil nitrogen (N) remaining after a crop harvest. Turnips produce large taproots that can grow as deep as 1,5 m and often deeper and can play a significant role in alleviating compaction especially when soils are moist and easier to penetrate.

Their deep rooting also allows these crops to scavenge nutrients from deep in the soil profile. As the large tap roots decompose, they leave channels open to the surface that increase water infiltration and improve the subsequent growth and soil penetration of crop roots.

Most Brassicas including turnips have been shown to release metabolic by-products that exhibit broad activity against bacteria, fungi, insects, nematodes and weeds. Brassica cover crops are often mowed and incorporated to maximise their natural fumigant potential.

Recent studies world-wide have indicated the potential use of turnips and other Brassicas for pest management. Preliminary results show that different varieties contain different amounts of bioactive chemicals and when using these species as green manure, fewer pests were noted. Like most green manures, Brassica cover crops also suppress weeds in the autumn with their rapid growth and canopy closure.

A mammoth Purple Top tuber.

Integrated crop and pasture-based livestock production systems

Tubers.

Management challenges

Regarding the use of a turnip cover crop in animal production systems, there are a few challenges regarding animal health. Since most Brassicas have a low amount of fibre it is extremely important that turnips should not constitute more than 75% of the ruminant's diet.

It is therefore important that when turnips are grazed that a lower quality roughage be supplemented. If turnips are not grazed carefully, health disorders such as bloat, atypical pneumonia, nitrate poisoning and hypothyroidism can occur.

Turnip crops may suffer from a variety of diseases such as rhizoctonia rot, club root, turnip mosaic virus, root knot, anthracnose, leaf spot and white rust. Some of these diseases can lead to crop failure if rotation or other control measures are not used. Resistant varieties are available to some diseases. To prevent problems with diseases, Brassicas should not be grown on the same site more than two years in a row.

Turnips also are subject to insect damage and can include flea beetles, common turnip louse or aphid. These insects are more common under conventional tillage practices and can be controlled with appropriate insecticides when applied to the soil at planting.

Animal production aspects

Due to highly variable climatic conditions in South Africa production of fodder turnip (cultivar Mammoth Purple Top) in Limpopo and Gauteng yielded the most when planted in February and defoliated late August, resulting in 5,1 t/ha and 3 t/ha of which 2,4 t/ha and 1,7 t/ha were leaves and 1,7 t/ha and 1,3 t/ha tubers, respectively.

Research has shown that turnip produces high-quality forage and livestock eat the stems, leaves and roots of turnip plants. Aboveground parts normally contain 15% to 25% crude protein, 65% to 80% in vitro digestible dry matter (IVDDM) with the roots containing 8% to 14% crude protein and 80% to 85% IVDDM. The mature forage Brassica maintains a high nutrient concentration into autumn and early winter. Turnips can be 80% to 90% digestible. By comparison, high quality lucerne hay is approximately 70% digestible.

Turnips are readily grazed by cattle and sheep and provide useful supplementary grazing in the mid-winter or late autumn when warm-season grasses and cereal forages are non-productive. Due to their nutritive value, turnips are especially useful for feeding animals with high nutritive requirements.

Such an application might include fattening lambs, flushing ewes and feeding lactating ewes, dairy cattle and young beef cattle. Lambs grazing turnip gained an average 214 g/day to 249 g/day, whereas lambs fed hay, gained 186 g/day to 195 g/day.

Conclusion

The Brassica species are valuable cover and forage crops. They do however have special management requirements especially when it comes to utilising them for animal grazing. As a dual purpose crop, their specific management requirements are negligible when the soil conservation benefits are realised. It does take good planning to integrate turnips into a grain production system, but when this crop is being used as part of a multi-functional cover crop programme and/or mix, specifically to restore soil quality, this system is much easier to apply with substantial soil and animal grazing benefits.

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Article submitted by Wayne Truter, University of Pretoria, Chris Dannhauser, Grass SA, Hendrik Smith, Grain SA and Gerrie Trytsman, ARC-Animal Production Institute, for SA Graan/Grain SA February 2016.
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What factors affect weaner prices?

Grain SA/Sasol photo competition

The feedlot industry buys, feeds and slaughters approximately 1,6 million calves annually and would like to deliver a 260 kg A2/A3-carcass that meets the broader market's need – although deviations can occur for specific markets.

A question that always arises is how the feedlots determine a specific price for the calves and why it changes from time to time.

The average calf buying mass is 235 kg, which constitutes 110 kg - 115 kg of the final carcass, while 145 kg - 150 kg are added in the feedlot. The feedlot operator knows more or less what his production costs will be to add 145 kg, as well as how the specific calf should perform in the feedlot.

Economic market factors and inherent characteristics of each animal – that can affect its production efficiency – make the calf more or less suitable to be fed profitably.

For the above reasons there is no single price for weaners. The price is mainly determined by the following factors:

Economic factors

- Current and prospective grain prices (locally and internationally).
- Projected meat prices (as well as poultry prices).
- Economic factors that can influence the demand for meat (interest and inflation).
- World meat-trading trends, import prices and supplies.
- Import prices and exchange rates.

Characteristics of the animal

Characteristics of the animal that influence the economic addition of 145 kg to the carcass and its suitability for the proposed market

- Calf buying mass.
- Age.
- Breed type/maturation type (early, intermediate, late).
- Sex mix of the group (100% steers are ideal).
- Condition (dry versus fat).
- Historic feedlot performance – if any.
- Prior farm management regime.
- Health status/physical defects/parasites/expected mortalities.

Buying area

- Supply and demand in the area (availability of grazing).
- Auction versus out of hand.
- Distance from the feedlot.
- Size of the group of calves presented.
- Previous health history of the area (measles, lung conditions, ticks and parafilaria).

Technology applied by the feedlot

- Feed formulations.
- Processing of feed ingredients.
- Additives and growth promoters.
- Health management programmes (plus inoculation programme).

Specific feedlot requirements

- Specific market requirements.
- Grazing available for backgrounding.
- Stock levels.
- Carcass production costs.

The overall determining factor is: Can 145 kg of weight be added economically to reach the ideal carcass mass? The old principle of the wrong calf cannot be fed right is now just as relevant as in the past.

Article submitted by Dave Ford, executive director: SA Voerkraalvereniging for SA Graan/ Grain March 2016. For more information, send an email to dave@safeedlot.co.za.

Grain SA interviews...
Andries van der Poll

This passionate farmer, from the Swartland district in the Western Cape Province, believes that hard work and proper planning is the main contributor to his progress and success. Andries van der Poll has the experience and motivation to achieve his goal of fully diversifying his farm and would like to share his passion with other young aspiring farmers.

Where and on how many hectares are you farming? What do you farm with?

We farm on 450 ha (with 42 ha water rights) in the Swartland district near Gouda. We farm with sheep, cattle, grain (wheat, oats, lupine and medic for crop rotation) and this year we started with maize. We also have pastures under irrigation.

What motivates/inspires you?

I am passionate about farming and have been dreaming about owning my own farm since 1993. We promised ourselves that the day we have the farm we will live our dream. I have the full support of my wife and children who are mad about the farm life and farming. The first day when we visited Klipdrift in 2011, we promised ourselves that if we had the opportunity to live here we will make a huge success of this farm. I always dreamed about having my own estate, and that is what motivates me. We have a lot of dreams but we are trying to do it bit by bit.

Describe your strengths and weaknesses

Our strength is the fact that we are experienced enough, passionate and motivated to make a success of this project. Our weak point is that this is a 'difficult' farm.

What was your crop yield when you started farming? What are your respective yields now?

In 2014 we started farming with oats and lupines and in 2015 we started with wheat, but because of the drought we could only harvest 600 kg/ha. The previous year was a little bit better but because we planted late we could only harvest 1,9 t/ha. With the cattle we had an 80% weaning rate and with the sheep we started with 60% in 2014 and in 2016 we ended with a 110% weaning rate.

What do you think was the main contributor to your progress and success?

Hard work and proper planning is the key to our progress and success. Targets are also very important. You need to know what is happening on your farm and knowing where you are going or want to be is also important.

What training have you received to date and what training would you still like to do?

We have received training in Finance, Sheep Management – Dohne Merino, Welding and Wheat Production. My wife also received Tourism and Finance training and is currently busy with Mixed Farming training at Kaap Agri Academy, from who she won an award for Top Achiever in 2016.

Our workers need a Life Skills course as well as a Machinery Maintenance course and I want to do a diploma course in Livestock farming as well as in Pest/Chemical Control in Grain.

Where do you see yourself in five years time? What would you like to achieve?

In five years' time we want this farm fully diversified, yielding 3 t/ha wheat, 12 t/ha maize on 40 ha, 2 ha of Lucerne and achieving a 140% weaning rate on the sheep as well as a fully expanded agri-tourism component. We would also like to train young people who are passionate about farming.

What advice do you have for young aspiring farmers?

My advice to young farmers is: Never give up, dream big and never stop dreaming. Write it down somewhere and think twice a day about it, don't leave it there, start working on it and never give up and be hard on yourself.

Article submitted by Liana Stroebel, Provincial Co-ordinator, (Western Cape) of the Grain SA Farmer Development Programme. For more information, send an email to liana@grainsa.co.za.

The Corner Post

NHLANHLA SICELO MNGADI

Mentorship is actually more important than funding

Nhlanhla Sicelo Mngadi (47) speaks passionately about farming. To him the most exciting thing about being a farmer is seeing growth whether it is the maize on the field which has grown from a seed or a calf growing into a mature animal. 'It is wonderful to see the change taking place in nature. It is as if nature is giving back to you when you farm,' he adds.

This nature-loving subsistence farmer farms on 43 hectares in the Estcourt district in KwaZulu-Natal. His farm is situated in beautiful surroundings near the Bushman's River on the way to Giant's Castle. He owns some cattle and cultivates maize. During November 2016 he planted 9 hectares of the 18 hectares of arable land. His short term goal is to plant the total 18 hectares within three years. Although the drought has prevented him from planting any vegetables (cabbages and tomatoes) this season, he believes that as it has already rained it is going to be a better season than the previous one.

To Nhlanhla the term agricultural industry comprises not only commercial producers but the variety of smallholder and emerging farmers as well. It also includes anyone who is involved in the food chain – those who market the farmer's produce, the relevant government departments and the financial institutions who supply resources to assist farmers with production. The companies and representatives of all the other agricultural products – whether it is mechanisation or seed and herbicides – all form part of this large industry ensuring food security.

He realises that the role he plays in the agricultural industry may be small. However, he knows that he is adding value as he is helping to put food on the table of people in his community with what he produces and sells at the local market. Without his contribution there would be less food available in that area.

> *"Grain SA came with a different approach than the department and made a big difference.*

If there is one change he would like to see implemented it is the way the Department of Agriculture, Forestry and Fisheries works with farmers. He feels that a different approach is needed where government officials visit farmers on their land so that they can discover what the real need is on ground level. 'It seems that the department has decided farming should be done in a certain way, but experienced farmers know that that way isn't viable. I don't think the department understands the struggles farmers are confronted with and the problems we face from one season to the next,' he shares.

Nhlanhla says developing farmers especially have been struggling for a long time and although the government has offered some assistance the funding provided for these projects has been wasted and no results have been delivered. 'Funding from the department isn't awarded to the people who need it and are working hard,' he adds.

When asked if funding was the biggest need amongst subsistence farmers, he quickly answers: 'No, funding on its own won't help. Subsistence farmers need mentorship almost more than funding'. He praises Grain SA for their mentorship programme: 'Grain SA came with a different approach than the department and made a big difference,' he says about the hands on approach of the Grain SA Farmer Development Programme. According to him this programme develops skills and is initiating growth in the agricultural industry.

There is a Malagasy proverb, 'Advice is a stranger; if he is welcome he stays for the night. If not, he leaves the same day.' Two years ago Gavin Mathews became Nhlanhla's mentor and as this passionate farmer welcomed the advice, the young mentor has walked the extra mile. 'Gavin has made a big difference in my farming operation. I did not know anything about planting times and did not realise that a variety of factors have to be in place before you can plant. You cannot just decide that you are planting on the 15th of November. You have to check that the conditions are right before you plant and if they are not, you have to wait.'

Nhlanhla is married to Thembile and they have three children, two sons and one daughter. His long term goal is to be able to purchase his own implements and have enough equipment available to produce more food and increase his income. His dream for agriculture in South Africa is that more time, energy and funding will be invested in the agricultural industry.

It is said what you help a child to love, can be more important than what you help him to learn. Nhlanhla is sure if agriculture is promoted at school level with the passion he has for this career, more young people will become interested in making agriculture their career choice after the completion of their schooling. He is already encouraging his sons to join him on the farm after the completion of their education by cultivating a love for agriculture.

This month's edition of The Corner Post was written by Louise Kunz, Pula Imvula contributor. For more information, send an email to louise@infoworks.biz.

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