

PULA INVULA

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



**NOVEMBER
2016**



MONSANTO



Editorial team

GRAIN SA: BLOEMFONTEIN

Suite 3, Private Bag X11, Brandhof, 9324
7 Collins Street, Arboretum
Bloemfontein
► 08600 47246 ◀
► Fax: 051 430 7574 ◀ www.grainsa.co.za

EDITOR IN CHIEF

Jane McPherson

► 082 854 7171 ◀ jane@grainsa.co.za

EDITOR AND DISTRIBUTION

Liana Stroebe

► 084 264 1422 ◀ liana@grainsa.co.za

DESIGN, LAYOUT AND PRINTING

Infoworks

► 018 468 2716 ◀ www.infoworks.biz



PULA IMVULA IS AVAILABLE IN THE FOLLOWING LANGUAGES:

English,

Afrikaans, Tswana, Sesotho,
Sesotho sa Leboa, Zulu and Xhosa.

Grain SA Farmer Development Programme

DEVELOPMENT CO-ORDINATORS

Johan Kriel

Free State (Ladybrand)
► 079 497 4294 ◀ johank@grainsa.co.za
► Office: 051 924 1099 ◀ Dimakatso Nyambose

Jerry Mthombathi

Mpumalanga (Nelspruit)
► 084 604 0549 ◀ jerry@grainsa.co.za
► Office: 013 755 4575 ◀ Nonhlanhla Sithole

Jurie Mentz

Mpumalanga/KwaZulu-Natal (Louwsburg)
► 082 354 5749 ◀ jurie@grainsa.co.za
► Office: 034 907 5040 ◀ Sydwell Nkosi

Graeme Engelbrecht

KwaZulu-Natal (Louwsburg)
► 084 582 1697 ◀ graeme@grainsa.co.za
► Office: 034 907 5040 ◀ Sydwell Nkosi

Ian Househam

Eastern Cape (Kokstad)
► 078 791 1004 ◀ ian@grainsa.co.za
► Office: 039 727 5749 ◀ Luthando Diko

Liana Stroebe

Western Cape (Paarl)
► 084 264 1422 ◀ liana@grainsa.co.za
► Office: 012 816 8057 ◀ Hailey Ehrenreich

Du Toit van der Westhuizen

North West (Lichtenburg)
► 082 877 6749 ◀ dutoit@grainsa.co.za
► Office: 012 816 8038 ◀ Lebo Mogatlanyane

Julius Motsoeneng

North West (Taung)
► 076 182 7889 ◀ julius@grainsa.co.za

Sinelizwi Fakade

Mthatha
► 071 519 4192 ◀ sinelizwifakade@grainsa.co.za
► Office: 012 816 8077 ◀ Cwayita Mpoty

Articles written by independent writers are the views
of the writer and not of Grain SA.

NKGONO JANE SAYS...



IN THIS ISSUE...

04

Keep rainfall records to reduce risk

One of the first thoughts on a farmers mind at the start of another day on the farm is what is the weather going to bring today...

06

Be ethical and stand tall

A study conducted by students at the Iowa State University about ethics in agriculture in 2002 was extremely revealing...

08

Pre-emergent herbicides remain important

Spring has arrived in South Africa. We hope that this year the rains will arrive with the summer months that lie ahead...

09

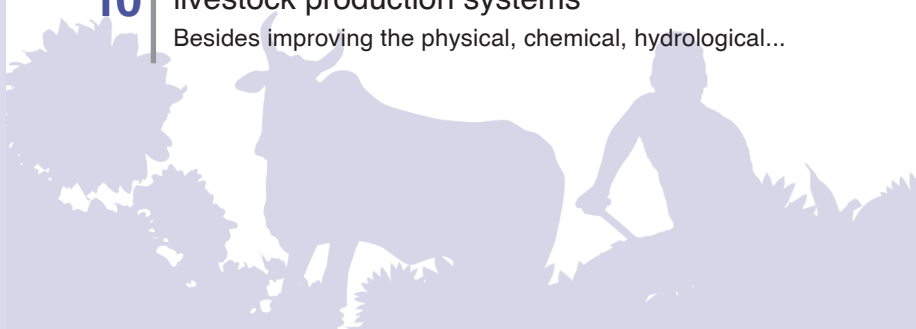
Manage the good years well

In a number of our previous articles we have stated that South Africa is actually a dry country...

10

Integrated crop and pasture-based livestock production systems

Besides improving the physical, chemical, hydrological...



THIS PUBLICATION IS
MADE POSSIBLE BY THE
CONTRIBUTION OF
THE MAIZE TRUST

As farmers, you have experienced a very difficult year – it is planting time again and we do really hope that this will be a year of normal rainfall and good crops. If you all continue to work hard and do the right thing, when the rains fall then you will be in a position to benefit from the season. Remember always to do the right thing at the right time and you will benefit.

Most of the production inputs for the Jobs Fund Project were delivered in October – we were particularly anxious to deliver the lime so that the farmers could spread it in time. Each farmer has to take one ton of lime to his/her fields. This is heavy and very tiring – however, the importance of lime for the lands with a low pH cannot be overemphasised – the crop cannot access any fertiliser if the lands

are too acidic. Knowing the pH of your soils is very important for your success as a crop farmer.

Unfortunately, due to the drought, there are many farmers who were not able to pay off their production loans from the past season. The financial institutions understand this and where possible, they are willing to help again. However, it is really important that you play open cards with your financiers – never try to conceal any income, and never deliver in someone else's name. We know that sometimes you are desperate for money, being dishonest is not the way to be if you are planning to be a farmer. You must always disclose your crop and your whole income to your financiers – they will be willing to stand by you if they feel that you are being honest. If they doubt your honesty and integrity, they will not walk the road with you and you will find yourself in deep trouble.

In this season, if you could all go back to the basics and do those right – remember to prepare your lands and do not allow weeds to compete with your crop; plant the right cultivar at the right population for your area; use the correct fertiliser at the correct application rate – if you do all these things then you should have a good chance of getting a good crop. We find that some farmers try to use the inputs for a larger area of land – it is better to plant a smaller area and to do that really well, then to plant a large area and skimp on the inputs. There are optimal rates for everything.

If you are unfortunate and have to make use of contractors – it will help a lot of you are present when they are working so that you can ensure that they work correctly. It is very expensive to use contractors and you must insist on getting value for your money.

Good luck for this season – we will continue to pray for rain! ☔

13

Monsanto – finding ways to feed the future population

Monsanto recently increased its focus on added value to smaller production units and smaller farmers in the market so that...

14

Conservation agriculture systems can mitigate droughts

Conservation farming is the only way...

16

Watch out for insects attacking maize seedlings

The soil insect pests attacking maize during...

18

Grain SA interviews...Thulani Mbele

Thulani Mbele started part-time farming in the 1980s when he was in partnership with his father...

19

The Corner Post

Gabula Joyi

How does a subsistence farmer see the agricultural industry?



Keep rainfall records to reduce risk

One of the first thoughts on a farmer's mind at the start of another day on the farm is what is the weather going to bring today. Many years ago farmers relied on the previous evening's general weather report and then other signs such as the prevailing 'rain wind' in one's farming region and whether or not the Cape South Easter was blowing.

These days with many weather satellites positioned above us there is much information and data available as to past, current and predicted weather patterns as well as rainfall received. Country wide, regional and district rainfall records are easily accessed via the internet as are the predictions for rainfall on a district level for weeks ahead. Smart phones can be used to access forecast or programmed to give you messages as to the current rainfall predictions on a daily basis.

Rainfall received, conservation and prudent use of this moisture is one of the main factors influencing the financial success or failure of your farming operation.

The accuracy of the predictions has been much improved over the years. However, the predictions might not be that accurate for the specific location of your farm or farms. The micro topography in your region can also influence whether or not a particular farm falls into a water shed area or rainfall shadow.

Long term recording of the actual rainfall received on each farm and the different microclimates found therein and on differing soil type blocks of land is important. This data will enable the farmer or a management team to be able to carry out detailed and more accurate production planning and risk assessment in your farming operation.

Recording your rainfall

The equipment required to start can range from the readily available conically shaped plastic measuring unit with holder, or better still, the older metal holders with a graduated glass beaker inside to fully fledged digital weather station. One can place the plastic type on a pole at each location on the farm to be measured. The plastic types seem to weather quite rapidly and become brittle and crack during the cold winter months.

A better option is to make a small steel cabinet with the rain gauges attached or mounted together with a high low thermometer and place for the recording sheet or book, plus non detachable pen, protected from the rain. It is thus quite convenient when doing the rounds after any rainfall to record the rainfall and temperature for collection at the end of the month. The temperature data can be used to calculate the actual heat units experienced in a particular year and compared with actual yields realised.

“Recording and knowing the long term rainfall patterns in various areas or lands on your farm can aid in determining the viability of cash cropping or other enterprises going into the future.”

The farmer can keep a record book of daily recordings with notes covering storm strength, instance of sudden thunder storms or general rain conditions, hail experienced and any other pertinent observations. These results can then be tabulated on another sheet under months for the year and compared to your local weather station or previous location or farm records. If you buy a farm or hire lands from a retiring farmer it is advisable to ask for any old rainfall records so that comparisons can be made with the rainfall patterns that you will experience. These records can be transferred to excel spreadsheets with various graphs being created to show comparisons with prior years, long term averages, or national long term rainfall data. The possibilities for the analysis of the data are endless.





Using the information

The rainfall data gathered over a long time becomes more valuable than the data in any one year. Hindsight is always an exact science and it is always the rainfall that will be realised in the coming season that is important. Rainfall patterns can be varied as was experienced last year with some farms within a short distance from others receiving almost double the rain.

The data can be utilised in many ways for dry land as well as irrigation farmers. The long term patterns can be used to generally predict the rainfall runoff to be captured in your farm dam or river systems. Full dams imply that any irrigation development can be fully utilised in the coming summer or winter season. More accurate predictions and calculations can be made as to the net water usage required from dams for supplementary or full irrigation.

Extensive livestock farmers on natural or planted pastures or irrigated pastures can use the long term information to plan water application and the related tonnage of pastures to be expected for fodder flow programme analysis.

This year the Eastern Free State has had in excess of 125 mm's over May, June and July. Dry land farmers can do profile holes to assess, under their cultivation methods, how much moisture was preserved in the soil. In these areas farmers, using optimum cultivation methods, whether or not under conservation tillage or not, can plan on being able to plant with a minimum of pre-planting rainfall required. This knowledge can alleviate the stress involved in planning and predicting crop income for the 2016/2017 production year.

The rainfall data gathered over a long time becomes more valuable than the data in any one year.

Conclusion

Recording and knowing the long term rainfall patterns in various areas or lands on your farm can aid in determining the viability of cash cropping or other enterprises going into the future. Knowing the facts can reduce your farming risk. Good luck for the coming farming season.

Table 1: A typical rainfall data sheet.

2016 Rainfall data sheet							
Day of Month	Jan	Feb	March	April	May	June	July
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							

- Record rainfall each day at the same time
- Record to the nearest 1/100th or 0,01
- If precipitation is less than 0,01 record 't' for trace
- If the precipitation is snow or freezing rain, melt the accumulation in the rain gauge and record as liquid
- Use the remarks column to list any unusual or severe weather

Article submitted by a retired farmer.

Be ethical and stand tall

There are 7 things that will destroy us:

Wealth without work;
Pleasure without conscience;
Knowledge without character;
Religion without sacrifice;
Politics without principle;
Science without humanity; and
Business without ethics!

– Mahatma Gandhi

A study conducted by students at the Iowa State University about ethics in agriculture in 2002 was extremely revealing. They found that: Ethical standards in the agricultural sector including co-operatives, agri-businesses and farmers, have declined.

This affects business dealings, sales incentives, pricing policies, sees people cutting corners and turning a blind eye to illegal practices. People take chances on everything from not paying their taxes to not honouring commitments to repay loans. Farmers agreed saying: 'At one time a person's word was as good as a signed contract; now you must get everything in writing!'

“Who you are tomorrow begins with what you do today!”

There is a general shirking of responsibilities. When they asked: 'Why have ethical standards declined?' The answers were:

- Farmers and agribusinesses are under extreme pressure to show a profit;
- The sector has too much unhealthy competition; and
- Tough economic times on the farm contributed to an erosion in ethical standards.

What are 'ethics'?

Ethics are essentially values or moral judgments about what is right and what is wrong – and then doing what is right! A business's ethics are decided on and formulated by the board/owner of the business or the farmer.

Ethics should guide every decision made and every action taken by the business. They do not stand in isolation but rather are formed with the understanding that the business functions within a broader society. Although every individual makes a choice about ethics, in actual fact society effectively tells us what is

“Character is not the same thing as reputation. Character is what you are. Reputation is what people say you are.”
– Josephson

good and bad and **right and wrong** by rewarding or punishing certain behaviours.

Ethics reflect an understanding that every business owner has a social responsibility to: 1) the people who work for him; 2) those he forms business contracts with; and 3) to conduct his business in an environmentally friendly manner which is respectful of the ecosystem!

Ethics describe a character

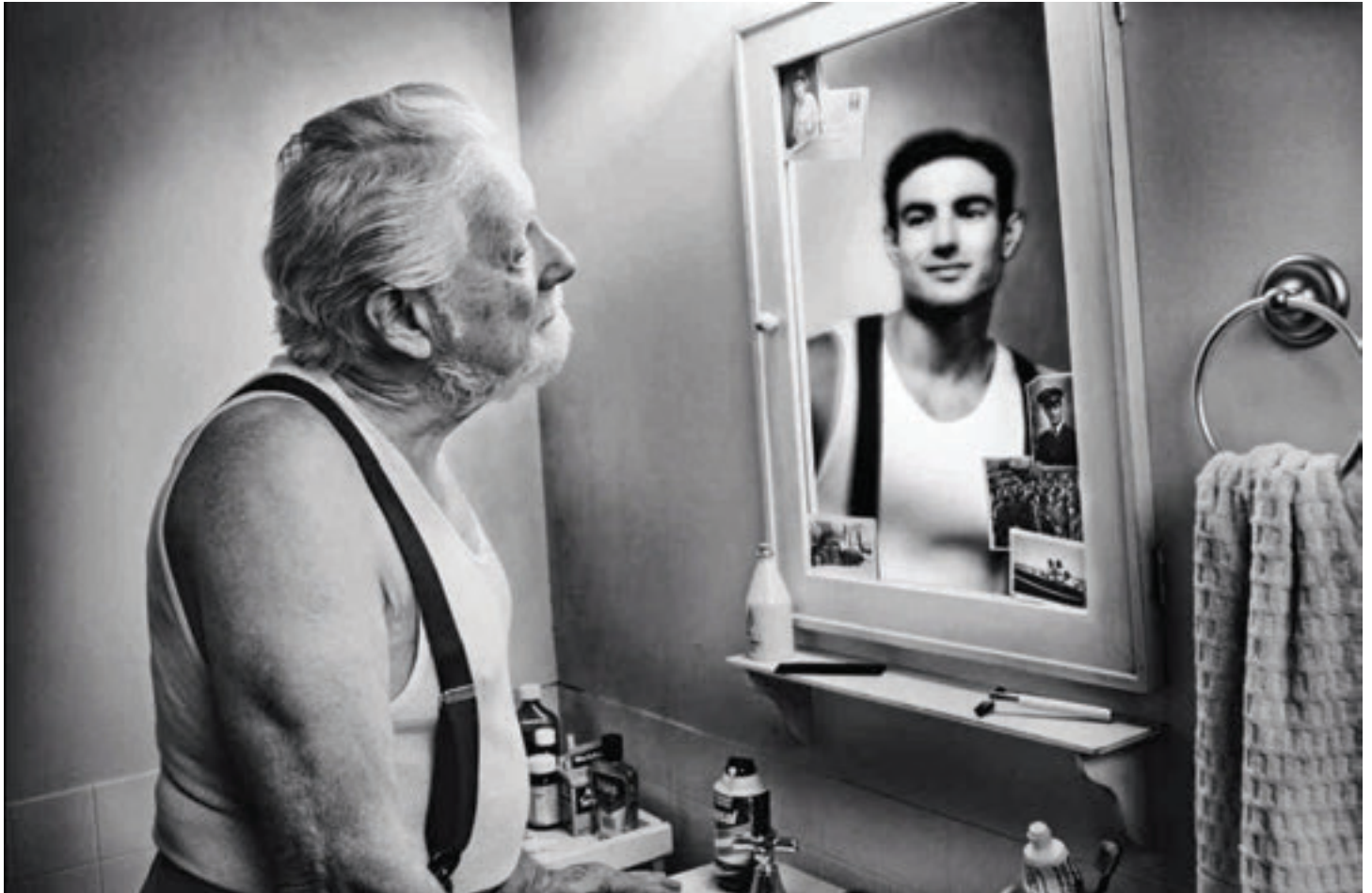
A code of ethics specifies your rules for conducting business. You put them in place and have a responsibility to live by them and continue discussions about them with your team, family and employees. In a large business environment ethics would be discussed under a topic such as 'Policy and Procedures,' but this doesn't often happen in an on-farm environment so it is up to you as the farm owner or manager to talk about ethical behaviour and good business practices. Attention to ethics in the workplace informs your team and business partners how they should and should not act.

If you are seen helping yourself in some way that benefits you through devious, deceitful or unfair practices, you can be sure that your employees will not think twice before

Pula Imvula's Quote of the Month

*It is no use saying: 'We are doing our best.'
You have got to succeed in doing what is necessary.*

~ Winston Churchill



“

*A man without ethics
is a wild beast loosed
upon this world!*

they do the same to you! For example: If you put farm diesel into your private vehicle which you drive for personal matters and then put in a claim for that diesel as if it was for farming purposes, that is being dishonest and you are stealing from the state coffers. Or, if you are delivering bags of mealies to a milling business which buys 75 kg bags and you instruct your workers to fill them to 71 kg each, then present them at the Mill door as 75 kg bags of mealies, you are skimming and cheating the mill owner – and the employees, knowing that you do this, will do the same to you somewhere down the line!

Ethical behaviour can bring significant benefits to a business

When a business has a reputation for conducting business ethically, it gathers favour with potential partners. In the farming environment this could be with input suppliers, financial support services or even traders who will look at doing business with you more favourably.

It has also been shown that a well-managed and ethical business makes for happy employees thus labour turnover is reduced and productivity increases. The other side of the coin is that any unethical behaviour serves to earn a business a poor reputation and damages the reputation of the farmer. This will result in deteriorating relationships with stakeholders and business partners and in a loss of profitability in the long run.

Ethics in your farming business

To test your ethical practices, ask yourself the following five questions:

1. Can I or anyone else suffer harm because of my decision or action/s?
2. Can my decision or action/s cause emotional pain?
3. Can my decision/actions harm my reputation, undermine my credibility or damage important relationships?
4. Can the decision/action prevent me from achieving my goals?
5. How do I feel about my action/decision when I look at 'the man in the mirror'?

The Man in the Mirror poem

*When you get what you want in your struggle
for self and the world makes you king for a*

*day, just go to the mirror and look at yourself
and see what that man has to say. For it isn't
your father, or mother, or wife whose judgment
upon you must pass.*

*The fellow whose verdict counts most in
your life is the one staring back from the glass.
He's the fellow to please – never mind all the
rest, for he's with you, clear to the end...and
you've passed your most difficult, dangerous
test – if the man in the glass is your friend!*

*You may fool the whole world down the
pathway of years and get pats on the back as
you pass, but your final reward will be heart-
ache and tears – if you've cheated the man in
the glass!*

Ethics are often in place when things are going well with a business but the first to go out the door during times of stress. Remember that when you have lived according to a high standard of ethical behaviour in your personal life and in your business dealings you will be better able to live with yourself – and you will stand tall among men! 🍌

**Article submitted by Jenny Mathews,
Pula Imvula contributor. For more information,
send an email to jenjonmat@gmail.com.**

Pre-emergent herbicides remain **IMPORTANT**

Spring has arrived in South Africa. We hope that this year the rains will arrive with the summer months that lie ahead, and that we can leave the drought behind us. One thing that we can be certain of is that when the rains do arrive the weeds will soon follow.

The weeds, our number one enemy, will be ready and waiting to emerge stronger than ever. As farmers we need to think ahead and be ready for this occurrence with a plan of action to combat our enemy, the weed. In this article I will outline the importance of controlling weeds before they have emerged and before they are growing in full force.

What is a pre-emergent herbicide?

A pre-emergent herbicide is chemical which is applied to a field by using a tractor drawn spray rig or an aeroplane crop sprayer. The purpose of the pre-emergent chemical is to inhibit the germination and emergence of weeds which are dormant and are yet to sprout. They do this by disturbing enzymatic processes in the weeds biological germination period. If the weeds do not germinate they will not be able to absorb sunlight and therefore will be unable to grow.

Your first step in planning a spraying program is to decide what crop you will plant where. Remember that every crop is different and needs to be treated differently. Before the planting season one should consult a chemical representative who is knowledgeable on the different herbicides available on the market. They will explain the different functions of the chemicals and the best methods of application. Different herbicides control different weeds which is why for each different crop that we plan to plant we should create a unique spraying program.

Some chemicals are specifically developed to control broad leaved weeds, some are specifically developed to control grasses and some are developed to control a mixture of broad leaves and grasses. Therefore, it is extremely **IMPORTANT** to know which weeds the chemicals that you purchased are designed to kill. If we plan to plant sunflowers we cannot use a pre-emergent herbicide which controls broad leaves as our sunflowers will also not emerge. Alternatively, if we plan to plant maize we cannot use a pre-emergent herbicide which

is designed to control grasses. There are however certain exceptions when it comes to the use of genetically modified seeds. Some cultivars have been developed to withstand certain strains of chemicals in order to improve weed control. This is why it is extremely important to consult with experts in the field of seed and chemicals before deciding what to plant and what to spray on the crop that you plant.

When spraying pre-emergent herbicides, it is important to apply the chemical before the weeds have germinated, as timing is everything when it comes to the efficacy of this form of weed control. It is also crucial that the climatic conditions are conducive in aiding absorption of the chemicals.

When is the correct time and what climatic conditions are favourable?

The timing of applying pre-emergent herbicide depends on the tillage practices which you employ on your farm.

If you practice conventional tillage, then you will apply your herbicide soon after the lands have been cultivated, so that the weed seeds do not get a chance to germinate. When using no-tillage practices one would first spray the field with a 'burn-down' herbicide application. This will kill all weeds that have emerged. One should then follow up with a pre-emergent herbicide which will inhibit any more weeds from germinating.

For both of these practices one should try to perform the spraying when there is slight drizzle or damp weather conditions, as this will help the chemicals to absorb and fix into the soil where the dormant weed seeds are lying, therefore allowing for the best results.

With weeds as our number one enemy, we need to do all that we can to control them during the growing season. Without controlling weeds, we put ourselves at risk of lower yields and further exacerbating the weed problem in our fields by filling the seed 'bank' in our soil. Pre-emergent herbicides are just one of the tools at our disposal in the war against weeds.

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



Apply pre-emergence herbicide before weeds sprout. (Photo taken by Johan Kriel)



Maize growing well free from weeds. (Photo taken by Johan Kriel)



The promise of the crop is there, the farmer needs to control the weeds. (Photo taken by Johan Kriel)



Manage the good years well

In a number of our previous articles we have stated that South Africa is actually a dry country with an average rainfall overall of plus minus 495 mm per year.

We have also concluded that droughts are part and parcel of our South African agricultural environment. Therefore it is absolute necessary that we must farm keeping in mind that we will experience drought again. Better to be prepared for it than to be unprepared.

Whether the existing drought will continue or whether we will experience a more moderate summer season is not quite clear yet and reports at this point in time are a bit contradicting. However, it is a fact that the drought will be broken at some stage, but we must accept that the next drought is already on its way. When it will occur we do not know. Whether it will be in a year or two or a couple of years we must prepare ourselves for that.

To manage your business very well the management of all areas – production, marketing, purchasing, administrative, human resources, public relations, assets and stock, general and financial management must be very good.

However, of all the areas of management, financial management is the most important one with regards to preparing yourself for the next drought. To face the challenges of the ever changing business environment the modern farmer, big or small, must be a champion producer but also a superb financial manager – therefore a skilled business manager. In this regard it is found that poor financial management and decision making is the most important cause for some 80% of farmers who lose their farms and not poor production farming conditions.

When financial management comes to mind, one should remember the simple formula: **Profit = Income - Expenditure (P = I - E)**. One should first of all manage your expenditures very well and reduce it as far as possible without impeding your business. Remember you can only manage your costs if you manage your business according to a comprehensive budget. Secondly improve your income to improve your profit.

The financial decisions taken in the good years will determine your fate in the poor years. Therefore one should rather reduce your debt in the good years with the additional profits made. Also consider to rather use additional profits to conserve your resources, such as applying proper conservation farming



The financial decisions taken in the good years will determine your fate in the poor years. (Photo taken by Jurie Mentz)

methods to conserve and improve the fertility of your soil, to conserve soil moisture, to conserve and improve the quality of your grazing or to build up a fodder bank. In the good years, rather invest any surplus funds in productive assets – assets that can generate income – than non-productive assets.

Our South African farmers are mainly dependant on themselves for survival with very little support from government. Therefore your financial management is of the utmost importance during good years and difficult years. You need to stay focused on your farming business by managing as a skilled business manager and take careful and thorough considered financial decisions. This then means you must have the necessary financial information available commencing with a comprehensive budget.

To apply improved financial management the farmer must accept ownership for everything that happens on the farm. The farmer must take the full responsibility and maintain integrity towards himself and all other parties involved in the business. A realistic step in this regard is for instance to improve your credit worthiness with your financiers during the good years. The result will be that they will be more lenient towards you in the difficult times – they know you as a man of your word.

Keep an eye on your cash-flow and manage it according to a cash-flow budget. Consider the profitability of your enterprises regularly. Consider opportunities for value-adding. Also be very mindful of your personal costs during the good times and manage it according to a personal budget.

Interesting, if you consider this article, you will find that we referred to a number of aspects that we have mentioned in more detail in previous articles. This article is a bit of a summary of a number of previous articles. It also indicates again that financial management is not only the link between all aspects of the farm business, it also 'oils the wheels' that allow the business to function more effectively. Without capital to meet the short-, medium- and long term needs of the business everything will grind to a halt.

Therefore apply top class management and especially financial management during the good years and you will survive the difficult years that more easily. Or manage the good years as difficult years and you will find that the really difficult years will then not be that difficult. 🍷

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

Integrated crop and pasture-based livestock production systems

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 pasture species, in this case as a pasture cover crop, and can therefore become an integral component of CA-based crop-pasture rotations. It is important to identify a pasture species fulfilling the requirements of a dual purpose crop, i.e. for livestock fodder and/or soil restoration.

This article focuses on an annual cover crop with enormous pasture crop potential used to improve soil conditions and to provide a good grazing for ruminants.

Secale cereale L. (stooling rye/stoelrog)

Stooling rye is a tufted annual grass species that can grow as tall as 1,5 m. Rye has an extensive, fibrous root system that may go as deep as 1,5 m.

Stooling rye is a valuable fodder (for pasture, hay or silage) and a cover crop during winter. When it is used as a cover crop in double cropping systems, stooling rye during late winter/spring provides valuable forage to animals going into summer.

Of all the cereal crops, stooling rye is the tallest and the hardiest annual species. There are many cultivars of *Secale cereale*; research has shown however, that diploid cultivars are more drought-hardy than tetraploid cultivars.

Agro-ecological distribution

Stooling rye is usually cultivated in areas with cold winters and warm, dry summers, notably in central, eastern and northern Europe, though it is also grown in Africa, Asia and North America. It can grow at very high altitudes and in the tropics it is only found at high elevations (Brink, 2006).

It grows best at temperatures ranging from 15°C to 20°C; however, research has shown that this species can tolerate a wider temperature range (3°C to 31°C). Once well-established, it can withstand very cold conditions (down to -35°C).

Stooling rye grows well under 600 mm to 1 000 mm annual rainfall and is relatively drought-resistant: It can tolerate dry condi-



Stooling rye is an excellent cover and fodder crop for the winter period – Ottosdal CA trial, North West Province.

tions with an annual rainfall as low as 400 mm. Rye prefers well-prepared, fertile, well-drained sandy or loamy soils, with a soil pH ranging from 5,6 to 6,5

Because it is tolerant of low temperatures, of droughty conditions and of dry and acid soils, stooling rye may be cultivated in places where wheat cannot grow. Rye grows better on light loams and sandy soils than on heavy clay soils.

Management and utilisation

Stooling rye can be sown with other cereal forages, such as oats, wheat, or even with annual legumes. Seeding rates can be between 25 kg/ha - 50 kg/ha (dryland) and 50 kg/ha - 75 kg/ha (irrigated) and depends upon whether it is sown in a mixture or not.

The best time to seed this species is February/March. Stooling rye forage is also profitable when sown with companion legumes,

“

Cover crops have proven to be important in improving soil health in the winter season prior to the next summer planting of either maize or soybean.

such as white and red clover or grazing vetch. The forage sustains the legume and the association makes full benefit of residual nitrogen (N) in the soil (UC SAREP, 2006).

It is a valuable winter feed that helps the livestock producer from being less reliant on preserved fodder during winter periods. This species can be grazed late in the autumn and early winter period and then late winter and early spring.

Stooling rye forage can also be used to make silage and haylage. It is recommended to harvest rye no later than at early boot stage (before heading) in order to maintain good palatability, intake and nutritive value.

When the plant reaches boot stage, the species should yield in the order of 7 tons - 10 tons of dry matter (DM)/ha under optimal management conditions. After stooling rye forage is cut, it should be wilted and then made into silage.

Research has shown that hay making of stooling rye is possible, but difficult, since forage moisture is too high at the early boot stage for easy drying.

Soil conservation and health benefits

Stooling rye is a very valuable cover crop and can be used for erosion control. When lands are going to be planted to soybean or maize, the soil can be protected over winter by this species.

It can also be used as a winter cover crop for continuous minimum tillage of maize when the maize crop is harvested early.

It has many positive effects on soil structure and chemical status. Because of its quick growing fibrous root system, rye makes full use of the various soil layers, and in doing so, it improves soil permeability, soil moisture content and soil biodiversity (earthworms); stooling rye forage also prevents leaching of excess soil or manure N (UC SAREP, 2006).

Used as green manure, rye provides large amounts of organic matter to the soil. However, when rye is sown for forage, a part of the organic matter is not returned to the soil. This species is an excellent cover crop to utilise unused soil nitrogen and research has shown how it increases the concentration of exchangeable potassium (K) in the top layer of the soil.



Stooling rye planted in February as a winter cover crop at the Ottosdal CA trial.



Stooling rye established in February as cover and fodder crop at the Ottosdal CA trial.

Integrated crop and pasture-based livestock production systems



It is used as a cover crop and killed two weeks before planting summer grain.

It is also known to suppress weeds very effectively especially through outcompeting weeds for water and nutrients, however, it also suppresses many weeds alleopathically (as a natural herbicide).

Management challenges

Fewer diseases attack rye than other cereals. The following diseases and pests have been reported to cause notable problems in stands of stooling rye.

Stem or stalk smut

Disease control could be achieved by seed treatment and crop rotation where the spores are soil-borne. Resistant varieties are also available.

Anthraxnose

This is a common disease especially prevalent in the humid and sub-humid areas of

the country. Infected plants often ripen or die prematurely.

Rusts (leaf rust and stem rust)

Destruction of volunteer stooling rye in stubble fields will aid in control of this disease.

Insects

Stooling rye is attacked by many of the same insects that attack other small grains. Serious losses are not common, however early sown autumn rye provides a favourable environment for the deposition of insect eggs which can cause injury to other crops.

Animal production aspects

During late autumn, livestock can graze stooling rye forage once it has reached a height of 15 cm - 20 cm and it should be removed when the grass height is reduced to 5 cm - 7 cm.

Stooling rye allows very early spring grazing when other perennial grasses are still dormant. It should be grazed rotationally and at high stocking rates in order to prevent it from maturing and losing nutritive value (Samples *et al.*, 2011).

Crude protein values range from 11% (dough) to 23% (boot) depending on the stage of maturity. Dry matter digestibility ranges from 64% (dough) to 81% (boot). Total digestible nutrients (TDN) range from 67% to 75%. Approximate values of acid detergent fiber (ADF) and neutral detergent fiber (NDF) are 37% and 55%, respectively.

Conclusion

Cover crops have proven to be important in improving soil health in the winter season prior to the next summer planting of either maize or soybean. Stooling rye offers the potential benefits of improving soil health, but establishment and management costs can be high.

One way for producers to recover these costs is to graze the forage, which benefits producers by integrating crop and animal production. Very limited information exists on the potential forage quantity and quality for grazing livestock of cover crops and mixed species of cover crops.

Research to date has suggested that different plant species complement each other, however research is currently determining how best to balance forage production and how competitive the various species are when added to a mixture with stooling rye.

References

- Brink, M. 2006. *Secale cereale* L. Record from Protabase. Brink, M. & Belay, G. (editors).
- PROTA (Plant Resources of Tropical Africa/Resources végétales de l'Afrique tropicale), Wageningen, Netherlands.
- Samples, D.H. & Sule, R.M. 2011. Winter rye for extending the grazing season. Ohio State University Factsheet AGF-26-00, Ohio State University Extension Service.
- UC SAREP, 2006. Cereal rye. Cover crop database. University of California, Sustainable Agriculture Research & Education Programme, Davis.

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 October 2015. For more information, send an email to Wayne.Truter@up.ac.za, admin@GrassSA.co.za, hendrik.smith@grainsa.co.za or GTrytsman@arc.agric.za.

MONSANTO – finding ways to feed the future population

Monsanto recently increased its focus on added value to smaller production units and smaller farmers in the market so that we can provide them with technology and affordable hybrids with a high yield potential.

The market was quantified as follows:

- **New Era Farmer** (>75 ha/250 ton grain, mechanised).
- **Small-scale farmer** (10 ha - 75 ha, partly commercial, little to no mechanisation).
- **Subsistence farmer** (1 ha - 10 ha, full production manual labour, own use).


In the **Small commercial category**, development trials were planted in the Carolina district on the farm of Mr Solomon Masongo. New white and yellow hybrids in the commercial pipeline are being tested here. This includes six white hybrids that fit into the NEW ERA FARMER category. This will provide feedback from the community to determine production and hybrid trait needs.

In the **Small-scale farmer category**, we planted the six hybrids on Mr Frans Malela's farm in the Groblersdal area. Here various crops are cultivated on 4 ha plots with some form of mechanisation.

In the **Subsistence farmer category** the six white hybrids were also planted at the Matibidi Community project in the Blyde River area where the Department of Agriculture together with Ms Thembi Mphela is involved. Here only soil cultivation is mechanised. Planting and harvesting are done manually.

One of the challenges is the perception of a high yield, due to the appearance of some older hybrids, while there are new genetics available that perform much better and have stronger resistance against environmental factors. Therefore Monsanto is interactively involved in the NEW ERA Farmer and looking for ways to offer the latest technology and the best hybrids to farmers to feed the future population.

“Monsanto is interactively involved in the NEW ERA Farmer and looking for ways to offer the latest technology and the best hybrids to farmers to feed the future population.”

Monsanto's strategy is based on research related to the United Nations regarding World Agriculture 2030. 

Article submitted by Magda du Toit, Corporate Communication Manager, Monsanto South Africa. For more information, send an email to magda.du.toit@monsanto.com.



Maize looking good.

Conservation agriculture systems can mitigate droughts



The presence of crop residue on the surface usually has a dramatic influence on infiltration capacity and is seen as one of the trump cards of conservation agriculture.

Conservation farming is the only way to produce grain in a sustainable manner. A welcome fringe benefit is that it can mitigate the effects of drought under certain conditions.

The climate of the Highveld is semi-arid and a characteristic of this is that, apart from relatively low rainfall, periods of drought can occur during the rainy season. The droughts usually have serious economic consequences.

The intensity and length of drought periods vary from year to year. Droughts generally occur in January, February and often in March as well, and usually go hand in hand with the drought-sensitive flowering or grain-fill stages of crops. After the good rain of 2013/2014, the recent 2014/2015 season once more made us acutely aware of the destructive effects of drought.

Many of the cultivation and crop systems are aimed at preserving moisture to mitigate the

impact of drought, and it is therefore logical that practices or grain production systems that can alleviate drought will be the designated systems to use.

Different practices exist for moisture accumulation and preservation. Fallow systems, where the soil stays fallow for a season, are one such practice. Two years' rainfall is then used for one season's production. Although this reduces the production risk, the efficiency with which the rainfall is utilised is extremely low. This also has serious long-term disadvantages. The organic matter and quality of the soil are undermined, because no or very little plant material is added to the soil during the fallow season. The erosion vulnerability of soil kept clean of weeds for a whole rainy season is high.

A second moisture preservation practice is to cultivate the soil during the season, when the crop is already established. It generally also serves as a hoeing action and helps to loosen

the soil to absorb rainwater easily and create a layer of loose soil on the surface to restrict the loss of moisture from the soil.

However, this practice can often be counterproductive. The tilling disturbs the soil, which usually exposes wetter soil to the atmosphere, which can then cause an additional loss of moisture. Plant roots are also often damaged. Plant residues are incorporated further, which increases the vulnerability to erosion.

Every round of tillage degrades the existing structure and an infiltration crust forms quickly during the first rain, which in turn promotes run-off and erosion. The increased infiltration capacity of freshly cultivated soil is usually extremely short-lived.

The presence of crop residue on the surface usually has a dramatic influence on infiltration capacity and is seen as one of the trump cards of conservation agriculture. One of the principles of conservation agriculture empha-

“

The presence of crop residue on the surface usually has a dramatic influence on infiltration capacity and is seen as one of the trump cards of conservation agriculture.

sised globally by experts is the retention of crop residue on the surface. In this way cover crops are often planted for the sole purpose of creating an effective cover of plant material.

The plant material and the increase in the humus that develops from it in due course prevent the forming of infiltration crusts and thus ensure that the infiltration capacity of the soil stays high. Run-off of rain water is consequently restricted.

In the article, *Bewaringslandbou: Organiese materiaal die basis van grondkwaliteit*, which appeared in the July 2015 issue of *SA Graan/Grain*, the important role of organic matter is discussed.

If circumstances are favourable, run-off can have a big influence on yield. What should the circumstances then be? First of all, there should be a slope to allow water to run off. The slope does not have to be steep. Water can run even if there seems to be no slope.

Furthermore, the soil should form an infiltration crust (something that occurs quite commonly), and finally, rain must fall with a high intensity (also a trait of the thunder storms that occur).

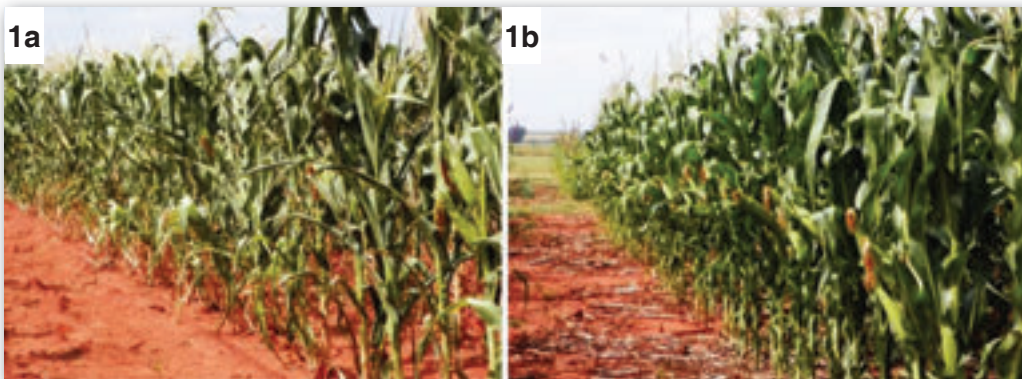


Photo 1a and 1b: Maize, photographed on 23 February 2015, cultivated on ploughed land (left), compared to maize with no-till (right) in a conservation agriculture system. The difference in inhibition is evident.

For the second time in the past three seasons the conditions in an experiment on the farm Buffelsvallei in the Ventersdorp-district were favourable for run-off to occur on ploughed soil. The run-off increased the impact of the 2014/2015 drought even more.

The maize yield achieved on ploughed land with an infiltration crust was a disappointing 2,8 t/ha. In contrast, an average 6,3 t/ha was achieved with five conservation agriculture systems.

With the amount of rain water that ran off the ploughed land, an additional 3,5 tons of maize/ha could have been produced. As was the case with the 2012/2013 season, the conservation agriculture systems did mitigate the 2014/2015 drought again.

If the results of the six-year experiment are examined, it is clear how conservation agriculture limits drought risks. The yield of maize cultivated in monoculture with conventional

ploughing was already lower than 3 t/ha for three seasons.

In three of the five conservation agriculture systems with which the conventional maize is compared, the yield was less than 3 t/ha in only one of the six seasons. Two of the systems never yielded less than 3 t/ha.

Conservation agriculture has clearly proved in this experiment that, if circumstances are favourable, it is capable of mitigating the impact of drought, and consequently of maximising the rain absorption efficiency. ☔

Article submitted by André Nel, ARC-Grain Crops Institute, for SA Graan/Grain October 2015. For more information, send an email to nela@arc.agric.za.



Watch out for insects attacking maize seedlings

The soil insect pests attacking maize during the seedling stage can – unseen – cause enormous damage every year if preventative measures are not taken. A sudden decrease in the plant density of seedlings points to the activities of soil insect pests.

Being aware of seedling pests is important, because once the seedling has been damaged it directly affects the yield. When these insects damage the seedlings, it can sometimes appear as if a whole row of seedlings has disappeared.

In such extreme cases, producers are sometimes forced to replant. The producer may even have to replant for a second time, for example in the case of severe infestation with cutworms, black maize beetles, wireworms or ground weevils.

With the start of the season around the corner, it is therefore vital to update your knowledge on the most important seedling pests, as some of the damage symptoms can be confused with one another.

The cutworm (**Photo 1**) is well known to producers and becomes a problem when moths laid eggs during autumn and winter, from these

eggs the first larvae for the new growing season will hatch. Larvae use weeds and winter crops as a source of food to survive. Just before planting, the overwintered larvae become pupae in pupal cells in the soil.

This stage lasts approximately two weeks, the first moths of the season emerge then from these pupae. These moths threaten crops, because they fly during the night and lay eggs on the leaves of weeds and volunteer plants occurring in the fields.

After approximately a week, the larvae hatch and feed on the leaves of the weeds. After the larvae's second moulting, they will burrow into the soil and only come out at night to feed. Cutworm damage can be distinguished from that of other soil insects attacking maize seedlings by the neat, clean hole these larvae make in the stems, compared to the frayed appearance of the chewing damage by the black maize beetle and wireworms.

In cases where the seedling has been completely chewed off on the surface, the whole plant can be pulled down into the soil to feed on. One larva can thus destroy a large number of seedlings in one night.

The larva of the black maize beetle (**Photo 2**) is a typical white grub (**Photo 3**). The latter is white with a brown head and is usually curled in a C shape. The gut contents of the larva give the end of the abdomen a characteristic blue-grey colour.

The adult beetles are shiny black in colour and approximately 12 cm - 15 cm in length. The beetles look the same as dung beetles. The black maize beetle has only one generation a year. Beetles usually appear from mid-January to mid-February to overwinter in the soil during late April, early May.

During spring the beetles start feeding, mating and laying eggs. These overwintered beetles are the ones that damage maize seedlings. The larvae feed on organic matter in the soil and do no damage, whereas beetles damage seedlings by chewing frayed holes in the underground stems. During autumn the stems of





older plants can be frayed above ground and the buttress roots can be chewed off.

The beetles of greater false wireworms emerge from pupae, which occur in pupal cells under the soil surface. These beetles are typical tapping beetles, grey-black with a clearly demarcated head, thorax and abdomen, and they are harmless. Female beetles lay eggs below the weeds and maize residue, approximately 5 mm - 10 mm underground. The eggs hatch in eight to sixteen days.

These great false wireworms occur as larvae in the soil almost throughout the year. False wireworm larvae (**Photo 4**) are up to 32 mm long and 4 mm thick. Larvae are creamy-white and the head appears red-brown. They damage seedlings in the new growing season by chewing holes in the underground stems of the maize seedlings. These holes have a clearly frayed appearance.

The ground weevil (**Photo 5**) is small, light to darker coloured and wingless. Compared to other weevils, ground weevils have relatively short proboscises. Various species of this pest family exist. The eggs are laid in the soil at the beginning of December. The larvae hatching from the eggs feed on the roots of grass and other veld plants. The beetles appear late in February and shelter in the soil during the winter.

Ground weevils often occur in new fields. The beetles damage the maize seedlings at the beginning of the season. The beetle feeds

Photo 1: A cutworm.

Photo 2: The black maize beetle.

Photo 3: White grub of the black maize beetle.

Photo 4: The greater false wireworm.

Photo 5: Die ground weevil.

at night and attacks the leaves of the seedlings. This can lead to serious damage.

Preventative control

The best way to control soil insects mentioned above is to act preventatively. Chemical control with seed treatments or sprayings during planting are the most common way of controlling them.

Conservation farming also has predator beetles, which can be efficient biological control agents. The most important preventative

measure is to keep fields clean of weeds and volunteer plants that serve as a source of food in order for the pest to survive until the crop is planted and then to attack the crop.

Article submitted by Dr Annemie Erasmus, ARC-Grain Crops Institute, for SA Graan/Grain October 2015. For more information, send an email to erasmus@arc.agric.za.

Grain SA interviews...

Thulani Mbele



took him three years to complete his National Diploma in Agriculture.

Thulani returned to the farm focussed and prepared to make a success of it. He was fortunate to meet other stakeholders like Grain SA where he attended some short courses like Tractor Maintenance, Welding, different Crop Production courses as well as Calibration of Planters and Sprayers. The training that he still looks forward to receive is related to value adding, packaging and understanding the global markets.

Training is very important for one to achieve optimum yields. It helps to minimise costs and maximise profits in many ways. Training contributed a lot to Thulani's progress and success. When he was helping his father in communal areas, he produced for consumption and a little surplus was sold. When he moved to his farm he started producing 3 t/ha maize dry land. With the latest technology today they are able to achieve 5 t/ha to 6 t/ha dry land maize.

From now on Thulani is working on expansion. His farm is fully utilised to its maximum potential but without compromising the natural resources. They would like to acquire another bigger farm in order to expand.

The love of farming always gives him strength and he takes challenges as opportunities to find new ways. It excites him to try new methods and monitor the change and difference.

The advice Thulani can give to young farmers is, pursue your dreams, focus, focus, focus and never give up. 🍌

Thulani Mbele started part-time farming in the 1980s when he was in partnership with his father who was a small scale farmer in the communal areas. During this period he was working for Eskom. Thulani bought one tractor and his father also had one tractor and some other implements. After planting their fields they used to contract the implements to other farmers who needed help. This is where his love of farming started.

Later he left Eskom and moved to QwaQwa in the Free State. He was fortunate enough to lease a 249 ha farm from the previous QwaQwa government. This was a breakthrough as it helped them to grow and make a living out of farming. They farmed with sheep, beef cattle and more or less 30 dairy cows to generate cash flow. They also planted maize, dry beans and wheat, rotating on 100 ha arable land.

We received training support in many aspects of farming. There was also a credit facility for inputs and it was very useful. Later Thulani's father passed away and he was on his own. The opportunity to buy the farm through Land Bank came and the farm is currently paid up and it belongs to the family.

In 1995/1996, training assistance was scarce and that forced him to go back to the College of Agriculture to study agriculture. It

“*The love of farming always gives him strength and he takes challenges as opportunities to find new ways.*”

Article submitted by Graeme Engelbrecht, Development Co-ordinator of the Grain SA Farmer Development Programme. For more information, send an email to graeme@grainsa.co.za.

THE CORNER POST

GABULA JOYI

How does a subsistence farmer see the agricultural industry?



According to leadership and management specialist, Simon Sinek, working hard for something we don't care about is called stress, while working hard for something we love is called passion. Gabula Joyi is a subsistence farmer in Mputi in the Mthatha district in the Eastern Cape who works hard because he loves what he does. On his 25 hectares of land this passionate farmer cultivates maize and cabbages and also owns some cattle and sheep. And although hard work does not necessarily guarantee success, he realises that without hard work no success is possible.

To Gabula the agricultural industry consists of a variety of subdivisions, namely production, marketing, financial resources, land and land access, bank loans for production and all the various agricultural products and their representatives. As a subsistence farmer he feels that this industry has room to develop and grow. 'Subsistence and smallholder farmers play a key role towards food security at household level,' he says.

According to him the industry provides various channels for smallholder and subsistence farming; however these opportunities are unfortunately not that accessible to subsistence farmers. The entire agricultural industry is important to all South Africans and therefore needs to be supported accordingly by the various stakeholders to ensure that this industry is sustained. He further feels that what is important to this industry is the continuous assistance of smallholder and subsistence farmers through financial aid and skill development. 'This will enable us to play a bigger and better role with regards to food security at household levels with smaller incomes,' he explains. 'The access of productive land, the empowering of

young up and coming farmers so that this sector survives and is sustained is also crucial for this sector' he continues his viewpoint.

He sees his role in the agricultural industry as small, but significant. 'I am the farmer who produces food for my household primarily although a lot of my surplus is purchased by the local community members and interested hawkers and shops,' he explains. This makes him feel part of the industry because he knows if he is taking care of his role within his space, he is ensuring that household food security is achieved and that those who are in need of whatever food source he produces, can also access it. 'Even though my role is a lot smaller than the big commercial farmers, I feel I make a big enough impact to be known as key role-player in this industry within my community,' he adds proudly.

To him the one area within the agricultural industry that requires a different approach is in supporting small-scale farmers. Access to land and ownership thereof is paramount to these farmers. The need to access financial institutions will position the farmers to grow and develop the vast amount of hectares which lay fallow in this region of OR Tambo in the Eastern Cape. Skills development and access to relevant information is also crucial towards ensuring that small-scale farmers develop into productive farmers in the communal areas.

According to Gabula subsistence farmers need access to the following:

- Finances.
- Good quality agricultural information.
- Markets.
- Sound skills development programmes.

'Currently Grain SA is the only hope of any up to standard assistance I am receiving,' he says and adds, 'The government is battling and cannot sustain their way of supporting farmers.'

“Subsistence and smallholder farmers play a key role towards food security at household level.”

His dream for his own farming operation is to become a successful farmer with all the necessary knowledge, skill and finances to sustain his production systems. In the broader agricultural sector he hopes to see a common understanding that farmers need to be subsidised, given the necessary skills and support that will allow them to thrive and become independent in the future.

When a hardworking person saw the well known phrase, 'Good things come to those who wait' on a billboard, he decided to change it to be a better reflection of the truth. It read, 'Good things come to those who work their fingers to the bone and never give up.' Whatever obstacle you face as a subsistence farmer, keep on working passionately and good things will come.

A special word of thanks to Sinelizwi Fakade, Grain SA Provincial co-ordinator in Mthatha, Eastern Cape, for his support to subsistence farmers in the area as well as his assistance in acquiring the requested information from Gabula Joyi for this article. 🍀

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.



Cultivars

Yellow maize

SNK2778
DKC80-10
DKC73-76R
DKC80-30R
DKC80-40BR GEN
DKC74-26R
DKC68-56R

White maize

CRN3505
DKC80-31
DKC90-89
CG4141
DKC2147
DKC78-83R
DKC78-35R
DKC78-79BR
DKC78-45BR GEN

... can make a resounding success of your farming.

In **DEKALB®** you have a partner who will walk with you all the way to success.

With **DEKALB®** from Monsanto, you have a range of high-quality white and yellow maize hybrids for exceptional yields suited to your specific needs.

Call Monsanto today to find out more.



Contact us on: **011 790-8200** or
customercare.sa@monsanto.com

Monsanto and **DEKALB®** are registered trademarks of Monsanto Technology LLC.
Monsanto South Africa (Pty) Ltd, PO Box 69933, Bryanston, 2021.



MONSANTO

