

PULA IMVULA



MAY
2017

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



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 Stroebel

▶ 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 Mthombothi

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)
▶ 082 650 9315 ◀ graeme@grainsa.co.za
▶ Office: 012 816 8069 ◀ Sydwell Nkosi

Ian Househam

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

Liana Stroebel

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

Sinelizwi Fakade

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

Articles written by independent writers are the views
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NKGONO JANE SAYS...



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Sometimes we forget how farming started – people need to feed themselves and food can be produced from land. It was the need to produce food that started farming. These days, farmers are removed from growing their own food. Recently while visiting some of the farmers in the Jobs Fund project (from Subsistence to Abundance project), we were reminded about how important it is for these farmers to produce food for their families (primary function) and then to sell the surplus.

Thinking about growing food, brings ones closer to thinking about food and nutrition. What do people need to eat? What is a bal-

anced diet? This of course brings us to a discussion on food groups (source of carbohydrates, proteins, fats, minerals) and the various crops that can be produced to satisfy these nutritional needs. Once we understand human nutrition then we can also start to think about animal nutrition – what to feed our poultry, goats, sheep, cattle and pigs. They all need a balanced diet and using our land, we can produce what they require.

We are planning to include a series of articles on nutrition (of humans and animals) so that we can all go back to the basics of farming – feeding ourselves and the domesticated animals that feed us.

We have been to visit a large number of the subsistence farmers in the programme – this year they are all achieving commercial yields (from 5 t/ha to 10 t/ha of maize all under dry-land conditions). Seeing these achievements has made us realise that we have achieved our goals with these farmers – the goal of commercial production on the land that the farmer has available. Now we need to look into helping the farmers with improved mechanisation so that they can plant more land and contribute to our national food security.

This month it is NAMPO – I do hope that many of you will be coming to the show. Please come and look for us – we will be there. ☘

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Actions speak louder than words



2017 GRAIN SA CONGRESS highlights

This month Pula Imvula met with new Grain SA Vice-chairperson, Derek Mathews who is a grain farmer near Sannieshof. He has been involved in organised agriculture since 1984, first serving on the board of NAMPO (National Maize Producers Organisation) and when the grain organisations merged, he was one of the founding board members of Grain SA as we know it today.

Mathews's long association with organised agriculture has convinced him that farmers need to be involved in organised agriculture and have structures such as Grain SA in place to lobby on behalf of farmers who don't always have the time to monitor the economic environment, policy and regulatory frameworks and legislation which directly affect their business environment.

I asked Derek to identify his 2017 Grain SA Congress highlights. He said the keynote address by Mike Mlengana, DG: DAFF was inspirational. His message was founded on his Christian faith, his personal experience of a farming partnership which has seen a deep friendship grow between two human beings, and his personal passion for agriculture. Mathews said it was encouraging to hear what Mike's vision is, since it is his leadership within DAFF that informs the political role-players and guides department activities and attitudes. It is very important to have leadership that has an understanding of the sector and is realistic about the road ahead.

Mlengana was unapologetic about the fundamental driver for the agricultural sector: **'From a policy perspective we must understand that we are correcting the difference that was created before.'** Land transformation must happen, but it has been impeded by a lack of commercial strategy in the sector. Previous strategies were too narrow and cost huge amounts of money, to very little effect. He despaired over projects like CASP and ILIMA where at least 9 billion was spent but cannot be accounted for. Mlengana dismissed past efforts saying there was little to no lasting impact on the lives and enterprises of the beneficiaries. He acknowledged this happened because people were appointed to posts on the basis of political alignment rather than skill, which resulted in "devastating chaos".

He is convinced **it is organisations like Grain SA and farmers themselves who will make transformation work, if they can unify and develop a common vision,** common values and common goals. Unity amongst farmers, who all face the same problems, will make the difference when they speak about challenges faced by the sector. He also said it is only when the sector maps its own road ahead and owns the successes and the failures that transformation will progress successfully. The danger about a lack of unity is it creates opportunity for apartheid to be blamed for failed land reform, and also it allows incorrect perceptions about farmers to prevail.

Mlengana also recognised the contributions made by farmers to villages, schools and in their communities, but said these need to be highlighted more to **show government that farmers are partnering in transformation.** Derek also feels we have many good stories to tell and Grain SA's Farmer Development Programme can contribute in this regard by showcasing the great development work and many warm relationships built over the years.

Mlengana said he believes that we can form significant partnerships to strengthen the agricultural sector and facilitate transformation and he encouraged farmers and their organisations to work together to **create structures that allow for partnerships.** He said future recapitalisation programmes will depend on partnerships between commercial farmers and black farmers. Mlengana is determined that continued focus on **recapitalisation will see a shift to enterprise productivity** and he will only consider 'bankable business plans'. There will be a **strict selection process for land beneficiaries:** Farms will not be given or sold randomly and 'non-farmers' will be eliminated.

women born with a passion for farming. Mlengana also said he intends to see increased expertise within relevant departments and greater accessibility, 'My office is open to you, bring ideas!' No strategies should be developed at local level without the involvement of agricultural sector stakeholders.

Mathews also took note of Mike's message to farmers not to be alarmed by the land ownership issues which form a central theme in political rhetoric and encouraged them to trust the constitution.

Other important issues discussed at Congress focussed on **the economic environment** and future **grain production potential.** Prof Ferdi Meyer is with the Bureau for Food and Agri-





The annual Grain SA Congress was held at NAMPO Park on 8 - 9 March 2017.

cultural Policy (BFAP) which focusses on benchmarks and monitors trends and 'mega-factors' which affect the market and trade environment. He believes **consistent and focussed research and development** is essential, together with a politically stable environment. Some issues which influence the sector are: The declining rural population and rising urbanisation creates two different **value chains**. The need for **job creation** in the sector – three main opportunities for job creation have been identified: 350 000 potential jobs could be found in under-utilised or unproductive land reform projects; 200 000 jobs could emerge in the intensive commodities sector like irrigated, high value crops if markets exist; and 326 000 jobs could be created within the agro-processing sector.

Meyer also noted that in the **long term real agricultural prices are declining** for all commercial farmers around the world. Production cost comparisons highlight the fact that South African producers are paying approximately

\$10/ton more for inputs, e.g. higher fertiliser prices, which instantly puts local producers on the back foot when competing with international markets. **Although we have a free market, it is not always fair, so this is where calls for intervention become necessary.** Soybean production has become a game changer and good opportunity exists for soybean production in the next few years.

Mathews says his vision for his term as Vice-chairperson of Grain SA is to get a **new generation** more involved in organised agriculture **to build an organisation that is relevant and modern and able to serve all grain farmers**, no matter how big or small and regardless of historical issues. He recognises that transformation is a priority now but he believes with time we will move into a new era which will still need Grain SA keeping its finger on the pulse to be a watchdog and to inform, protect and monitor the agricultural environment in the best interests of ALL grain farmers.

In an effort to participate in the transformation process, the congress also voted on changes to the constitution which directly impacts New Era farmers and creates more scope for involvement of members from the Farmer Development Programme as leaders in the organisation and representatives on the board. The role of Grain SA Congress will always be to hear from leaders like Mlengana and learn from experts like Meyer who have valued insights, but also to create a platform where farmers from all walks of life can meet to discuss burning issues and ultimately find the common vision, common values and common goals that Mike Mlengana is calling for.

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

What are maize prices telling us?

In their first production estimates for 2017, the Crop Estimates Committee (CEC) indicated that South Africa could potentially harvest a bumper crop in the 2016/2017 production season.

From January 2017, the market was hit by lower maize prices. Prior to this, it was widely reported that the possibility of a bigger crop is on the horizon for the upcoming season which was backed up by good rains and excellent crop conditions in some parts of major producing areas in South Africa. It was therefore widely expected that maize prices would normalise after a drought dreaded year which sent prices skyrocketing. To illustrate the maize price movements, we make use of an import and export parity band which indicates the direction prices take with a year of shortage versus a year with a surplus.

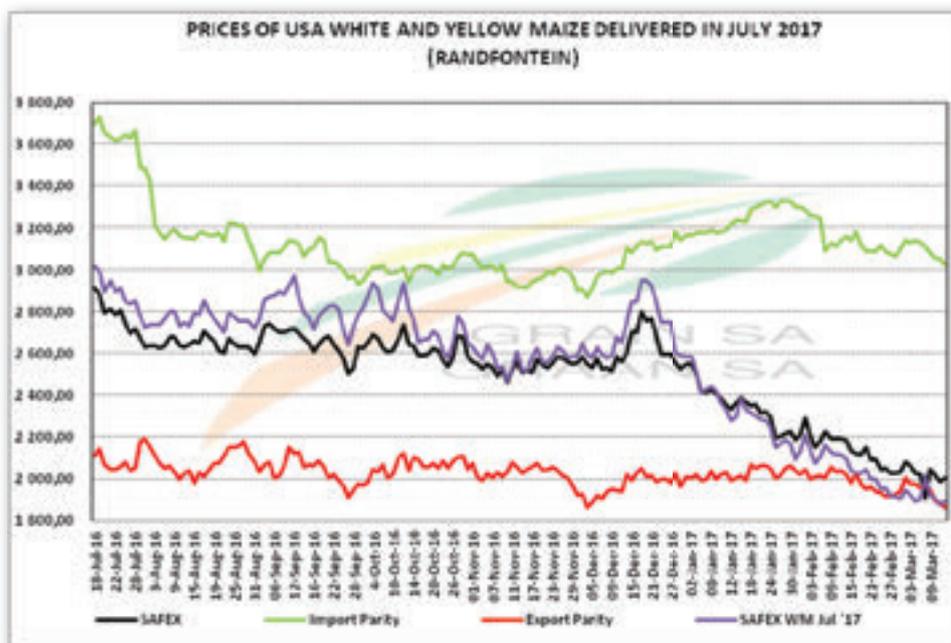
According to the CEC, white and yellow maize are set to increase by 79% to 13,9 million tons in 2017 from the 7,7 million tons harvested in 2016. The prospects of a larger crop indicate that South Africa is likely to have surplus maize for the 2017/2018 marketing season, leaving an even bigger opportunity for exports and a decline in maize prices.

Import parity is the price a buyer pays or can expect to pay for imported goods and an export parity is the price that a producer gets or can expect to get for its product if exported.

South Africa harvested the lowest maize in nine years, resulting in shortage of maize that placed South Africa from a position of net exporter to a net importer. The effect that this had on prices as seen in **Figure 1** resulted in higher maize prices, thus causing them to tend towards the import parity band. On 18 July 2016, white and yellow maize prices for delivery in July 2017 were trading at R3 018 and R2 912, respectively, which was roughly R800 below import parity; however, towards the beginning of the year, maize prices began to decline amid news that South Africa is likely to harvest a record crop. Safex July 2017 white maize prices decreased since 18 July 2016 to the 4th of March 2017 by 37% while the yellow maize price decreased by 31%. In this case, it is evident that price decreases are largely at the backdrop of expected surplus maize in 2017 harvest.

While 2016 was met with low yields and high maize prices; the road ahead looks promising for higher yields but with low maize prices. Lower maize prices could put farmers under strain as they are still recovering from the drought but with potential export opportunities, maize prices could soon show some recovery.

Figure 1: Prices of white and yellow maize delivered in July 2017 (Randfontein). Source: Grain SA



Article submitted by Michelle Mokone, Agricultural Economist: Grain SA. For more information, send an email to Michelle@grainsa.co.za.

Pula Imvula's Quote of the Month

Things do not change; we change

~ Henry David Thoreau



Very good weed control is a sign of efficiency.

How do I compete with BIGGER FARMERS?

One can ask at the outset what is the definition of a small farmer as compared to a large commercial farmer. Many grain farms will be diversified into grain and complimentary livestock and other enterprises.

These might include a beef herd, sheep flock and other value added intensive livestock enterprises such as dairy, pigs and poultry that enhance the viability of the farming enterprise as a whole.

Definition of a small farm

Grain farmers might have a small portion of 1 ha to 5 ha to farm under grain crops, or be in a 10 ha to 20 ha category and could be considered as micro grain farmers. Other categories could range from 20 ha to 50 ha, 50 ha to 100 ha, 100 ha to 300 ha and up to 500 ha planted to various grain crops. Even grain farmers with 1 000 ha under grains in a medium potential agricultural area might struggle to survive in future.

Your vision as a 'small farmer'

Whatever size farm you have under your control and management should be assessed as to the resources available before each grain production season. The resources might include soil type by classification standards, soil

depth by profile holes, fertility levels with soil tests, mechanisation capacity and efficiency, financial reserves or ability to access production loans, quality, skill levels and training of staff, and an evaluation of your own skill levels and production experience. Any aspect or factor that will affect your grain farming ability must be included in the assessment.

This information must be collated to be able to produce a realistic detailed financial gross margin analysis. Each aspect of the production cycle can then be quantified. Any shortfalls as to production and production capacity will come to the fore.

The gross margin analysis is but one part of your own business plan that will include a mission statement, short and long term goals as well as the expected outcomes for your farm, yourself and family.

Determine what margin or net profit is left over after the direct or variable costs and fixed or overheads costs have been deducted from the gross income. This amount will really determine whether or not you are a 'small' farmer' and if a family can be sustained on the nett amount generated. If this is not the case, the merits of the farming business must be closely examined to see where efficiencies and precision farming can be applied and implemented. Hopefully if your farm is large enough and well farmed, enough profit can be generated to

sustain your family and replacement of equipment for efficient and precise production planning and expansion of the farming enterprise in future.

Grain as a commodity

As was experienced over the last two years, maize experienced huge increases in value due to underproduction and just as a large fall in values as the production season normalised. Maize for example, went from a high of about R3 800/ton to R2 000/ton for July 2017 futures. Farmers that did not recover production costs in the dry year might sadly not be in a good financial position despite good farming techniques and above average crops this year.

The lower price value of maize as a primary commodity will however stimulate added value industries and enterprises such as poultry, pigs and dairy.

Conclusion

Detailed strategies to define and improve your crop production techniques will be examined in the next article. 🍷

Article submitted by a retired farmer.

MYCOTOXINS

in cereals and other crops

In our previous article (April 2017) we dealt exclusively with maize. This time around we are going to focus on other cereal crops (winter and summer) and then move on to sunflower, peanuts, legumes, fruit products and tree nuts.

Summer and winter cereals

The **summer cereals** under consideration are sorghum, millet, teff and rice (produced on a limited scale in South Africa), with sorghum being the most important.

Sorghum suffers from infection and colonisation by several fungi during the panicle and grain developmental stages. The infection results in Sorghum Grain Mould, also referred to as 'blackening'. Several fungi cause grain

moulds in sorghum, of which most are relatively non-specific and can colonise several types of plants. *Fusarium*, *Aspergillus* and *Alternaria* species are among the most prevalent grain mould pathogens of sorghum in South Africa.

Grain mould occurs mostly in rainy seasons or under irrigation. Most grain mould pathogens infect the panicle seeds in the field and under moderate temperature, high relative humidity and grain moisture, these fungi can grow within the colonised seed and can even spread to other seed during favourable post-harvest conditions. Incidence (the proportion of mouldy panicles) and severity (the proportion of infected grains on a panicle) of disease depends on pathogen race, cultivar and environmental conditions.

The mycotoxins, together with their associated fungi, most readily found in South African sorghum are: Fumonisin (FB), zearalenone (ZEA) and deoxynivalenol (DON) [produced by *Fusarium* species]; and aflatoxin (AFLA, produced by *Aspergillus flavus*).

These fungi and their mycotoxins are also capable of contaminating millet and teff. The same can be said for rice, but in this case the mycotoxin situation is more complex due to rice being grown under unique agronomic conditions.

Winter cereals (wheat, barley, oats, rye and triticale) are predominantly influenced by the occurrence and spread of *Fusarium* Head Blight (FHB) or Head Scab, a disease caused mainly by *Fusarium graminearum* (also known



Correct storage conditions for winter grains is essential.



Grain mould occurs mostly in rainy seasons or under irrigation.

as *Gibberella zeae*) and several other closely related *Fusarium* species. This can result in severe contamination with mycotoxins such as DON (also known as vomitoxin), ZEA and nivalenol. FHB of winter cereals occurs worldwide and is one of the most important mycotoxin-related diseases in agriculture, causing severe economic losses. FHB outbreaks occur where heavy rainfall occurs prior to and during the flowering period, or where fields are irrigated.

FHB symptoms are confined mostly to the head and grain. Typically, the first noticeable symptom is bleaching (whitening) of some or all of the spikelets while healthy heads are still green. As the fungus moves into the rachis, spikelets located above or below the initial infection point may also become bleached. Pink to orange masses of spores may be visible on infected spikelets and are produced during wet, humid weather. Infected kernels, commonly called 'tombstones', appear shrivelled, discoloured, and are lightweight. As the symptoms on the grain become more severe, so the greater the levels of associated mycotoxins that can be expected.

The damaged grain will primarily affect the grading that can be obtained at the silo/elevator, which will significantly influence potential profits for producers. Infected seed could reduce seed germination and increase the incidence of root rot and seedling blight when planted.

FHB risk factors in wheat are: Excessive moisture before and during flowering; a warm, wet spring; irrigation; planting wheat after

maize; planting wheat after wheat; no-till or reduced tillage; and susceptible cultivars.

DON is associated with vomiting, feed refusal and decreased feed consumption in pigs, which can affect animal performance. Cattle are more resistant to the effects of vomitoxin than pigs. ZEA is a chemical that acts similarly to the female sex hormone, estrogen, and excessive exposure can disrupt the reproductive cycle in some animals. Pigs are again more sensitive than cattle and other ruminants. Exposure to ZEA does not cause abortion, but it can cause reproductive dysfunction in both female and male animals.

The best management method of FHB is an integrated system, with better control over both crop rotation and no-till practices, built around the planting of resistant cultivars.

Other food crops

To cover all the other food crops is impossible in this article, so the focus is on the most important crops only. It must be pointed out that most of these mycotoxin problems are dependent on varying climatic and environmental conditions, but we must not ignore these mycotoxin risks.

Although AFLA is less important on South African maize and cereal crops, it is a significant threat to local **peanut** production. Peanuts are not only an important commercial crop, but serves as a subsistence crop in certain regions of southern Africa. As *Aspergillus flavus* is a soil fungus, it readily infects peanuts in the field and can cause further prob-

lems during windrow drying and improper storage. To minimise AFLA contamination, it is vital that all peanut farmers apply Good Agricultural Practices in the field, dry the pods as quickly as possible after harvest, and then apply good sorting measures to remove mouldy pods and peanuts before human consumption.

Other crops in South Africa that are at risk of AFLA contamination are **sunflower, cottonseed, tree nuts, canola and legumes** (chickpea and dry beans). Correct harvesting, drying and storage of these crops are very important.

Fruit and fruit products can be at risk of mycotoxins such as patulin (in apples and pears) and ochratoxin A (in dried fruit and grapes). Patulin is less of a health risk, but can be restrictive in export trading when levels exceed international regulatory standards. Ochratoxin A carries significant human health risks and can be problematic when exporting food products such as cereals and cereal products, spices, dried vine fruit products, coffee beans and coffee products, and wine.

Please note, in case of any further mycotoxin-related questions, contact your local extension officer, or the staff at Grain SA. 🌧️

Article submitted by HM Burger and P Rheeder from the Institute of Biomedical and Microbial Biotechnology (IBMB), Cape Peninsula University of Technology (CPUT). For more information, send an email to Burgerh@cput.ac.za or RheederJP@cput.ac.za.

Increase production with advanced technology

Farmers in South Africa face but one major problem – to make a sustainable profit over a period of time. This is because of the so-called cost prize squeeze. Thus, it is a continuous battle to keep expenditures under control and to increase income.

Our farmers also face a challenge to provide enough food at reasonable prices to a growing population. Productive land does not become more, therefore production per unit must increase continuously to make a sustainable profit and to feed the nation. A way to increase income and reduce costs that is receiving a lot of attention lately is the use of advanced technology.

In practical terms, we see advanced technology as the use of some kind of advanced type of mechanical item (for instance an improved planter) that assists a farmer to produce more and better products. Certain apparatus such as a computer and a smartphone can also be seen as advanced technology. It has now also become a practice to add electronics like a GPS to these advanced items to improve their performance. This practice is then described as high tech farming or precision farming which we will discuss in a follow up article.

The purpose of using advanced technology is thus solely for the purposes to increase and improve production. However, it must be remembered, the use of technology can never replace management, let alone poor management. If you do not apply basic management principles such as proper record-keeping, the use of advanced technology will be of no use to you. A grain farmer must keep record of for instance rainfall, the size of his lands, plant population, plant depth, soil samples, soil profiles and production. The first step to proper management is to keep the necessary records of your business. Remember if you do not measure, you cannot manage.

An advanced planter with which you can control plant population and plant depth more accurately, will be of little use if you do not manage it properly – maintain it properly, use it as prescribed, and so forth.

To make a sustainable profit you must become more efficient from year to year. Without adequate, accurate data, this will be impossible. Management input is inversely related to a farmer's financial input. This means the less ef-



fective the management of a farming operation, the greater the costs of the operation, and the lower the profit generated from the business.

The one major advantage of the use of advanced technology is therefore that production is increased through improved efficiency of actions. Some farmers have achieved an increase of 10% in production by using advanced technology. Another advantage is that you could save on labour thus saving on costs. Experienced farmers have recorded a saving of 10% on input costs. But bear in mind that the use of advanced technology has its own costs, such as interest, possible higher maintenance costs, depreciation, and insurance, which must also be considered.

A further advantage of advanced technology is that it will enable you to complete an action or task in shorter time, more accurately and more efficiently, thus saving costs.

As far as disadvantages are concerned, the acquiring of advanced technology requires additional capital. Depending on the type of advanced technology you wish to acquire the additional capital outlay can be a large sum of money. Should you consider to borrow money to acquire the advanced technology, remember that you will have to pay interest on the borrowed funds. To use the advanced machinery also requires qualified staff at a higher cost. The advanced machinery could also bring about higher maintenance costs. When considering acquiring advanced technology a thorough analysis of the advantages compared to the disadvantages will be necessary. The only effective way to consider the pur-

chasing of advanced technology is to compile a proper business plan – proper management.

As a first step to the use of advanced technology, we would recommend that you acquire a suitable computer – a normal PC is good enough, you do not need a laptop to start with. The reason for this recommendation is that you must get your basic management up to a high standard before using advanced technology. A computer will be of great assistance to your record keeping. You can record and save all your records on the computer and by using formulas interpret the data to useful information which you can use for proper management purposes. A computer linked to the internet facility can also enhance your communication with clients, suppliers, and others and can be used as a purposeful source of information regarding agriculture by using Google.

Farmers must deliver optimum production of high quality outputs on a continuous basis whilst minimising inputs, without damaging the environment. To achieve this, the use of advanced technology need to be considered thoroughly – it can be advantageous but will put pressure on your finances and management. ●

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

Read, study and implement: That is value adding

When value adding in the grain industry is discussed, the first thought that arises involves a mill. However, this is not necessarily the best option for producers.

Most people who are already adding value to their products mention that it requires additional management time. The days only get busier and more responsibilities will have to be transferred to other employees.

The work that you enjoy as producer may be taken from you and replaced with other tasks – like office work, negotiations, planning, checking and marketing. This may take up more of your management time. Are you prepared for this?

However, there is room in every business for value to be added. It is usually within yourself. How often do you measure and change your own long-term and short-term goals? When last did you invest in yourself, or read a book to expand your knowledge? As manager, you are the biggest asset of your business: you need to set the pace and direction, but no time is set aside to expand your knowledge or to re-evaluate your goals.

If you can succeed in expanding your knowledge, the new information should be implemented in new practices in your business. This will increase the effectiveness and efficiency of your business and may increase the proceeds as well. This may not mean spending a huge amount of extra capital, but will quite probably contribute to a reduction in costs and/or an increase in proceeds – which will both lead to a higher profit.

Invest in your employees

The next area where you should probably invest more is the employees on the farm. These people are actually the heart of your business. Happy employees usually give more than you expect.

Your employees are your eyes, ears and hands. So why do you not want to invest in them? There may be various reasons – you may be afraid that they will leave. There are various excuses to give.

All people (you and I included) want to receive positive acknowledgement. Do you, as manager, give enough positive feedback to your employees and input representatives? When last did you thank your employees for their contribution to the business?

Do you, as manager, use the words 'thank you' enough – to the benefit of your business? Use these words more often and you will see how the effectiveness and efficiency of your business (alongside your profit) increase.

Maybe it is time for you to sit down with your employees and listen to their dreams – you might understand why they act the way they do. Culture and cultural differences mean that we do not react and think in the same way about things. The place where we grew up and the value system we believe in differ, and this prevents production from being optimised.

Perceptions across cultures differ dramatically. As an owner, you might think you are wonderful, but the employees might think exactly the opposite, and vice versa. Life revolves around perceptions and percep-

tions are the cause of actions. Therefore it is important that the correct facts are always shared and that perceptions are managed.

There are many rumours that can affect the farming business and an industry. Generally only the negative things are reported on. Therefore, it cannot be emphasised enough that it is important to retain perspective. If all rumours were true, producers should have sold everything a long time ago and left. Yet we are still here and creating wealth.

As manager, you should know what you want, how you are going to secure it and how you will motivate the employees to buy in on this and make it work. If the employee does not fit in, consider other alternatives, and if he fits in – reward him. If new appointments have to be made, make sure they are the correct ones.

The effect of increasing efficiency cannot be ignored. The effect of a 5% increase in yield over five years is incredible. An increase of 5% in the yield of grain production on an eastern Highveld farm with the same inputs can lead to a 15% increase in the farm's net profit and this is without a dramatic capital layout!

Given the situation in which most producers find themselves, might this not be the way to go to increase profitability? 

Article submitted by Pietman Botha, SA Grain contributor for SA Graan/Grain June 2016. For more information, send an email to pietmanbotha@gmail.com.

Mind these pitfalls

A 'value-adding plan' always sounds great – until it starts going wrong, and then it is a big, expensive mess that can easily harm the existing business. In order for a value-adding project to be successful, one needs careful planning, sustained quality production, capable management and, most importantly: very good market analysis and marketing. Furthermore, long-term future planning is vital.

Opportunity to make money

Value adding is usually considered and implemented to change a potential threat to the farming business into an opportunity to make money and survive. In turn, new opportunities that can be utilised will arise for value-adding businesses.

People often believe that the price at which maize meal, for example, sells in a chain store, is the price that they will receive for the meal they produce. That is a big mistake. Processors rarely get those prices. Many costs and profits are still added in the distribution and marketing chains. The profits made on value-added products in particular are low and therefore sustained high turnover of products is important.

Expertise

Some of the key prerequisites for success are using expertise and specialisation. Use experts to conduct the feasibility study and market analysis. Also use experts to do the physical and financial planning for the new business, and to recommend what infrastructure and machinery to acquire, as well as which staff positions to create and when to fill them.

This aspect is critical, because a mistake here can sink the whole business from the beginning. When appointing staff, ensure that expert workers are appointed. A manager, accountant, debtors and creditors clerks and personnel managers are examples of staff to appoint – and these experts cost money.

A complete business plan that covers all aspects and the accompanying risks should be drafted before you enter the world of value adding.

Beware of cross-subsidising

It is vital for the processing branch to work on its own as quickly as possible – which means separate sets of books and management are needed. This new business is a business in its own right and therefore cross-subsidising should be avoided.

The workload and pressure of managing the current farming business will also increase if the decision is made to implement a new value-adding operation. Value adding is nothing more than an additional extremely management-intensive enterprise. If this new branch does not fit in with the existing farming business, something will suffer. As owner, your task of overseeing and planning will become increasingly important and will also take up more of your time.

Involve specialists

By allowing experts to add their specialist expertise for your benefit, you increase the profitability of the business, because they improve the efficiency and effectiveness of the business. Together, these two are the building blocks of a successful business. The specialists must ensure that the production is on par with demand and that quality is maintained. Specialists do not take over your responsibility regarding planning and control, but you now have assistance in these specific areas.

Business plan

A complete business plan that covers all aspects and the accompanying risks should be drafted before you enter the world of value adding. If it does not work on paper, the chances of it working in practice are virtually zero. This business plan should be evaluated and adapted regularly once the value-adding business is up and running.

Market analysis

The process of determining whether you should enter such an industry should start with an analysis of the market, and specifically the need your product will satisfy, as well as the marketing environment of the business. Given these realities, it would make sense to also analyse the long-term profitability.

It is important to actually know the size of the market, the number of competitors that exist and who they are, and what your competitive advantages are.

The expected changes in the tastes and preferences of consumers should also be

taken into account. Consumers' characteristics should also be analysed, in other words: are they price sensitive, quality conscious, comfort orientated or technologically inclined? This will determine the future of your products.

For marketing it is important to get the right product out there at the right price, at the right time, to the right consumer with the specific need.

Which form of enterprise?

The form of enterprise you choose for your business is equally important. Use experts to help you with this. It is important to know what effect the businesses will have on each other if there is a drought, for example, and one of the divisions trades at a loss, and if or how accrued tax losses can be used.

The enterprise size and production capacity are important. Make provision for buying inputs from outside and processing them. It may be better to make provision for this with the design of the processing facilities and to then grow into the production.

What about the waste products?

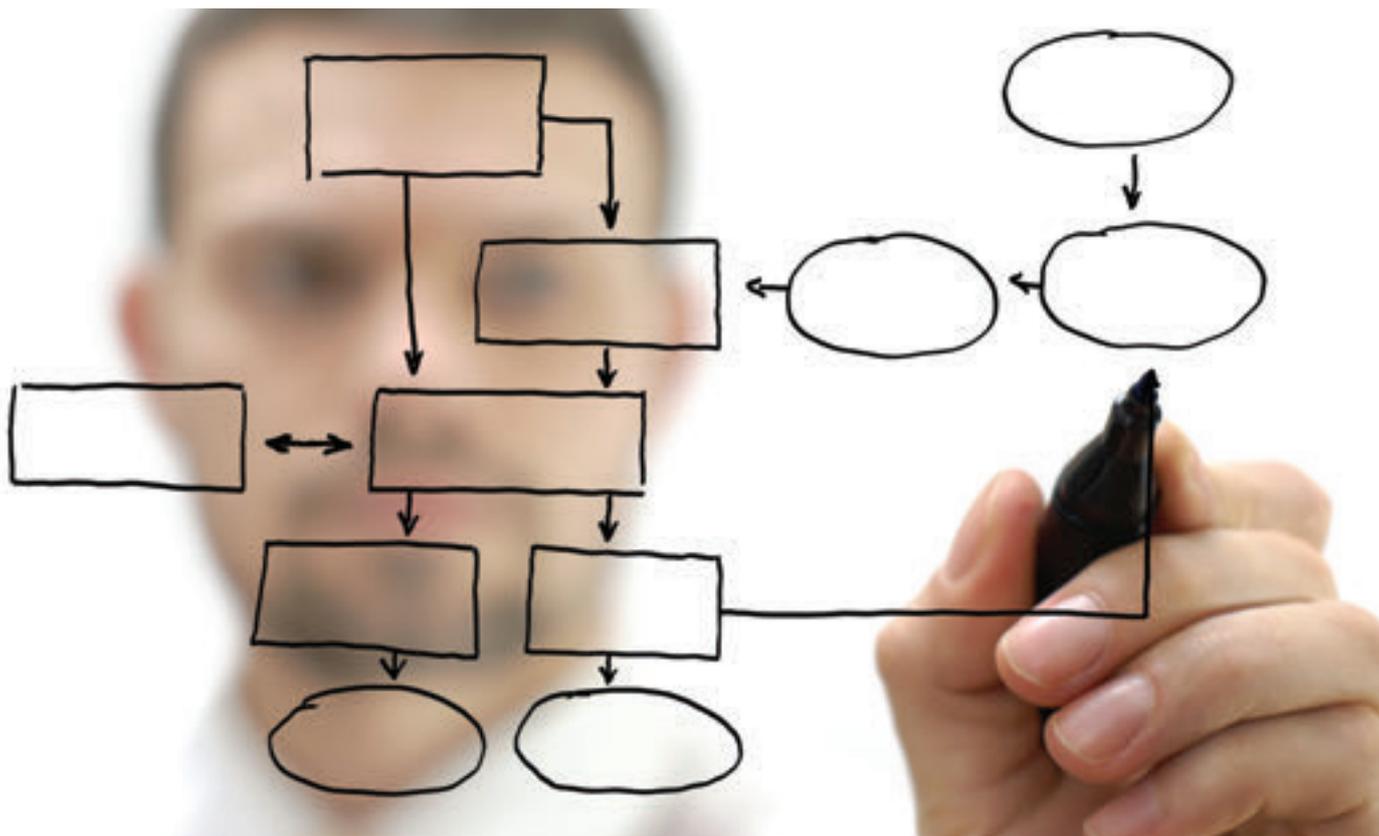
With value adding there will always be waste products, for example the manure from a feedlot or the bran from a mill. The question should be how these waste products can be converted into a financial benefit for the business – for the processing as well as for the farming business. These waste products will also have to be taken into account when the sales and purchasing prices are determined.

The consumer is king

Remember: The consumer is king. He has the money in his pocket and he will decide to whom and for what he wants to give it. If the consumer likes a product a lot, he will perhaps be prepared to pay more for it, but usually he will look for value for his money.

The consumer also increasingly requires traceability on products. He needs to know that the groundnuts he is buying adhere to the necessary standards and he needs to be able to check it if he wants to. The same requirements are increasingly demanded of more and more products.

Establish which laws are applicable to your new business and products in terms of food safety, traceability, information protection, labour laws, consumer laws and various other requirements – make sure you understand and comply with them.



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It is important to actually know the size of the market, the number of competitors that exist and who they are, and what your competitive advantages are.

There are many laws to comply with when it comes to adding value to products. Managing these laws takes up a lot of time.

Input providers

In the same way that the consumer is king, the input providers will sell their products at the best possible prices. Ensure that the inputs are always available at the right prices and that the factory is positioned correctly to limit transport costs from the input supplier or storage facility to the consumer.

Ensure that the prices paid for the inputs are realistic, so that the business can be run profitably. When products need to be bought, ensure that the necessary funds are available in time. Like with the farm, the value-adding branch should also have its own cash-flow budget and must manage the cash flow. A separate bank account is definitely necessary.

Value adding is a business with many high risks and low profits. Competitors enter

the market readily – this influences the product and the raw material prices. Economies of scale can perhaps provide a degree of protection, but product quality and price are very important.

A value-adding business is more exposed to external factors than a farming business. A change in the political, economic or social environments filters through to the business very quickly. The business should gear itself to handle this change. Plans should be in place for when the employees strike or when the clients’ buying patterns change.

Capital

Every business needs funds, whether to purchase capital items or for operating capital. The operating capital can increase dramatically if the raw material prices increase. This increase takes time to reach the consumer and the increase should therefore be financed. Without the necessary funds to run this business, everything is just a pretty fairy tale.

Cash flow is the first prize. Sufficient funds should be available to purchase raw products, keep production going and carry products on a shelf. Provision should be made for debtors and processed stock – both elements that devour cash.

Sometimes it can take a while to break even and any start-up losses must be financed or borne by the owner.

Yes, it is true that when production is running properly, cash flow will become stable, but because the purchase and selling prices do not change at the same time, profitability will vary considerably.

Unfortunately the new processing business has an influence on the cash flow of the farming business. Make sure that the cash flow of the farming business includes the effect of the processing business. The farm may have to wait for six months before funds start coming in to pay its creditors.

Record-keeping is important

Finally, just like with the farming operations, record-keeping is extremely important. The information should be up to date and used to manage the business and to identify and rectify mistakes early. Debtors are and remain a problem. Keep them up to date, ensure they pay on time and make provision for an amount that cannot be collected.

It is evident from the above that it is not easy to be in the processing industry. This is only a summary of a few of the critical aspects that need attention and of the pitfalls that can cripple the business. ☹

Article submitted by Pietman Botha, SA Grain contributor for SA Graan/Grain June 2016. For more information, send an email to pietmanbotha@gmail.com.

Integrated crop and pasture-based livestock production systems

This article highlights 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 dependent on the utilisation of forage species, or pasture ley and cover crops (used interchangeably in this article), and can therefore become an integral component of CA-based crop-pasture rotations.

To qualify as a pasture ley crop, a plant species must fulfil the requirements of a dual purpose crop, i.e. it must be functional for livestock fodder and for soil restoration. This article concludes the series and focuses on the way these different species can be incorporated into cropping systems as 'pasture ley' crops.

The term 'pasture ley' can include a variety of annual or perennial species, legumes, grasses or root forage crops used in short or long-term rotations. It is therefore important to distinguish between a short term and long term ley cropping system.

Integration of pasture leys with grain crop systems

With the declining fertility and productive capacity of many South African cropping soils, there is an increasing need to develop successful ley pasture systems in grain producing regions. Ley pastures in crop rotations have the ability to reverse declining soil health and various properties, improve livestock productivity and reduce rising environmental problems.

The past series of articles on different species have highlighted the important benefits of such species as an integral part of crop livestock CA systems. These benefits include: Improved nutrient cycling and soil biodiversity, reduced erosion, compaction and nutrient leaching, improved soil aeration and water conservation, increased carbon sequestration and storage.

It is however important to understand the attributes of the different ley pasture species, as the wrong combination of species can lead to negative effects on succeeding crops. Legume pasture ley crops are most commonly used for nitrogen contribution because of their ability to fixate nitrogen to



1 A winter cover crop mixture, Ottosdal, North West Province. Photo: Hendrik Smith



2a and 2b A relay cropping system with maize and a winter cover crop mixture of oats, radish and vetch. Photos: Hendrik Smith



Brassicas are used to reduce compaction and increase soil structure through increased levels of organic matter, recycle nutrients and to suppress diseases and weeds.

Ley crop rotations and associations with cash crops

The following section provides information about different ley or cover crops grown during, in-between or after cash crops. Emphasis is given to the summer rainfall area of South Africa. These crops should preferably be planted as multi-species mixture and utilised through mob grazing, or short-duration, high-intensity grazing. The ideal is to have a diversity of living roots in the soil for the entire year to boost soil health.

be used by a following crop. Grass ley crops are more widely used to control soil erosion, to control weeds, improve nutrient recycling and carbon sequestration and to improve soil structure as a result of soil compaction.

Table 1: Functions of different pasture leys in integrated crop-livestock systems (dryland).

CA cropping system type	Growing period	Advantages	Disadvantages	Suitable species commonly used	Dry matter (DM) and meat production (g/d)
Non-legume forage crops	< 1 year	Easy establishment. Rapid production of feed. Enable rapid shift between crop and livestock production.	No nitrogen fixed. Little effect on SOM. Little disease break or weed control benefits.	Temperate annuals: Oats Rye Tuberous crops: Radish Fodder rape Warm season annuals: Forage sorghum Babala	3 - 6 ton DM/ha ADG: 800 - 900 g/d 4 - 6 ton DM/ha ADG: 650 - 800 g/d 8 - 10 ton DM/ha ADG: 500 - 600 g/d
Annual legumes	< 1 year	Boost soil nitrogen available for subsequent crops. Some disease and weed management benefits. Enable rapid shifts between crop and livestock production.	Provide limited ground cover. Little effect on SOM. Can be weeds in subsequent crops.	Summer: Cowpea Lablab Velvet bean Jack bean Winter: Vetch Serradella	3 - 5 ton DM/ha ADG: 550 - 650 g/d Poisonous: caution 2 - 3 ton DM/ha ADG: 900 - 1 100 g/d
Perennial legume	1 - 4 years	Boost soil nitrogen available for subsequent crops. Good for disease and weed management benefits.	Limited improvement in SOM. Lower cropping intensity. Provide limited ground cover.	Lucerne Poor man's lucerne Butterfly pea	6 - 8 ton DM/ha ADG: 650 - 750 g/d Not very productive in trials ADG: 850 - 900 g/d
Tropical grasses	1 - 4 years > 4 years	Reduce weed populations. Provide good ground cover. Increase in soil organic matter (SOM) greater than for pure legume or annual forages.	Lower cropping intensity	Grasses (summer): Smuts finger Rhodes grass Wool grass Buffalo grass Bahia grass Weeping love grass	8 - 10 ton DM/ha ADG: 480 - 600 g/d
Tropical grasses/legume mixtures	> 4 years	Better utilisation of resources. Nutritionally balanced forage. Saving on N fertilisers.	Less N fixed and available as in pure legumes. Difficulties controlling persistent pastures in subsequent crops.	Legumes: Lucerne Poor man's lucerne	10 - 12 ton DM/ha ADG: 600 - 750 g/d

Adapted from Smith and Trytsman, 2011

After maize or soybeans, or late in growing season (as a winter cover crop or relay crop)

Cereal rye, annual ryegrass, wheat, oats or triticale as grasses can be planted to accumulate soil organic matter, recycle nutrients, and reduce soil compaction (see **Photo 1**).

Brassicas (oilseed or tillage radish or turnips) is used to recycle nutrients, reduce compaction, and promote weed and disease suppression. Vetch can be planted as a nitrogen source. Relay cropping is the technique of seeding these winter cover crops into a maize crop. The cover crops germinate and grow slowly under the maize canopy (see **Photo 2a and Photo 2b**).

When the maize is harvested in the fall or winter, the cover crops are already established and growth resumes, saving valuable time. Generally, the relay crop will have far more growth throughout the winter and spring, than will any cover crop seeded after maize harvest.

Apart from the advantage for livestock integration, there are many other economic and environmental benefits.

During growing season, in-between cash crops (as summer pasture ley fallow)

Crops such as babala, forage sorghum, cowpea, soybeans, mung beans, dolichos lablab, velvet bean, sun hemp and jack bean can be

used. These multi-specie systems should preferably be grazed twice in the growing season, once in early summer to maximise root growth (five times more root growth after first grazing) and once in late summer to increase organic matter decomposition (see **Photo 3**). If required, crop growth could be terminated with herbicides or with a knife roller. Time of termination depends on the need to store or conserve soil water for the next crop.

During growing season, simultaneously with maize (as intercrop)

Non-climbers (such as cowpea, mucuna or velvet bean) or climbers (dolichos lablab and

Integrated crop and pasture-based livestock production systems



3 A summer cover crop mixture, Ottosdal, North West Province. Photo: Hendrik Smith

velvet bean) can be sown two to eight weeks after planting maize. Later plantings have less impact on maize yield, however. The earlier the ley crops are sown, the greater the soil protection and weed suppression obtained.

In smallholder systems, intercrops are also planted as food source, such as dry beans or cowpeas, which residues could also be used for animal feed (see **Photo 4**).

Pasture ley crops for a specific purpose

A suite of cover crops are available for producers to plant for a specific purpose and can include the following (*species listed are not limited and other options do exist*):

Quick forage which can be grazed

Oats, forage radishes, turnips, triticale and stouling rye, and annual ryegrass, teff for dry lands, babala, forage sorghum and barley.

Start up or enhance no-till

Forage radish, turnips, babala and forage sorghum. Babala and forage sorghum can result in very high residue amounts for soil cover.

Prevention of soil erosion

Grasses have fibrous root systems to bind soil, and the best grass cover crops include babala,



4 Maize intercropped with cowpeas, Bergville, KwaZulu-Natal. Photo: Hendrik Smith

forage sorghum, cereal rye, annual ryegrass, oats, wheat and barley. Other cover crops include lablab, buckwheat (with a shallow fibrous root system), cowpea and winter pea.

Pasture ley crops for soil carbon build-up (to increase C:N ratio)

Summer annuals: Babala and forage sorghum.

Winter annuals: Cereal rye, annual ryegrass, triticale, oats, wheat and barley.

Perennials: Sub-tropical grasses, for example Rhodes grass, Smuts finger grass, weeping love grass, Guinea grass, blue buffalo grass and tall fescue (see **Photo 5**).

Pasture ley crops for soil nitrogen increase (to decrease C:N ratio)

Summer annuals: Cowpea, soybeans, mung beans, dolichos lablab, velvet bean, jack bean and sun hemp.

Winter annuals: Winter pea, red clover, sweet clover, vetch, serradella and lupines.

Perennials: Lucerne, poor man's lucerne and fine stem stylo.

Requires no herbicide to kill

Oats, cowpea, winter pea, forage radish and turnips.

Reduction in compaction (deep rooted)

Babala, forage sorghum, annual ryegrass, forage radish, sweet clover, cereal rye, oats and dolichos lablab.

Recycle excess nutrients (nitrogen, phosphorus)

Forage and tillage radish, turnips, annual ryegrass, cereal rye, oats, wheat, babala, forage sorghum, sweet clover, winter pea, cowpea, red clover and vetch species.

In general, legumes need P for N fixation but are unfortunately poor users of P in the soil. Since legumes can contribute to soil acidification, it can result in P becoming more available when P is fixed and limiting.

In general, grass cover crops store and supply more P than legumes because they have a finer root system and more surface area than legumes with a taproot. In mixed legume-grass pastures, the legume cycles N to the grass and the grass cycles P to the legume.

Natural herbicides or allelopathic effects for weed suppression

Cereal rye, forage radish, oats, barley, babala and forage sorghum. Annual ryegrass, cereal rye, and sorghum may be used for controlling soybean cyst nematodes.

Attract beneficial insects

Buckwheat, sweet clover, red clover and other selected clover and vetch species, sun

5



Rhodes grass mixed with white Buffalo grass at Ventersdorp. Photo: Hendrik Smith

hemp, sunflower, dolichos lablab and sorghum.

Tolerate wet soils

White clover, red clover, other selected clover species, annual ryegrass, cereal rye, wheat and oats.

Tolerate heat and drought

Dolichos lablab, cowpea, vetch species, mung beans, sweet clover, sorghum, babala, barley and teff.

Cold tolerant

Stooling rye, oats, wheat, triticale, winter pea and selected clover species.

Nurse crop

Summer annuals: Teff.

Winter annuals: Oats and annual ryegrass.

Table 1 shows an overview of the major pasture ley species that serve as forage for animals (cattle, pigs, sheep, chickens and fish).

Conclusion

Pasture ley and cover crops offer many benefits to producers that increase farm profitability and environmental sustainability. Each pasture ley and cover crop has a niche or special purpose. Legume pasture ley and cover crops are typically used to improve soil nitrogen levels. Grass pasture ley and cover crops are used to increase soil organic mat-

ter, recycle excess nutrients and reduce soil compaction.

Brassica crops are grown to loosen the soil, recycle nutrients and suppress weeds. Some other cover crops are grown to suppress insects, disease, weeds or attract beneficial insects. Therefore, cover crops should be considered an integral part of any farming system aiming to efficiently utilise nutrients, improve soil health and increase farm profitability.

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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 June 2016. 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.

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As part of this commitment to customers, Monsanto is involved in various projects with selected partners in South Africa, participating in projects to support farmers by providing products and agronomic support.

Since 2013 Monsanto has been partnering with Grain SA in their Farmer Development Programme in KwaZulu-Natal, the Free

State, Eastern Cape, Mpumalanga and the Eastern Cape, and much has been achieved since the programme started. Monsanto is proud to invest in the Farmer Development Programme of Grain SA. 

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



Recently Grain SA and Monsanto visited farmers in Mpumalanga and KwaZulu-Natal who are part of the Farmer Development Programme.

THE CORNER POST

SAREL PRETORIUS

Actions speak louder than words



In this new series, *The Corner Post* will feature the mentors who form part of the Grain SA mentorship programme. A mentor is that person who gives you advice on how to achieve your own goals and dreams.

One of the quotes of the well-known Chinese philosopher, Confucius, is 'I hear and I forget. I see and I remember. I do and I understand'. Mentor Sarel Pretorius from the Eastern Cape believes in this method to increase knowledge concerning farming practices. He has seen that practical demonstrations of what needs to be done deliver the best results. 'Sometimes not everyone understands when you explain methods verbally, but when they get involved and see first-hand what the results of the action are, they get on board quickly,' he explains.

Although Sarel is no longer farming actively, he still lives on his farm between Elliot and Barkly East where he was a cattle and sheep farmer for many years. Apart from the mentorship programme he keeps busy doing pregnancy tests on sheep and cattle in the area during the breeding season.

Practical demonstrations lead to successful farming

Sarel, who can speak Xhosa, got involved in the Grain SA training sessions nearly six years ago, and was approached by the Farm-

“*Sometimes not everyone understands when you explain methods verbally, but when they get involved and see first-hand what the results of the action are, they get on board quickly.*”

er Development team to become a mentor nearly four years ago. Initially he would only have helped for six months, but it has since become part of his daily routine. With 14 groups falling under his mentorship, he is kept busy from Monday to Friday, travelling nearly 300 km per day. Although four of the groups were allocated to another mentor earlier this year, he is mentoring all 14 groups again. He manages to visit each study group every two weeks, but as there are so many groups he sees two groups per day. 'It really is a full-time job, but a very fulfilling one especially when you see the improvement that your advice brings about,' he adds.

In his area, not all farmers own a whole hectare of land. Sometimes one hectare is divided between four people with each responsible for their own plot of land. Four gardens form a hectare and a group's chief is appointed. As it is not always possible for Sarel to visit every farmer, he speaks to the chief who then conveys the necessary information to the others in the group.

From the beginning Sarel found that a lack of knowledge was one of the biggest stumbling blocks the farmers faced. He has tried to give guidance on some of the most important agricultural practices and has seen a lot of growth in these groups – knowledge has increased and so have their yields. 'It was important to first explain how maize grows, what it needs to grow and why weeds have to be eradicated. Once the farmers understood this and saw the difference it made to their maize growing, they were on board. There really is nothing more gratifying than seeing big smiles on the faces of happy farmers.'

Seeing the success of farmers using no till practices has resulted in more farmers turning to this farming method – without Sarel telling them what to do, which proves that

“*There really is nothing more gratifying than seeing big smiles on the faces of happy farmers.*”

actions speak louder than words. With the smaller plots, he has taught farmers how to make straight rows using string. 'When I visit the plots, it is very clear to see who has been working hard' he adds. Those that achieve better results always inspire the others to get involved, without any recommendation from his side. This shows once again that actions speak louder than words.

Sarel finds it exciting to see how this programme gives people hope and a dream, and how it enlarges their vision – one farmer who started planting on a plot, is now planning to plant 20 hectares. 'It definitely gives them a better future,' he says.

To him one of the highlights of his time as mentor, has been the success achieved by farmer Ngubengcuka Christian Moyo, who is currently the chairperson of the Ngqayi study group in the Louwsburg region. Realising he can make a living through farming, Moyo left his job at the Department of Agriculture, Forestry and Fisheries and started farming in 2008 on communal land. With the help of the mentorship programme, he became the 2015 Grain SA/Absa Subsistence Farmer of the Year. 🍓

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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