

PULA INVULA

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



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PANNAR®

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NKGONO JANE SAYS...



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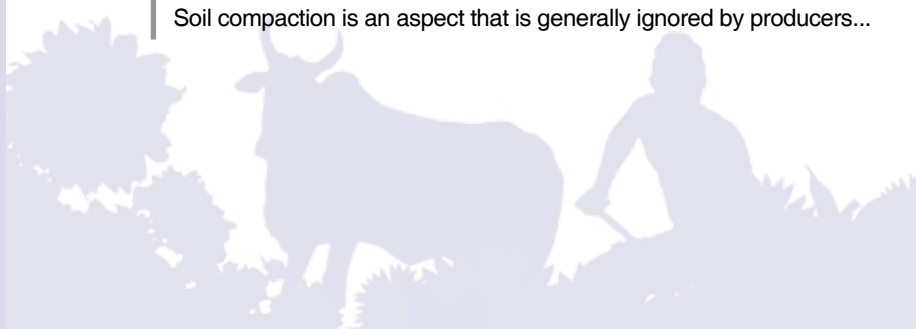
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Planting season has started in earnest and I am sure that you are almost too busy to read the Pula! How blessed you are to be in a position to grow food for your family and for your country.

We had our Day of Celebration at the end of September and what a wonderful opportunity it was to honour those who have achieved so much at all the different levels. No one is too small or too big to achieve greatness – it is within us all to use our talents to the very best of our ability.

The summer crops that you are planting now are very sensitive to weed competition. We say this every year, but I believe that we should say it again – weeds are your enemy. If you control

the weeds in your fields then you are so much more likely to harvest a good crop – don't allow the weeds to eat the food and drink the water that you have planned to give to your crop.

I hope that this year you will all be looking at other ways to increase your income from your land. What have you got, or what could you offer to the local (and national) market? Maize is a great crop to grow but we also need to think of growing other crops in rotation with the maize. It is so important to know the market – if you are in the deep rural areas without access to good markets – what are your neighbours buying that you could perhaps supply them? Dry beans are always a good option as they are known locally and are an excellent source of protein.

Livestock are important to farmers – they can help you stabilise your business so that you are not so vulnerable to the weather. Even very small farmers, you can keep some poultry and small stock which you can feed on your surplus maize (now that you are producing so well). By feeding maize to your livestock, you will improve on their production and you will be able to sell them to your neighbours as well.

Farmers are also business people – growing the crop is the first step, but it is just the beginning of a long journey. What can you grow to make more money, and to whom are you planning to sell that which you are growing?

I wish you all a good season with great rewards for your hard work and perseverance – be Blessed! 🍀

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Portia Buso

Discovering purpose and passion through internship



The front-page photograph of Jeremia Makhosini Mathebula, the 2018 Grain SA/Absa/John Deere Financial New Era Commercial Farmer of the Year, was taken by Louise Kunz.

CELEBRATING

passion, purpose & progress

There is an old African proverb which says that seeing is different than being told. The farmers who were nominees in the various categories all took the advice their mentors shared on board, but when they saw the results of their labour, they knew that hard work is always rewarded.

Growing together

On 26th September NAMPO Park bustled with excitement and farmers in colourful traditional wear at the tenth Day of Celebration which was hosted at this venue just outside Bothaville in the heart of the Free State for the very first time. It was evident that agriculture in South Africa was alive and well thanks to the Grain SA Farmer Development Programme.

When Grain SA decided to assist farmers to become better farmers through this programme the number of South African farmers started increasing. As Jannie de Villiers, CEO of Grain SA, explained during this special celebration: 'We don't farm for farmers. We help farmers to farm for themselves and at this event we do not celebrate a harvest of maize, but a harvest of farmers.'

He is very proud of the team involved in the programme who were instrumental in adding 29 emerging farmers to the list of farmers who produced grain of commercial quality during the past season. 21 farmers joined the 250 Ton Club, three new members joined the 500 Ton and 1 000 Ton Club each while two farmers became proud representatives of the 1 500 Ton Club.

"We don't farm for farmers. We help farmers to farm for themselves and at this event we do not celebrate a harvest of maize, but a harvest of farmer."

From mentees to winners

The Day of Celebration was initiated by Grain SA in 2009 to give acknowledgement to farmers for the hard work they put in throughout the year. Whether the year has been difficult with low yields being achieved or a good

rain season which has seen high yields being recorded, the celebration takes place.

An emotional Jenette Thembi Shoba (59) was announced as the **2018 Grain SA/ Absa Subsistence Farmer of the Year**. She farms between Ermelo and Piet Retief in the Mpumalanga area. Her interest in agriculture developed on the farm where her parents were farm workers. Jenette joined Grain SA in 2014 and attends a study group where she discovered how to become a more skilled farmer. Although this determined granny was injured in a vehicle accident, she managed to produce 7,5 tons of maize on 1 ha. The other finalists in this category were Amos Mfaniseni Kubheka from Mpumalanga and Siyavuya Njeya from the Eastern Cape.

For 2018 there were only two finalists in the category, **Grain SA/Syngenta Smallholder Farmer of the Year** – Mduduzi David Mnisi from Mpumalanga and Nhlanhla Sicelo Mngadi from KwaZulu-Natal. The award was given to Nhlanhla (48) who joined Grain SA in 2015 after seeing the success his neighbour was enjoying as a result of Grain SA's mentorship. Nhlanhla is applying what he has learnt and slowly working towards becoming a commercial producer. The improvement in the field and in his agricultural practices impressed the judges.

A new category, **Grain SA/Monsanto Potential Commercial Farmer of the Year**, was introduced last year. The 2018 winner of this category, Paulus Mosia (50), hails from the Free State and joined the Grain SA Farmer Development Programme in 2008. He is also an active member of the Edenville Study Group and was instrumental in getting a new study group in Heilbron off the ground. Paulus and his wife, Nomasonto say their success would not have been possible without the Farmer Development Programme. Brothers Anton and President Mabaso who farm together in the Bothaville district were the other finalists in this category.

The 2018 Grain SA/Absa/John Deere Financial New Era Commercial Farmer of the Year was presented to Jeremia Makhosini Mathebula (40) from Mpumalanga and his prize included a brand-new tractor. His farming career began in 2009 when he started planting only 40 ha of arable land on which he achieved about 4 t/ha of maize. Over the past four years his maize yield has increased by 75%. He currently plants a total of 450 ha of maize and

100 ha of soybeans and manages over 400 breeding cows. The other finalists in this category who each received a cheque of R25 000 and a watch from the sponsors are Thamsanqa Sampie Booizene from the North West Province and Daniel Maqala from the Free State.

"A lot of people are losing hope, but a day like today gives hope."

The people who made it possible

The sponsors who made this wonderful event possible were represented by Belinda Jacobs (Enablement Marketing Manager: Absa Agri-Business), Antois van der Westhuizen (Managing Director: John Deere Financial Sub Sahara Africa), Andrea Boon (Head: Technical, Syngenta SA) and Dudu Mashile (Seed Sales Manager, Bayer).

Jane McPherson (manager: Farmer Development, Grain SA) thanked the friends of the programme who support the programme to ensure its continued existence. In her speech she said, 'A lot of people are losing hope, but a day like today gives hope.'

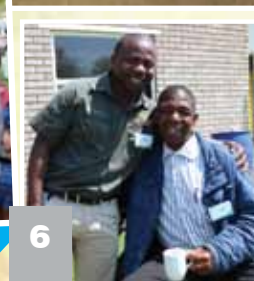
A new season means a new winner

It is clear that the nominees applied the advice given by their mentors. According to a west African proverb, the answer to success seems to be found in listening and not speaking: A talkative bird will not build a nest! Although there can only be one winner per year in each category, any progress in your own farming operation will make you feel like a winner. Remember no matter how many mistakes you make or how slow your progress, you are still way ahead of everyone who isn't even trying. See you at the 2019 Day of Celebration!

Article submitted by Louise Kunz, Pula Imvula contributor. For more information, send an email to louise@infoworks.biz.

DAY OF CELEBRATION









BEING READY ISN'T ENOUGH; YOU MUST BE PREPARED!

How ready are you for that dreaded moment when you realise the veldfire is out of control and has taken on a life of its own? How well prepared are your family members and farm workers? How well equipped are your neighbours? Who must be notified and where does one turn for help? It is time to start asking these important questions!

Recent headlines in our newspapers read: **Pilanesberg Nature Reserve fire 'ignited by a neighbour'**. A smallholder had decided to burn

some rubbish. The wind carried the fire into the reserve where it has damaged almost 8 000 ha. Statistics show that most veld fires are a result of human actions; whether from a tossed cigarette butt (often thrown out of moving cars), burning of vegetation or rubbish or cooking and heating fires lit carelessly.

Veld fires don't respect boundaries and are a serious problem. They threaten lives, present a risk to property, contribute to reduced soil fertility and destroy vegetation. They can become runaway emergencies that become disasters. Fire is an

important 'tool' for humankind used for many different reasons including heating, cooking and managing farm lands and grazing lands. Fires also occur naturally and can be started by lightning strikes.

Do you know that you may not stand by and watch a wildfire spread across your land? **You have a legal responsibility** to report the fire to authorities and neighbours and you have to help contain it. This is why we have to be prepared to manage planned and unplanned fires and veldfires respectfully and considerately by having a fire fighting strategy in place.





Who must prepare?

Everyone who owns, or rents land has a responsibility to control the fires on his or her land. The National Veld and Forest Fire Act states that every owner on whose land a veld fire may start or burn and from whose land it may spread must be prepared and be in a state of readiness.

Readiness for fire fighting

This requires the responsible person to have the necessary equipment, protective clothing

and training for extinguishing fires. This readiness is expected to be in proportion to the risk that the owner must manage so if you have 1 ha of land, you cannot be expected to have a huge firefighter standing at the ready on a tractor – but you can be expected to lend a hand with a knapsack sprayer filled with water or a fire-beater.

It is also reasonable to expect you and your farm workers to assist to control the fire on your property and to stop it from spreading beyond your boundaries. In the case of an absentee owner, the Act requires that every landowner or tenant must have a responsible person available to help extinguish a fire and to take steps to alert the neighbours and nearest officials.

Firebreaks

It is true that firebreaks are probably not going to stop the path of every fire. There are times when the wind picks up and blows a fire straight across a break. However, firebreaks do stop many fires and they provide a safer space for firefighters to work along when fighting fires or burning back with counter-fires.

It is important for landowners to work with their broader community and their neighbours. It is a landowner's responsibility to be in communication with other farmers as to when the fire break season is held and when everyone should burn. The day set for burning must be mutually acceptable.

Neighbours should work together in burning breaks along shared boundaries. They must be sure to have adequate assistance. It is essential that the fire is carefully managed and contained. Leadership on the day is essential. That person must decide whether conditions are ideal. If a wind has sprung up, then the burn must be halted and postponed to a quiet windless day.

A landowner may not burn wherever he or she pleases. Attention must be paid to the weather, the terrain and the vegetation when deciding how to prepare the fire break. The break must be made so that it is wide enough and long enough to have a reasonable chance of stopping a veldfire. It must not cause soil erosion and it must be reasonably free of inflammable material. Many farmers plan their breaks well in advance and spray the designated area with weed control to reduce dry matter and the risk caused by flammable weeds and brush.

Fire Protection Associations

It is important to note that firebreak legislation and practices differ significantly in different parts of the country, so it's up to every landowner to establish firebreak procedures in their specific region and then comply. Many communities formalise their cooperation by establishing a local Fire Protection Association (FPA). This is a good system as it ensures the community has a veldfire management strategy in place and the FPA rules are enforceable.


“

Attention must be paid to the weather, the terrain and the vegetation when deciding how to prepare the fire break. The break must be made so that it is wide enough and long enough to have a reasonable chance of stopping a veldfire.

The community can benefit from skills development and other assistance. There is improved communication between members, authorities and other stakeholders.

While some areas are highly legislated, there are other areas where other methods of fire control are deemed adequate i.e. grading, ploughing, and disking are other methods apart from burning. If you are a landowner or lease land, please take time to develop a fire management strategy for yourself and in your community – better safe than sorry!

Further reading is available at: <http://www.daff.gov.za>.

- Guide to fire protection associations for developing plans to implement.
- Veldfire prevention through firebreaks. 

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Are you a **STANDOUT LEADER?**

These days it is common to read and hear about businesses, government institutions, organisations and others that are not performing as well as they should or even fail. Many a time the reason disclosed for this poor performance is a lack of leadership.

A leader or in business terms a manager is a person that must manage his business, that is plan, organise, implement and control. But, a manager must also lead people as his/her employees to achieve what was planned, organised, implemented and controlled. A standout leader is thus a person who succeeds in directing the behaviour of others towards the accomplishment of certain objectives, in other words translating plans into reality, so that the objectives of the business can be attained, such as to make a profit.

Leading involves elements such as influencing people, giving orders, motivating people, either as individuals or in groups, managing conflict and communicating with them.

How do you become a manager? You become a manager and thus a leader of people when you are appointed in a certain post in a business, or you are chosen by a group of people, for instance a club

or workgroup, or you start your own business and are then *ipso facto* also the manager, or you may be a voluntary leader such as being the head of your family.

As an owner you are in the position of authority to manage and to lead because you are the owner of the business. This puts you in a position of power and you may expect your employees to respect you, but respect is earned through what you do or do not do. When people perceive your behaviour as positive they will respect and trust you and allow you to lead them. Remember, people observe the behaviour of a manager or for that matter anybody who is in a position of authority, more than one sometimes could imagine.

“ *The choice is yours – are you going to join the masses or are you going to be the standout leader?*

Being able to manage and thus to lead people provides you with power and when leading people this power can be used or abused. You may use your power to lead people by threatening them – ‘I will fire you’ – but then you are not leading people, you are chasing them in front of you. They do what ever you wish them to do out of fear, they are not following you. The result of leading in this way is always that at some stage the people will let you down.

Vice versa, you can lead people in a positive attitude by setting an example and lead because people respect and trust you. The question arises: ‘What can I do to gain the respect and trust of other people?’ For one, as already mentioned, by the example you set. You are never late for an appointment, you keep your promises, what about I’ll call you back? Is the example

that you set of high ethical standards or? You will also gain the respect and trust of people by treating all people with respect and being fair under all circumstances.

Essential common characteristics for great leadership are for instance communication, courage, vision, but the most vital characteristic is integrity. Positive leadership is built on integrity.

In learned terms integrity is described as being honest and morally upright under all circumstances. In more practical terms it can be described as – your yes is your yes and your no is your no, always doing the right thing even when nobody is watching, do what you say you will do, walk your talk, set the right example, keep your promises. Integrity builds trust and has high influence value. Integrity is the human quality most necessary to business success. Integrity results in a solid reputation, not just an image.

Unfortunately, in our public environment integrity and positive ethics is a vanishing commodity resulting in the poor performance of government institutions and even private businesses. Ethics is seen as the moral principles governing or influencing the conduct or behaviour of people. Principles such as honesty, loyalty, respect for other people and what belongs to them, to be law-abiding, responsible, just and fair, to act according to what is right.

Good solid business ethics (positive conduct) will go a long way to maintain sustainable profits. On the other hand, poor business ethics will achieve the vice versa. Yes, there might be short term advantages but in the long run poor business ethics will result in a poor business.

The choice is yours – are you going to join the masses or are you going to be the standout leader? Remember: Your good name is an invaluable asset. Nobody can take it away from you except you yourself.

A leader who is leading but nobody follows him, is only walking. Leadership is not only a title but is hard work. 🍀

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Maize prospects for the 2018/2019 season

This article gives a brief overview of the 2018/2019 marketing season for maize. We firstly look at the international prospects and there we see an anticipated drop in production with utilisation slightly up.

On the local front we expect maize production to be lower than the record breaking crop of 2017/2018, with a decrease in production area. Yellow maize production continues to increase at the expense of white maize due to the high demand for animal feed.

International prospects

World maize production in 2018 is due to fall by over 4% from last year's volume; this is due to shrinking harvests in several countries in particular Argentina, Brazil and the US.

Utilisation is up sharply from the previous season and now raised even further on projected stronger increase in industrial use (starch and biofuels), mostly in China.

On the trade front, there is an expected increase in imports by Asian countries. Ending stocks for 2019 have been revised down, this will be the lowest in five years, and this is mainly due to Ukraine and the US.

Local prospects

Looking back to the 2017/2018 marketing year maize production reached a record high of 16,769 million tons, planted on 2 628 600 hectares. The country has opening stock levels of 3,6 million tons as at 1 May 2018.

According to the National Crop Estimates Committee (CEC) for the 2018/2019 season, the size of the expected commercial maize crop will be 13,207 million tons; this is 22% less than the previous season. The area estimate for maize is 2,319 million hectares, which is 12% less than the previous season, while the expected yield is 5,70 t/ha.

The area estimate for white maize is 1,268 million hectares and for yellow maize 1,051 million hectares. The production forecast for white maize is 6,880 million tons, whilst the yield is 5,43 t/ha. In the case of yellow maize the production forecast is 6,327 million tons and the yield is 6,02 t/ha, yellow maize continues to increase significantly due to a rise in demand for animal feed.

The total demand for white maize and yellow maize, both domestic and exports is projected

at 7,439 million tons and 5,864 million tons respectively. With total maize closing stocks levels projected at 3,381 million tons for 30 April 2018.

According to the National Crop Estimates Committee for the 2018/2019 season, the size of the expected commercial maize crop will be 13,207 million tons.

It is predicted that in the long term yellow maize production will continue to increase at the expense of white maize. White maize exports are also expected to slow down with South Africa facing competition from Zambia from importing countries in Southern Africa; Zambia faces favourable conditions in production and logistics.

Annual maize prices are projected to move further away from export parity levels but to remain well below import parity and will continue to be influenced by domestic supply and demand conditions.

Article submitted by Ikageng Maluleke, Junior Economist, Grain SA. For more information, send an email to Ikageng@grainsa.co.za.



Pula Imvula's Quote of the Month

*Communication – the human connection
– is the key to personal and career success.*

~ Paul J. Meyer



A SILENT YIELD THIEF

that sometimes wears a different jacket

Soil compaction is an aspect that is generally ignored by producers and in doing so, without realising it, they lose a lot of yield. 'It is not a problem for me, the use of profile holes is just for other people... ', one often hears.

Soil compaction is often a man-made way of restricting the soil depth. Soil depth is one of the corner stones of production and soil that is too shallow becomes waterlogged or dries out first.

Photo 1 is a classic example of a plough pan or impenetrable layer. The plant roots could not reach the moisture at the bottom of the layer and are starting to dry out.

The correct method for stopping soil compaction is just as important as realising that soil compaction is present. Test the impact of the implements by digging the soil where the implement worked and checking that the soil compaction was broken up thoroughly and correctly (**Photo 2**). Tillage of the fields at the right moisture status is critical to obtaining the desired break-up effect.

Soil compaction is one of the aspects on which a producer should focus throughout the season. It does not help at all if you break up the soil and then compact the soil again with tractors. A general perception is that it is only tractors that compact the soil, and this is where the mistake is made.

The effect of implements

It is easy to ignore the impact of implements, and especially with today's tendency to tow bigger and heavier implements, it adds greatly to soil compaction. The large, heavy transfer wagons are also guilty of soil compaction. Furthermore, watch out for the use of heavy planter fertiliser wagons and seed wagons.

Track traffic was and is a system specifically developed to address soil compaction. The



A plough pan or soil compaction is a well-known yield thief.

Table 1: Yield results with a variance in the weight obtained on the planter wagon and consequent pressure on the soil.

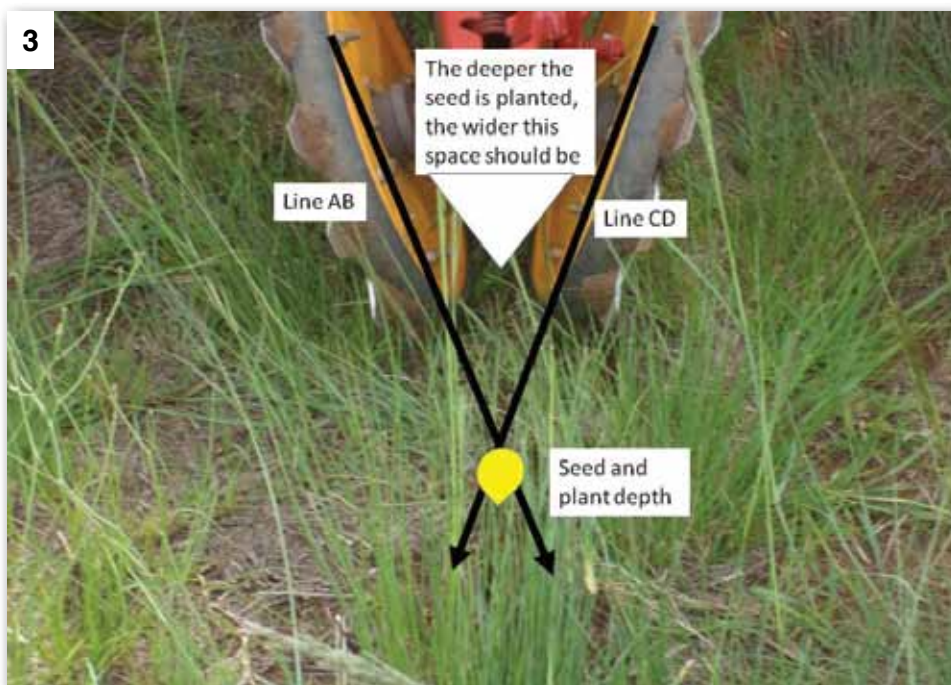
Amount of weight or pressure	Yield (bushels per acre)	Yield t/ha	Percentage difference from pneumatic variable pressure management
0 lbs	207,9	13,05	5,11%
125 lbs	210,4	13,21	3,97%
250 lbs	210,5	13,21	3,93%
375 lbs	206,0	12,93	5,98%
Pneumatic variable pressure management	219,1	13,75	

2



The operation of an implement can be seen clearly when a profile hole is dug where the implement has finished working.

3



A schematic presentation to determine how the closing wheels should be set.

tractors all ran in the same track. This limited the soil compaction, and it contributed to a reduction in fuel consumption per hectare.

The legends who developed and rolled out this system were men like Carel Koch, Martiens du Plessis and many others. This took maize cultivation to a new level. Today we should reflect on how

the big new implements can be used in a track-traffic friendly way to reduce soil compaction.

Consider this

There are a number of methods to consider. One of these is to keep the weight of the implements as

low as possible. Emptying the combine harvester or filling the planter at the headland will definitely take time, but the compaction caused by the combine harvester or planter will be reduced drastically.

By limiting the trips over the field to the minimum and by seriously paying attention to wheel size, wheel width, type of tyres and tyre pressure you can definitely reduce compaction. When buying implements producers should certainly pay proper attention to these aspects. The larger and wider the wheels, the greater the contact with the soil and the less the compaction.

During the past few years there has also been a new trend to let tractors and implements run on caterpillar tyres. This possibility will definitely reduce the impact of the tractors and implements on the soil. However, there is another implement that can also cause significant damage to the crops.

Planters

The planter is mostly forgotten, and yet the planter with all its discs can cause significant lubrication – which can seriously harm the roots of the plants. Soil moisture is critical: Take care to not plant in soil that is too wet.

If set incorrectly, the planter and particularly the depth-control wheels can to a great extent lead to unexpected compaction and root restrictions. If the pressure of the planter wagon is too low, the kernels are planted too shallowly, and if the pressure is too high, it dramatically increases the pressure on the depth-control wheels – which in turn can lead to compaction right up against the seed. These two aspects are directly responsible for crop losses.

American research

Research conducted in America found that producers totally underestimate this aspect. Trials done there also showed interesting results. **Table 1** reflects the results of a trial done at Beck's Central Illinois Independent Practical Farm Research in 2010.

In this trial, the weight or the pressure of the planter wagon on a tilled land was varied and the results of the yields harvested were measured. A treatment, the pneumatically variable pressure control (*air force variable rate*), was also included, where the planter was equipped with a mechanism that always keeps the plant depth and pressure on the planter wagon constant.

From these results it is clear that the pressure on the wagon should be set correctly.

SOIL-BORNE FUNGAL DISEASES

– the root of all evil

Soil-borne fungi can cause root, crown and stem rot as well as seedling wilting in plants. As the symptoms are hidden underground, the producers are not aware of them and usually attribute poor establishment (**Photo 1**) and yield losses to circumstances on the surface.

The above-mentioned rots and seedling wilting are caused by a variety of fungi (fungal species complex), which complicates the control of these diseases. The fungus species will, for example, vary from one field to another and environmental factors will also play a big role in the composition of the fungus species complex.

Some of the fungi in the complex are *Pythium*, *Exserohilum*, *Fusarium*, *Rhizoctonia*, *Aspergillus*, *Penicillium* and *Trichoderma* spp.

The disease severity can vary due to different soil types, soil moisture, soil temperature, available nutrients and general soil and plant health. Furthermore, the above-mentioned fungi differ from each other in their preference for environmental conditions and hosts.



Poor plant establishment in a sunflower field caused by fungal diseases.
Photo: Dr Maryke Craven

Soil cultivation practices will also have an influence on the fungal species complex.

Symptoms

Typical symptoms observed with root rot are discolouration, and the roots will also be fewer and shorter compared to healthy roots (**Photo 2**). This causes poor plant establishment and a decrease in growth vigour, which will also harm the yield.

The degree of root rot is divided into groups of one to four according to the infection percentage (one = > 0% - 25%, two = 25% - 50%, three = 50% - 57% and four = 75% - 100% root rot) found on the roots.

Every numerical group is known as a disease unit. According to literature, for every progressive disease unit, an additional decrease in yield of 1,81 t/ha can occur.

Soil-borne fungi can also cause wilting of seedlings, and typical symptoms are discolouration of the roots and the seedling stem. Infected seedlings will typically be smaller when compared to healthy seedlings, and a yellow rot will often be seen (**Photo 2**). Poor seedling germination often results in producers having to replant – which then has financial consequences.

Controls

The control of soil-borne fungi is a huge challenge due to the wide spectrum of fungi in the complex and the interaction of the fungi with the host, environment and soil tillage methods.

In order to control root, crown and stem rot as well as seedling wilting, the fungal species complex should first be identified. *Pythium* spp. mainly affects seedlings and the fungus prefers wet soils.

This fungus produces zoospores with flagella, which enable them to move over short distances in wet soil. On the other hand, *Fusarium* spp. will, for example, flourish in drier soil. Therefore, good drainage can reduce *Pythium* spp. in that the zoospores cannot spread and increase, while flood irrigation can impede *Fusarium* spp. by reducing the soil oxygen and temperature.

The control measures applied will depend on the fungus species present at pre-plant.

Successful control measures should be easy to apply, economically justifiable, not harmful to the environment and be effective against soil-borne fungi. Single control measures do not usually have these properties and therefore it is better to use an integrated approach.

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Discolouration in the stems and roots (right) caused by seedling wilting, compared to healthy plants (left) of the same age.
Photo: Johnny Viviers

Crop rotation

Soil-borne fungi survive in the soil and on plant residues and can therefore already be present at pre-plant, ready to infect new plantings. By planting a crop that was not a host to the problem fungus, the inoculum (amount of fungi) in the soil will be reduced.

Successful control measures should be easy to apply, economically justifiable, not harmful to the environment and be effective against soil-borne fungi.

Such a rotation should be done for at least four years or longer, as soil-borne fungi can survive for up to seven years in the soil and on plant residues.

Nutrients

Plants that receive sufficient nutrition are stronger and have better resistance against soil-borne fungi. The literature mentions that phosphate fertilisation can influence host resistance positively.

Phosphoric acid can be applied, for example, to control *Pythium* and *Phytophthora* spp., and gypsum can reduce the incidence of *Macrophomina phaseolina* (charcoal rot) in groundnuts.

A lime application can make the soil pH more alkaline and therefore suppresses fungi

such as *Plasmodiophora brassicae* (causes rot in cabbage).

A sulphate application that lowers the soil pH will be effective in reducing the bacteria (*Streptomyces scabies*) that cause potato scab.

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Soil-borne fungi can also cause wilting of seedlings, and typical symptoms are discolouration of the roots and the seedling stem. Infected seedlings will typically be smaller when compared to healthy seedlings, and a yellow rot will often be seen.

Soil solarisation

Placing transparent polyethylene on damp soil during summer can raise the temperature of the top 5 cm to approximately 52°C (solarisation).

The solarisation process can destroy fungi, bacteria and even nematodes in the top soil layer and thus reduce the inoculum.

Biological control

Natural biological antagonists can partially or completely destroy fungi. An example of this is where the fungus called *Trichoderma* is used to control *Rhizoctonia solani* (causes root rot and wilting disease).

Various products containing *Trichoderma* are available (liquid form as well as seed treatment).

Chemical control

Some fungicides can be applied in powder, liquid and granular form before and after planting. The chemicals in the fungicides are used to form a toxic barrier between the host plant and the fungus.

Seed treatments play a critical role in seedling germination in that they provide protection against soil-borne fungi and therefore improve

the overall growth vigour and development of seedlings.

Genetics

The use of resistant cultivars is the most effective and economical option. Genetically modified plants/seeds are also available.

Conclusion

To ensure the success and economic feasibility of control measures for soil-borne fungi, knowledge of the host, fungus species complex and environmental conditions is essential. Better control can be obtained by applying integrated control measures.

Article submitted by Dr Belinda Janse van Rensburg, ARC-Grain Crops, Potchefstroom, for SA Graan/Grain November 2017. For more information, send an email to belindaj@arc.agric.za.

13 A silent yield thief that sometimes wears a different jacket

Where the pressure of the planter wagon on the soil was too little or too much, it caused yield losses. Ensure that the springs that control the pressure on the wagon are set correctly according to the soil conditions and make the effort to adjust it regularly to a change in soil conditions.

Pressure of planter wagons

Various companies provide technology concerning the regulation of the pressure of the planter wagons on the soil. Cerealis Precision in Lichtenburg is a frontrunner where this technology is concerned. With cooperation from Monsanto they are currently busy with trials to test the Delta Force (hydraulic pressure control) effect at Bothaville.

Hydraulic pressure control is used to control the planter wagon units' pressure on the soil, so that an even plant depth is obtained without leaving too much compaction along the planter gutter.

This mechanism uses a weight pin to measure the pressure that the planter wagon

should exercise on the soil and then adjust the pressure itself. The system takes a reading 200 times/second, which moves the hydraulic cylinder in the parallel arms of the planter wagon.

The hydraulic cylinder reacts approximately five times per second to add to or reduce the pressure of the wagon. Consequently, the correct plant depth is maintained without really getting compaction from the pressure wheels. Delta Force's goal is to ensure a more uniform emergence by maintaining an even plant depth without compacting the soil.

A planter's closing wheels can cost producers a load of money. If the closing wheels of a planter are set incorrectly, it can also cause yield losses. Incorrectly set closing wheels can compact the soil under the kernel – causing the plant's roots to struggle to get through the compaction. However, the real problem is that the seed does not make proper contact with the soil and therefore the emergence of the plants is relatively uneven. The uneven emergence of the plants causes crop losses.

Closing wheels

Planters' settings differ from each other, but it basically comes down to if you draw an imaginary line that follows the angle of the closing wheels, the two lines should cross each other exactly at the plant depth. In **Photo 3**, lines AB and CD should cross each other exactly on the kernel.

The deeper the plant depth, the wider apart the wheels should be. Ensure that the wheels are an exactly equal distance from the centre and that the kernel is placed exactly in the centre between the wheels.

It is important for producers to consult the planter's manual to know exactly how the wheels should be set.

Article submitted by Pietman Botha, SA Grain contributor, for SA Graan/Grain November 2017. For more information, send an email to pietmanbotha@gmail.com.

Why CREEP FEED for young RUMINANTS?

Producers invest in the best affordable genetics and construct infrastructure like lambing pens and camps. They follow management programmes for inoculations, dipping and dosage carefully. Technology with controlled internal drug release (CIDRS), pregnant mare serum (DSM), artificial insemination (AI) and laparoscopy are available to us, but do we still unlock the young animal’s genetic potential optimally?

A large number of producers avoid creep feed for various reasons. The construction of new creep feed troughs, extra rations that must be mixed or purchased, or just the potential additional costs appear to be the most common reasons why creep feed is not given.

However, research has proven over time that the benefits that a quality-formulated creep feed hold for the development of a young animal overshadow the negative perceptions.

Benefits offered by creep feed

The effect of Epi genetics is one of the main benefits offered by creep feed. Epi genetics are the environmental factors and external changes that DNA undergoes without the DNA sequence being changed.

The change affects the way in which the cells interpret the genes. Exposing animals to good feed during the first few months of their lives affects how their DNA is expressed and interpreted by them.

Table 1: Influence of age on the feed turnover effectiveness of lambs (Vosloo, 1982).

Age (Days)	Mass (Kg)	Feed turnover (Kg feed/Kg mass increase)
0 - 42	4,5 - 15	1,0:1
42 - 60	15 - 20	3,0:1
60 - 80	20 - 25	3,5:1
80 - 100	25 - 30	4,0:1
100 - 120	30 - 35	4,5:1
120 - 140	35 - 40	5,0:1
140 - 160	40 - 45	5,5:1

An example of this is that ewe lambs that experienced feed stress during the first few months of their life will have a lower ovulation rate and this will have a negative effect on their fertility for the rest of their life.

The number of muscle cells established in this golden period can also be higher. For the rest of their life the animals will therefore have more muscle cells that can increase in size.

A third example is that 70% to 80% of the wool follicles already mature in the first month of the life of a woolled lamb – a food shortage in this period will have a negative effect on the sheep’s future wool production. To make the most of these benefits, the young ruminant must receive a creep ration with sufficient high-quality energy, roughage, bypass proteins and vitamins and minerals.

Rumen development

Newborn ruminants are born with an immature digestive system and one of the main functions of creep feed is to support and develop the rumen.

Creep feed develops the rumen in two ways. The one is to increase the size and volume of the rumen, and the other to develop the rumen wall and finger-like rumen papillae. The size and volume are affected positively by the roughage the lamb/calf eats with his mother and/or consumes if there is fibre in the creep feed.

“If you use creep feed, the animals can be weaned earlier and marketed or personally rounded off earlier.”



Lambs consuming creep feed. Photo: Dawie du Plessis

I prefer creep feed that contains roughage in the form of good-quality ground lucerne, as the digestion is still developing. Good-quality lucerne is easier to digest than other poorer roughages. It also helps to prevent ruminal acidosis, which can develop if animals overfeed. The purpose of rumen papillae is to absorb nutrients from the rumen. The better these finger-like villi are developed, the bigger is the surface for absorption from the rumen.

The grain part of the creep ration is responsible for this. Grain digestions lead to the formation of volatile fatty acids like propionic acid and butyric acid. Butyric acid is regarded as the energy substrate for the rumen epithelial cells that constitute the rumen papillae.

The rumen of calves that receive only milk will therefore be basically underdeveloped (as illustrated in **Photo 2a**), and a young calf that received only milk and roughage will show some degree of development of the rumen



Photo 2a: The rumen of a calf who received only milk, with minor papilla development.

Photo 2b: The rumen of a calf who received milk and hay, with little papilla development.

Photo 2c: The rumen of a calf who received milk, grain and roughage. Significant papilla development. Photos: Jud Heinrichs, Penn State University

papillae. However, please note the good development of the rumen papillae and the thick rumen wall of the rumen of a dairy-breed calf in **Photo 2b** to **Photo 2c** – mainly due to the presence of grain in the ration.

The rumen in **Photo 2c** and **Photo 3** would be considerably more effective than that in the other illustrations and would absorb more nutrients from the feed being consumed.

Economics of creep feed

When cost estimates are done and they involve creep feed, you cannot focus only on the cost of rations. Young animals have the ability to utilise creep feed so much better. **Table 1** shows how many kilograms of feed lambs have to consume to gain 1 kg in mass through its life span.

Note how the effectiveness of feed turnover in lambs becomes significantly lower as they grow older. Older lambs therefore have to consume more feed to gain 1 kg of weight – which means you must try to get them on weight as early as possible. In the process you will require less feed to gain the desired weight.

If you use creep feed, the animals can be weaned earlier and marketed or personally rounded off in a shorter period. This creates room for expanding the breeding herd. Replacement cows/ewes can also be mated earlier and thus make an economic contribution to the herd earlier.

This also supports first-calf cows and first-lamb ewes to recover more quickly from lactation and reduces the chances of their skipping a calving or lambing season. These changes mean that the farm can function more cost-effectively, which creates an opportunity for you to expand your herd vertically.

Creep feed is not such a popular practice for beef cattle. The reason for this is that calves have the ability to experience compensating growth later in their life, for example in the feed-



Cross-section of the rumen wall, illustrating the rumen papillae.

Photo: Jud Heinrichs, Penn State University

lot. Yet a return on investment of 4:1 in beef calves that received creep feed has been proven. These calves received creep feed from the age of 2,5 months up to and including weaning.

Even though creep feed is not a common practice for beef calves, the rumen of calves who did receive creep feed is already adjusted to concentrated feed, which limits rumen disorders like ruminal acidosis when these calves go to the feedlot.

I prefer creep feed that contains roughage in the form of good-quality ground lucerne, as the digestion is still developing. Good-quality lucerne is easier to digest than other poorer roughages. It also helps to prevent ruminal acidosis, which can develop if animals overfeed.

From creep feed to other rations

When lambs/calves are weaned, it is advisable to continue with the creep feed for a further two weeks. The weaning process is extremely stressful to lambs/calves and consistency in the feed supports them in order to better bridge the shock in this confusing period of change.

However, it is important to stop feeding creep feed for lambs after this two weeks. Furthermore, avoid the temptation to round off lambs on creep feed – not just because it is expensive, but also because creep feed generally contains few ammonium salts, which can lead to bladder stones in wethers and ram lambs.

Creep feeds are specialist feeds that are made up for relatively young animals who do not feed on them ad lib because they are still suckling.

After animals have been weaned, suitable supplementary feed should be implemented in

accordance with the ultimate goal for the animal. Animals that are culled can be fattened with a feedlot ration. Stud ewes and rams can receive an energy lick or concentrate in the field to support their further growth.

Currently different forms of creep feed are commercially available: Pellets, meals and specialist lick blocks. Concentrates are also available that enable producers to mix their own creep feed. Contact your animal nutritionist for balanced formulations.

Obstacles and solutions

The biggest challenge of creep feed is that lambs have to start feeding on it. Here are a few suggestions for improving intake:

- Lambs do not like dusty feed. One option is to pellet the mixture – this will also limit wastage. Another way is to include molasses meal or syrup in the rations, or alternatively to add oil.
- Smell and taste are extremely important, because the lambs have to be enticed into the pen. Lucerne works very well, as it is very enticing to ruminants. Feed “fresh” creep feed every day and avoid musty and rancid feed. It can be budgeted that a lamb will consume about 300 g to 350 g of creep feed per day over a period of 86 days.
- Place creep pens in the camp before the lambing season commences. Lambs’ frame of reference is very small, which means that they take fright if creep pens are suddenly placed in the camp. There are management practices that can be followed to teach lambs/calves to feed.

Accessibility is key to intake. Young animals must have access to troughs and you should therefore make sure that the measurements of creep pens are correct. Feed and water troughs must be high enough so that the smallest lamb/calf in the herd can feed and drink from them.

Creep feed is a specialist product and cannot be replaced by other rations. It is worthwhile to invest in the infrastructure of the correct creep pen and troughs and a high-quality creep feed to ensure that the genetic potential of your calves and lambs is optimally utilised.

Article submitted by Annelie van Deventer, animal scientist, Feedtek, for SA Graan/Grain November 2017. For more information, send an email to annelievdmweb.co.za.

Planting tips for success

The planting process is very important and should be carefully managed. Good planting conditions are the foundation of success.

An even seedbed, careful seed spacing, planting depth, fertiliser placement and good contact with moist soil, create the optimal conditions for germination and early seedling growth.

A uniform and vigorous plant population is the first step to optimising the yield potential. Optimum germination occurs at soil temperatures above 15°C. Good seedbed preparation always delivers dividends.

“ *Good planting conditions are the foundation of success.*

In a no-till system, strip-tillage can give the advantage of a clean, warmer seedbed in the rows for quicker germination and even emergence. Make sure that the seed is in good contact with the soil. Without this, a good plant population and ultimately a good yield are not possible. Guard against planting in wet soils, which can cause sidewall compaction and inhibit the development of the roots and their access to fertilisers.

Fertiliser placement below and away from the seed stimulates optimal seedling development. Crust formation due to a heavy down-pour, especially on sandy soils, impedes emergence and it is necessary to break the crust and aerate the soil. Any form of soil compaction should be addressed. On sandy soils a rip cultivation is important to break up any compaction layers to facilitate optimal root development. Sandy soils should also be managed to limit the potential of wind damage.

Weeds are the biggest thief of soil moisture. Pre-emergence weed control is essential

“ *Weeds are the biggest thief of soil moisture.*

during the first six weeks to eliminate weed competition.

Apply quality control regularly – check the fertiliser placement, herbicide prescriptions, seed placement, planter speed and potential damage by soil insects. Close attention to the fine details is essential for success. 🌱

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THE CORNER POST

PORTIA BUSO

Discovering purpose and passion through internship



As many young graduates know, graduating does not guarantee a job or an income. Finding work can be very difficult with most employees seeking experienced candidates. Most graduates lack the practical experience to start farming or to apply for positions in an agricultural field.

During 2017 a selected group of graduates were the first interns to participate in Grain SA Internship Programme which began last season. This programme is a joint partnership between Grain SA and the Department of Rural Development and Agrarian Reform (DRDAR).

The benefit of this programme is twofold as Grain SA Farmer Development is given the opportunity to train the calibre of mentors that is needed in the field for future farmer development in the deep rural areas. On the other hand, interns can obtain much needed experience in the field, better equipping them for their future careers. The main criteria to join the programme is that participants must be graduates who have completed their studies in an agricultural field.

During the internship participants must attend a variety of Grain SA farmer training courses in grain production. These courses have a good balance between theory and the practical application thereof and form an integral part of the internship. Other learning opportunities and skills development activities are acquired during the Grain SA social facilitation tasks, which include study group meetings, farmers days and advanced farmer encounters. They also accompany a mentor to experience first-hand what is done in the field to improve the agricultural practices of the mentees.

After completing the year-long internship a written exam is completed to evaluate their practical and theoretical knowledge. The seven candidates in the 2017 Kokstad group who had all experienced the frustration of not being able to land a job with little to no practical experience

in the field after completing their studies, all passed and are now junior mentors in the field.

A learner becomes teacher

Portia Buso (26) from Mount Frere in the Eastern Cape is one of the graduates who went from intern to junior mentor. 'In the rural areas where I grew up, we depended on crop production to put food on the table,' she says. This is where her interest in agriculture developed, helping her mother from a young age to plant maize, potatoes and other vegetables.

The significance of seeing something grow from a seed to food on the table prompted her to choose agriculture as a career. She first obtained a National Diploma: Community Extension at the Mangosuthu University of Technology and then furthered her studies at the Tshwane University of Pretoria. Here she received a BTech Degree in Agriculture: Extension and Rural Development. Her studies concentrated on developing farmers and improving agricultural practices in rural areas through crop production.

To her the highlight of the internship was receiving hands-on experience in the mechanisation field. She shares that learning to calibrate planters and boom sprayers and even do maintenance on farm equipment was a true adventure. 'This was really valuable experience because you can't teach what you can't do!' Other areas in the programme included mapping of land using GPS and doing crop yield estimates.

Although Portia comes from a farming background, she was amazed to discover during the internship that a high yield could be accomplished on a small piece of land by just following procedures and applying the correct agricultural practices. 'I also realised that farmers are very sensitive people and that one must be aware of this when you share advice so as not to offend them.'

Michelle Obama, wife of the previous American president, said, 'Empower yourself with a good

education, then get out there and use that education to build a country...' Portia is empowered by a good education and skills through the internship programme. Now she is using it to build a strong farming community working as a junior mentor in the Pabankulu area, mentoring about 60 farmers to help improve their agricultural practices to realise their dreams.

One of the groups under her supervision is familiar to her as they were part of her mentor's mentees during the internship, the other is a brand-new group showing that Grain SA's Farmer Development Programme is still growing. When asked how these experienced farmers feel about a young elegant lady teaching them about farming, she laughs. 'The new group has truly accepted me as their mentor and take the advice I share on board. The group who got to know me as intern, saw that I am interested in their success and are very positive towards my input,' she shares.

It has become clear that the importance of soil analysis is the one area where farmers need the most guidance and when they witness the results of correct soil management, they want even more information. She is planning to place more emphasis on marketing too. 'Marketing maize is very important if you want to make a living. If farmers do not sell their maize, it goes to waste as their storage facilities are not up to par or none existent.

Record-keeping and log book maintenance also forms part of the responsibility of the junior interns. Portia says she used to believe that she was the kind of person who only enjoys office work and doing administrative tasks at a desk. Through this programme she has discovered something she never knew about herself, that she is a teacher at heart.

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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