

PULA IMVUILA

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PREDATORS - friend or foe?

Advantages of maize storage

Manage the NEW WAGE structure



PULA IMVULA

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NKGONO JANE SAYS...

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THE MAIZE TRUST

It is almost time to start estimating the yields of your crops – so rewarding to see the results of your efforts. Nature is so willing to assist us with our endeavours to produce food. There are ways of estimating the yield of every crop and you could ask your development co-ordinator to assist you to understand how this is done so that you are in a position to do an accurate estimate of your expected crop.

Every year during May, Grain SA hosts the NAMPO Harvest Day on our farm just outside Bothaville in the Free State. At the event, which is the biggest agricultural trade exhibition in Africa, you can see the most modern equipment for grain production for farmers of

all sizes. It is really worthwhile to try and attend NAMPO this year: 12 - 15 May. Unfortunately there will not be accommodation available in Bothaville, so if you plan to sleep over, you need to make arrangements early in some of the towns near Bothaville.

You will be able to meet with all the input suppliers – seed, fertiliser and chemicals, the implement manufacturers as well as many tractor manufacturers. It is good to see what is available on the market and to have an idea of the current prices. There are very big tractors, but also smaller ones, so you should not feel that if you are a small farmer that you should not come to NAMPO. The development pro-

gramme personnel will also be at the event, which means you can come and meet us and discuss your farming challenges with us.

With the harvesting time in sight, you will be looking forward to getting an income. Many of you will have borrowed money to plant the crop that you are planning to harvest. We know that we all have pressing needs for money, but please remember that before taking any money for yourself, rather pay off your debt. If you do not pay your debt, then you are unlikely to ever get a loan from any other institution in the future.

We look forward to seeing you at NAMPO 2014!



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Front page photograph taken by René Theunissen.

Predators – friend or foe?



Most damage will take place after maize cob formation.

What is a predator? A predator is an animal which takes advantage (or preys on) the produce produced by the farmer. Many farmers suffer great losses from season to season due to animals destroying crops and livestock.

The battle between man and predator has been ongoing since biblical times and will continue into the foreseeable future. The question is: How do we manage these losses and how do we manage the relationship between man and animal?

To answer this question, we first need to identify the main culprits in the system. These may vary from region to region. In this article we will take a look at crop predators.

In South Africa we find that the primary animals destroying crops are:

- Birds such as the Red-billed Quelea, which flock in large swarms and target small grains like sunflower, wheat and sorghum.
- Crows and raven can cause significant damage just after the emergence of the crop, especially in maize and sunflower lands.
- Gerbils: These rodents live in burrows in the land and cause the most damage just after planting by eating up all the seed.



Quickphos is a Phostoxine tablet, which is commonly used for the fumigation of grain when being stored away.

- Cape Ground squirrels: These are also rodents which live in colonies underground on the edges of lands and also eat the seed once planted.
- Porcupine: This is a rodent which does a lot of damage in maize after the cobbing stage until the maize is dry.
- Bush pig: These swine do large amounts of damage, especially in KwaZulu-Natal. They flatten large sections of crops, usually maize, potatoes and beans and can be a pest from the point when the seed is planted in the ground until it is dry for harvest.

The struggle with trying to control these predators is that some of them are doing their damage in plain sight, but their sheer numbers make it difficult to manage them. Others are few, but are much more stealthy and sly, making it difficult to manage them.

Now the argument comes: How do I control these critters and do I even control them? Do they perhaps have a role to play in the ecosystem and will removing them make the problem worse? These are all good questions to ask. To answer this, we first need to identify the natural predators which are meant to control these problem animals.

- Birds – black-backed jackal, owls and raptors.



PEST CONTROL

- Rodents – black-backed jackal, owls and raptors.
- Bush Pigs and porcupine – leopard and lion and other large cat species.

How many of these natural predators still occur in the wild and to what extent? Yes, you have spotted it; we have a few missing links in our “circle of life”. Due to the fact that some key-stone top order predators have been removed from the system years ago, we are now in a state of Trophic Cascade. This occurs when one predator is removed from an ecological system and then causes an imbalance in the entire system. Because of this we are continually playing catch up. Man has had to try and bridge the gaps and “play predator”; unfortunately this is not effective or sustainable enough to control these problem creatures. So what can we do?

Well, the best solution would be to reintroduce all large predators into the system, but for obvious reason this is not a practical solution. Because of this I definitely believe that man has a significant role to play in managing the numbers of predators in populated agricultural areas. This needs to be done under strict protocol following a programme designed with the best interests of all parties involved. This is a job which should be the responsibility of the Parks

Boards and similar institutions in conjunction with farmers and landowners.

What can we do on our farms?

There are many ways in which we can promote the presence of raptor bird species.

- We can preserve habitats.
- We can build perches to assist their hunting in the lands.
- We can avoid the use of harmful poisons which cause secondary fatalities.
- We can create awareness amongst our neighbours and friends.

A few simple steps can make a big difference.

When it comes to larger problem animals, there definitely needs to be mechanical intervention... Yes, this means guns and traps. Without culling the numbers of these problem animals, we could see an explosion in their population density and thus an exacerbation of the problem. For this, do not take measures into your own hands! There are trained professionals who can be contacted to come out to your farm and attempt to reduce the numbers of problem animals. Strict measures are taken to be safe and responsible. Usually the professional hunters will use trained dogs to flush out the pigs or porcupine, thus it is very important to notify all of your neighbours as sometimes the hunt will carry over onto the next

door property. Be sure to use professionals with dogs that are trained to only flush out pigs and other problem animals, not any animal that they smell or see.

Another method which is often used, but which takes more time, is baiting. This is where bait of sour maize meal is put out in the same spot everyday for a period of time until the pigs come every night. Once they are coming regularly you can go and sit in a hide from early in the evening in an attempt to ambush them; be sure to do this from a well-hidden position where your scent and presence is obscured.

All control measures of large and small problem animals need to be responsible! Always keep in mind the secondary consequences of your actions. Too many innocent creatures are being lost due to irresponsible uses of poisons and snares. Remember, every creature has its role to play in the ecosystem and if one is removed, it will have an effect on all the others. 🐾

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



Bush pig damage in the Lowlands district, near Estcourt in KwaZulu-Natal.



Bush pigs can also be a pest just after planting.

Don't take any shortcuts when

The volatile grain market had forced farmers into a situation where they need to control how and when they sell their maize. Thus new methods of storage are continually being developed. For decades farmers have been finding ways to store their grain, evolving from grass baskets to the modern steel and concrete silos of today.

The storage of maize has numerous advantages for the farmer. Maize, if stored at the correct

moisture content, can be kept very well for long periods of time without losing any value, even for two to three years. This provides:

1. **Marketing advantage** – maize can be stored away if prices are low and kept until a later stage when prices have improved, and a greater profit can be made.
2. **Feed availability** – maize can be an excellent source of feed for livestock in winter and in times of drought. Storage thus enables us to stockpile grain as a fodder bank.

3. **Human consumption** – if maize is stored at a local milling company, it allows the consumer to hedge against food price hikes – as is the case at the moment. This is especially beneficial for the small-scale subsistence farmer who only harvests a few tons at a time. If he stores his maize at a local mill, he is guaranteed food at his cost of production plus a small storage fee, regardless of increasing food prices.

As with everything, there is always a risk involved when storing maize. It is crucial to make sure that all the correct measures are taken beforehand to prevent a “storage disaster”.

- Make sure that the moisture level is correct (below 14%).
- Ensure that it is stored in a dry place which is free of leaking roofs and from damp seeping through the floors.
- Keep pests out with regular fumigation.

Today there are many options when it comes to storing your maize. There are continually new products being developed, which make it easier and safer to put our maize away. Unfortunately though, many of these options are costly and involve large capital outlays. So what are some of these options?

- **Bags** – this method is probably the cheapest; it is also ideal considering that maize can be stored in any suitable space which is available on your farm, i.e. sheds or store-rooms. Another advantage to using bags is that a large volume of weight can be stored in a fairly small space seeing as maize is heavy.



Portable augers make it much easier to handle large quantities of grain at a time.



storing your maize

Main photo: Bodenstein silo, near Coligny in the North West Province, is one of the options you can use to store your maize, if you live in that area.

- **Silos** – you can store your maize at a local co-operative's silo or on your farm if available. This is more expensive, but much safer if you consider that the risk belongs to the silo owners. It is their responsibility to look after your grain and return it in good order when the time comes.
- **Silo bags** – this method is cheaper than traditional silos, but still costly as the bags can only be used once. Thus it is only really feasible if at least 100 tons is to be stored at a time.
- **In bulk** – if space is available on your shed floor, you can store your maize loose on the ground. This method has the advantage of easy handling, especially if you have access to a portable auger. It also allows for easy inspection for pests such as maize weevil, which are a huge threat to stored maize.

Keep in mind

There are a few crucial things to keep in mind when storing maize on your farm.

The first and foremost, which cannot be ignored, is grain moisture. Maize can be stored safely below 14%, but at 15% and above there is a risk of mould as well as internal combustion.

Cleanliness is another factor which should always be considered. The storage facility needs to be well cleaned and fumigated to get rid of any weevil eggs which may still be present from previous seasons. A common and easily accessible poison



Grain silos on the farm are fast taking motion in South Africa as it allows the farmer to access the market at a time which best suits him.

to use is *Quickphos* or *Phostoxine*. This comes in tablet form and should be scattered over the top of bags before being covered and completely sealed with a tarpaulin which is free of any holes or cuts. *Phostoxine* releases a gas when exposed to oxygen; this gas is heavier than air and thus moves downward, penetrating the lower levels of the maize stack. Be sure to take all necessary safety measures before using this poison, i.e. wear gloves and a mask, wash your hands and ensure that it is sealed properly so that there is no chance of leaking gas.

The key to reaping the benefits of using maize storage options is to do it properly without taking any "shortcuts". If you can use storage methods and access the market at a time which suits you best, then it will give your business an advantage to achieve the best possible profit margin. 🌱

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

What are the options for marketing my maize?

In the past, the selling of maize was a lot easier. The farmer would produce the maize crop and deliver it to the local co-operative and be duly paid for his product at a much more regulated market price than today. The co-operative would then act as the middle man and distribute the maize to buyers in all sectors and industries.

Today, however, things are a bit more cut throat. The co-operatives still have a large role to play and do still control a large percentage of the industry's grain. The only difference is that today the farmer has a greater access to the market thanks to modern technology and can therefore easily market his maize to a range of consumers in an attempt to receive the best possible price.

Where can I market my maize?

When considering this question, we need to think about the uses of maize: Who uses it, how is it used, where is it used, et cetera? Maize can be marketed to a number of grain co-operatives. In South Africa the leading co-operatives are NWK, Senwes, Suidwes, TWK, AFGRI and GWK. There are also many private buyers who you could market your maize to; these would include maize milling companies, feed companies, feed lots, piggeries, chicken farms and small-scale hawkers. It is an important decision to make and all possible markets need to be considered carefully.

There are a number of options to consider when deciding where to sell your maize.

1. **Locality** – due to high transport costs, we need to find where the closest market would be.
2. **Price** – we need to test the waters and find who is paying the best prices, because even though the market price is fairly set according to Safex, there are still buyers willing to pay a premium for convenience and quality.
3. **Product** – before planting a maize crop, we need to identify which products are in demand in your area. Perhaps there is a feed company in your area which would be a buyer of yellow maize. Perhaps there is a maize milling operation in your area which would buy white maize. These are crucial factors to consider.



A farmer exchanging his mealies for maize meal.



Maize being delivered to the local mill.



Maize being delivered to the local mill.



While waiting for their maize meal order, these farmers take some time out to read the Pula/Imvula.

Technology has become a major role-player in maize marketing today and is widely used in a number of ways. The main one is the buying and selling of grain using the South African Futures Exchange Market (Safex). To do this you usually need the help of a broker who knows the market trends and can advise you on your transactions. Most brokers can be accessed through any grain trading company.

By using Safex a farmer can assess the market and hedge the price at which he will sell his maize in order to protect him from a future decrease in price. To do this a farmer

will usually buy call or putt options, which will establish a minimum price for his maize. If the price of maize is low and the farmer is scared it will go up, he will buy a call option. If the price is high and the farmer is scared it will drop, he will buy a putt option. The trading of grain using Safex can be very confusing at first, which is why it is advisable to use the services of a broker. However, once the skill has been mastered, it will be very useful as a protection buffer during volatile times.

The grain you produce is your livelihood, thus it is crucial for you to make the effort to

market it as well as you can. Use all the available resources to find the best buyer, which will translate into the best profit margins. Don't instinctively sell your maize to the easiest and most convenient outlet. With a bit of marketing strategy, you will increase your potential income and possibly forge new business relationships, which will be beneficial into the future. 🌱

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

Jupidex

- leaders in the agricultural equipment market



Jupidex (PTY) Ltd is a company with its origins deeply rooted in agriculture. It was founded in 1999 then trading as Kverneland South Africa. The head office is situated in the heart of the KwaZulu-Natal Midlands, on the Eastern Seaboard of South Africa near Durban. The company started off by importing and distributing **Kverneland, Vicon, Taarup and RAU** products from the world renowned **Kverneland group** to meet the needs of farmers in Southern Africa.

Over the next few years Kverneland SA grew into one of the market leaders in the agricultural equipment market with arguably the best dealer network with more than 80 outlets in South Africa alone. With demand exceeding all expectations Jupidex are still growing and expanding each year in business innovation, market share and providing in the special needs of the African farmer.

Being part of the diverse Plennegy Group, Jupidex also have marketing synergies throughout Africa with the necessary financial backup needed to source our vast product range.

Markets

Jupidex (Pty) Ltd are the market leader in South Africa regarding the distribution of soil preparation equipment and trailed mowers. Having one of the best dealer networks and always working on long term business relations within this network, Jupidex can market the total product range to the farming community throughout Southern Africa and Africa.

Our vision

To be a leading world-class supplier of top quality and affordable agricultural products to the African markets.

Our mission

To supply superior quality, affordable agricultural equipment and aftermarket spare parts with exceptional service to all our customers.

Our product range includes

- Ploughs
- Mowers – 3. and trailed
- Chisel ploughs – 3. and trailed

- Sub soilers
- Bale loaders
- Mower conditioners
- Rakes – wheel and PTO
- Power harrows
- Bale wrapper
- Disc harrows
- Feeder mixers
- Rotovators
- Mulchers
- Maize planters
- Balers
- Fertiliser and lime spreaders
- Trailed disc mowers
- Mounted boom sprayers
- Trailed sprayers. 🌱

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Climate change in South Africa

Climate refers to the long term patterns in temperature and rainfall that are experienced in any particular area.

Records show that average temperatures have been increasing and that rainfall patterns are changing. Over long time frames (thousands of years) there are various natural reasons why climate patterns change. However, along with these natural causes, human activities are now also contributing to climate change. Emissions of greenhouse gases from industry, transport and, to a lesser extent, agriculture increase concentrations of these gases in the atmosphere and trap heat.

This heating of the atmosphere results in an overall change in the climate. The latest, and most credible, scientific assessment by the Intergovernmental Panel on Climate Change (IPCC) shows that that warming of the climate system is now beyond dispute. Since the 1950s, many of the observed changes have never been seen before. Climate change means changes in temperatures, rainfall patterns (amount and distribution) and extreme events (such as storms) and it is driven by human activities.

What will it mean in South Africa?

Average annual temperatures across the country will continue to rise. Temperatures will rise by a greater amount in the interior compared to the coast, where the oceans keep temperatures lower. Some projections say temperatures will

rise by as much as 6°C by the end of the 21st century. Rainfall patterns are more difficult to predict. The models used are not able to take into account the important role that mountains play in affecting South African rainfall.

Broadly speaking, the east of the country is due to become wetter. The west of the country (including the winter rainfall region of the Western Cape) will become drier with a greater likelihood of droughts. Even in the east, however, higher rainfall quantities over a year may not necessarily be positive for agriculture, since the additional rain will likely fall in a number of intense rainfall events. These will occur in the early summer months, as opposed to being evenly distributed throughout the rainy season.

About this project

The Comprehensive Africa Agriculture Development Programme (CAADP) is an African-led initiative to improve agricultural productivity that is run by the New Partnership for African Development (NEPAD) under the African Union (AU). Its overall aim is to eliminate hunger and reduce poverty through agriculture. To do this, African governments have agreed to increase public investment in agriculture by a minimum of 10% of their national budgets, and to raise agricultural productivity by at least 6%. CAADP's role is to bring together the various partners required for this to happen. This project contributes by identifying best practices in adaptation to climate change by farmers from

six countries across the continent: Burkina Faso, Cameroon, Ethiopia, South Africa, Togo and Zambia. The project ensures that CAADP promotes practices that will continue to be sustainable in the face of a changing climate.

For more information, please contact Kwame Ababio, NEPAD Planning and Coordinating Agency (kwamea@nepad.org; 011 256 3355) or Tracy Cull, South Africa project expert (tracy@kulima.com; 082 820 6607).

Sources of further information

The South African Weather Services (SAWS) (www.weathersa.co.za; 012 367 6000) issues daily, seasonal and long range (2 - 3 seasons) forecasts at various levels of resolution for South Africa; and also undertakes drought monitoring.

The South African Risk and Vulnerability Atlas (www.rvatlas.org) provides weather and seasonal forecasts and high resolution climate projections over a range of timeframes (2011 - 2040, 2041 - 2070, and 2071 - 2100).

The Climate Systems Analysis Group at the University of Cape Town has a Climate Information Portal (<http://cip.csag.uct.ac.za/webclient2/app/>) with access to Africa-wide datasets and climate projections using the latest available climate science.

Article submitted by Dr Katharine Vincent, Director: Kulima Integrated Development Solutions (Pty) Ltd. For more information, send an email to katharine@kulima.com.



The new wage structure – you have no choice but to manage it!

When considering the influence of the new wage structure of farm workers on the finances of a farm and what to do, a farmer has three choices – ignore it, manage it and an “I have to” approach.

To **ignore** the situation, you pay wages that you want to pay and your employees are satisfied. This could be a dangerous path. As long as your employees do not complain, fair enough, you do not have problems. However, should one report you to the Department of Labour and labour inspectors find you to be at fault, they could close down your business temporarily with devastating results. This does happen – some two years ago a farm business in the North West Province was closed down for a couple of months to rectify its labour practices.

Secondly, to adopt an “**I have to**” approach and pay the higher wages to keep everybody satisfied, which could eventually result in very negative financial results for your business. Due to the cost-price squeeze on farmers (costs are increasing at a greater tempo, percentage wise, than prices of products) this attitude could lead to difficult financial times.

The third choice – **manage** the situation – is actually the right choice. If you want to be a successful farmer, you must follow this route. The question is what can I do? Let's discuss a few options and where to start.

First of all, you could apply for variations with the Department of Labour, a tedious process with not much promise of success.

Secondly, we refer you to an article on Human Resource Management in a previous Pula/Imvula. See that you have a proper human resource management policy in place, including your organisation structure indicating all the posts. Are all posts necessary? Reduce staff if practical. Within the scope of the Labour Relations Act and of the Basic Conditions of Employment Act you are entitled to retrench staff on basis of operational requirements (poor finances).

This major change in the wage structure has also put a strong emphasis on the appointment of suitable employees. All posts in your organisation structure must be supported by a proper job description to be used when appointing new employees. You should also test their skills before appointment.

Remember, you are entitled that your employees should work at an acceptable standard and tempo. If they do not, use your disciplinary process and code. You need not struggle with employees that are not productive.

You will notice that the aforementioned steps are all within the labour laws – the legal route – use it, you are entitled to it.

A major focus area to address the higher wages must be to attend to the productivity of your workforce where productivity measures the output of employees compared to cost and time. Productivity is a major problem in South Africa. Worldwide statistics indicate that South Africa is ranked between the countries with the lowest productivity. This low productivity causes labour to be expensive in South Africa. When

considering productivity, there are two resources involved, namely people (employees) and equipment (tools, machinery et cetera).

Address your human resources – do your employees have the necessary skills and expertise to do the job and are they properly trained? (This includes employees cultivating a maize land using a hand hoe.) Train your employees properly to increase productivity and therefore counter labour costs. Also communicate with your employees on ideas to get a job done – they can come up with wonderful ideas.

Consider your tools and equipment. Do you expect an employee, when responsible to repair something and needs a number 13 spanner, to do the job with a “*draadtang*”. The employee cultivating – is the hoe sharp or do you expect him/her to use an old hoe with only half the blade left that has never been sharpened? We are not saying you should buy a new hand hoe, we are merely implicating that you must maintain your tools and equipment in a good state of repair to get the job done properly in good time.

Have you considered improving productivity by adapting existing equipment or improvising something new? Remember, “*n Boer maak 'n plan*”. Agricultural magazines (Landbouweekblad, Farmer's Weekly, and others) are full of ideas on how to adapt existing tools or equipment or to improvise. At the NAMPO Harvest Day you will also come across wonderful ideas.

Other major steps that can be taken in order to manage the higher salary costs are for instance to mechanise or change your enterprises to less labour intensive enterprises. However, these plans are not always financially feasible, especially for the smaller farmer. They require a high input of capital.

To summarise, apply the labour laws to the letter and increase productivity. Train your employees, communicate with your employees and use functional tools and equipment to counter the higher wages, which are again increasing on 1 March 2014 with a further 6,4%. 🍷

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

Controlling white goosefoot in maize and wheat

White goosefoot is an annual, ramose, upright weed that can grow up to 1,5 m tall. This weed has strong tap roots and the stem is ribbed, yellow-green, often with reddish stripes, and epilose.

The leaves are simple, arranged alternately, and the shape varies from lanceolate to ovate. Leaf margins can vary from smooth to irregularly dentated. Leaves are usually dark green on the top and floury white on the underside.

Seedlings can also appear woolly because of the white colour of the young leaves. Leaves can be up to 5 cm long and 3 cm wide. The flowers of the goosefoot are green, in thick terminal and axillary panicles, without a corolla, with five carinated sepals. The seeds are lenticular, shiny black and up to 1,5 mm in diameter.

Distribution

This weed is also called pigweed, but should not be confused with the *Amaranthus* species, which is also edible. It is widely spread throughout South Africa, and is also frost resistant and is common in winter crops.

Control

Tillage

White goosefoot can be controlled by means of shallow tillage at the seedling stage.

Chemical

The most effective control measure is by way of herbicides. Several herbicides are registered for controlling white goosefoot in maize and wheat (Tables 1 and 2). Follow the indications and dosage

instructions on the label for each product extremely closely. Green goosefoot is also a *Chenopodium* spp. (*C. carinatum*), and although most herbicides in tables 1 and 2 can also control green goosefoot, producers should still make sure which *Chenopodium* spp. is indicated on the label for each product.

Always contact a reliable chemical adviser before using any chemicals to follow the correct dosage and specifications on the label. All herbicides that are registered for controlling weeds are summarised in the publication, *A guide to the chemical control of weeds in South Africa. A CropLife South Africa Compendium*.

Article submitted by Elbé Hugo, ARC-Grain Crops Institute and Hestia Nienaber, ARC-Small Grain Institute for SA Grain/Grain April 2013. For more information, send an email to HugoE@arc.agric.za.

GET YOURS NOW



All herbicides registered for controlling weeds are given in the publication: *A guide to the chemical control of weeds in South Africa. A CropLife South Africa Compendium*. Order it from info@croplife.co.za or 011 079 4199.



The book *Onkruid in gewasse en tuine in Suidelike Afrika* can be obtained from the ARC-Grain Crops Institute, Private Bag X1251, Potchefstroom, 2520. Contact Mary James on 018 299 6253 or at JamesM@arc.agric.za.

Table 1: Broad-leaved herbicides for controlling white goosefoot registered with respect to maize.

Active ingredient	Formulation	Time of application
2,4-D	480 grams/litre	Pre-emergence application five to six days after planting Postemergence, when crop is 30 cm high, otherwise directed spraying with drop arms
2,4-D/dicamba	240/80 grams/litre	Postemergence when weeds grow actively, five- to six-leaf stage
acetochlor/atrazine/simazine	160/165/165 grams/litre	Pre-emergence, during or just after planting
acetochlor/atrazine/terbuthylazine	125/187,5/87,5 grams/litre	Pre-emergence, with planting or within three days after planting Early postemergence – no later than four-leaf stage of the weed
	150/225/225 grams/litre	
	178,6/160,7/160,7 grams/litre	
	200/150/150 grams/litre	
	250/225/225 grams/litre	
350/175/175 grams/litre		
alachlor/atrazine	336/144 grams/litre	Pre-emergence, with planting or within two days after planting Some products cannot be used on sandy soil with 16% clay and less
atrazine	500 grams/litre	Pre-emergence on well-prepared seedbed Early postemergence, two-leaf stage of weed
	900 grams/kg	


Table 1: Broad-leaved herbicides for controlling white goosefoot registered with respect to maize (continued).

Active ingredient	Formulation	Time of application
atrazine/cyanazine	167/333 grams/litre	Pre-emergence or early postemergence
	250/250 grams/litre	
atrazine/mesotrione/s-metolachlor	208,5/26,8/208,5 grams/litre	Pre-emergence application
atrazine/metazachlor/terbuthylazine	210/60/210 grams/litre	Pre-emergence, within three days after planting Can be followed up with early postemergence spraying
atrazine/metolachlor	300/300 grams/litre	Pre-emergence application within three days after planting
atrazine/metolachlor/terbuthylazine	174/252/174 grams/litre	Pre-emergence or early post-emergence, before broad-leaved weed has reached four-leaf stage
	262,5/175/262,5	
atrazine/s-metolachlor	370/290 grams/litre	Pre-emergence applications just after planting
atrazine/metolachlor/terbuthylazine	248,6/102,8/248,6 grams/litre	Pre-emergence application
atrazine/sulcotrione	300/125 grams/litre	Administered pre- or postemergence
atrazine/terbuthylazine	250/250 grams/litre	Pre-emergence or early postemergence, before four-leaf stage of weed
	270/270 grams/litre	
	300/300 grams/litre	
	450/450 grams/kg	
atrazine/terbutryn	250/250 grams/litre	Pre-emergence, during or just after planting
bendioxide	480 grams/litre	Postemergence application
bromoxynil	225 grams/litre	Postemergence of weeds between the four- to six-leaf stage
	400 grams/litre	
	450 grams/litre	
	500 grams/litre	
bromoxynil/terbuthylazine	150/333 grams/litre	Postemergence application
dicamba	480 grams/litre	Postemergence until crop is 30 cm tall
	700 grams/kg	
dicamba/topramezone	160/50 grams/litre	Early postemergence before six-leaf stage, use in tank mixture with atrazine or atrazine/terbuthylazine
EPTC	720 grams/litre	Pre-plant, mixed with soil. Consult label
MCPA	700 grams/kg	Pre-emergence, within five to six days after planting Postemergence until crop is 30 cm tall
	400 grams/litre	
mesotrione	480 grams/litre	Pre- or postemergence. Use only in tank mixture of atrazine, atrazine/terbuthylazine or s-metolachlor
mesotrione/s-metolachlor	83,3/416,7	Pre-emergence application
s-metolachlor/terbuthylazine	102,8/49,2 grams/litre	Pre-emergence application
metribuzine	480 grams/litre	Postemergence, between four- and six-leaf stage of weed in tank mixture with 2,4-D or bromoxynil
terbuthylazine	500 grams/litre	Postemergence application together with 2,4-D/dicamba
topramezone	336 grams/litre	Early postemergence before six-leaf stage, use in tank mixture with atrazine or atrazine/terbuthylazine

Note: Certain grass herbicides like acetochlor, s-metolachlor, alachlor and s-dimethenamid can also be sprayed pre-emergence to control white goosefoot in maize. Glyphosate can be sprayed postemergence where herbicide-tolerant maize is planted.

Controlling white goosefoot in maize and wheat

Table 2: Broad-leaved herbicides for controlling white goosefoot registered with respect to wheat.

Active ingredient	Formulation	Time of application
2,4-D	480 grams/litre	Apply between growth stage seven to 13 of the wheat
	500 grams/litre	Only in summer rainfall areas (not KwaZulu-Natal). Apply between growth stage seven to 13 of the wheat
bendioxide	480 grams/litre	Apply to young, actively growing weeds
bromoxynil	225 grams/litre	Weed must be fully germinated, not older than six-leaf stage
	400 grams/litre	Apply when crop is between three-leaf and end of boot stage
	450 grams/litre	Weed must be fully germinated, not older than six-leaf stage
	500 grams/litre	Wheat must be between three-leaf and end of boot stage
bromoxynil/pyrasulfotole	210/37,5 grams/litre	Only in winter rainfall areas, between four- and six-leaf stage
carfentrazone-ethyl/metsulfuron-methyl	400/100 grams/kg	Western, Southern and Eastern Cape, wheat at three- to five-leaf stage
chlorsulfuron	750 grams/kg	Wheat at two- to five-leaf stage
chlorsulfuron/metsulfuron-methyl/tribenuron-methyl	119/79/222 grams/kg	Western, Southern and Eastern Cape, wheat at four- to six-leaf stage
dicamba	700 grams/kg	Only in tank mixture with Enhancer (10 grams - 12 grams) + Reaper (10 grams) + aid
diflufenican	500 grams/litre	Only in winter rainfall areas, wheat plants must be well established, read label
florasulam/flumetsulam	75/100 grams/litre	Only in winter rainfall areas. Apply between two-leaf and before end of stalk formation of wheat, when weeds are seedlings
iodosulfuron-methylsodium/mefenpyr-diethyl	50/150 grams/kg	Only in winter rainfall areas, up to four-leaf stage of the weed, or 3 cm tall
iodosulfuron-methylsodium/metsulfuron-methyl/mefenpyr-diethyl	30/30/90 grams/kg	Only in winter rainfall areas, up to four-leaf stage of the weed, or 3 cm tall
MCPA	400 grams/litre	Apply between growth stage seven to 13 of the wheat
	700 grams/kg	Mainly annual broad-leaved weeds in dryland wheat Apply between growth stage seven to 13 of the wheat
metsulfuron-methyl/thifensulfuron-methyl	68/680 grams/kg	Apply before four- to five-leaf stage of the weed
metsulfuron methyl/tribenuron methyl	80/300 grams/kg	Western and Southern Cape, wheat at four- to six-leaf stage
	120/600 grams/kg	Only in tank mixture with 2,4-D Ester or Voloxynil B 225 EC
metsulfuron-methyl	200 grams/kg	Only in winter rainfall areas, wheat at three- to five-leaf stage
	500 grams/kg	Only in winter rainfall areas, wheat at three- to five-leaf stage
	600 grams/kg	Only in winter rainfall areas, wheat at three- to five-leaf stage
prosulfuron	750 grams/kg	Apply before four- to five-leaf stage of the weed
pyraflufen-ethyl	20 grams/litre	Only in winter rainfall areas, apply as tank mixture at two- to four-leaf stage of the weed



Scientific name: *Chenopodium album*
Afrikaans name: *Withondebossie, bloubossie, hondepisbossie, seepbossie of varkbossie*
English name: White goosefoot, fat hen, wild spinach

Table 2: Broad-leaved herbicides for controlling white goosefoot registered with respect to wheat (continued).

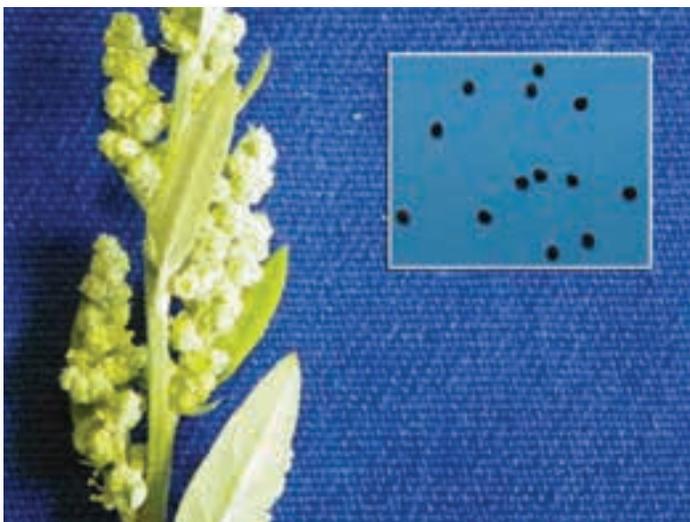
Active ingredient	Formulation	Time of application
thifensulfuron-methyl	750 grams/kg	Western, Southern and Eastern Cape, only in tank mixture with Enhancer plus aid, wheat at two- to five-leaf stage, no later than four weeks after weed emergence
triasulfuron	750 grams/kg	Western and Eastern Cape, apply during planting
tribenuron-methyl	750 grams/kg	Only in winter rainfall areas and irrigated wheat in summer rainfall areas, wheat at three- to five-leaf stage
trifluralin	480 grams/litre	Use only in planted fields, read label



Young white goosefoot.



Mature plant and green goosefoot (insert).



Flower spikes and shiny black seeds (insert).



White woolly appearance and reddish purple stems.

Do not allow botulism to paralyse your farm

Botulism (*lamsiekte* in Afrikaans) is a disease that causes partial or total flaccid paralysis in cattle, sheep, goats, horses, donkeys, chickens, ostriches, water birds and sometimes pigs.

The disease mainly occurs in cattle, and sheep are also sometimes affected. The muscles that are required for movement, chewing and swallowing are affected. Botulism is caused by poisoning and not by an infection. The poisoning occurs when decomposed organic matter of animal or vegetative origin containing the bacterial botulism toxin *Clostridium botulinum* is ingested orally by the animal. Botulism is not contagious (a sick animal does not infect a healthy animal).

In South Africa the toxins (there are two types) of the bacteria *C. Botulinu*, types C and D, usually cause botulism. These toxins are some of the most deadly toxins known and are not rendered harmless by the digestive process of the digestive tract.

These toxins are sensitive to heat and can be deactivated by exposure of ten minutes to a temperature of 80°C. People and certain types of fish are also susceptible to botulism. *C. botulinum* produces at least seven types of neurotoxins (toxins that affect the nervous system).

The *C. botulinum* bacteria form resistant spores and occur widely in soil in most parts of the world. The bacteria multiply in decomposing protein-rich animal and plant material such as the carcasses of rats, mice, tortoises, rabbits and birds, as well as in lucerne and bean hay.

They form their extremely deadly toxins in this decomposing protein-rich material. The animal ingests the toxins orally and absorbs them through the intestines, with the paralysis following after two to six days.

Conditions in which animals are poisoned

Horses are the most susceptible of all animals to the botulinum toxin, in contrast to pigs and dogs (carnivores), who are resistant. Cattle, sheep and goats are equally susceptible to the toxin. The bacterium *C. botulinum* is a normal inhabitant of the digestive tract of horses, cattle and chickens (the animals are healthy). Here the bacteria multiply and are excreted in large numbers in the dung and thus contaminate the environment.

The phosphate content of old grass pasture can decrease to such an extent in winter that cattle grazing on the grass in winter can develop



A sheep with botulism.



This cow with botulism has no fever and is paralysed.



Make sure that the cattle's water troughs are free of the carcasses of birds and rodents, as these can serve as source of the botulinum toxin (botulism toxin).



pica (an urgent desire to eat bones – osteophagy) if the deficiency is not supplemented by phosphate in a lick or in the water.

This old and hard grass also lacks protein and this aggravates the pica in the animals. Prolonged droughts can also contribute to the development of pica. A phosphate deficiency in animals is characterised by poor growth, general weakness in the legs, a stiff gait and pica.

Such animals chew old bones and will eat any decomposing carcass material. If these bones or carcasses are infected by *C. botulinum*, the animals will develop botulism.

Growing, lactating and pregnant cattle require more phosphate in their diet than other cattle and they have a greater tendency to develop botulism if their phosphate needs are not met. Pica is the most important factor leading to botulism in cattle under extensive conditions.

Cattle in particular and sheep to a lesser extent develop pica as a result of a phosphate deficiency in their diet. As far as we know pica does not develop in other species.

Chicken manure (particularly broiler manure), which can contain decomposed chicken carcasses in which *C. botulinum* produces toxins, can be fed to cattle and sheep because of its high nitrogen content, and is a major source of botulism. Botulism has also occurred where contaminated chicken manure was spread on pasture as fertiliser and cattle then fed on that pasture. Changes in diet by changing pasture and swapping from silage to hay seem to increase the susceptibility of goats to the botulism toxin.

The carcasses of small mammals like rabbits and rats, of birds and tortoises are major sources of the botulinum toxin for cattle and sheep under extensive conditions. The carcasses of small mammals and tortoises can remain toxic for up to

350 days, but usually lose their toxicity after four to six weeks.

The toxins in the carcasses are flushed out and away by rain, but the shell and bones of tortoises retain the toxin for longer periods during wet weather conditions. Many toxins are produced in carcasses where sufficient heat and moisture are present, but toxin production is reduced dramatically in cold, dry conditions.

If a rat or a cat dies in a feedbox or silage pit, the botulinum toxin can be produced in the carcasses and the surrounding feed can be contaminated by the toxin. When the animals ingest this feed, they will develop botulism.

Large bales covered with plastic are often visited by rodents and sometimes they die there. These carcasses can also lead to botulism when the bales are used for feed. Sometimes these carcasses are found in the animals' drinking water and the animals that drink this water can also develop botulism and die.

Decomposing protein-rich lucerne and bean hay as well as brewers grains and 'afvalpap' can sometimes cause botulism in cattle and sheep because they serve as growth medium for the bacteria and the toxin is produced in the feed. Autointoxication by *C. Botulinum*, where the bacteria occurring normally in the animal's digestive tract produce toxins, is rare.

Signs of the disease

The paralysis of the animals can be less to very serious, and most of them usually die if they are not treated with the antiserum. Symptoms of the disease in cattle usually appear two to six days after the ingestion of the toxin, and deaths occur one to two days after the animals have lain down, but can occur up to 17 days after the toxin was ingested. The animals do not have a fever.

Muscle paralysis with respect to movement, chewing and swallowing can be partial or complete. The general symptoms of the disease are the following: The animals have an unsteady gait, as if they are afraid, lie down, find it difficult to get up and gradually become paralysed.

They drool saliva because they cannot swallow. The tongue muscles are paralysed and the tongue can be easily extended, but cannot be retracted. The tail is also paralysed and the dung is hard. The head of animals that are lying down usually rests on their flank. Sometimes the animal becomes bloated when lying down.

The symptoms in sheep and goats mainly correspond to those in cattle. Typical symptoms in sheep are that they arch their back and their neck, head and tail hang, they display abdominal breathing and urinate frequently. The lower jaw is paralysed and droops.

Diagnosis

It is sometimes difficult to make a diagnosis. A preliminary diagnosis can be based on the history, symptoms and a negative post-mortem. The diagnosis is confirmed if the botulinum toxin of a sick or dead animal can be demonstrated in a laboratory.

Prevention and control

- Annual vaccination of animals. Animals that are inoculated for the first time should receive a booster dosage of the vaccine after three to four weeks and then annually. The vaccine against botulism only or the combination vaccine for blackleg and botulism can be used.
- Phosphate deficiencies should be prevented. Animals should have access to bone meal, phosphate licks or soluble phosphate in the drinking water. This prevents pica and improves the production and reproduction of the animals. Protein deficiencies in the diet should also be corrected.
- Animals that receive chicken manure as feed should be vaccinated against botulism.
- Remove carcasses from the veld if possible.
- Administer antiserum intravenously to sick animals. Provide good care and supportive treatment.
- Good immunity only develops two weeks after the booster has been given. Where there is a high probability of botulism, a third vaccination should be given during the immunisation programme.



Animals must be vaccinated against botulism every year.

Article submitted by Dr Jan H du Preez, Managing Director, Institute for Dairy Technology, for SA Graan/Grain April 2013. For more information, send an email to jan.dupreez@mpo.co.za.

Grain SA interviews...

Patricia Ntombi Maphosa



Mrs Maphosa and her son Phillimon holding a measuring stick for measuring the length of their green mealies SC701 near Barberton in the Mpumalanga Province.

Patricia Ntombi Maphosa is a hard-working, successful farmer from the Barberton area in Mpumalanga, who does not just farm with maize and vegetables, but also creates job opportunities for the unemployed and aspires to one day export her own produce.

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

I have a small plot near Barberton and currently I am farming on 10 ha of arable land. I farm with maize on both dryland and irrigation. On 1 ha I have planted green mealies and on another 6 ha I have planted dryland maize. On another 2 ha of arable land I have planted vegetables like beetroot, spinach and cabbages. I am rotating the maize with dry beans.

What motivates/inspires you?

I was motivated to become a farmer, because I grew up farming in the backyard garden at home. Here we planted vegetables like tomatoes, onions, beetroot et cetera. I also worked on a farm in Kaapmuiden, Mpumalanga for four years. Here we planted sugarcane, grapes, oranges and paw paws; some of these fruits were exported and some were supplied to the Johannesburg Market.

Another reason for me to start farming on my own was that I wanted to create job opportunities for the unemployed.

Describe your strengths and weaknesses

Strengths: My husband has a lot of farming experience and we do everything together as a team. We have a direct market for selling our produce. The green mealies are bought directly from the farm and we make a lot of money from the sale of this 1 ha of green mealies, approximately R30 000/ha.

We own one Duetz 65 tractor and one Ford 83 model tractor. I also own a Toyota bakkie, which was purchased with money we generated from the farm. I have also received training from Grain SA, which has enabled me to farm in the correct manner.

Weaknesses: Currently I am running short of farm implements, especially for disking. I use old tractor tyres, which I pull with a tractor, in order to loosen the soil. I also do not have a shed to store my harvest.

Our farm is small and we want to expand by cleaning up the area next to our farm, which is not utilised by anybody. Water is never enough and we have drilled two boreholes, which no longer work.

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

When I started farming, I used to harvest less than 1 ton/ha of maize. Currently, I am harvesting 4 tons/ha under dryland and \pm 7 tons/ha of green mealies.

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

The main contributor to my progress and success is my husband. We work hand in hand and because he has a lot of farming experience and some qualifications in agriculture, he is my mentor and is always prepared to help me.

The Grain SA training courses that I have attended is also a contributor to my progress and success. I also used to attend study group meetings, farmers days and workshops offered by Grain SA in our area.

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

I have attended courses on vegetable production offered by the Department of Agriculture, Forestry and Fisheries. I have also attended courses offered by Grain SA, like The Introduction to Maize Production, Farming for Profits and Tractor Maintenance courses.



Where do you see yourself in five year's time? What would you like to achieve?

In five year's time I would like to own a big farm or expand my existing farm. I want to own tractors with their own implements and which are also in a good working condition. I would also like to employ \pm 20 permanent staff and create even more opportunities for the unemployed. I would like to export my produce so that I can generate a lot of money.

What advice do you have for young aspiring farmers?

My advice to young aspiring farmers is that if they want to farm, they must have a love for farming. If you farm just for the sake of farming, you are not going to succeed. You must not let people do the job for you, you must do it yourself. They must also acquire farming skills by attending courses, workshops and farmers days. They must not want to get rich quick and must persevere and wait until their business is well developed and sustainable. 🍷

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

THE CORNER POST

The inspiring ripples of development



We as people are funny creatures. We go places; we talk a lot and hear many things. We talk to friends, family, neighbours and various people in our communities. We talk about our children, family, the weather, money, farming and much more. All the things that are on our minds, things that affect us, positive or negative, and we talk about things that are important to us. When you think about it, every single one of us has hopes and dreams of doing more and doing better. We sometimes hear stories and see other people doing well, going forward and achieving success and wish that we could do the same. As all people are different, everyone reacts differently to the things they see and hear. Some become sad, angry, jealous or depressed when they see a friend or neighbour achieving success.

However, people who are fighters and the leaders of our beautiful country are the ones who have a very different reaction to others'

The question is which farmer are you? Are you the farmer who becomes jealous, angry or depressed when you see others succeed, or are you the farmer who is prepared to take matters into your own hands and to ask for help and learn from those who are doing well?

success. It motivates, inspires and drives them to get up and become creative and to do whatever they can with what they have. People often have a great misconception about what it takes to be successful. All it takes is for us to open our hearts and minds to learn as much as we possibly can and then to practice what we have learnt. Success comes from getting up every morning and doing what you know you should do and what you know is right.

One of the main goals of the Grain SA Farmer Development Programme is to help farmers to help themselves. It is truly inspiring to hear of farmers who are proactive and have the will and drive to achieve success. We would like to use the farmers of the Emmaus study group as an example of how people with the right attitude are achieving success. These farmers have no tractors or implements and are planting their maize either by hand or with a hand planter. They spray their herbicide with a knapsack sprayer, spread fertiliser by hand and also harvest by hand. Miss TO Mdluli is part of the Emmaus study group and has achieved great success by applying all the information she has learnt at the study group. As a result of her dedication and hard work, she received a Grain SA award after being voted as the 2013 Subsistence Farmer of the Year.

However, that was not the end of her story. Through her efforts, she has inspired and challenged all the farmers in her study group to also do better by setting an example of what can be achieved when you put your mind to it. The group has taken up the challenge and is now

leaning on Miss Mdluli to guide and teach them to also get their maize on the same standard. She has assisted them with taking their soil samples, how and when to spread their fertiliser and much more. The group was also prepared to take on no-till practices and the results are showing.

"This whole chain reaction started in one study group. I was very surprised when I received nine entries from the Emmaus study group for the Subsistence Farmer of the Year competition! It was so difficult to choose the two best candidates from the group, because everyone's maize is of such high quality and their plant population and weed control is also very good," said Jurie Mentz.

Think about this: There are two farmers from the same village, with the same amount of land and with the same resources at their disposal who attends a Grain SA study group meeting every month. The one farmer gets a yield of 5 tons/ha of maize, and the other a yield of 1 ton/ha. Why?

The question is which farmer are you? Are you the farmer who becomes jealous, angry or depressed when you see others succeed, or are you the farmer who is prepared to take matters into your own hands and to ask for help and learn from those who are doing well? 🍌

This month's edition of The Corner Post was authored by Jurie Mentz and Liana Stroebel from Grain SA. For more information, send an email to jurie@grainsa.co.za or liana@grainsa.co.za.



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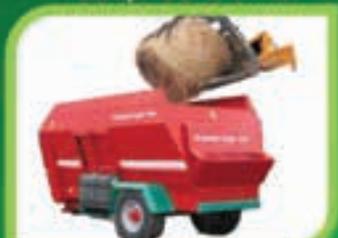
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