# PULA IMVULA

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

GRAIN SA
GRAAN SA

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2014

## Plan for a BUMPER maize crop

*Winter Cereals special feature*

## Produce wheat for a profit

## LEONARD NONDONGA

*"Passionate and eager to learn"*

# PULA IMVULA


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## NKGONO JANE SAYS...

# IN THIS ISSUE...

## COVER ARTICLES



## INSIDE

It is always during the Grain SA Congress that I become aware of the richness created by the diversity in our farming community. There are those who are fourth generation farmers who come with a deep love and understanding of the land, and there are also those first generation farmers who are wrestling with the realities of farming. Together we feed the people of our lovely country.

This has been a difficult summer crop season again – rains were early for some and very late for others; some had too much and most had too little; when the rains came they were accompanied by hail and storms; soil erosion increased as the water landed on the bare land – land made bare by necessity rather than by choice. I think about the gratitude of nature – whenever the rain falls, the soil receives it well, and the plants are thankful. We are so often ungrateful – too little, too late, too hard, too cold, too hot. Nature accepts its fate and deals with it.

This brings me to the attitude of people – it is so sad that we so often want to blame other people for things that happen. If the grain price goes up after I have sold, I am angry at someone – never myself. "It is not fair" you hear people saying. Could we not develop a sense of deep gratitude – gratitude for the rains, the cold, the heat, the good prices, the good workers, profitable production, and the mechanisation that keeps going even when it is old and worked hard? A gratitude for life itself and all the joys we share. It is a choice to look at the glass and say it is half-full or see it as half-empty. This does not change the facts – it only changes how we feel about the facts.

I pray that we should be blessed with gratitude and a positive attitude – it makes our life and the life of those around us happier!



# Farmers are the caretakers of paradise

There are an estimated 500 million family farms around the world and in Africa 80% of all the farms here are family-run enterprises and small-scale farmers are growing up to 8% of the food supplies on the continent.

Farmers are custodians over at least 80% of the world's arable land and 70% of the world's water resources, so they not only play an important role in food production, but are also caretakers of our environment with a responsibility to ensure the sustainable use of natural resources.

## Friend or foe

In 2010 the municipality of Barberton, Mpumalanga ordered the killing of 900 swarms of bees. Dr Gerhard Verdoorn, director of The Griffon Poison Information Centre, said this was not necessary as the bees could have rather been removed and relocated. He also highlighted problems arising from the misapplication of pesticides as honeybees are being killed unnecessarily with pesticides. This is problematic as these insects pollinate plants and allow fertilisation and reproduction to take place.

His advice is that if bees are in an area where they do not threaten people or animals, they should be left alone as they are important for agriculture as well as the natural vegetation. However, should they be a threat it is better to have professional beekeepers move them rather than kill the bee colonies with poison. Our honey bee population has to deal with many challenges, since their natural habitats are increasingly being destroyed and even the removal of blue gum trees by the Working for Water programme is a threat, as the trees are a major source of food for bees, which is why they move into urban areas.

## It's like a tug-of-war

**Yes, use poisons** – this is a heavy burden resting on the shoulders of farmers who are struggling to stay ahead of the game in a world of rising prices, competitive markets and erratic weather patterns. Farmers have to manage financial risk all the time, do whatever it takes to ensure that top yields are achieved and at the same time increase productivity to feed 9 billion mouths by 2050.

This pressure has meant that farmers have been expanding the area under cultivation, increasing their use of water and that there has been a growing dependence on fertilisers, herbicides and pesticides to eradicate the weeds and insects which threaten to reduce yields. Unfortunately, the indiscriminate use of some of these products has given rise to serious concerns about the disappearance of wild life and imbalances in the natural biodiversity. If these trends go on uncontrolled there will be increases in soil erosion, deteriorating soil status, water shortages as well as more polluted water in our natural system.

**No, don't use poisons** – in South Africa we are blessed to be surrounded by immense natural wealth. Even though South Africa only covers 2% of the earth's land surface, it is the natural habitat to about 10% of the total plant population of the world and 7% of the world's mammals, reptiles and birds. Even though there are some protected areas in the country, it is important that we all act as conservation officers. In fact there are over 400 types of vegetation found here, but over 100 types are found outside of the protected zones. This means we must act responsibly and use toxic methods of pest and weed control with caution.

South Africa is a mega-diversity nation and agricultural production contributes significantly to the threat of its biodiversity. The tug-of-war pulls to and fro between the great need for food security

> *"When elephants fight, it is the grass that suffers." (Old African proverb.) While we are fighting one foe, we could simultaneously be harming our allies – we must think about the consequences of our actions!*

and the agricultural biodiversity which is necessary for long-term sustainability of a healthy and balanced environment which works in harmony. Scientists believe that between 10 000 and 10 million species, including plant, birds, mammals and amphibians, are becoming extinct globally every ten years.

## Why should we be concerned?

Many people, especially rural dwellers, are reliant on a healthy, smoothly operating natural environment for purposes which range from medicinal and cultural to wood for fuel and shelter and also foods and fibre. Biodiversity is essential for the balance between all the systems which keep our planet functioning, like:

- Generating oxygen;
- Regulating our climate;
- Providing a steady supply of clean water;
- Ensuring perfect conditions for pollination to take place;
- Protecting our top soils;
- Providing our soils with necessary nutrients; and
- Controlling outbreaks of pests and diseases.

The challenge is to develop an agricultural system which addresses food security solutions at the same time as ensuring natural resource sustainability. Many different management practices have been identified as best practices in the face of threatened biodiversity. These include integrated pest management, improved water and soil management, conservation agriculture and organic farming. The practices are aimed at ensuring that biological processes occur in natural conditions such as nutrient cycling and composting, natural pest control and effective pollination. The farmer plays a critical role in this. It is a farmer's responsibility to be fully informed about the chemicals he uses.

## Integrated Pest Management (IPM)

The IPM system is becoming the most popular

approach to pest control and is essentially a plan of attack on pests which uses all available methods to control pests rather than going the pesticides only approach. The Griffon Poison Information Centre also supports this multiple approach: "Natural control methods, mechanical control methods, chemical control methods, crop rotation, pest exclusion and pheromones are all part of IPM."

### Gerbils – the little buggers!

Most crop farmers have had to deal with rodent invasion of their crop fields, but during 2013 the infestation of maize fields by gerbils reached serious levels and Grain SA estimated that 55 000 ha of maize was destroyed by these burrowing pests. These small rodents consume the freshly planted seed, germinating seed, ripening crops and even the vegetative matter left after the harvest.

I remember some years back driving cattle on our farm in the Kalahari when, from my position on horseback, I noticed a large area where the grass had been completely eaten and there were tell-tale little burrows everywhere. I asked my husband in a panic what we were going to do to stop the invasion and denuding of our precious grassland. His response surprised me, because his plan was to leave it alone and let the natural predators solve the problem for him! I double checked his plan with a neighbouring farmer who completely agreed that the problem would not last too long, because the snakes, owls and birds of prey would come – and they did, in large numbers!

Dr Verdoorn says the most basic principle of IPM is to maintain and support a balanced ecology on your farm and to use your allies to help you manage your problem:

- Birds like kites, smaller eagles, secretary birds and kestrels all hunt rodents.
- Owls are excellent rodent managers and farmers should build perches to attract them.
- Small mammals like jackals and bat-eared foxes, honey badgers and mongoose all prey on rodents.
- Snakes and monitor lizards are also rodent predators.

Biological control encourages all forms of predator activity and ensures that the predators are not disturbed or hunted.

Artificial control measures are a last resort and are carried out only once all other avenues have been tried. Only use poisons when it is absolutely necessary and consider their impact on the ecosystem. Sadly, it is too common that rodents are the target for the poison, but in the process all the other useful predators are also poisoned, which immediately sends the ecosystem out of balance.

### It's the circle of life, or death

Another key principle of IPM is to use pesticides

> *"And on the 8th day God looked down on his planned paradise and said: "I need a caretaker!" So, God made a farmer…*

that will be effective without threatening other animals and the environment, which is why it is important to use pesticides exactly according to the recommended dosage. Pesticides should be used in such a way that a knock-on effect is avoided. For example, should it be necessary to use rodenticides, farmers should be sure to drop all the raptor perches down to discourage them from the area and have it re-erected once the dead rodents have been removed from the area. This may seem a lot of effort, but it is a responsible farmer who will take this time and trouble!

And on the 8th day God looked down on his planned paradise and said: "I need a caretaker!" So, God made a farmer...

***Article submitted by Gavin Mathews, Bachelor in Environmental Management, and Jenny Mathews, Pula/Imvula contributor. For more information, send an email to gavmat@gmail.com or jenjonmat@gmail.com.***

# Yield estimation for maize crops – plan for a BUMPER crop

All farmers have the common goal of achieving a good yield from their planted crops. This will determine the break-even and profitability of what has been planted.

To get a good yield there needs to be good pre-season planning. This includes:

- Applicable crop stand;
- Applicable planting row widths;
- Good weed control;
- Good pest and disease control;
- Good harvesting practices; and
- Good fertilisation according to soil samples.

Your crop stand will be determined by the rainfall in your area. Farmers in drier areas will tend to plant lower stands (about 15 000 - 20 000 plants/ha). These farmers will also usually plant their crops in rows with wider widths. Farmers in wetter areas will tend to plant higher stands (about 40 000 - 60 000 plants/ha). These farmers will usually plant their crops in rows of narrower widths. Your seed representative will assist you with a recommended seed stand according to your specific geographic area and the variety of maize which they are selling you. To achieve the desired stand your planter will need to be calibrated accordingly.

As farmers we need to do everything in our power to try and achieve the best yield possible. Therefore we need to have a good weed control programme in which all the necessary chemicals are sprayed at the correct time. It is also important to control all the common pests and diseases that are prevalent in your area. When a plant is affected by a disease or pest, the leaf area will become damaged. The leaf area on a plant can be considered to be the factory of the plant; this is where the photosynthesis takes place which provides energy for plant and seed production. Thus, if we lose valuable leaf surface area, then we are lowering our potential yield.

Good fertilisation is required to achieve a good yield; this should be done according to soil samples that were taken in the pre-season. It is a big mistake to skimp on fertiliser and think you are making a saving, when what you are actually doing is reducing your crop's yield potential.

At harvest time it is essential to make sure our combining equipment is in good working order. Many farmers loose a significant percentage of their yield (between 2% and 5%) due to wastage at harvest time. There may be a small hole in the grain hopper of the combine or a hole in a sieve; all of these little leakages and losses of grain add up throughout the combining process.

## Calculating your potential yield

Once your maize has started drying off you will be able to make an assessment and calculate your potential yield. This is a good practice as it helps you to plan your labour, storage and transport at harvest time.

To make the calculation we first need to work out our stand. To do this we consider our row width and work out how many meters of a row add up to one hectare. The three most common row widths are 76 cm, 90 cm and 2,3 m. In a 76 cm row spacing land, 13 000 m of a row will add up to a hectare of maize. In a 90 cm row spacing land, 11 000 m of a row will add up to a hectare of maize. In a 2,3 m row spacing land, 4 300 m of a row will add up to a hectare of maize.

> *"As farmers we need to do everything in our power to try and achieve the best yield possible.*

To calculate the stand in a 76 cm row spacing land, we measure out 13 m in a row and count all the plants within that space and times them by 1 000 to make a hectare, i.e. 35 plants in 13 m, therefore my stand is 35 000 plants/ha. It will be more accurate if you take a number of samples throughout the land. For a 90 cm row spacing land, we will count the plants within 11 m and a 2,3 m row spacing land within 4,3 m.

Once we have an average stand calculated, we then need to take cob samples from the plants, if the plant has two cobs, then you should take a sample of both. We now need to remove the grain from the cobs, weigh it and times their weight by our stand per hectare For example, in a 90 cm row spacing land with a calculated stand of 30 000 plants, we get samples of two cobs per plant, one weighing an average of 200 g and one an average of 100 g, therefore 300 g per plant. 300 g = 0,03 (cobs) x 30 000 (stand) = a potential yield of about 9 tons/ha. This calculation needs to be made at a number of different places in the land in order to achieve a true average representation. It is important to always consider moisture level at the time of doing the calculation and subtracting any percentage of moisture over 14% as this is the minimum moisture level that will be accepted at a co-operative depot.

Remember to plan your crops in such a way that we achieve maximum yields, for the benefit of our own businesses and also for the increasing number of people that need to be fed.

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

# Reduce Fusarium ear rot and fumonisin contamination with Bt maize hybrids

Maize hybrids expressing the MON 810 gene (Bt maize) are widely planted for the control of stem borers in South Africa. Pests that are primarily targeted by the toxic proteins in Bt maize include the African stem borer, Busseola fusca (**Photo 1**), which is the most injurious pest of maize in South Africa.

> *"Exposure to fumonisins in animal feed can cause lung disease in pigs as well as immuno-suppression in chickens and they are also toxic to broiler chicks.*

Fusarium ear rot (**Photos 2 and 3**) is mainly caused by *Fusarium verticillioides* fungi, although *F. subglutinans* and *F. proliferatum* are also important. Fusarium ear rot occurs in all maize-producing regions in South Africa and is most severe under hot, dry weather conditions that occur after flowering. *Fusarium verticillioides* can live within the maize plant without showing visible symptoms and it produces fumonisin mycotoxins that are known to cause human and livestock diseases. Fumonisins possess cancer-promoting properties which have been associated with human oesophageal cancer in rural areas in South Africa and birth defects in humans in Mexico and the USA. Exposure to fumonisins in animal feed can cause lung disease in pigs as well as immunosuppression in chickens and they are also toxic to broiler chicks.

A three-year study was conducted at the ARC-GCI in Potchefstroom to determine the effect of insect resistant Bt maize on Fusarium ear rot and fumonisin production. Results showed that insect resistant Bt hybrids control *B. fusca* and are, therefore, indirectly effective for the management of Fusarium ear rot and concomitant fumonisin production, because *B. fusca* larvae contribute toward spreading *F. verticillioides* infection by carrying fungal spores on their bodies.

## Control measures

Other measures that could be applied to control the stalk borers and also indirectly control ear rot of maize include:

### *Push-pull system*

The push-pull system is a management strategy in which trap plants such as Napier grass, which is a drought tolerant plant, are planted around maize fields. These plants produce compounds that attract invading adult stem borer moths, thus preventing moths from landing on maize plants. The trap plants provide the "pull" in the "push-pull" system and also serve as a refuge for the borer's natural predators.

The "push" is provided by plants which emit repellent chemicals such as *Desmodium uncinatum* (silverleaf desmodium) that turns away/repel stem borers from maize in an intercropping system. In addition, *Desmodium uncinatum* is a highly nutritious fodder crop and it provides soil nutrient stability through nitrogen fixation. Although *Desmodium uncinatum* originates in South America and is not productive during the dry season, it can persist in regions with dry seasons of three months and it is now locally naturalised elsewhere in the highland tropics and humid subtropics, conditions that are favourable in South Africa.

### *Cultural practices*

Crop residues provide a habitat for stem borer larval populations to survive between seasons. Stem borer densities can be reduced through crop residue management such as removing stover and ploughing in stubble. Adaptation of planting dates to avoid periods of moth flights by planting short-growing-season maize varieties can result in escape of damage and yield loss.

### *Pesticides*

The stem borer larvae primarily feed in the whorls of plants, therefore, the application of insecticides in the whorl is effective until shortly before tasselling. Treatment of other plant parts is often unnecessary.

***Article submitted by Edson Ncube, ARC-Grain Crops Institute, Potchefstroom. For more information, send an email to NcubeE@arc.agric.za or contact him at 018 299 6100.***

1

***B. fusca larvae on maize ears. (Photo: A. Erasmus)***

2

***Fusarium ear rot in white maize. (Photo: E. Ncube)***

3

***Fusarium ear rot in yellow maize. (Photo: E. Ncube)***

4

***Busseola fusca larvae usually spread fungal spores around the maize ears.***

# The harvesting and storage of maize

The philosopher Aristotle said: "Well begun is half done." In the case of grain farmers this couldn't be truer. Every stage of growing the maize must be carefully planned and executed, and the same applies to the harvesting, marketing or storage stages too.

It is not enough to grow a good crop of maize if one does not have a plan for the final stages of production, which needs the maize to be harvested and safely stored or sold on.

Maize can either be harvested by hand or more commonly nowadays with a combine harvester machine. In South Africa it is common practice to leave the maize standing in the fields until well dried off. This is the most economical method for the farmer. Moisture levels of between 12,5% and 14% are the ideal and a small sample can be tested for farmers at the nearest silo. It is also important not to leave the grain standing in the lands for too long as losses will be incurred after that.

## Weed control

Too many farmers think that once the crop is mature, it is not necessary to worry about weed control, but weeds influence not only the yields at harvest time, but also the quality of the harvest. If weeds are in abundance they not only slow the combine machine down, but they contaminate the grain and even give it a bad smell, which will either result in a downgrade at the silo or additional costs to clean the grain and remove the seeds. Silo managers are particularly strict with seeds like the common "*olieboom*", which is poisonous for animals and humans.

## Common problems

Other problems which lower your price at the silo door are:

- Broken seeds;
- Defective kernels which are shrivelled, obviously immature, frost damaged, heat damaged, have sprouted or have holes in the grain kernels caused by insects or rodents;
- Discoloured kernels which have changed colour due to too much heat exposure and damage. The kernels will look darker, wrinkled, puffed or woollen and even blistered; and
- Foreign material in the sample, which is anything other than maize, like glass, stones, dung or bits of metal.

> *"Too many farmers think that once the crop is mature, it is not necessary to worry about weed control, but weeds influence not only the yields at harvest time, but also the quality of the harvest.*

## Moisture

Maize must be stored under dry, ventilated and hygienic conditions. Grain which is binned while moisture is over 14% is very likely to lose condition and deteriorate, becoming sour or "musty" and seeds will lose their viability. Poisonous aflatoxins will also grow in maize, which was

stored while too moist. This is formed mostly by a mouldy fungus.

Furthermore, the living and multiplying fungus present in the grain, along with the insects which live and breathe in the grain, all contribute to high temperatures and humidity and thus the deterioration of the stored maize, whether it is in commercial silos, silo bags or in other on-farm storage. It is important for farmers who store their maize for household consumption or to feed their own animals to take note of this risk and manage the problem. The most important thing to remember is that the aflatoxins present will not be destroyed by any food processing methods. This explains why, for the purposes of international trade, the regulations of mycotoxins in foods and feed is strictly controlled.

## Quick tips for small scale farmers on maize harvesting

- Allow the maize to dry off in the field;
- Do not leave it too long or crop losses will be experienced;
- Keep the grain as clean as possible;
- Small scale farmers should dry the maize in conditions which reduce the risk of contamination, such as on tarpaulins or concrete floors; and
- Remember that the greatest problem in maize storage is too much moisture, since wet grain attracts insects and moulds.

## Harvesting and harvest contractors

Depending on the size of the farming enterprise, the challenge for farmers who produce on a commercial scale is often access to the combine harvester, since acquiring the machine requires a large capital investment into something which will literally only work for the few weeks of harvesting on the farm. It is quite normal for farmers to rather contract someone with a harvester to come and take the crop off the land. However, it is important if one chooses to go this route, to be certain that the machine is in good order and will collect your harvest properly.

It is also important to find out when the harvest contractor will be able to come to your farm. They often get very busy during the harvesting season and will sometimes take on too much work, which means one waits and waits while the maize quality deteriorates and the kernels become lighter and make your weights at the scale unnecessarily low. Sometimes, because they are in a hurry to move to the next land, they may even go too fast and leave too much grain behind so wastage is unnecessarily high.

Always remember that as the farmer you are entitled to monitor the process and you in fact have a responsibility to monitor the samples. Every farmer should know how to check the settings of a combine harvester, even if he doesn't own one himself. If you are unhappy about anything, ask questions and discuss your concerns with the contractor.

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

# Planting wheat for profit

It is in the interest of any farmer to produce wheat for a profit. The farmer has to make certain decisions which influence the profitability of the crop.

## Factors influencing yields

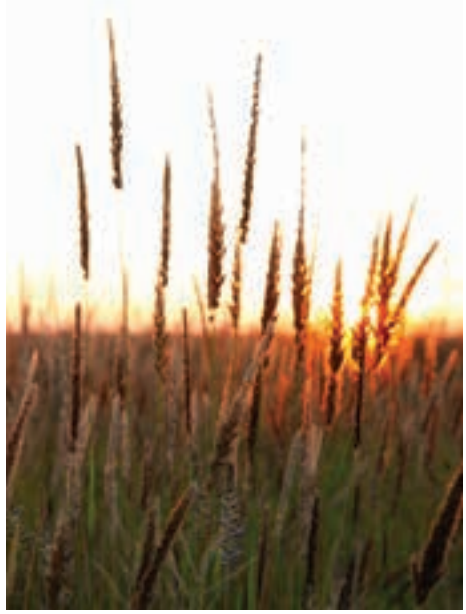
The yield attained is a result of the following factors:

- The number of plants per hectare;
- The number of heads per plant;
- The number of grains per head; and
- The individual grain weight.

## Planting dates

Wheat is planted in autumn and early winter, from April - June. Soil texture has a major role in determining the moisture conservation practices to be applied and to ensuring that the maximum moisture is conserved.

The best conditions for planting and sowing, germination and development of the wheat plant are provided by cultivation practices which not only ensure a good seedbed, but also subsoil conducive to optimum root development. Cultivars, time of planting, row width and the probability of wind erosion, especially in ploughed sandy soils, are factors which also influence the choice of cultivation method.



***Growing degree days and the development of the wheat plant/heat units***

In order to plan for successful dryland production of a wheat crop, the farmer should know something of the basic morphology and other growth influencing factors that influence final yield realised. The orderly development of the wheat plant with its leaves, main stem, tillers, and sub tillers is governed by accumulated heat units or **growing degree days (GDD).**

| Factor | Yield component |
|---|---|
| Seed germination | Number of plants established per hectare |
| Planting rate | |
| Thousand kernel mass | |
| Seed vigour | |
| Planting date | |
| Soil structure | |
| Seedbed condition | |
| Planting method/depth | |
| Fertiliser application | |
| Seed treatment | |
| Diseases/pests | |
| | |
| Cultivar | Number of tillers/heads per hectare |
| Planting date | |
| Nitrogen | |
| Soil conditions | |
| Water availability | |
| Pests/weeds/diseases | |
| Plant production | |
| | |
| Cultivar | Grains per head and grain weight |
| Nitrogen | |
| Water availability | |
| Weather | |
| Diseases/pests | |

Winter wheat (wheat usually planted at autumn or beginning of winter with the main vegetative phase in winter) has a longer growing season than spring wheat (planted in spring and growing in the warmer early summer months) and has accordingly a higher attainable yield.

If winter wheat is planted later in the season, the real time available for photosynthesis and the accumulation of dry matter, the production factory for later grain yield, is cut back accordingly. For this reason, early maturing varieties and late planting dates tend to produce plants with smaller leaves and heads that lead to a lower yield potential.

In general it takes the same number of heat units for a leaf to form and enlarge on a tiller as it does on the main stem. Tillers may lag behind the main stem in development and maturity, but not by more than two to three days. The wheat plant has a remarkable ability to bring all of its stems to final reproductive phase at nearly the same time in spite of the different starting times of its different stems. Winter wheat requires a vernalisation period, which is defined as a period of cold during the vegetative or growth phase that is distinctive for each cultivar or variety that is planted. The winter wheat cultivars require this period to ensure that the plant enters the reproductive phase later on in its growth cycle.

***Always keep your end product in mind.***

***Planting wheat in the Overberg.***

> *Once the optimal target yield has been identified, the seeding rate can be determined. Once the choice of variety has been made, the recommendations of the seed company can be followed.*

Stem extension is a response of the plant to either accumulated heat units or day length and commences once the hormonal signal from the plant is received in spring. The additional thermal time available for extra vegetative development with earlier planting translates into more tillers and hence, potentially, more heads and therefore more yield if water, nitrogen or some other factor does not become limiting.

The above knowledge can be used in the practical applications of crop management to ensure that you achieve an optimal yield based on various factors. From the preceding discussion, it can be seen that it is most important to plant the correct cultivar, the choice of which is based on planned planting, growth and harvesting dates taking into account the climatic conditions that are specific to your farming region. The various cultivars are extremely sensitive to the heat units required for optimal growth.

Seed companies that develop the various cultivars with differing growth patterns suitable for different climatic conditions and zones can be approached for advice on the best cultivars suited to your farming region. It is always best to attend farmers days to keep abreast of the various new cultivars being developed. It is, however, advisable to stick to the known cultivars that have been proven over good and bad rainfall years in your farming area.

Planting commercial trials of the latest cultivars can be planted as a self-test in relation to your farm's specific climatic conditions. If you do not have the resources or land area to do your own tests, then stick to a cultivar choice that is proven in your cropping area. The choice of the wrong cultivar for the prevailing climate in a particular area can be extremely costly if a low yield is realised.

### Planting depth and planting technique

The type of seedbed preparation, whether after conventional ploughing or conservation tillage, will determine the type of planter used. The main principles are that:

# Planting wheat for profit

- Seed should be drilled firmly into the soil (moist or dry soil depending on the season), not deeper than the long side of a match box, and not shallower than the short side of a match box.
- The fertiliser must be below the seed and to the side.
- In the Western Cape farmers make use of various planters. Some make use of spreaders and tine implements with rollers at the back to firmly bury the seed.

An important factor that has to be considered before planting commences, is the target yield. There are a number of factors that affect the determination of the target yield:

- Soil depth;
- Stored moisture;
- Current soil fertility status;
- Correct cultivar selection;
- Target planting date;
- Cultivation techniques and effectiveness;
- Soil tilth and seedbed preparation; and
- Rainfall patterns and weather predictions.

Once the optimal target yield has been identified, the seeding rate can be determined. Once the choice of variety has been made, the recommendations of the seed company can be followed.

## Practical farming implications

Wheat has a remarkable ability to compensate in yield components depending on conditions for growth and development. Plants produce more tillers to make up for a low plant population or tiller less to make up for a high plant population. This allows for wider latitude in the seeding rate.

Planting density in the Western Cape depends on the time of planting, method of planting, soil moisture and the soil structure being worked. The cultivar variety, pip size and weight play a role in planting density.

Fallow land is agricultural land defined by a planned rest period after a previous crop such as canola/lupines, in order to be able to change crops in a rotational cropping system, to build up moisture, control weeds and pests and to improve soil tilth.

The recommended planting densities and growth dynamics of various hybrid cultivars planted at various times from autumn into early winter, specifically for your farming area, can be obtained from seed breeding companies as well as the Small Grain Centre, supplying well-proven and tested commercial seed into the market. It is also advisable to consult well-established wheat farmers, farming consultants and agribusiness extension services as to the best cultivars and seeding rates to use in your farming area.

Please remember that seeding rates and planting dates must be adjusted according to available moisture, fertility status, fertilisation, soil potential and rainfall patterns on your farm. Practical experience over time will show you what the optimum seeding rate for various cultivars will be on your farm. Too low a seeding rate will limit yield potential and allow space for weed competition. Some of the newer cultivars seem to have a lower stooling or tillering capacity and are usually planted at about 30 kg/ha. Too high a rate will create weaker plants that are all competing for stored soil moisture, nutrients and growth space, resulting in underdeveloped secondary roots. It is also very important to set up your wheat planter for correct seed placing and planting density.

Check your planter settings statically in the workshop and then measure seed and fertiliser used on an exactly measured hectare or more. If the size of an area between contours or a small land is known, an accurate assessment of planting rates can be made at the normal operating speed of tractor and planter. Often the static setting in the workshop does not match the actual applied under field operating conditions. Planting a large area either at a too low or high seeding or fertilisation rate can be very costly indeed.

***Article adapted from the Grain SA Introduction to Wheat Production manual. For more information, send an email to liana@grainsa.co.za.***

***Lands which are protected by stubble prevents erosion.***

***Lands which have been burnt.***

MADE POSSIBLE BY THE WINTER CEREAL TRUST

# I do not have time for...

An old Chinese proverb says: "An inch of gold cannot buy an inch of time." Time is very precious or as some would say, "time is money", especially with relation to a business. Time is not infinite. Each day only has 24 hours. Once time is wasted, it can never be recouped. Yesterday is gone forever.

A person often hears others say: "I have no time to..." We all have the same amount of time, but some of us tend to get more done in a day. Why? Effective time management? Most probably.

Being precious, time deserves being managed properly. Time management entails to plan, organise, implement and control your time, which requires some paper work, but it will be more than worth your while. The following is an example of planning your time, day by day for a week – think what you need to do the next week, write it down (planning), add who is going to do what (organising), implement the actions on the specific day (implement) and then mark it off when done (control). When following this example you will find that you will experience a great deal of satisfaction as the actions planned are completed and done properly and on time. You will note that the time is indicated broadly. When you get more used to using this system and your planning improves, you can indicate the time more precise.

### Planning next week (2014/03/17 - 2014/03/21)

(Only one day shown as an example).

> *"When you waste time you waste money – manage your time effectively – it will be worth your while.*

### Time is money

Why the expression "Time is money"? Let us consider these actions as planned for Monday. What if the fertiliser is not bought and not applied on time? A pest is not detected in time in the maize, causing damage to the crop? A sick animal is not observed? The fence is not repaired and the animals stray onto a road? If the actions are not done as planned, there will be an effect on either your income and/or your expenditures, affecting your profit negatively.

You can recognise people who do not manage their time effectively quite easily – they seem to work longer and harder, they always seem busy or will always tell you how busy they are, tasks get overlooked and they appear disorganised.

First of all, to manage your time effectively you must be able to delegate. Too often people enjoy the feeling of doing everything themselves rather than to pass on some responsibilities, thus tying themselves up with work that could have been done by others.

Secondly, set yourself deadlines. You can greatly increase your effectiveness if you simply give yourself a deadline for each task and do your best to stick to it.

Thirdly, learn to say "no". Sometimes you have to say no to requests. Helping others all the time might encourage them to use you and become so dependent on you that they cannot do anything without your assistance.

Fourthly, one of the best ways to start a time management improvement exercise is to look at exactly where your time is going at the present. Keep a log for three days or so. You will be surprised how time gets wasted.

Time is wasted when you feel that you could have spent it better or could have got more done. Common time wasters are the manager that cannot delegate – let go – let somebody else do the work. Do you change your mind all the time? Do you waste your own and other people's time because of inadequate preparation? Meetings are one of the biggest wasters of time if not managed properly. Dealing with paper work can be a major time waster. The idea behind dealing with paperwork is that each piece of paper should only be handled once – take action, file or throw away. Also, if you wish a job to be done in time, the correct machinery, equipment and/or tools in good order, must be available. Insufficient tools or in a poor condition are a major time waster.

### A few more tips to manage time effectively

Keep the workplace clean and tidy with everything in its place. Insist that other people suggest solutions to problems. Do not make their problems your problems. Be on time. Keep telephone conversations as short as possible. Plan trips properly. Communicate properly; if the other person does not understand you correctly, it can waste a lot of time.

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

**Monday 17 March 2014**

| Time | Action | Responsible person |
|---|---|---|
| Up to lunch | Scout maize land 5 | Self (owner/manager) |
| Afternoon | Buy fertiliser | Self |
| Before breakfast | Check on cattle | Jan (herdsman) |
| Up to lunch | Repair fence in Bossiecamp | Jan |
| Afternoon | Clean two water troughs | Jan |

# Controlling weeds in maize and wheat

*Seedlings*

Herringbone grass is an annual, indigenous tussock grass that is very common. Leaves appear short and broad, with a characteristic crenation observed on the sides of the leaves from the seedling stage.

Although the grass has a tussock habit, it can grow to a height of 90 cm in favourable conditions. The inflorescence (halm) varies between two to seven ears on which the seeds are arranged alternately in two regular rows. Stems (or runners) of mature plants often have a characteristic reddish-purple colour.

*Urochloa mosambicensis (Bosveldbeesgras/* Bushveld herringbone grass) is also common and the difference between the two species is particularly discernible in the inflorescences.

## Distribution

Herringbone grass is regarded as one of the four 'field grasses' because of its wide distribution and the general occurrence of the grass in most crops. The grass is allegedly more common in clay soil, but can be a strong competitor in any type of soil where infestation levels are high. This grass spreads only through seed and mainly germinates early in the spring.

## Control

### *Tillage*

Timeous shallow tillage can be done early in spring, as seeds occur at a shallow level in the soil profile and can be among the first grasses to germinate.

### *Chemical*

Most pre- and postemergence grass herbicides can be used to control herringbone grass effectively. However, if grasses are controlled postemergence, the spraying should be done as early as possible, between the two to four-leaf stage. When herringbone grass starts to form tussocks, control can be less effective.

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

***Crenated leaves***

***U. panicoides and U. Mosambicensis***

***Mature plant***

***Table 1: Herbicides registered for controlling herringbone grass in maize.***

| Active ingredient | Formulation | Time of application |
|---|---|---|
| acetochlor | 700 grams/litre | Pre-emergence or early postemergence of crop |
| | 750 grams/litre | |
| | 840 grams/litre | |
| | 900 grams/litre | |
| | 960 grams/litre | |
| 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<br>Early postemergence, no later than four-leaf stage of the weed |
| | 150/225/225 grams/litre | |
| | 178,6/160,7/160,7 grams/litre | |
| | 250/225/225 | |
| | 350/175/175 | |

## Scientific name: *Urochloa panicoides*
## Afrikaans name: *Beesgras, Tuinurochloa*
## English name: *Herringbone grass, Garden Urochloa*

***Table 1: Herbicides registered for controlling herringbone grass in maize (continued).***

| Active ingredient | Formulation | Time of application |
|---|---|---|
| acetochlor/EPTC | 150/350 grams/litre | Pre-emergence of weed and crop |
| alachlor | 384 grams/litre | Pre-emergence, during or just after planting |
| | 480 grams/litre | |
| alachlor/atrazine | 336/144 grams/litre | Pre-emergence, during or just after planting |
| 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 of weed and crop |
| atrazine/metolachlor | 300/300 grams/litre | Pre-emergence, within three days after planting |
| atrazine/s-metolachlor | 370/290 grams/litre | Pre-emergence application within three days after planting |
| atrazine/sulcotrione | 300/125 grams/litre | Administered pre- or postemergence |
| atrazine/terbutryn | 250/250 grams/litre | Pre-emergence, during or just after planting |
| dicamba/tropamezone | 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 |
| flumetsulam | 200 grams/litre | Pre-emergence, use in tank mixture with metolachlor or s-metolachlor |
| | 800 grams/kg | |
| flumetsulam/s-metolachlor | 20/630 grams/litre | Administered with planting or within three days after planting |
| glyphosate/mesotrione/s-metolachlor | 250/25/250 grams/litre | Postemergence, only on glyphosate-tolerant cultivars |
| mesotrione | 480 grams/litre | Pre- or postemergence. Use only in tank mixture of atrazine, atrazine/ terbuthylazine, s-metolachlor |
| mesotrione/s-metolachlor | 83,3/416,7 grams/litre | Pre-emergence of weed and crop |
| metolachlor | 800 grams/litre | Pre-emergence, within three days after planting |
| | 840 grams/litre | |
| | 915 grams/litre | |
| | 950 grams/litre | |
| metribuzine | 480 grams/litre | Postemergence when weeds grow actively, four- to six-leaf stage |
| nicosulfuron | 240 grams/litre | Postemergence, when crop is between two- and six-leaf stage |
| | 40 grams/litre | |
| s-metolachlor | 915 grams/litre | Pre-emergence, within three days after planting |
| | 960 grams/litre | |
| s-metolachlor/terbuthylazine | 312/5/187,5 grams/litre | Early postemergence, in tank mixture with mesotrione |
| tropamezone | 336 grams/litre | Early postemergence before six-leaf stage, use in tank mixture with atrazine or atrazine/terbuthylazine |

***Table 2: Herbicides registered for controlling herringbone grass in wheat.***

| Active ingredient | Formulation | Time of application |
|---|---|---|
| trifluralin* | 480 grams/litre | *Use only in planted fields. Dosage depends on weed species.* |

*NB: Always check on the herbicide label whether the herbicide concerned is registered for use on the weed species concerned. Only some brands have been registered for controlling herringbone grass. Only registered herbicides may be used.

# Manage your cattle health programme

A preventive cattle health programme remains an interesting challenge and should be a routine and critical component of every cattle producer's year programme.

Many vets have compiled various programmes, but they all have to have the same end objective: The optimum health of the cattle herd. This article focuses on the most important diseases, and vaccines for diseases like redwater, gall sickness and heartwater blood are discussed in depth elsewhere.

MSD Animal Health South Africa has a wide range of products available, for example dosing and dip products, vaccines, antibiotics and growth promoters. Each group of products has a specific target group of animals and season of the year in which they should receive preference.

A year programme is important in a summer as well as a winter rainfall area. Breeding and servicing seasons should be adjusted as far as possible to correspond with the availability of feed.

***Table 1: Heifers and young bulls (0 - 6 months).***

| Type of cattle | Age | Month | Action | Product | Disease or effect | Vaccine – alive/dead | Repetition/reason |
|---|---|---|---|---|---|---|---|
| **Calves** | <1 month | Aug - Oct | Inject | Heartwater blood | Heartwater | Alive | Pre-immunity |
| **Calves** | 2 - 6 months | Sept - Feb | Inject | Redwater blood | Redwater | Alive | Can vary |
| **Calves** | 2 - 6 months | Sept - Feb | Inject | Gall sickness blood | Gall sickness | Alive | 4 - 6 weeks after redwater |
| **Calves** | 2 - 6 months | Sept - Feb | Pour-on | **Delete All** | Ticks, mites, lice, flies | | As required |
| **Calves** | 2 months | Sept | Deworm | **Gardal 10%** | Roundworms | | 3 - 4 months later |
| | 2 months | Sept | Vaccinate | Three days of stiff sickness | Three days of stiff sickness | Alive | 1 x per year* |
| | 2 months | Sept | Vaccinate | **Piliguard® Pinkeye-1 Trivalent** | Serious eye infection, blindness | Dead | 1 x per year* |
| **Calves** | 3 months | Oct | Implant | Ralgro Cattle | Skeleton and muscle growth promoter | | **Once-off, not for young bulls** |
| | 3 months | Oct | Vaccinate | **Respiravax** | Pneumonia and BVD | Dead | After 4 weeks |
| | 3 months | Oct | Vaccinate | **Clone 13 (SDK)** | Rift Valley fever | Alive | 1 x per year |
| | 3 months | Oct | Vaccinate | Lumpyvax | Lumpy skin disease | Alive | If cow was not vaccinated* |
| **Calves** | 4 - 5 months | Nov | Vaccinate | **Supavax** | Anthrax, blackleg, botulism | Alive/dead | Anthrax 1 x per year* botulism/blackleg after 4 weeks |
| | 4 - 5 months | Nov | Vaccinate | **Multiclos/Covexin 10** | 8 - 10 different clostridium strains | Dead | After 4 weeks* |
| | 4 - 5 months | Nov | Vaccinate | **Respiravax** | Pneumonia and BVD | Dead | Subsequently 1 x per year* |
| | 4 - 5 months | | Vaccinate | **Lumpyvax** | Lumpy skin disease | Alive | Mother vaccinated 1 - 3 months before calving |
| **Calves** | 5 - 6 months | Dec | Vaccinate | **Botuvax** | Botulism | Dead | Once-off here |
| | 5 - 6 months | Dec | Vaccinate | **Multiclos/Covexin 10** | 8 - 10 different clostridium strains | Dead | Subsequently 1 x per year |
| | 5 - 6 months | Dec | Deworm | **Solution 3,5% L.A.** | Roundworms, blue ticks | | Strategically in summer |
| | 5 - 6 months | Dec | Implant | **Revalor G** | Background calves | | **Not breeding animals** |
| | 5 - 6 months | Dec | Vaccinate | Three days of stiff sickness | Three days of stiff sickness | Alive | 1 x per year* |
| **Heifers** | 5 - 6 months | Dec | Vaccinate | **S-19 (only 4 - 6 months of age)** | Brucellosis/abortions | Alive | ***Never again and not young bulls** |

There are essential* precautions and less essential** or optional precautions that can be introduced.

Some programmes start with a breeding season and others simply correspond to the calendar year and the activities are then added.

The programme example below involves a three-month calving season from August to October. It covers as many diseases and parasites as possible. Remember that you should compile a tailor-made programme for your herd in collaboration with your vet.

The most important part of the programme is to prepare the calves (heifers and young bulls) as carefully as possible during the first twelve months. This programme repeats the most important disease-prevention administrations so that you follow one main treatment schedule for female animals from 18 months old in July, with only a few other smaller treatment schedules in other months.

This helps to reduce the handling and stress of the cattle. As July is a cooler month, there are few signs of heat stress. At this stage the pregnant female animals are all past the sensitive first trimester of the gestation period.

Approved vaccines administered in the final trimester of gestation can lead to the colostrum in the coming calving season containing the highest antibody levels possible to be transferred to the new-born calves.

***Table 2: Heifers and young bulls (7 -18 months).***

| Type of cattle | Age | Month | Action | Product | Disease or effect | Vaccine – alive/dead | Repetition/reason |
|---|---|---|---|---|---|---|---|
| **Heifers, bulls** | 7 months | Feb | Test for BVD carriers | **Blood or ear test** | Permanent BVD carriers who are infected | | After weaning, replacement animals |
| **Heifers** | **7 months** | **Feb** | **Vaccinate** | **RB 51** | **Brucellosis/abortions** | **Alive** | **3 months* later (not young bulls)** |
| **Heifers, bulls** | 7 months | Sept - Feb | Pour-on | **Delete All** | Ticks, mites, lice, flies | | As required |
| **Heifers, bulls** | 9 months | April | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies Mineral deficiencies | | 2 x after April After 6 months |
| **Heifers, bulls** | 9 months | April | Vaccinate | Three days of stiff sickness | Three days of stiff sickness | Alive | 1 x per year** |
| **Heifers** | **10 months** | **May** | **Vaccinate** | **RB 51** | **Brucellosis/abortions** | **Alive** | **3 months* later (not young bulls)** |
| **Heifers, bulls** | 11 months | June | Vaccinate | **Supavax** | Anthrax, blackleg, botulism | Alive/dead | Anthrax 1 x per year* botulism/blackleg after 4 weeks |
| **Heifers, bulls** | 11 months | June | Vaccinate | **Multiclos/Covexin 10** | 8 - 10 different clostridium strains | Dead | 1 x per year* |
| **Heifers, bulls** | 11 months | June | Vaccinate | **Respiravax** | Pneumonia and BVD | Dead | 1 x per year* |
| **Heifers, bulls** | 11 months | June | Vaccinate | **Lumpyvax** | Lumpy skin disease | Alive | 1 x per year* |
| **Heifers, bulls** | 11 months | June | Inject | **Vit AE** | Winter vitamin deficiencies | | 2 x after April |
| **Heifers, bulls** | 11 months | June | Deworm | **Sovereign Pour on/ Fluxacur NF** | Roundworms, liver flukes | | Winter for roundworms and liver flukes |
| **Heifers, bulls** | 12 months | July | Vaccinate | **Trichguard V5l** | Trichomoniasis, vibriosis, leptospirosis | Dead | Repeat after 4 weeks and then 1 x per year |
| **Heifers, bulls** | 12 months | July | Vaccinate | **Clone 13 (SDK)** | Rift Valley fever | Alive | 1 x per year* |
| **Heifers** | **13 months** | **June** | **Vaccinate** | **RB 51** | **Brucellosis/abortions** | **Alive Not for pregnant cows** | **Directly after calving* (not young bulls)** |
| **Heifers, bulls** | 13 months | August | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies Mineral deficiencies | | Again in autumn After 6 months |
| **Heifers, bulls** | 13 months | August | Vaccinate | **Trichguard V5l** | Trichomoniasis, vibriosis, leptospirosis | Dead | Repeat subsequently 1 x per year* |

There are essential* precautions and less essential** or optional precautions that can be introduced.

# Manage your cattle health programme

Certain vaccines have been deliberately omitted from certain months because they are live vaccines that should preferably not be administered shortly before breeding or in the first three months of gestation. Structuring the programme in this way makes it possible to administer preventive vaccines in the safer period.

According to the programme schedule, heifers and young bulls are prepared as follows during the period of 7 - 12 months of age. Certain vaccines like S-19 and RB51 may never be administered to bull calves or bulls, as this could lead to testicular and genital infection (orchitis and epididymitis), as well as quite possibly permanent infertility.

Neither of these two vaccines may be administered to pregnant heifers and cows. The S-19 brucellosis vaccine strain may also not be repeated or administered outside the age group of 4 - 8 months. Such an administration will quite probably lead to false positive test results, which would make it impossible to distinguish between a 'veld'-strain infestation from other cattle and the vaccine strain in the laboratory.

The growth promoters should also be administered strictly according to their recommended label recommendations. If you are not sure whether the cattle will be used for breeding purposes, you should preferably not administer the Revalor G to either sex, and the Ralgro Cattle to bull calves that may later be used for breeding, as fertility problems can develop.

If the components for the calves from 0 - 6 months and then from 7 - 12 months are followed as set out below, with further boosters between 12 and 18 months, the young cattle should develop an adequate immune response so that they can be included in the practical annual vaccination of 18 month old heifers and older cows.

This means that the adult cows can be vaccinated in winter to provide the calves with optimum immunity through the colostrum that they ingest within the first 1 to 12 hours after birth.

If the health programme above is followed carefully, it should be reasonably sufficient at this stage to manage the cows according to the tables below, and to handle them as little as possible. This management does not included controlling ticks, as this matter should be determined very specifically according to the conditions on the farm itself.

The health plan for bulls is structured in such a way that no product that can have any negative or depressant effect on seed quality or fertility tests is administered during the period before the sheath washing and fertility tests, as well as in the period before and during the breeding season.

For further details and the implementation of the health programme, and for the integration of supplementary feeding, contact Dr Johan Cloete at 0861 838 838 or 083 643 5456.

***Table 3: Heifers and cows (18 months to 4+ years).***

| Type of cattle | Age | Month | Action | Product | Disease or effect | Vaccine – alive/dead | Repetition/reason |
|---|---|---|---|---|---|---|---|
| Cows 18 - 29 months | 1,5 - 2,5 years | Sept - Feb | Pour-on | **Delete All** | Ticks, mites, lice, flies | | As required |
| Cows 30 - 41 months | 2,5 - 3,5 years | | | | | | |
| Cows 42 - 53 months | 3,5 - 4,5 years | | | | | | |
| Cows 54 - 60 months | 4,5 - 6+ years | | | | | | |
| | | Dec - March | Deworm | **Solution 3,5% L.A.** | Roundworms, blue ticks | | Strategically in summer |
| | | April | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies<br>Mineral deficiencies | | After 2 months<br>After 6 months |
| | | April | Vaccinate | **Three days of stiff sickness** | Three days of stiff sickness | Alive | 1 x per year* |
| | | April | Vaccinate | **Respiravax** | Pneumonia and BVD | Dead | 1 x per year* |
| | | June | Vaccinate | **Trichguard V5L** | Trichomoniasis, vibriosis, leptospirosis | Dead | 1 x per year* |
| | | June | Tests | **Skin test**<br>**Blood sample** | Bovine tuberculosis<br>Bovine brucellosis | Intra-dermal<br>Blood test | 1 x per year* |
| | | June | Vaccinate | **Supavax** | Anthrax, blackleg, botulism | Dead/alive | 1 x per year* |
| | | June | Vaccinate | **Multiclos/Covexin 10** | 8 - 10 different clostridium strains | Dead | 1 x per year* |
| | | June | Vaccinate | **Lumpyvax** | Lumpy skin disease | Alive | 1 x per year* |
| | | June | Deworm | **Sovereign Pour on/ Fluxacur NF** | Roundworms,<br>liver flukes | | Winter for roundworms and liver flukes |
| | | June | Inject | **Vit AE** | Winter vitamin deficiencies | | After 2 months |
| | | August | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies<br>Mineral deficiencies | | Again in autumn<br>After 6 months |
| | | Aug - Oct | Vaccinate | **Clone 13 (SDK)** | Rift Valley fever | Alive | Directly after calving*, not 4 weeks before breeding season |

There are essential* precautions and less essential** or optional precautions that can be introduced.

***Table 4: Bulls (18 months to 5+ years).***

| Type of cattle | Age | Month | Action | Product | Disease or effect | Vaccine – alive/dead | Repetition/reason |
|---|---|---|---|---|---|---|---|
| Bulls | 18 months - 5+ years | Sept - Feb | Pour-on | **Delete All** | Ticks, mites, lice, flies | | As required |
| | | March | Vaccinate | **Clone 13 (SDK)** | Rift Valley fever | Alive | 1 x per year* after the servicing season |
| | | April | Vaccinate | **Three days of stiff sickness** | Three days of stiff sickness | Alive | 1 x per year**, not before tests/breeding season |
| | | April | Vaccinate | **Respiravax** | Pneumonia and BVD | Dead | 1 x per year* |
| | | April | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies Mineral deficiencies | | After 2 months After 6 months |
| | | June | Vaccinate | **Trichguard V5l** | Trichomoniasis, vibriosis, leptospirosis | Dead | 1 x per year* |
| | | June | Vaccinate | **Supavax** | Anthrax, blackleg, botulism | Dead/alive | 1 x per year* |
| | | June | Vaccinate | **Multiclos/Covexin 10** | 8 - 10 different clostridium strains | Dead | 1 x per year* |
| | | June | Vaccinate | **Lumpyvax** | Lumpy skin disease | Alive | 1 x per year* |
| | | June | Tests | **Skin test Blood sample** | Bovine tuberculosis Bovine brucellosis | Intra-dermal Blood test | 1 x per year* |
| | | June | Deworm | **Sovereign Pour on/ Fluxacur NF** | Roundworms, liver flukes | | Winter for roundworms and liver flukes |
| | | June | Inject | **Vit AE** | Winter vitamin deficiencies | | After 2 months |
| | | Aug - Sep | Sheath washing Fertility tests | **Laboratory tests** | Trichomoniasis Vibriosis | | Every year, 2 x, 1 month apart |
| | | Aug - Sep | Inject | **Vit AE Multimin SE** | Winter vitamin deficiencies Mineral deficiencies | | Again in autumn After 6 months |

There are essential* precautions and less essential** or optional precautions that can be introduced.

***MSD product reference: The registration details of all the products listed here from MSD Animal Health can be viewed at www.msd-animal-health.co.za.***

***MSD product reference***

*Botuvax® Reg. No. G2193 Act 36/1947. Composition: Botuvax is a colourless liquid with an off-white sediment that resuspends when shaken. It contains formalinised, alum-precipitated Clostridium botulinum types C 1 + 2 and D toxoids.*

*Covexin® 10 Reg. No. G3354 Act 36/1947 Reg. No. G3354 Act 36/1947. Clostridial vaccine for sheep and cattle. Destroys all vials within eight hours after opening. Indications: For the active immunisation of sheep and cattle at age of two weeks to prevent deaths, lesions and clinical signs of disease caused by Clostridium perfringens type A (enterotoxaemia, red gut), C. perfringens type B (lamb dysentery), C. perfringens type C (necrotic enteritis), C. perfringens type D (enterotoxaemia/pulpy kidney), C. chauvoei (blackleg), C. novyi type B (infectious necrotic hepatitis), C. septicum (malignant oedema), C. tetani (tetanus), C. sordellii (sudden-death syndrome/haemorrhagic enteritis), and C. haemolyticum (bacillary haemoglobinuria).*

*Botuvax® Reg. No. G2193 Act 36/1947. Composition: BOTUVAX is a colourless liquid with an off-white sediment that resuspends when shaken. It contains formalinised, alum-precipitated Clostridium botulinum types C 1 + 2 and D toxoids.*

*Duovax Reg. No. G2328 Act 36/1947. Composition: DUOVAX is a colourless liquid with an off-white sediment that resuspends when shaken. It contains formalinised, inactivated alum-precipitated toxoids of Clostridium chauvoei and Clostridium botulinum types C1 + 2 and D.*

*Lumpyvax TM Reg. No. G3673 Act 36/1947. Composition: Each 1 ml (1 dose) of vaccine contains 104 TCID50 freeze-dried, alive, attenuated virus (SIS type).*

*Multiclos Reg. No. G3392 Act 36/1947. Namiba Reg. No. N-SR 1159. Multiclos is a vaccine for the active immunisation of healthy cattle and sheep against blackleg, malignant oedema, bacterial red urine, infectious necrotic hepatitis, red gut, uterine blackleg, and pulpy kidney.*

*Piliguard Pinkeye-1 Trivalent Reg. No. G2803 Act 36/1947 Reg. No. N-SR 1133. Contains chemically inactivated cultures of Moraxella bovis isolates called Species EPP 63, FLA 64 and SAH 38 by Schering-Plough, in an oil-emulsion system. RB-51® Brucella abortus vaccine Reg. No. G3056 (Act 36/1947). Composition: This freezedried vaccine contains the RB51 strain of Brucella abortus.*

*Respiravax™ Reg. No. G3867 Act 36/1947. Indications: Respiravax is an inactivated vaccine for vaccinating calves and pregnant cows to reduce and prevent bovine respiratory disease caused by bovine herpes virus 1 (IBRV), bovine viral diarrhoea virus type 1 (BVDV), parainfluenza virus 3 (PI3V) and Mannheimia (Pasteurella) haemolytica.*

*Supavax® Reg. No. G2643 Act 36/1947. Indications: For the active immunisation of cattle and sheep against anthrax, botulism and blackleg.*

*Delete® All Reg. No. G2837 Act 36/1947. Composition: Contains Amitras 2,0% m/v, Deltametrine 0,50 % m/v and Piperonil Butoxide 2,0 % m/v.*

*Solution 3.5% LA® Reg. No. G3689 Act 36/1947 N-SR 1286. Composition: SOLUTION 3,5% L.A. contains Ivermectin* 2,25 % m/v and Abamectin* 1,25 % m/v. * Macrocyclic lactone.*

*Sovereign® Reg. No. G3831 Act 36/1947. Composition: SOVEREIGN contains Ivermectin* 1,5 % m/v and Triclabendazole* 24,0 % m/v. * Macrocyclic lactone.*

*Fluxacur NF Reg. No. G3202 Act 36/1947. Composition: Contains 0,2% m/v Abamectin and 10% m/v Triclabendazole.*

*Gardal 10% Reg. No. G3201 Act 36/1947. Composition: Contains 10% m/v Ricobendazole.*

*Ralgro® cattle implants Reg. No. G1406 Act 36/1947. Composition: Contains cattle: 36 mg (1 implant, i.e. 3 pills)*

*Revalor® G Reg. No. G 2714 Act 36/1947. Composition: Each pill contains: 20 mg Trenbolone acetate and 4 mg Oestradiol. Each implant (dose) contains: 40 mg Trenbolone acetate and 8 mg Oestradiol (2 pills).*

***Article submitted by Dr Johan Cloete, Technical Manager: Ruminants, MSD Animal Health, for SA Graan/Grain March 2013. For more information, send an email to johan.cloete@merck.com.***

# Emphasis on vaccines and the importance of managing the cold chain

It is Friday morning, and you are in town doing the shopping for the end of the week before you pick up the kids at school. You have ice cream on your shopping list.

When do you buy the ice cream?
- 10:00?
- Your last task before picking up the kids?
- After you have picked up the kids, on your way home?

How will you transport the ice cream home?
- Packed in a plastic bag from the supermarket?
- Packed in an insulated cooler bag?
- Packed in an insulated cooler bag with a frozen ice pack inside?

When you get home, will you?
- First enjoy a cup of coffee, give the kids something to eat and then unpack the car?
- Immediately store the ice cream in the freezer?

Obvious questions with obvious consequences if you make the wrong decision – melted ice cream!

We all know what happens if ice cream has melted and is then returned to the freezer. It is never the same again. The ice cream freezes again, but the quality is affected. A layer of sticky ices forms at the bottom, with less tasty 'ice cream' on top.

What does buying ice cream have to do with vaccines and managing the cold chain? The general logic applied in getting your ice cream home in a frozen state is actually also good management of the cold chain!

Vaccines are temperature-sensitive products that should be transported with the same care as ice cream. However, the potential financial consequences of ignoring the cold chain when transporting vaccines is much more serious than the loss of a tub of ice cream.

Unfortunately, an interruption of the cold chain of the vaccine is not as easy to see as that of a tub of refrozen ice cream. However, the consequence is a vaccine that is ineffective in protecting the immunised animals against the disease targeted by the vaccine.

As we farm with herds of animals, immunisation with a bottle of vaccine that has been rendered ineffective by an interruption of the cold chain can leave 20 to 100 animals unprotected. In such a case the impact of disease can have serious consequences in the form of lost production or dead animals.

Your business and source of income is exposed to risk.

Management of the cold chain is as good as the weakest link in the process of getting the vaccine from the place of manufacture to the vaccination of the animal. If the cold chain is interrupted at any stage of this route, the damage to the vaccine is irreparable – just like with refrozen ice cream.

## Critical checkpoints for managing the cold chain of vaccines on the farm

- Buy only vaccines registered by the Registrar of Act 36 of 1947 (identified by a 'G' number, e.g. G2643).
- Make sure that registered vaccines have been assessed for safety and effectiveness and that the manufacturer complies with the requirements for manufacturing a vaccine.
- The manufacturer of registered vaccines will comply with the requirements of managing the cold chain.
- Purchase vaccines only from a reliable distributor (vet, co-operative, veterinary distributor) who maintains the cold chain.
- Always transport vaccines in an insulated container with sufficient ice packs to maintain the desired temperature until you reach your destination.
- Keep the vaccines in a reliable fridge on the farm.
- Check the temperature of the fridge daily with a minimum/maximum thermometer. Temperature levels of 4°C to 8°C should be maintained.
- Do not freeze vaccines.
- Prepare a contingency plan in case the fridge breaks down or in the case of a long power failure (sufficient cooler bag space and frozen ice packs).
- Transport vaccines in an insulated container with sufficient ice packs to where the animals are to be immunised and keep the vaccines in the container.
- Keep the vaccines out of the sun.
- Reconstituted live vaccines should be administered within 30 minutes.
- Reconstituted vaccines cannot be stored in a fridge for later use. The vaccine will no longer be effective.
- Always consult the package insert of the vaccine for information on the correct storage, handling, dosage, route of administration and possible precautions.
- Never use vaccines that have reached their expiration date.

## Vaccine distributors approved by MSD Animal Health

As market leaders in the provision of vaccines to the stock industry, MSD Animal Health realised the importance of a network of 'approved vaccine distributors' who understand our passion for vaccines.

Approved vaccine distributors are audited annually, with the emphasis on three critical areas:
- Receipt of vaccine from the supplier: was the cold chain maintained?
- Storage of vaccine at the trading premises: procedures applied to guarantee that the cold chain is maintained and checked 24/7.
- Distribution of vaccine: vaccine purchased at the trading premises should be stored in an insulated container with frozen ice packs to ensure that the cold chain is maintained until you reach your destination.

All staff responsible for receiving, storing and dispatching vaccines are trained to realise the importance of managing the cold chain.

For peace of mind, purchase your vaccines from an MSD Animal Health-approved vaccine distributor. Visit their website at *www.msd-animal-health.co.za* to find out where your closest approved vaccine distributor is.

***Article submitted by Dr Johan Cloete, Technical Manager: Ruminants, MSD Animal Health, for SA Graan/Grain March 2013. For more information, send an email to johan.cloete@merck.com.***

# Groundnuts and March 2014

## – what should be done

The season is in full swing and before you realise it, it is harvest time. March in the groundnut field is very interesting. This is when you start seeing the fruits of your labour and will make the final attempts to achieve the best production possible.

At this stage you have to be very wary of leaf diseases, as you want to retain as much as possible of your foliage for the harvest period. However, make very sure that you strictly adhere to the withholding periods for registered chemicals, as the HACCP regulations must be complied with.
The demand for groundnut hay has increased over the past few years, and it has become lucrative for the groundnut farmer to bale groundnut harvester residue.

Early plantings can be ready for harvesting by the middle of the month. It is therefore essential to make weekly maturity assessments. If large plantings have to be harvested, it will be beneficial to start harvesting the early plantings at around 60% maturity, so that when the last plantings are harvested, the maturity will be more or less 80%.

If you have some time left before the harvest commences, it is very important to check your harvesting machines. Harvesting time for groundnuts can be very busy, and careful planning is essential. A farmer does not want to struggle with equipment that keeps on breaking down. A clean groundnut field is also easier to harvest than one covered in weeds. It may be necessary to hoe the last troublesome weeds.
Be aware of what is happening in your groundnut fields. Leave your tracks in the soil and you can be sure of a good harvest.

***Article submitted by Loureine Salomon, ARC-Grain Crops Institute, for SA Graan/Grain March 2013. For more information, send an email to salomonl@arc.agric.za.***

# MONSANTO

## – supplying the complete seed treatment package

According to Monsanto South Africa, pre-plant treatment of seed with a range of beneficial products, plays a critical part in sustainable and successful grain production.

Successful and sustainable grain production relies on three main factors. Firstly, using good genetics that is best genetically adapted to the conditions and high yielding is of utmost importance. Secondly, is using technology, in terms of biotechnology, using hybrids that inherently have beneficial genetic traits like tolerance to certain insects and herbicides. Thirdly, is agricultural systems which basically implies doing the correct "thing" at the correct time in the right place. This includes good and reliable recommendations, precision farming techniques and adding value by using the correct weed control and using seed treatment to protect seed and adding additional benefits that can increase yields.

One of the most important factors of a successful grain harvest is establishing the correct plant population and maintaining it. Being that the seed and seedling is the most vulnerable stage of your crop, it is important to protect it from damage by all means possible. Using a package of approved seed treatment products on your seed can protect your seed and seedling from insect damage, fungal infections, disease as well as nematodes. Using the correct and approved seed treatments can not only protect the germinating, but it can also improve the vigour of the seedling. Different seed treatment products provide different periods of protection, some treatment can protect the crop against disease and insect damage up to maturity. Treating the seed pre-plant is the best, safest and most direct way of getting beneficial chemicals and biologicals into the zone of germination and rhizosphere (root zone).

It is very important when considering seed treatment options to always use only registered and approved products. The best approach is to obtain already treated seed from your seed company, where it is treated professionally under highly regulated, controlled and safe conditions. These professionally treated seed also have the correct polymer coatings to prevent dust when handling the seed during planting. Some seed treatment products can have a negative effect on human health and the environment when handled in the wrong way, thus safety is very important when considering on-farm treatment and handling the treated seed during planting. It is also very important to store treated seed under the correct and safe conditions, and to dispose the empty seed bags and chemical containers in a correct and safe manner.

MONSANTO

Monsanto can supply farmers with a complete package of seed treatments on their maize seed. These seed treatments can not only protect the seed and plant against certain fungal infections, insects and disease, but it can also improve the seedling vigour and protect seedling against nematode damage. In the near future, Monsanto will provide farmers with different seed treatment package options to address the specific seed treatment needs of the farmers. We will also see the introduction of more treatment products with a biological approach, using beneficial living micro organisms to protect the seedlings and improve vigour, while also improving the overall health of the soil.

***Article submitted by Pieter Smit, Product Manager: Seed and Traits, Monsanto. For more information, send an email to pieter.smit@monsanto.com.***


# Grain SA interviews…
# Leonard Nondonga

Meet Leonard Nondonga, a passionate, committed and eager-to-learn farmer from Njezweni in Ngqeleni, in the Eastern Cape Province. Leonard farms with sheep, cattle and maize on 7 ha of land.

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

I am producing maize on 7 ha of land at Njezweni in Ngqeleni, Nyandeni Local Municipality. I farm with sheep, cattle and maize. I also lease a smallholding farm for livestock near Barkley East.

### What motivates/inspires you?

White farmers' maize fields motivate me in the sense that when you are self-employed, you are able to create jobs for the unemployed as well as run a real farming business.

### Describe your strengths and weaknesses

**My strengths**: I am committed and eager to learn. I have a passion for farming, but also want to make money out of it.

**My weaknesses**: I have no access to finance. I lack the know-how to farm the way it should be. I farm on communal land.

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

My yield was 2,5 tons/ha when I started, now I am producing 4 tons/ha.

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

Grain SA's training courses that I have attended to date capacitated me with skills.

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

I have completed the Contractors Course, Setting of Implements Course, Tractor Maintenance Course and Introduction to Maize Production Course. I would like to do the Farming for Profits Course in the future.

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

I am aiming to reach the 250 Ton club.

### What advice do you have for young aspiring farmers?

That farming is a good business to earn a living.

***Article submitted by Lawrence Luthango, Development Co-ordinator of the Grain SA Farmer Development Programme. For more information, send an email to lawrence@grainsa.co.za.***

# The Corner Post

## African Farmers Association of South Africa (AFASA).

The African Farmers Association of South Africa (AFASA) is a unitary and representative body of South African farmers whose primary aim is to create competent and successful commercial farmers in South Africa.

The organisation was established in 2011, with the main objective being, to organise African farmers under one representative body. Smallholder farmers in the country had, for a number of years, been without a well organised structure which represented their interest, and which they can call it their home. So, with the establishment of AFASA, the aim was to articulate, represent, protect and develop African farmers' economic interests.

The organisation was founded by 3 000 farmers from all nine the provinces after a year-long consultation process, countrywide, to determine their need for an official structure that would represent their interests.

As part of the consultative process, a National Convention of African Farmers held in Bloemfontein in December 2010 adopted a new constitution, structure and a five-year strategic plan. After the Convention, district and provincial structures were launched between 18 January and 5 April 2011. The leadership was democratically elected in the provinces using the constitutional guidelines adopted by the convention. The final stage was the founding conference of AFASA which was held in Boksburg, Gauteng on 10 - 12 April 2011, during which the farmers formally adopted the name "African Farmers' Association of South Africa (AFASA) and the founding constitution as well as confirmation of the National leadership.

> *"We also agreed that the organisation will responsibly facilitate improvement of food security in our country, reduce poverty in our communities, and an increase of business and employment opportunities within the agricultural sector.*

### Our vision

Our vision was to establish a united body of African farmers with strong financial viability, growing and sustainable membership and led by reputable and dynamic leadership. These leaders would represent farmers' common interest and ambition to be competent and successful commercial farmers, who will participate meaningfully in the commercial agricultural sector. We also agreed that the organisation will responsibly facilitate improvement of food security in our country, reduce poverty in our communities, and an increase of business and employment opportunities within the agricultural sector.

### Capacitating smallholder farmers

To be consistent with the vision, mission and strategic goals of the association, AFASA offers several services to its specialised constituency. The organisation participates in several processes to try and influence policy and legislation in order to create a favourable environment for the development of the smallholder farmers. We hold regular members' meetings to identify the key issues for lobbying and advocacy. We must also formulate clear policies and a coherent stand point on behalf of the farmers and in relation to the identified issues. On the basis of these positions, influence relevant stakeholders and policy makers in favour of the African farmers of South Africa.

> *"With the establishment of AFASA, the aim was to articulate, represent, protect and develop African farmers' economic interests.*

### Women and youth

We facilitate participation of women and youth in agri-business, forestry and fisheries by designing and developing special programmes for promotion of women and youth participation in agriculture, forestry and fisheries. AFASA also, facilitates Agri-BEE Projects, identify high impact projects per commodity and per agro-ecological region, as well as link farmers with value adding projects. We also facilitate farmer support and development programmes, as well as training and mentorship programmes.

***This month's edition of The Corner Post was authored by Mike Mlengana, President of AFASA. For more information, send an email to communications@nerpo.org.za.***

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