PULA IMVULA

GRAIN SA
GRAAN SA

NOVEMBER
2013

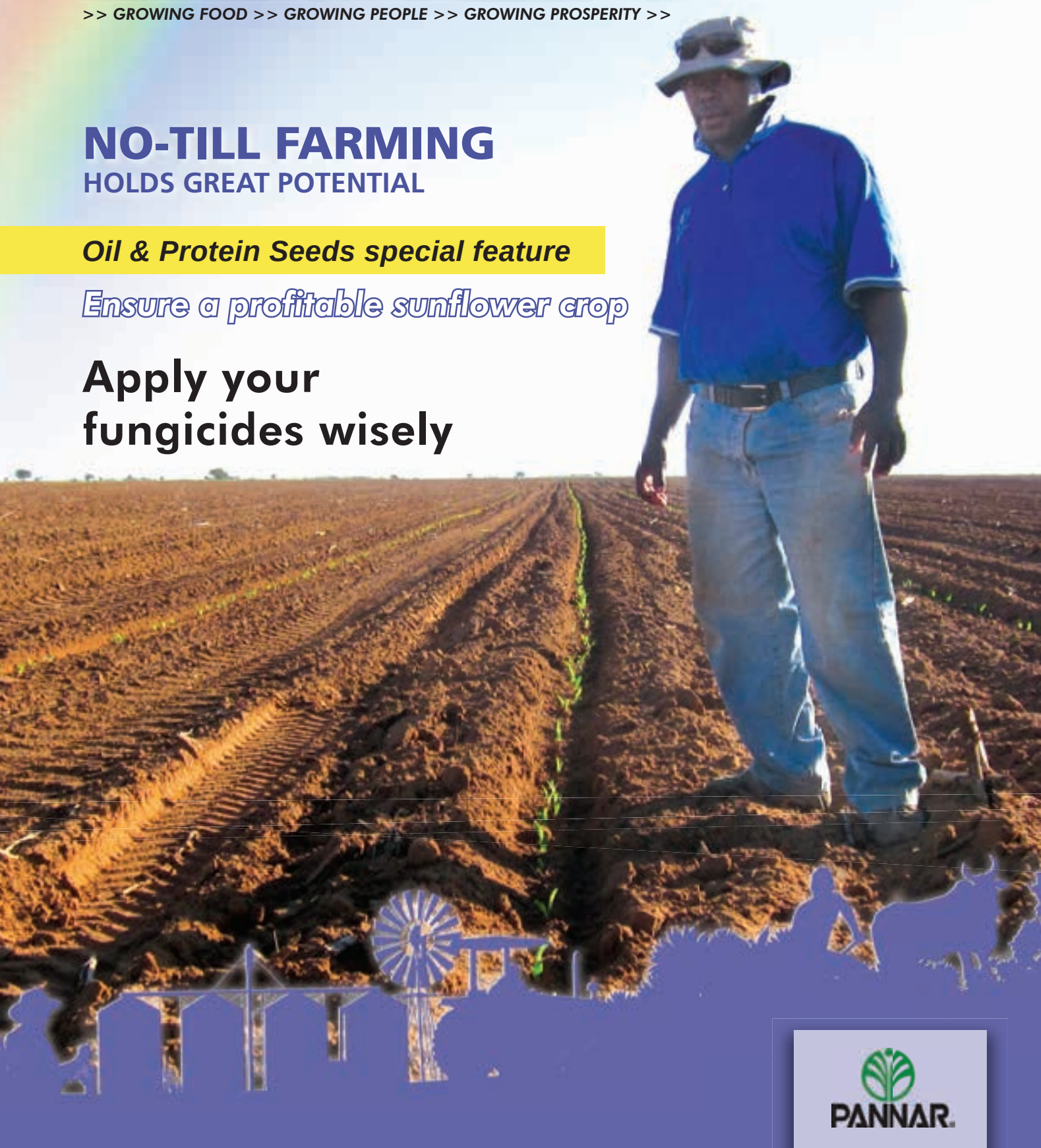
>> GROWING FOOD >> GROWING PEOPLE >> GROWING PROSPERITY >>

NO-TILL FARMING
HOLDS GREAT POTENTIAL

Oil & Protein Seeds special feature

Ensure a profitable sunflower crop

Apply your fungicides wisely



PULA IMVULA

Editorial team

GRAIN SA: BLOEMFONTEIN
Suite 3, Private Bag X11, Brandhof, 9324
7 Collins Street, Arboretum
Bloemfontein
▸ 08600 47246 ◂
▸ Fax: 051 430 7574 ◂ www.grainsa.co.za

EDITOR IN CHIEF
Jane McPherson
▸ 082 854 7171 ◂ jane@grainsa.co.za

EDITOR
DISTRIBUTION
Liana Stroebel
▸ 084 264 1422 ◂ liana@grainsa.co.za

DESIGN, LAYOUT AND PRINTING
Infoworks
▸ 018 468 2716 ◂ www.infoworks.biz

infoworks
your ideas can fly

PULA IMVULA IS AVAILABLE IN THE FOLLOWING LANGUAGES:
English,
Afrikaans, Tswana, Sesotho,
Sesotho sa Leboa, Zulu and Xhosa.

Grain SA Farmer Development Programme

DEVELOPMENT CO-ORDINATORS

Danie van den Berg
Free State (Bloemfontein)
▸ 071 675 5497 ◂ danie@grainsa.co.za

Johan Kriel
Free State (Ladybrand)
▸ 079 497 4294 ◂ johank@grainsa.co.za
▸ Office: 051 924 1099 ◂ Dimakatsi Nyambose

Jerry Mthombothi
Mpumalanga (Nelspruit)
▸ 084 604 0549 ◂ jerry@grainsa.co.za
▸ Office: 013 755 4575 ◂ Nonhlanhla Sithole

Naas Gouws
Mpumalanga (Belfast)
▸ 072 736 7219 ◂ naas@grainsa.co.za

Jurie Mentz
KwaZulu-Natal (Vryheid)
▸ 082 354 5749 ◂ jurie@grainsa.co.za
▸ Office: 034 980 1455 ◂ Sydwell Nkosi

Ian Household
Eastern Cape (Kokstad)
▸ 078 791 1004 ◂ ian@grainsa.co.za
▸ Office: 039 727 5749 ◂ Jenilee Buntting

Lawrence Luthango
Eastern Cape (Mthatha)
▸ 076 674 0915 ◂ lawrence@grainsa.co.za
▸ Office: 047 531 0619 ◂ Cwayita Mpotyi

Toit Wessels
Western Cape (Paarl)
▸ 082 658 6552 ◂ toit@grainsa.co.za

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

NKGONO JANE SAYS...

IN THIS ISSUE...

COVER ARTICLES

INSIDE

We hope and pray that by the time you are reading this Pula, you have managed to plant most of your summer crops. It is so important to get the seeds into the ground at the right time, both for the expected rains as well as the plants' heat requirements. Plants are very sensitive to heat units and late planting often results in a poor yield, simply because the days in autumn are not hot enough to encourage good grain development.

I recently went into a shop to buy some maize meal – I was shocked, seeing as the price for a 5 kg bag of meal was R25,99. This would translate into a maize price of more than R5 000/ton. During this past year, I don't think any farmer was paid more than half of that amount. This is a very important aspect of food security on a household level – what is the cost of the grain, and what is the consumer paying?

Let us assume that the costs to produce 1 ton of maize is below the selling price of maize at any time (this must be true for the average farmer, because otherwise the farmer would be going out of business). Let us further assume that a family needs 1 ton of maize meal for the year – if you produce more than 1 ton, then you either sell the surplus or use it to feed livestock.

The cost per month of the maize meal in the house (at the farmer's price for maize) would be in the region of R192/month. (The cost of 1 ton is being taken at R2 300/ton and we are assuming that the family uses 80 kg/month.)

Let us go back to the price I paid recently in the supermarket – that was R5/kg. For the 80 kg, the cost would be R400/month (per bag). In other words, by producing maize just for your family (1 ton/year), you can save more than R200/month.

Will everyone please try to grow at least the maize that you need for your family – you should be able to do this on a quarter of a hectare. Imagine if everyone could be free from hunger...

An introduction to maize farming the no-till way

No-till maize farming has been practiced around the globe for many years and yet in South Africa it has mainly been seen in smaller pockets where some progressive farmers have been implementing the process for many years. It is important to note that no-till farming systems can be suited to both large-scale and small-scale farming operations.

No-till farming practices provide a residue which leaves a mulch layer on the surface of the soil and which subsequently builds up the organic matter in the soil. This organic matter is comprised of a vast selection of compounds which give life and create a fertile and productive soil. The decomposed organic matter is called humus and this is able to hold many nutrients to make them available to the plants.

It is also true that there have been as many failures as successes in the implementation of no-till farming systems. It is generally believed that the success of no-till maize production boils down to four main factors, namely attitude, previous crop, soil types and the no-till planter. Of the four factors, three are manageable – soil type is not. One's attitude will in fact affect the level of success in every aspect of one's life, not just farming. If a farmer plants no-till maize half-heartedly, he will probably end up with half a crop! Success with no-till definitely requires advanced planning and preparation to ensure that the transition is successful.

Before you take the plunge

Know your soil type. No-tillage is feasible on most loam soils and many growers are doing a great job on no-till production and reaping the soil conservation benefits, particularly in the long term, seeing as the true benefits of no-till maize production are only realised four to five years into the system.

Consider starting small and learning through experience. Most farmers ease themselves into the system and make an effort to learn as much as possible before converting their entire farming operations to the no-till system.

Why no-tillage for maize?

- There has been increased interest in no-till, particularly in the light of increasing input expenses and rising fuel costs.
- Fewer land operations are necessary, so a tractor will work in the lands fewer times than for conventional tillage – this also reduces time and labour expenses.
- Other factors which can be addressed beneficially through no-till farming are:
  - the need to conserve moisture;
  - the need to naturally build up the health status of the soil; and also
  - there is less wear and tear on costly machinery.
- Despite the initial expense of the especially engineered no-till planter, it has been shown that in the long run capital investments into machinery are lower.
- No-till practices which leave the previous season's material lying on the surface of the lands, reduce run-off and lessen the effects of soil erosion by wind and water.
- South Africa has serious problems with soil erosion in some regions and the no-till system can be a tool towards reducing the problem.
- The organic matter that is added through crop residues can further improve soil structure and fertility.
- Improved soil quality affects crop yields and productivity positively. Since no-till improves the structure of the soil, costs of production will decrease, but production potential increases.

While working on a farm in South Dakota, Gavin Mathews took this photo of wheat crop residue. (Photo: Gavin Mathews)

Management considerations

In order to get the best crop potential on no-till lands, some important issues must receive attention.

Liming

The best soil pH for no-till is 5,5 - 6,5, seeing as this will enable effective herbicide activity and maximises nutrient availability to the crop.

Fertilisation

Perform regular soil sampling and apply phosphates and potash accordingly. Soils warm up more slowly beneath the crop residues, so it is advisable to use a starter fertilise application of nitrogen and phosphorous to get the maize off to a vigorous start.

Planting date

Farmers have learned that soil temperatures at the 2" (two inch) depth can be considerably cooler under no-till than traditional tillage. This means that it may be wiser to start planting the no-till maize slightly later than in conventionally tilled lands, considering that maize seed is very sensitive to soil temperature during the germination stage.

No-till planters

The no-till planter is a major expense. It is a good idea to try to hire one in the initial phase of transition. The type of residue cover on the land will affect the setting of the no-till planter, seeing as planters need to cut through the residue and place the seeds uniformly at the correct depth, so it has the best contact with the soil. The planter then must firm the soil around the seed to ensure good germination and seedling emergence. These planters often have double-disk seed furrow openers, while

narrow, single or dual-press wheels are used for firming the soil around the seed. The most critical factor during the planting process is the soil-to-seed contact and planting depth.

Weed control

Weed control is critical to the success of no-till systems, as there are no traditional tillage processes ripping the weeds from the land. Herbicide effectiveness can also be reduced by the amount of matter lying off the land from crop and weed debris, which will hold on to the herbicides and present a physical barrier preventing a uniform cover of the herbicide. Therefore the selection of herbicide, the rate of application and the method of application need particular attention. This is not an insurmountable problem and it is also true that the residue on the surface of the soil can also inhibit the growth of weeds by suppressing some species.

It is a good idea to consistently consult with experts, since the widespread and continuous use of the same herbicide creates problems and is the reason for increased weed resistance to herbicides. Herbicides and their combinations should be rotated.

Type of crop residues

Different crops leave different types and quality of residues on the lands. Some produce favourable no-till planting conditions, such as soybeans or hay crops, while others present challenging conditions, for example maize on maize. It is important to know what benefits and challenges will be presented by each different crop that will be rotated on a particular land. Legume crops provide soil-enriching nitrogen, while other crop residues may be inclined to harbour insects which need to be managed before the new crop is planted. Maize can be planted into maize residue, but careful attention must be given to insect and weed control measures.

Conclusion

Clearly the no-till system of farming holds great potential for the future, with many benefits for the production of maize and other crops. The value of improved soil moisture content and soil health, combined with reduced soil erosion and therefore reduced soil nutrient losses, cannot be underestimated as a useful tool for the future in an environment which must cope with climate change and increased demands from the land.

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

Let's declare war on gerbils!

Gerbils and the management of these tiny animals are a challenge to most farmers. In this article we provide a brief, point-by-point summary of how to manage this pest.

- Take the time to plough those gerbil spots thoroughly. If they are left alone, particularly in fallow fields, the gerbils settle in very comfortably and nobody breaks down their colony – this is particularly important to producers who practise little or no tillage.
- Use owls and raptors to frighten the gerbils and summarily catch the ones who do dare to go outside – erect seats from where the owls and raptors can hunt the gerbils.
- Use only registered rodenticides that will not poison the raptors.
- Make sure that the rodenticide is an attractive bait. One of the best and least harmful techniques is treating soft-cooked grain and germinating grain with cooking oil and zinc phosphide and placing this in pipes alongside the fields, or in dense gerbil colonies.
- Do not wait for the gerbil populations to explode – deal with the problem immediately, before they dig out and eat the germinating plants.
- Together with the main crop, plant a bait crop that will germinate at the same time as the main crop – it should be planted very densely in the headland. Take the old maize or wheat seed that is no longer so viable and plant that. If the gerbils want food, this will be on offer.
- Leave the snakes, meerkat and polecats alone – they also eat some of the gerbil offspring.
- Work with fellow producers to make war on the gerbils – we cannot win the war against them if we do not cooperate to control their populations.

Article submitted by Dr Gerhard H Verdoorn, Griffon Poison Information Centre and Association of Veterinary and Crop Associations of South Africa (AVCASA) for SA Graan/Grain November 2012. For more information, send an email to nesher@tiscali.co.za.

This is what a gerbil should look like.

Gerbil burrows among the maize.

Gerbil droppings indicate where they are active.

Gerbils 10; farmer 0.

Control of thorn apple in maize and wheat

Thorn apple is an upright, branched, half-herbaceous, annual plant that can reach a height of up to 1,5 m. The weed has long, sturdy tap roots and the stems are round to angular and finely ribbed, green or purplish.

The leaves have a hairless petiole and stink when bruised. The plants have a purple stem below the cotyledons and the petals of the flowers are white, mauve or purple. The fruits are woody, egg-shaped capsules with a diameter of up to 4 cm, and are covered with numerous small thorns that can be up to 1 cm long.

The fruit breaks open into four "boxes" with numerous seeds. The seeds are relatively large, approximately 3 mm long, flattened and kidney-shaped. This weed is a strong competitor for any crop in which it occurs. The seed is poisonous and grain that has been contaminated by it, is rejected at the silos and first has to be purified. Although the entire plant is poisonous, the seeds are the most poisonous.

Datura ferox, or large thorn apple (Afrikaans: *groot stinkblaar*) is another well-known species and can be distinguished from the ordinary thorn apple by its longer "thorns" on the capsules.

Dissemination

Thorn apple occurs widely in South Africa and is an annual weed in various crops.

Control

Chemical

Thorn apple is not controlled adequately by only spraying with pre-emergence herbicides. The most effective control is obtained with postemergence herbicides. For effective control, postemergence herbicides should be mixed with an additive that promotes the penetration of the herbicides. Several herbicides are registered for controlling thorn apple in maize and wheat (**Tables 1 and 2**).

Follow the indications and dosage instructions on the label for each product extremely closely. Datura species can be a hardy weed and must be controlled as soon as possible after emergence, but late-germinating thorn apples should also be controlled with one well-planned spraying, otherwise follow-up sprayings will be required.

The optimum time is between the two- to six-leaf stage of the weed. The bigger the plants become, the less effective the postemergence herbicides will be.

As resistance to herbicides has not yet been reported in this weed, broadleaf-herbicides are still used successfully. However, always take the degree of resistance into account and do not use herbicides against which resistance already occurs. Always contact a reliable chemical adviser before using any chemicals to follow the correct dosage and specifications on the label.

Scientific name

Datura stramonium

Afrikaans name

Olieboom, stinkblaar, stinkolie

English name

Thorn apple

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*.

Table 1: Herbicides registered for controlling thorn apples in maize.

Active ingredient	Formulation	Time of application
2,4-D	480 g/litre 720 g/litre	Pre-emergence, within five to six days after planting Postemergence, when crop is 30 cm - 45 cm high, otherwise directed spraying with drop arms
2,4-D/dicamba	240/80 g/litre	Postemergence, between three- to six-leaf stage of weed and before crop is 30 cm tall
acetochlor/atrazine/terbuthylazine	160/165/165 g/litre 125/187/187 g/litre 150/225/225 g/litre 178/160/160 g/litre 250/225/225 g/litre	Pre-emergence or soon after emergence, before four-leaf stage of weed
alachlor/atrazine	336/144 g/litre	Pre-emergence, no later than two days after planting

Active ingredient	Formulation	Time of application
atrazine	500 g/litre 900 g/kg	Pre-emergence or soon after emergence, weed must be <10 cm
atrazine/cyanazine	167/333 g/litre 250/250 g/litre	Pre-emergence or soon after emergence
atrazine/metazahlor/terbuthylazine	210/60/210 g/litre	Pre-emergence or soon after emergence
atrazine/metolachlor	300/300 g/litre	Pre-emergence
atrazine/metolachlor/terbuthylazine	174/252/174 g/litre 262,5/175/262,5 g/litre	Pre-emergence or soon after emergence
atrazine/s-metolachlor	370/290 g/litre	Pre-emergence
atrazine/s-metolachlor/ terbuthylazine	248,6/102,8/248,6 g/litre	Pre-emergence
atrazine/sulcotrione	300/125 g/litre	Pre-emergence or soon after emergence
atrazine/terbuthylazine	250/250 g/litre 270/270 g/litre 300/300 g/litre 450/450 g/litre	Pre-emergence or soon after emergence
atrazine/terbutryn	250/250 g/litre	Pre-emergence
bendioxide	480 g/litre	Postemergence
bromoxynil	225 g/litre 400 g/litre 450 g/litre 500 g/litre	Postemergence, actively growing weed
bromoxynil/terbuthylazine	150/333 g/litre	Postemergence
cyanazine	500 g/litre	Use only as tank mixture in conjunction with atrazine
dicamba	480 g/litre 700 g/kg	Postemergence, between three- to six-leaf stage of weed and crop not >30 cm
dicamba/topramezone	160/50 g/litre	Soon after emergence, use in tank mixture with atrazine or atrazine/terbuthylazine
EPTC	720 g/litre	Before planting of crop
glyphosate/mesotrione/ s-metolachlor	250/25/250 g/litre	Soon after emergence, only on glyphosate-tolerant maize cultivars
MCPA	700 g/kg 400 g/litre	Pre-emergence, five to six days after planting or postemergence, use drop arms if crop is >30 cm
mesotrione	480 g/litre	Pre- or postemergence, use in tank mixture with atrazine, atrazine/terbuthylazine or s-metolachlor
metribuzine	480 g/litre	Postemergence, between four- and six-leaf stage, tank mixture with 2,4-D or bromoxynil
nicosulfuron	240 g/litre 40 g/litre 750 g/kg	Postemergence, when crop is between two- and six-leaf stage
s-metolachlor/terbuthylazine	102,8/497,2 g/litre 312,5/187,5 g/litre	Pre-emergence and soon after emergence
terbuthylazine	600 g/kg	Pre- or postemergence, weed not >four-leaf stage or >10 cm
topramezone	336 g/litre	Soon after emergence, in tank mixture with atrazine or atrazine/terbuthylazine

Control of thorn apple in maize and wheat

Young thorn-apple seedling.

Mature thorn apple.

Development of capsule.

Differences between the capsules and seeds of thorn-apple species.

Table 2: Herbicides registered for controlling thorn apples in wheat.

Active ingredient	Formulation	Time of application
2,4-D/dicamba	240/80 g/litre	Postemergence, between two- and six-leaf stage and growth stage 7 - 13 of crop
2,4-D	480 g/litre (SC) 480 g/litre (SL) 720 g/litre	Postemergence, between two- and six-leaf stage and growth stage 7 - 13 of crop
bendioxide	480 g/litre	Apply to young, actively growing weeds
bromoxynil	225 g/litre 400 g/litre 450 g/litre 500 g/litre	Postemergence, weed fully germinated, but not older than three-leaf stage
dicamba	700 g/kg	Postemergence, use only in a tank mixture with metsulfuron-methyl, chlorsulfuron and an additive
MCPA	400 g/litre 700 g/kg	Postemergence, between growth stage 7 - 13 of crop

Article submitted by Elbé Hugo, ARC-Grain Crops Institute and Hestia Nienaber, ARC Small Grain Institute for SA Graan/Grain November 2012. For more information, send an email to HugoE@arc.agric.za.

Planning ahead for your maize season

This coming planting season promises to be a very challenging one indeed. In many areas, such as the North West Province and the Free State, we are starting out with depleted soil moisture. Many farming operations have to cope on lower budgets for inputs due to last season's poor maize crop and in truth, maize prices haven't really done very much in the past season despite low yields from these regions.

So the challenge is how do we plan for a new planting season in such circumstances? Some will say: "Do the same as you always do, don't do anything too drastic or too different!" Others will say: "Plant later!" – or even, "Don't plant at all!" The reality is that when the first rains fall and your bank or agri-business has approved a new production loan, you just become a maize farmer who knows only one thing and that is to produce mealies! We farmers are instinctively driven to work in our fields and to plant, and we know we must try again…We have to let those big wheels get rolling and get the fresh seeds of grain in the soil!

Maize production is a high-risk venture. If you are lucky enough to be one of those who had a good maize crop last season, then you can get started with a joyful heart, but for many of us we need to address a few key issues in order to improve our chances and reduce our risks.

- Take soil samples in good time so that fertiliser can be ordered.
- Get advice from experts and representatives of the seed companies who know your area and discuss which varieties of maize seed you could plant.
- Get to know the character and growing times of the different varieties of maize seeds; they are all different, with different advantages for different growing conditions.
- Make sure all your other inputs are ordered and ready for you to be able to use your window of opportunity to plant optimally.
- Don't plant too early where soil moisture content is still very low.
- Make sure you have at least loosened your top soil to promote the penetration of the rain when it does come, that is, through either disking or vibroflexing.
- Make sure early weeds are controlled either chemically or with a tined implement to conserve the available moisture. Your weed control programme is critical and will affect the growth of your maize plant as well as the number of pips which develop on the cob. This means that your entire harvest can be negatively affected by poor weed control through the season.
- Do your maintenance on planters and other primary tillage implements, that is, replace tines on vibroflexes and shears on the ploughs, as you do not need downtime to fix implements, especially if it only rains late as it sometimes happens these days!
- Take a long-term view of the maize growing season and even before you have put your first seed pips into the ground, consider your marketing options. Decide what you need for on-farm use, such as for household use and as livestock fodder, and then consider how and where you will sell the rest of your crop.
- It is very important to become familiar with the way the South African grain trading market works, even if you have an agent who assists you. Take the time to get help, so you understand Safex and how it works. Make sure you understand the "location differential" and what its purpose is, so that you can negotiate the best possible prices for your maize crop.
- Crop insurance is costly, but could be helpful in a particularly risky season. It is advisable to contact your agri-business or credit supplier and discuss your options and whether you could qualify for crop insurance for this coming season. You cannot take it for granted that you will qualify, seeing as insurance companies are not guaranteed to automatically offer you cover.

Be disciplined throughout the maize growing season. It is not wise to spend a lot of money putting a crop of maize in and then not monitoring and managing it in the long term.

- This means being present in your fields almost daily;
- It means keeping your tractors and implements in good working order;
- It means keeping all your stocks neatly in your shed until required and chemicals and poisons safely under lock and key;
- It means keeping your accounts and office administration neat and up to date;
- It also means picking the brains of local experts and other more advanced farmers in your area; and
- It means joining your organisation, Grain SA, and attending meetings, study groups and training courses on an ongoing basis – and reading our informative Pula/Imvula monthly from cover to cover too of course!

No farmer can ever say he has learnt all there is to know. The maize growing environment is dynamic, progressive and ever changing as seed companies strive to improve their seeds and chemical companies offer new, more efficient products. It is up to every maize farmer to enquire and read as much as possible all the time and in this way equip himself or herself to become a better farmer by keeping a finger on the pulse of the dynamic maize industry in our country.

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

Ensure a profitable sunflower crop this season

The new planting season for summer crops and sunflowers in particular is just around the corner. It seems that harvesting was only completed a short time ago.

The SAGIS crop estimates for the 2013 crop show that a total national crop of 566 600 tons was produced from 504 700 ha. This translates into an average of 1,12 tons/ha. The low average yield is a reflection of the extremely variable rainfall patterns experienced in the main summer crop production areas. Where adequate rainfall was received, yields of 1,8 tons/ha to 2,0 tons/ha were actually realised. Other areas had little or no yields. Compare the national average to the yields achieved on your farm.

The futures price for sunflowers for delivery in March 2014 is quoted at R5 125 and then falls to R4 840 for May 2014 after the main crop has been delivered following harvesting. A price of R5 000 can be used for your production planning and gross margin analysis. Sunflowers could be one of the better crop options for profitable production this season if you can aim for and realise a yield target of at least 1,5 tons/ha. Make sure you plant on soils with this production potential.

Stored moisture and soil conditions

The country is experiencing an extremely dry period in most production areas, with very little late autumn and winter rains having been received at the time of writing. You might have been fortunate to have some stored soil moisture on which you can base your sunflower production planning and possible planting dates.

The area that you plan to put to sunflowers, maize, soybeans, and other crops will be largely influenced by the rainfall patterns experienced during the last weeks of September and in October. If not enough rain is received to start the build-up of soil moisture and enable soil cultivation prior to planting, farmers will tend to plant less soybeans and maize. Both these crops and especially soybeans have a small critical planting window for commercially viable yields.

Fortunately sunflowers have a larger planting window starting from October and extending to January in the western planting areas.

Do not take the risk of planting on lands that do not have enough moisture in the whole soil profile!

Quantity and quality of hybrid seed

In taking the above reality into account, it would be wise to order enough sunflower seed with a range of maturity dates. You can then exercise the options to plant early if you have enough moisture in the soil profile and have a short season variety on hand in your farm shed to be able to plant later if good rains only come during November or early in December.

Seed and cultivar selection

Only good quality uniform seed with a high germination percentage of a cultivar that has been proven in your area or on your farm should be purchased from the many companies that breed and market seed. The sunflower breeding industry could be regarded as mature in South Africa, with much knowledge from applied production practices being available from these companies. Always use cultivars with known results in your area or on your farm.

Table 1: Summary of the ideal plant population.

Yield potential kg/ha	Areas (plants/ha)	Final seed spacing in 90 cm rows rounded off
1 000 - 1 200	25 000 - 30 000	45 cm and 36 cm
1 200 - 2 000	30 000 - 35 000	36 cm and 32 cm
2 000 - 3 000	35 000 - 40 000	32 cm and 28 cm
3 000 - 4 000	40 000 - 50 000	28 cm and 22 cm

However, plant some new and different high oil cultivars every year so that you keep abreast of cultivars with improved yields and higher oil content.

Several varieties are available on the market that are resistant to specific chemical spray applications and can be planted with a view to having excellent weed control under conventional tillage. Make sure that the seed you purchase is the correct size for your existing plates if you still use a plate type planter. A smaller seed size can be used for air suction type planters. If the farmer is aiming at about 40 000 plants/ha, then you can budget on about 3 kg of seed/ha. The seed supplier representative can be consulted as to the correct seed size and the mass to be used per hectare. Purchase enough seed for replanting or to substitute for maize or soybeans should the need arise. If all farmers plan for a larger area under sunflowers, there is likely to be a shortage of seed later in the season.

Planting dates, planting depth and plant population

If the farmer has decided to plant for early harvesting in order to catch the higher futures prices, then planting during September, only a good soil moisture profile would be recommended.

The optimal planting dates in the cooler eastern areas are from the beginning of November to the first week in December. In the central regions, from the last week in November to the end of December and for the drier western areas, from the last week in December to the middle of January.

Set your planter so that the seed is planted between 2,5 cm and 5 cm (the maximum) depending on surface residues, soil moisture conditions and soil type. The correct planting coulters with accurate depth control that create a slightly firmed soil condition to each side, but not above the seed, are recommended. Always be in the lands at planting time to monitor the planting conditions that can change during the day from early morning, midday and then later in the afternoon. The planting depth might need adjustments during the day as the moisture conditions change. Always make sure that the seed is firmly in contact with moist soil.

The ideal plant population, being the final plant stand after emergence, will depend on soil potential and can be summarised in **Table 1**.

As a general rule, a minimum of 20 000 plants in all areas is required for a reasonable and payable yield target. A final acceptable stand will depend on the date of replanting. If it is too late, even a good stand will not out yield the original 20 000 plant population.

It is important to set your planter to plant about 8% to 10% more than the final population yield target in order to allow seeds that do not germinate to be compacted or available for insect damage.

Make sure that your planter calibration is done in the shed by accurately counting planter wheel turns per 100 m of planter row and accurately counting the seeds to determine the planned plant population. If time allows, plant a small section early in the season to check plant spacing and planter efficiency for each row.

Conclusion

Plan ahead for this year's conditions, select the right seed for your farm, and plant the correct plant population when enough soil moisture is available. These tips, if properly implemented, will ensure that a profitable crop is realised during the coming 2013/2014 production season.

Article submitted by a retired farmer.

What soybean variety or cultivar should I plant?

Making the decision on which soybean cultivar to plant on your farm taking into account your farm's prevailing climate conditions and soil potential can be difficult.

The correct choice can only really be made from assessing the results of various cultivars planted commercially under your own management conditions and production potential. A minimum of three planting seasons will be required to start to identify which cultivars work on your farm and which don't work.

If at all possible arrange for a cultivar trial from various companies to be undertaken on your farm while you plant two or three tested varieties on a commercial scale. As will be experienced, the correct cultivar can out yield an incorrect cultivar by 0,5 ton or more per hectare and can make the difference between profitable or unprofitable production.

The only way to determine the correct cultivar for you farm is from actual production experience. Don't take chances with guessing which could be the best cultivars if an area for commercial production is being considered.

Soybean cultivars – agronomic characteristics

The important agronomic characteristics of soybeans for breeding programmes and commercial production can be categorised into some main factors. These are the growing season length or maturity group (growth type being indeterminate or determinate), average days to flowering, average days to maturity, plant height, pod height, standability, shattering resistance, the average seeds found in 1 kg of seed and ideal plant population.

These characteristics are usually rated by the seed breeding or supply companies on a scale of 1 to 9 with 1 being "high" or "excellent" and 9 being "low" or "poor" for example.

Many of the cultivars are glyphosate tolerant and can be used with excellent results in an appropriate "roundup ready" chemical weed control system. The chemicals used in such a programme must however be carefully applied at the correct plant age. It is wise to mix the spray with a fertility additive to boost growth and counter against any negative effects that might retard growth that can occur for a week to ten days after application.

Growing season or maturity class

Together with the growth type of the cultivar this is one of the most important characteristics to consider.

Early maturing or quick growing cultivars are suitable for cool regions or regions with a shorter summer growing season. Early maturing soybeans require less heat units to reach maturity than the medium or longer growing season varieties.

Ask your seed representative which are the correct choices for temperate and warm production regions.

Soybean cultivars are very sensitive to longitude and latitude and to height above sea level as well as to sunlight intensity. A height difference of only 100 metres between lands can influence final yield on the same cultivar.

Growth type

One of the biggest factors that can influence yield in any given year with differing climatic conditions experienced within a farming district or region is the growth type. Farmers in Brazil, which is one of the main soybean producers worldwide, are adapting to planting mainly indeterminate growth type cultivars.

What are the differences between indeterminate growers and determinate growers?
Much confusion exists amongst farmers as to the distinction between the two main types. Semi-determinate cultivars are also available and planted and add to the confusion in classification as the growth habits are observed in the field by farmers.

Indeterminate growers
An indeterminate soybean plant continues to grow and put on new leaves and nodes at the top of the plant while at the same time the plant sets flowers and pods at the bottom of the plant. As the growth season progresses, there may be full size pods at the bottom of the plant while at the top of the plant new leaves are still emerging.

Determinate growers
Determinate soybeans have a different growth pattern and complete their vegetative growth cycle first before they start to flower and set seeds.

A determinate soybean can therefore be a meter high and not have any flowers or pods where an indeterminate soybean may already be starting to set pods when the plant is 350 mm to 500 mm high.

The huge advantage of indeterminate varieties is the fact that they can recuperate after periods of dry weather. This was experienced in the Eastern Free State last season with the plants “delaying” flowering during the protracted January drought and that recovered to produce 1,4 tons/ha. Their effective growth season was almost three weeks longer than the theoretical period to maturity. This was a very definite financial advantage in this case.

Conversely if determinate growers experience a period of hot and dry weather when the plant is flowering and setting pods the plant may abort many of the flowers and pods. There is thus never a chance to set new ones later.

Plant height, pod height, standability and shattering resistance

The above factors are also important with the lowest pod height measured from the soil level to the lowest pods being important. This should be at least 10 cm to facilitate the maximum harvesting of the crop by the combine harvester. Plant height is genetically determined but will be influenced by the weather conditions experienced in a particular season and can vary from 65 cm to 100 cm.

The cultivars chosen should also show an ability to remain in an upright position after physical maturity until combining. Soybean pods will easily peel open and release seeds after physical maturity and drying out. If rainfall is received after this stage the shattering effect can be very bad. The only way to harvest these lost seeds is usually by putting in small stock in the land after harvesting.

Always plant a range of cultivars with different maturity periods so that the harvesting process can be completed in time for each land as the crop matures at different times.

Summary

Try to choose suitable cultivars taking into account all the factors shown above. The important factors include using cultivars that will be suited to the length of growing season on your farm. Include both determinate and indeterminate types with differing growth seasons and most importantly observe and record the planting dates and monitor the important agronomic characteristics and accurate final yield of each cultivar you have planted.

This information will be critical to cultivar choice and the future successful soybean production and the financial success of your farm.

Article submitted by a retired farmer.

Sprayer fundamentals – spray rig preparation and calibration

By calibrating your sprayer, you are establishing the correct spray application rate so that the exact and accurate amount of the chemical is applied per hectare. This procedure is critical to the performance of the chemical and its effectiveness in achieving the desired results.

You should know how many litres of liquid your spray tank will hold and then work out in advance how many spray tanks will be needed for a particular job. The spray application is different for each crop, different row spacing and the age, height and density of the crops. This means it is necessary to make new calibrations for each new block and each different crop. Most chemical companies should send a representative to assist and check on the calibration process and it is good for you to ask for this service, but it is advisable that every farmer should understand the calibration process.

David Malo, a maize and sunflower farmer near Deelpan in the North West Province, spraying his maize. David has been a beneficiary of recap funding from the Department of Rural Development and Land Reform, and has been mentored by Grain SA and John Mathews.

Natie Visser from Sannieshof is an agent for various seed and chemical suppliers. Here he is assisting David with the calibration of his sprayers.

Getting your sprayer ready

1. Clean the sprayer well and make sure there are no signs of rust or leaking.
2. Half fill the tank with plain water and then take the spray rig to a field with similar conditions to where the spraying will be done.
3. Check all the nozzles on the spray boom to make sure they are working effectively.
4. Know the exact width of your sprayer's boom and exactly how many nozzles it has.
5. Then find out how many passes your sprayer must make over 1 ha. See **Figure 1**.
6. The next step in the calibration process is to drive your spray rig over 100 m distance in the field conditions it will be working in and time the speed it takes to cover the 100 m.
7. Next you need to measure the output of one nozzle in the number of seconds it takes your spray rig to pass over the 100 m distance. This is done by collecting the output from one nozzle for the exact number of seconds it took your sprayer to cover the 100 m into a measuring jug.
8. Now that output of millilitres is multiplied by the number of nozzles on the boom to discover how much liquid is put down by the sprayer over 100 m of the field. That is: 1 000 ml from 1 nozzle x 12 nozzles on the boom = 12 litres of liquid output/100 m.
9. Multiply that result by the number of passes you calculated earlier that you need to do to cover 1 ha. That is: 12 litres x 10 passes = 120 litres/ha.
10. Now it is critical that you calculate the chemical concentration needed to be applied per hectare and adjust according to the litres of water your rig is putting out. For example, assuming your spray holds 600 litres and is putting out 120 litres/ha 600 litres divided by 120 litres = 5. This means you should cover 5 ha with one spray tank of chemical mix.
11. Refer to the label on the chemical bottle to discover how many litres or millilitres need to be put down per hectare and adjust accordingly. In the example above we have figured out the sprayer covers 5 ha/tank full of water. In this instance, you will then work out how much chemical to put into one tank for 5 ha.

Figure 1: Calculate how many passes your sprayer must make over 1 ha of land.

→ Calculate the width of the boom x 100 m = area in square metres (m^2)
(For example: If your boom is 10 m long, then 10 m x 100 m = 1 000 m^2

Since 1 ha = 10 000 m^2, we must then divide the sprayer's area covered in 100 m^2, into 10 000 m^2.
This is to discover how many passes the spray rig will need to make in order to cover 1 ha of the land.

→ For a 10 m long boom, the calculation will be:
10 000 m^2 divided by 1 000 m^2 = 10
This means that the spray rig will need to make **10 passes** over the land to cover 1 ha.

Now you have all the information you need

- You know how many litres your spray tank is spraying per hectare.
- You know how many hectares one spray tank is covering.
- If the amount of water required is not adequate, it can be fine-tuned by adjusting the pump pressure either upwards or downwards. This will give you more or less water output.
- If you change the output of water, then you must do all the calculations over again.
- **DO NOT** adjust the pressure after the sprayer has been finally calibrated and set.
- Adjust the chemical and water concentration according to the number of hectares one spray tank full will cover.

Very important

- After the first full tank has been applied in the lands, it is very important to measure the area that has been covered to confirm that your calibrations are correct. Make adjustments if necessary.
- Check that all the nozzles are working correctly and are not blocked.
- Check that the tanks' filters are cleaned daily to ensure the flow is consistent.

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

Grain SA hosted farmers at Agri Mega Week

Grain SA sponsored a guest tent during the Agri Mega Week (18 - 21 September 2013), held in Bredasdorp, in order to accommodate all Grain SA members, grain industry role-players and members of the media. Provincial managers from the Western and Southern Cape as well as Jannie de Villiers, Louw Steytler and Susan Engelbrecht from the Grain SA Head Office attended this event.

Friday was the highlight of the event, with very good attendance from our developing farmers throughout the Western and Southern Cape. Farmers had the opportunity to speak to Louw Steytler and Jannie de Villiers, and were also presented with the opportunity to discuss their thoughts on what the future holds regarding land availability in the Western and Southern Cape. Many farmers revealed their appreciation to Grain SA and feel confident in the guidance and support that has been given so far, and also feel assured concerning their support in the future.

Although Grain SA presented nearly 38 courses in the Western and Southern Cape during the last three months, there is still a great need for training. Many developing farmers voiced their need for training and this need will surely be addressed in the coming months. The Agri Mega Week also presented Grain SA with the opportunity to inform the farmers residing in the Western and Southern Cape as to what Grain SA is busy with throughout the rest of the country with regards to study groups, training, farmers' days and school programmes, and as such motivated the farmers to follow suit.

Article submitted by Liana Stroebel, Pula/Imvula contributor. For more information, send an email to liana@grainsa.co.za.

Crop estimates

How does it work and why is it important?

If you say that the Crop Estimates Committee of the Department of Agriculture, Forestry and Fisheries (DAFF) determines the size of the maize crop, you are 100% correct! The official information released by this committee is extremely important, as Grain SA and other role players base their supply and demand projections on it, and it therefore has a direct impact on maize prices in the free market.

This article briefly discusses the basic activities of the Crop Estimates Committee to avoid misconceptions about what exactly is estimated. Although maize is used as example, the committee estimates not only the size of the maize crop, but also the size of the other grain and oilseed crops.

Aim of the Crop Estimates Committee

The aim of the Crop Estimates Committee is to release reliable, accurate and unbiased crop estimate statistics to the benefit of all the role players in the sector – whether they be farmers, financial institutions, input providers, buyers, transport agents, agricultural economists of other decision-makers. The release of accurate and timeous information on the size of the maize crop is therefore a prerequisite because of the effect this has on the maize price.

What does the Crop Estimates Committee estimate?

Although most of the role players have a sound understanding of what the Crop Estimates Committee estimates, there are still certain misconceptions. The Crop Estimates Committee estimates the total maize crop, regardless of whether:

- the farmer supplies the maize to a commercial structure for selling/storage (for example to an agribusiness/cooperative, miller, processor, dealer et cetera);
- the farmer supplies the maize to a commercial structure for custom milling/gristing;
- the farmer sells maize to his fellow farmer(s) to use in the feeding pen, dairy, mill, for poultry et cetera;
- the farmer holds back a part of the maize on his farm for own consumption/processing; and
- the seed will be used for planting purposes or not.

Method used to estimate a crop

Various types of information are used to estimate the size of South Africa's total maize crop. The information that is used is then classified according to importance. Information that is used derives from: surveys, modelling, personal contact with farmers/study groups/agri-businesses etc etera as well as monthly reports by various role players.

> *"The aim of the Crop Estimates Committee is to release reliable, accurate and unbiased crop estimate statistics to the benefit of all the role players in the sector.*

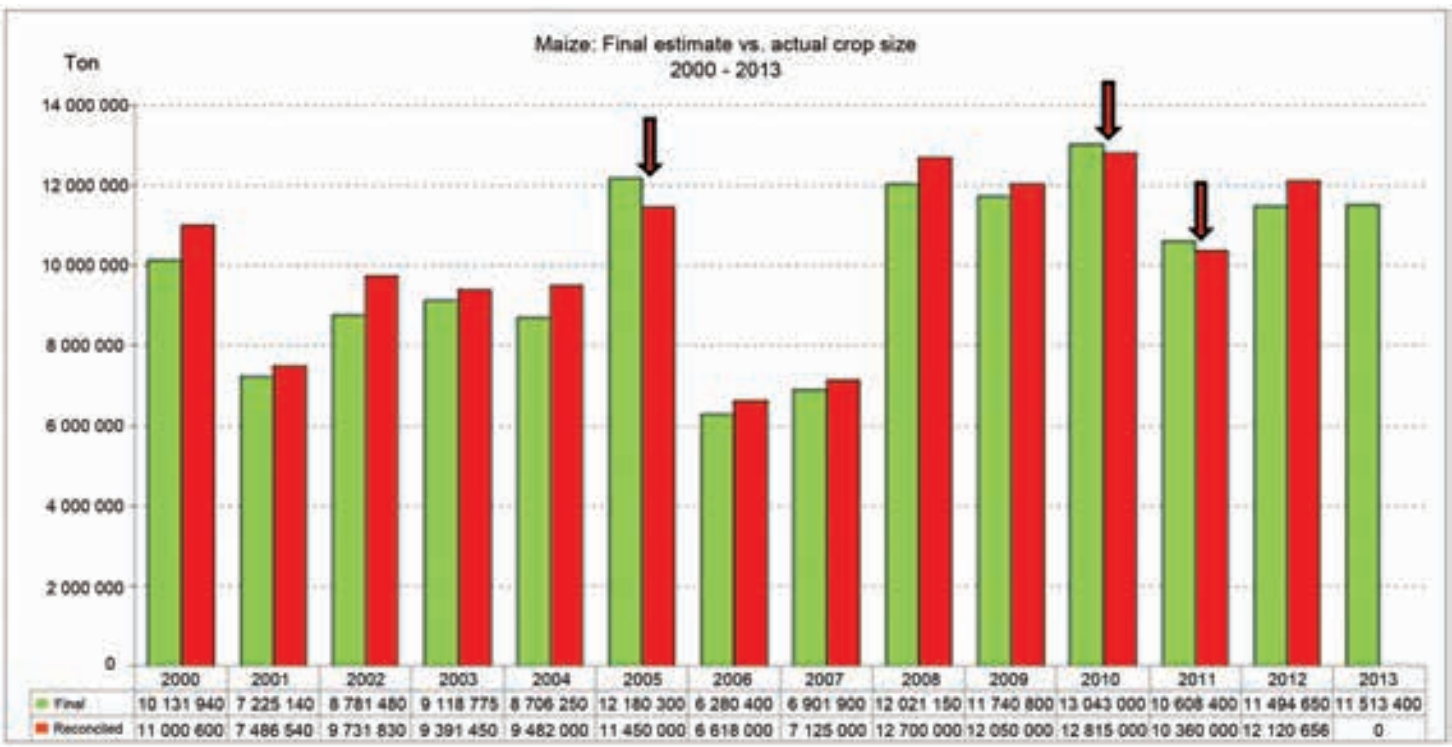
How is the total crop calculated at the end of the season?

At the end of a production season information from physical farmer deliveries to commercial structures, together with physical hold-backs on farms, is used to determine the size of the crop.

Farmer deliveries, which usually constitute between 95% and 97% of the total crop, are monitored by the South African Grain Information Service (SAGIS).

Hold-backs on farms for later delivery and/or own use are estimated at the end of the harvesting process by way of surveys

Graph 1: Estimate of the Crop Estimates Committee over the past 13 seasons.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Final	10 131 940	7 225 140	8 781 480	9 118 775	8 706 250	12 180 300	6 280 400	6 901 900	12 021 150	11 740 800	13 043 000	10 608 400	11 494 650	11 513 400
Reconciled	11 000 600	7 486 540	9 731 830	9 391 450	9 482 000	11 450 000	6 618 000	7 125 000	12 700 000	12 050 000	12 815 000	10 360 000	12 120 656	0

undertaken by the Department of Agriculture, Forestry and Fisheries and the National Crop Estimate Consortium. These hold-backs are calculated and added to the SAGIS deliveries to determine the actual size of the maize crop.

Information on seed is obtained from SANSOR (South African National Seed Organisation). To summarise:

TOTAL CROP = SAGIS farmer deliveries + hold-backs on farms + seed.

From the above information it is therefore clear that the estimate by the Crop Estimates Committee and the SAGIS farmer deliveries cannot be reconciled.

Role of the farmers

It is important for the Crop Estimates Committee to obtain input from farmers, as it can be stated unequivocally that farmers (questionnaire survey) are one of the most important sources of information for the committee to provide an accurate estimate. The more farmers per area (magisterial district) who provide the Crop Estimates Committee with accurate inputs, the better the final estimate will be.

The reasons why farmers should regularly send their information to the Crop Estimates Committee are the following:

- Area information is the most important input after the information obtained from the consortium.
- Yield information serves as the only input at the beginning of the season as well as at the end of the season.
- The intention of farmers to plant crops is based only on inputs from farmers.
- Greater participation leads to better representation.
- Better representation leads to farmers' information carrying greater weight in determining the estimate.
- Differences/variances can be identified sooner.
- Yield information at the level of magisterial districts can be calculated accurately.

How accurate is the crop estimate?

Over a period of 13 seasons the committee estimated the maize crop to be higher than that realised only three times. The committee therefore tends to underestimate the crop more regularly than it overestimates. **Graph 1** indicates the record of the Crop Estimates Committee over the past 13 seasons with its final estimate compared to the actual crop size for maize.

Conclusion

Grain SA focuses on ensuring that accurate information reaches the market place. Grain SA would therefore like to express the hope that producers will cooperate in assisting the committee to carry out this important task. Better participation by farmers not only facilitates the task of the committee, but also means that the farmers' estimate carries more weight in the provision of an estimate.

Article submitted by Petru Fourie, Economist: Inputs/Production at Grain SA. For more information, send an email to petru@grainsa.co.za.

Apply your fungicides wisely

Much has been written in the past on the various diseases that impact negatively on crops and the importance to correctly identify the problem pathogen before initiating spraying programmes.

Bacterial leaf streak and even sunburn damage have proven to be very deceptive in this regard, and care should be taken not to attempt to control them with fungicides.

Once die pathogen has, however, been correctly identified and is indeed a fungus, fungicides should be administered with great care. The effective control of plant pathogens within a plant production system is a critical component in the objective of achieving optimal yields.

It is therefore required that fungicides are administered to such an extent that the optimal yield is obtained. Optimal control is, however, not only required to ensure that financial expenses are justified, but also to ensure that fungicide resistant fungal populations do not occur in the process.

A lack of knowledge on fungicides and how they work, could therefore not only result in financial loss through ineffective sprays, but could also create a situation in a production system which will be extremely difficult to control.

Fungicides differ from each other in various ways. Knowledge about the strong, but also weak points is essential for effective control and also to ensure that resistance build-up against the available fungicides does not occur.

The cornerstone of fungicides is their active ingredients

Fungicides are classed with regard to their mode of action, which in turn is determined by the active ingredient. A very simple explanation as to how fungicides work is that fungicides disrupt the metabolism of the plant pathogen. This disruption impedes the development of the pathogen or results in the death thereof.

Various fungicides are available, each with different active ingredients. These active ingredients work in at different points of the metabolism pathways of fungi. Some active ingredients are very specific in their mode of action and will for example block the activity of a specific enzyme or groups of enzymes. Others will inhibit various metabolic steps, which mean that they are less selective with regard to the fungi they influence.

Contact versus systemic fungicides

As contact fungicides cannot penetrate plant tissue to reach existing fungal structure, it can only protect the plant where it has been applied.

Time of application is critical as such chemicals must already be on the plant surface before the pathogen has infected. It is in addition necessary that the fungicide spray is administered as a uniform layer on the plant surface to ensure effective protection.

Contact fungicides normally have a broad spectrum activity which minimises the risk of a pathogen developing resistance to the fungicide. The negative aspect of this fungicide is that it will only be effective against the first phase of the development of the pathogen. Once the pathogen has been successful in infecting the plant tissue, the fungicide will have no effect on the pathogen, and the pathogen will continue to cause disease.

New plant growth that develops after the initial spray, will not be protected and more regular follow-up sprays will be required (compared to systemic fungicides).

Climatic conditions as well as the plant growth stage are important factors when follow-up sprays are considered. Contact fungicides administered to leaves; provide protection for between seven to ten days. Maneb, chlorothalonil and mancozeb are examples of contact fungicides.

Unlike contact fungicides, systemic fungicides have the capability to penetrate plant tissue and have some degree of mobility as they are able to move within the leaves. Some of the systemic fungicides, such as azoxystrobin, benomyl, carbendazim, etc also move via the xylem to the upper plant parts.

They are capable to express their activity within the plant tissue and are selective in their mode of action. Only a specific group of related fungi are affected by these fungicides. Triazoles are less specific systemic fungicides and have a wider activity spectrum.

Triazoles, such as difenoconazole, cyproconazole and propiconazole, demonstrate translaminar as well as upward movement, but the degree and speed of the movement differ.

Aerial fungicide application.

Depending on factors such as climatic conditions as well as the developmental phase of the plant, an average of 10 to 21 days of protection can be expected.

Corrective versus preventative

Fungicides are accordingly also classed based on the stage at which they affect the pathogen. Preventative fungicides prevent infection and the establishment of the pathogen. All fungicides have some form of preventative action. As contact fungicides are unable to penetrate the plant, they are viewed as preventive fungicides.

Some systemic fungicides have corrective qualities, which imply that they have the capability to stop infection that occurred a few hours or days before the spray was administered. The fungicide will not be able to control the disease if the fungicide was administered too long after infection occurred and if the degree of infection is too high.

Resistance management

Various reasons exist for the ineffectiveness of fungicides, of which the too early or too late application is very common. Other possibilities include wrong application concentration, irregular application as well as the uneven covering of leaf surfaces. When everything has, however, been done correctly and insufficient control is still obtained, consideration should be given to the possibility that a fungicide resistant fungal population is present.

Continuous use of the same class of active ingredients can result in resistance build-up of the pathogen. This resistance can occur as a result of genetic change that occurs in the cells of the pathogen. Such genetic mutations will initially be present in only a small fraction of the fungal population in a specific region. When fungicide is applied, this small population of resistant fungi will survive and multiply. Resistant populations will therefore always start out small and will take years before their presence is detected.

Various degrees of resistance against fungicides exist. A fungus can for example only show resistance against an active ingredient of a specific fungicide. Cross-resistance refers to a greater degree of resistance that implies that the fungus demonstrates resistance to all active ingredients belonging to the same family (e.g. triazole or storbilurin-group). Multiple resistance refers to resistance against various fungicidal families. An example of such a resistance is when a fungus is not effectively controlled by either the triazole or storbilurin families.

Care should therefore be taken with the use of fungicides to ensure that a situation is not created that result in an unmanageable disease. Spraying programmes should be structured as such that they consist of a variety of active ingredients with different modes of action. (e.g. the use of both systemic and contact fungicides).

Unnecessary applications at insufficient dosage rates should be avoided. Not only will this result in financial losses, but it will also contribute to the generation of fungicide resistant populations. Other agronomical approaches such as the implementation of crop rotation with non-host crops as well as the use of resistant genotypes will also assist with the management of the disease and ensure that resistance build-up does not occur.

Article submitted by Maryke Craven, ARC-Grain Crops Institute, Potchefstroom, for SA Graan/Grain November 2012. For more information, send an email to CravenM@arc.agric.za.

How do I record rainfall and why is it important?

In South Africa, where sunlight and temperature are not restricting factors during the growing season, rainfall is the most important climate element.

Rainfall is measured in units of millimetres. There is a general misconception that rainfall is measured as a volume like the contents of a bottle of soft drink or beer, because of the use of a cylinder that measures the "volume". Rainfall is, however, actually measured as the "height" of the layer of water on a horizontal surface. A rainfall figure of 20 mm indicates that there was sufficient rainwater to cover the area with a layer of 20 mm of water.

Standard rain gauges consist of a water-collecting "bucket" and secondly a measuring cylinder. A smaller diameter cylinder is used that converts the thickness of the layer of water to a volume, but it is, however, important that the cylinder is calibrated for the diameter of the water-collecting bucket. The reason for using a smaller transparent cylinder is that the diameter of the rain gauge (water-collecting bucket) must be as wide as possible in order to get the most representative amount of rainfall into it, but it is very difficult to read the thickness of the layer of water in a cylinder with a large diameter. A small error in the deviation from the horizontal position can result in a large error in the measurement. A transparent cylinder with a smaller diameter is much more convenient, with the horizontal error much smaller.

The diameter of a standard World Meteorological Organisation (WMO) rain gauge is 15,95 cm, that corresponds to a surface area of 200 cm^2.

The most used rain gauges in South Africa are the cone shaped plastic types. It is a compromise between a large surface water-collecting area and a relative accurate rainfall measurement, especially for smaller rainfall amounts. The problem is that it is not very durable and small invisible cracks are often responsible for water leakages and inaccurate measurements.

It is also important to have the placement of a rain gauge correct. The "splash" effect of surfaces like nearby roofs and other obstructions, can "add" to the amount of rainfall. It is also important to have the rain gauge in an open space with the nearest obstruction not less than three times the height of the obstruction (like a tree et cetera) from the rain gauge. For example: The height of the nearest tree is 5 m. The rain gauge must not be closer than 5 m x 3 m = 15 m from the tree. It is also important to have the top of the rain gauge about 1,4 m above the surface of the earth. If rain gauges are too high, the wind will have a more severe effect and can record less rainfall. If the rain gauge is too close to the surface of the earth of other obstructions, it is possible to have "additional" rain resulting from the splash effect into the gauge. It is also very important that the rain gauge or bucket must be 100% level.

Why is it important to measure rainfall?

Rainfall is an indication of the amount of water that is available for agricultural production under rain fed conditions. It is important for a farmer to have knowledge of his natural resources in order to make best use of these resources. Rainfall, soil and temperature are the most important natural resources to a farmer's disposal. Building up rainfall records over time provides a tool to guide specific actions in agriculture. For example: For the maize farmer it is important to plant his crop in a specific window during the season so that the very sensitive flowering and post-flowering stages coincide with the highest probability for rain. If he plants his maize crop with the first rain in summer, the maize crop will most probably be in the sensitive flowering stage in the midsummer dry spell in December and January and will subsequently result in yield losses. By analysing historic rainfall trends, the maize farmer can optimise his planting date and decrease the risk for yield losses. Another very important use of historic rainfall statistics is when a new farming enterprise is considered. The amount as well as distribution of rainfall over time can then give an indication

> *"Rainfall is an indication of the amount of water that is available for agricultural production under rain fed conditions. It is important for a farmer to have knowledge of his natural resources in order to make best use of these resources.*

of the suitability of the specific crop or enterprise for the specific area.

Rainfall history can also be a very useful tool for livestock and rangeland farmers. The risk for drought is always one of the main considerations for the livestock farmer. A farmer must make provision for drought by building up dry matter reserves. Analysing historic rainfall figures can provide information of the intensity, duration as well as frequency of drought. It can also assist in the fodder flow programme by knowing the dry and wet months during "normal" years and therefore when to market his animals or to synchronise it with his calving or lambing season.

For more near real-time use, it is also important to know the amount of rainfall. Rainfall intensity is often responsible for misleading real-time observations. Actual rainfall measurements provide a more accurate estimate of water in the soil, depending on the soil surface characteristics like clay content, crusting et cetera. Measuring rainfall can assist the farmer in anticipating the reaction of crops and rangeland to the amount of water. With some training and experience, farmers should be able to immediately relate specific rainfall amounts to specific actions, depending on the soil type, condition of the surface and time of the year.

Article submitted by Johan van den Berg, Manager: Specialised Crop Insurance at Santam Agriculture, Bloemfontein. For more information, send an email to johan.vandenberg@santam.co.za.

Grain SA interviews…

Alan Jeftha

This month our editorial staff took some time out of their busy schedules to get to know Alan Jeftha. Alan farms near Suurbraak and Constantia in the Southern Cape. Read more about this motivated farmer who believes in conservation and no-till farming.

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

I farm near Suurbraak and have two components to my farming, namely grain (wheat, canola and barley) and livestock (Fleckvieh Simmental cattle, Hampshire Down sheep for lamb and wool production as well as Saanen dairy goats). I have also established a Shiraz vineyard near Constantia. At Suurbraak I planted 90 ha to grain, 25 ha to medics for pastures and then I have about 50 ha of veldt for grazing. At Constantia I have planted 1 ha to Shiraz on a trellis system.

What motivates/inspires you?

I am motivated to farm commercially and to contribute to food production in our country, whilst protecting and nurturing the environment and contributing to job creation. I believe in conservation and no-till farming as well as in preserving the Renosterveld that we have at Suurbraak, and learning how to farm commercially and doing so in harmony with the biodiversity that exists in the veldt surrounding Suurbraak.

Describe your strengths and weaknesses

My strengths are that I am a good listener and eager to learn from my mentor, Dirk van Papendorp as well as from my colleagues who are also members of Suurbraak Grain Farmers Co-operative. My weakness is that I do not manage my time well, seeing as I believe in community development and assisting with poverty alleviation and this can take up a lot of time.

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

I started three years ago with grain production when I planted 45 ha under wheat and oats, and subsequently harvested 1,5 tons/ha. This year I am planting 90 ha under grain and 25 ha under medics, and my grain yield is now 2,2 tons/ha. Next year I intend on planting 125 ha under grain and will increase land under medics to about 35 ha. With conservation farming and building up crop residue on the grain fields and managing grazing, I hope to increase the carbon content in my fields by building micro organisms and monitoring water retention, and thus hope to increase wheat or barley yields to 2,5 tons/ha and canola yields to 1,5 tons/ha.

What would you say is the main contributor to your progress and success?

Mentorship, support and training from Grain SA and its systems as well as ongoing education.

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

I have received training in modules 1 and 2 in Wheat Production, presented by Grain SA. I have also completed Equipment and Tractor Maintenance from SSK, Winemaking and Viticulture from Stellenbosch University as well as Cheese Making and Honey Bee Farming coursers. I have made goats cheeses and is now increasing the Saanen herd to about 120, so that I can run a cheese and yoghurt processing plant on my farm near Suurbraak. As part of biodiversity, I also manage about 30 bee hives and will increase this number to about 100 hives, which we will build ourselves.

Where do you see yourself in five years' time?

In five years I would like to farm and produce grain on 150 ha, I want to reduce my cattle and increase the dairy goats to about 200 animals, and also farm with sheep and honey bees in Suurbraak. I want to produce about 12 tons of Shiraz at Constantia and then make my own wine under our trademark Constantiavale brand. I also want to farm with Suurbraak Grain Farmers Co-operative on a farm where we plant at least 1 000 ha under grain.

What advice do you have for young aspiring farmers?

Listen to and learn from successful commercial farmers and industry bodies such as Grain SA, apply conservation farming practices and undergo ongoing training.

Article submitted by Liana Stroebel, Pula/Imvula contributor. For more information, send an email to liana@grainsa.co.za.

The Corner Post

The Maize Trust – continuous improvement of the entire industry

The Maize Trust came into existence in August 1998 after long and difficult negotiations between the then Minister of Agriculture, Forestry and Fisheries and representatives from the maize industry, following the demise of the Maize Board. The provisions and stipulations of the Deed of Trust are the result of these negotiations.

These provisions were a compromise by both the minister, on behalf of government, and industry role-players. However, first and foremost in everybody's mind at the time were the benefits that a trust of this nature could bring to the maize industry as a whole.

The Maize Trust was therefore born as the custodian of industry, which is to be used to the advantage of the industry at large, within the agreed principles and policies as stipulated in the Deed of Trust.

What are the responsibilities of the Maize Trust?

The trust serves the industry through financial support for institutions and organisations with programmes aimed at market and production related research. The secondary objectives of the trust are to fund the assimilation and dissemination of market information, and to broaden market access for the benefit of the maize industry.

The trustees are not remunerated for their services, but are reimbursed for their direct and indirect expenses on behalf of the trust. The Board of Trustees comprises six members and is appointed for a term of two years. Three of the trustees are appointed by specific maize industry sectors, while the other three trustees are appointed by the Minister of Agriculture, Forestry and Fisheries.

The mission of the Maize Trust is to facilitate the continuous improvement of the entire maize industry in South Africa in order to ensure that the industry becomes the leader in the region and that it is internationally competitive. The Deed of Trust does not specify beneficiaries, but only lists the objectives of the trust. This means that funding from the trust can be accessed by anybody in the maize industry who can demonstrate that the intended programme will benefit the industry as a whole. The trust's funding is aimed at the financial support of actions and programmes by acceptable institutions that are involved in the maize industry.

The costs of the trust are strictly managed and are kept as low as possible. This proves the fiduciary responsibility of all the trustees that have been appointed to the trust over time and is still the case up to this day.

Over the years the trust has endeavoured to identify and implement new initiatives in conjunction to the normal funding of projects that would benefit the industry. There are several successful initiatives that have been launched by the trust since its inception, which have all benefited the maize industry and often also created opportunities and benefits for the other grains and oilseeds industries. A few of these initiatives were initiated by the Maize Trust and in others the trust played an important part with the funding thereof. Some of the highlights in the industry where the trust has or is still playing an important role, are the following:

- The development and co-funding of the Southern African Grain Information Service (SAGIS) and the Southern African Grain Laboratory (SAGL).
- The development of a model to predict the effect of changes in the agricultural industry (BFAP).
- The development of a crop estimates model (DAFF/SiQ (Pty) Ltd).
- A generic marketing campaign for maize ("Pap Idols").
- South Africa's participation in the WTO dispute on trade subsidies.
- The launch of the Maize Trust Bursary Scheme.
- The launch of a pilot project to assist black emerging farmers and the formation of the Grain Farmer Development Association (GFADA).
- The allocation and distribution of maize meal to the value of R1 million to help the poor.
- The application on behalf of all the agricultural trusts to get clarity on the tax exemption status of the trusts.
- The development and erection of the Grain Building in Pretoria.

"The trust serves the industry through financial support for institutions and organisations with programmes aimed at market and production related research.

- The development of a common and focused mycotoxin research strategy and a dedicated panel of mycotoxin experts.
- Implementing a system of funded internships at universities and industry entities for bursary students of the trust.
- The development of a Public-Private-Partnership to possibly co-fund the approved mycotoxin research projects in future.
- The development of a conservation agriculture strategy for maize and the appointment of a specific facilitator to drive this process.

Who serves on the Maize Trust and why them?

Continuation of trustees is extremely important to ensure the correct functioning of the trust. During the past financial year there were no changes to the trustees. The composition of the Board of Trustees is thus as follows:

- Karabo Peele – ministerial representative
- Toto Hewu – ministerial representative
- Penny Daly – ministerial representative
- Jannie de Villiers – white maize producer representative
- Neels Ferreira – yellow maize producer representative
- John Purchase – maize processor representative

The composition of the trust was also a negotiated agreement between government and the maize industry in the 1990's, in an effort to provide fair representation to the parties involved.

What exactly does the Maize Trust contribute to the Farmer Development Programme?

The trust currently contributes approximately R14 million per annum to the Farmer Development Programme, which represents the lion's share of the costs of that programme. This programme has always been supported by the Maize Trust and is generally seen as the most successful development programme for emerging farmers in the grain industry.

The Farmer Development Programme receives enormous support from the Maize Trust. Why do you think that farmer development is important to the Maize Trust and what does it hope to achieve?

The Maize Trust is committed to capacity building in the South African maize industry. The training and development of new farmers is a crucial part of this and will always be supported by the trust. Without successful farmers, the industry and the country will suffer, because reliance on imports is not regarded by the trust as a long-term solution to food security.

It is also crucial for farmers to be well trained in order to be more competitive in the international market. During the last few years South Africa has proved to be a regular exporting country for maize and international competitiveness is imperative for our farmers to survive. The trust supports farmer development for these reasons, in the belief that sustainable commercial production of maize will achieve food security and independence of our country from other sources.

Inspirational quote or take-home message to our developing farmers:

"Without commitment, training and faith, farming cannot be a success and will only prove to be a burden."

This month's edition of The Corner Post was authored by Leon du Plessis, Maize Trust Administrator. For more information, send an email to l-lagric@mweb.co.za.

CREATING EXCELLENCE!

PANNAR®

Together we farm for the future

www.pannar.com

GLOBAL TECHNOLOGY LOCAL PERFORMANCE

We are proud producers of the finest quality maize, soybean, sunflower, dry bean, wheat, grain sorghum and forage sorghum cultivars as well as various forage crops

Harry Matebese	Developing Market Manager	079 705 0415
Reggie Mchunu	Agronomist	082 098 5242
Vusi Ngesi	Eastern Cape	071 678 1533
Welcome Zulu	Zululand	082 973 6604
Hendrik Mokoto	North West	082 767 7333
Karabo Puswe	Limpopo / Mpumalanga	082 715 4878