PULA IMVULA

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

GRAIN SA
GRAAN SA

JANUARY
2018

PANNAR®

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 AND 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

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

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

Jurie Mentz
Mpumalanga/KwaZulu-Natal (Louwsburg)
▸ 082 354 5749 ◂ jurie@grainsa.co.za
▸ Office: 034 907 5040 ◂ Sydwell Nkosi

Graeme Engelbrecht
KwaZulu-Natal (Dundee)
▸ 082 650 9315 ◂ dundee@grainsa.co.za
▸ Office: 012 816 8069 ◂ Nkosinathi Mazibuko

Luke Collier
Eastern Cape (Kokstad)
▸ 083 730 9408 ◂ goshenfarming@gmail.com
▸ Office: 039 727 5749 ◂ Luthando Diko

Liana Stroebel
Western Cape (Paarl)
▸ 084 264 1422 ◂ liana@grainsa.co.za
▸ Office: 012 816 8057 ◂ Hailey Ehrenreich

Du Toit van der Westhuizen
North West (Lichtenburg)
▸ 082 877 6749 ◂ dutoit@grainsa.co.za
▸ Office: 012 816 8038 ◂ Lebo Mogatlanyane

Sinelizwi Fakade
Mthatha
▸ 071 519 4192 ◂ sinelizwifakade@grainsa.co.za
▸ Office: 012 816 8077 ◂ Cwayita Mpotyi

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

NKGONO JANE SAYS...

IN THIS ISSUE...

I would like to apologise to you all for the fact that you did not receive the Pula Imvula for November and December. As we have always acknowledged, we are very dependent on the Maize Trust for the eight-page monthly Pula Imvula.

Unfortunately, this year the approval of the application was delayed and we had to stop the Pula Imvula until the funding had been secured. We are happy to be starting again and hope that we will not miss any more for a long time! I believe that we miss this communication as much as you do – it is our way of talking to you all, wherever you are.

It is the New Year already. For three years, we had drought and then we got a good crop. But, the price was low. This is one of the very difficult things with farming – the price is dependent on the supply and demand – when there is too much of one product, its price drops. When there is not enough, then the price is high. The low prices were bad for most, but they did mean that the consumers were able to pay less for their maize meal – they can thank each one of you for that – the fact that you produced so much maize, helped to bring down the price to the consumers. One of our major tasks is to produce food for the whole country – we did it so well that we suffered. I hope that many of you were also able to keep some for your livestock – they will also have benefited from the surplus.

The predictions for this season are good – we hope that the production of all the crops will be in balance and that you will have a good crop and get a good price – this would be a double blessing.

Our Jobs Fund project has expanded again this year – we have 3 804 farmers in the programme this year and they will be planting more than 5 300 ha. This programme has grown very much from its humble beginnings three years ago (it was 850 farmers on 850 hectares). We did experience some funding challenges this year and we are hoping to be able to request the departments of Agriculture and Land Reform to pledge their long-term support to the programme (through their One Hectare One Household programmes). Without their help, we are not sure if this programme will be able to continue. If you would like the programme to continue, it would help us very much if you also speak to the local officials and ask them to become part of the programme so that we can share the costs.

I would like to wish you all a very Happy New year – good health to you all, enough rain to sustain the crops and peace for our country. We live in a beautiful country and we are involved in the greatest job on earth – FARMING. Be blessed.

With HARD WORK, there are no limits

If you love a celebration and are looking for something to celebrate, the website, *http://www.holidayinsights.com/moreholidays/*, is a great help. Here bizarre, unique and different days are listed so that everyday can be a celebration.

For example, on 22 February you are not allowed to talk about your success or accomplishments as it is 'Be Humble Day'. 'No Diet Day' is celebrated on 6 May where people are encouraged to accept their bodies, while International Joke Day is scheduled for 1 July when telling a joke is appropriate throughout the day no matter where you are.

A day to celebrate

Grain SA's Farmer Development Programme added their own special day in 2009 – the Day of Celebration. On this day the achievements of the farmers who are part of this programme is celebrated. During the event acknowledgement is given to farmers for the arduous work they put in throughout the year. Whether the year has been challenging with low yields realised or a good rain season has produced record high yields, the festivity takes places as a celebration and overshadows any of the trials that the farmers were faced with during the year to reach the end of the production season. This day also gives the farmers and the Grain SA team – management, mentors and provincial co-ordinators – an opportunity to relax at a beautiful venue and compare notes about the past season.

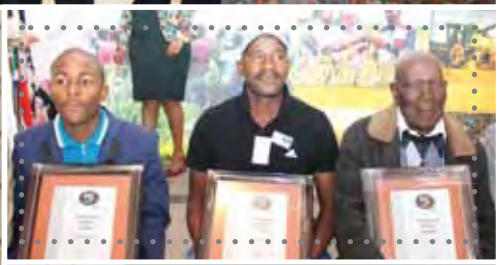
On 5 October 2017 more than 300 guests which included government representatives, agricultural stakeholders and approximately 150 emerging grain producers, many sporting colourful traditional outfits, attended the 2017 Day of Celebration. This year the farmers' progress and hard work were acknowledged at the Sandstone Sleeper Estate on the outskirts of Bloemfontein. With 17 new farmers joining the 250 Ton Club and 21 becoming members of the 500 Ton Club, it was clear that the valued advice Grain SA's team and mentors share with the emerging farmers is making an impact in the lives of developing farmers.

The main sponsors of this wonderful occasion were represented by Dr Langa Simela (Business Development Manager: Absa AgriBusiness), Mr Ferdie Marx (Area Alliance Manager: John Deere Financial sub-Saharan Africa), Linda van der Merwe (Head: Customer Marketing, Syngenta SA) and Dudu Mashile (Sales Manager: Emerging Markets, Monsanto).

As the end of the formalities Jane McPherson (manager: Farmer Development, Grain SA) thanked the friends of the programme – those individuals who support the programme to ensure its continued existence. These include the Maize Trust, Winter Cereal Trust, OPOT, Monsanto, Afgri, Pioneer, Pannar and Sasol Base Chemicals. Jannie de Villiers (Grain SA CEO) expressed his gratitude to every developing grain farmer who is willing to be mentored and taught, thereby ensuring a growing harvest of grain farmers each year.

The most successful harvest of grain farmers

As most winners know, there is no secret recipe for success. It is the result of hard work, dedication and determination as the following four 2017 category winners learned.



Photos: The achievements of the farmers who are part of the Grain SA Farmer Development Programme were celebrated on 5 October last year.

With hard work, there are no limits

The 2017 Grain SA/Absa/John Deere Financial New Era Commercial Farmer of the Year was presented to Edwin Thulo Mahlatsi from Bothaville in the Free State at the prestige function at The Theatre on the Track in Midrand on Friday, 13 October last year. As the winner, he received a brand-new John Deere 5065 MFWD OOS tractor sponsored by John Deere Financial. Edwin is a grain producer on the farm Swartlaagte which he obtained through the government's PLAS programme. This year he yielded a substantial 5 and half tons/ha. The other finalists in this category were Remember Mthethwa from Dundee and Lolwane Vuyani from Lichtenburg. (Read more about Edwin in the February issue of *Pula Imvula*.)

A new category, **Grain SA/Monsanto Potential Commercial Farmer of the Year**, was introduced this year for farmers with access to more than 100 hectares of arable land, but who are currently not able to use all of the available land but are able to become 250 Ton New Era Commercial farmers. The winner of this new category, Paul Malindi, from Edenville in the Free State, says agriculture is in his blood. He was granted the use of this 441 ha farm through the government's PLAS programme in 2012 and joined Grain SA's Farmer Development Programme the same year. Paul is one of the founding members of the Edenville Study Group. The fact that he implemented all the advice he has been receiving over the years, paid off this year. The other finalists were also both from the Free State, Daniel Tshidiso and Ruben Mtlhanbae.

Thembalihle Hopewell Tobo, the winner of the **Grain SA/Syngenta Smallholder Farmer of the Year 2017**, hails from Ndunge near Bizana in the Eastern Cape. He started farming in 1996, became a member of Grain SA in 2006 and is currently the chairperson of the Ndunge Study Group. Tobo harvested more than 5 tons/ha on his 15 hectares of maize. Apart from the maize component, he also has a soya milk value-adding enterprise which is steadily growing. He is a dedicated farmer who is seen as a role-model in his community. Meluxolo Mfoxo from KwaZulu-Natal and Samson Shuwisa from Mpumalanga were the other two finalists in this category.

The **2017 Grain SA/Absa Subsistence Farmer of the Year**, Mavis Hlatshwayo (55) joined Grain SA in 2005 and is mentored by Jerry Mthombothi (developing co-ordinator). She dreams of owning more land to create job opportunities for the unemployed in her community. Mavis is always willing to share the knowledge she gains at the study group meetings, workshops and courses arranged by Grain SA with less experienced farmers in the area. The other finalists in this category were Elliot Siphowe Gumbi from KwaZulu-Natal and Solomon Ghasa Dhlongolo who hails from Mpumalanga.

Start preparing for next year

Every morning in Africa, a gazelle wakes up, it knows it must outrun the fastest lion or it will be killed. Every morning in Africa, a lion wakes up. It knows it must run faster than the slowest gazelle, or it will starve. It doesn't matter whether you're the lion or the gazelle; when the sun rises, you'd better be running. Although the origin of this proverb is debatable, the meaning is very relevant. Farmers, don't just dream of being the next winner, wake up and work hard at it – you may just be one of the stars of the 2018 Day of Celebration.

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

Put yourself in others' shoes

Respect is one of the cornerstones of any social society, and respect also lies as the center of solutions for this country. But our understanding of respect lacks some content.

According to the dictionary respect is a feeling of deep admiration for someone or something elicited by their abilities, qualities, or achievements. But very few of us understands the second part, the part that says respect is due regard for the feelings, wishes, or rights of others. In other words, can you put yourself in the shoes of others? And here we fail. If we have respect for others, we would firstly think of the effect our words and deeds would have on others, before we speak or do.

The Bible tells us in Matthew 5 about the reward for people that master this talent. But the Beatitudes sermon also tells us about a lot of other qualities that the Lord will reward excessively. All qualities that a Christian should have.

But in the shoes of others one should also look back at oneself. To who and what you see. Christmas time is a time of festivity and family, of reflecting at the past and looking toward the future. Let this also be a time for introspection. Who do others see in you? Is it Jesus Christ? That is what the Word expects of us.

A wonderful 2018 lies in front of us if we all are willing to be of service to others, with the good Lord's assistance and guidance, and as communities determine our own route to the future. We have the responsibility toward ourselves and our children's future to break from the darkness around us, all the negativity, break from the past and focus on things that are positive and constructive.

Blessed are they who walk in the shadow of God's Word! May this year be blessed for you, your family and your community, and may his Beatitudes be upon you!

Article submitted by Jaco Minnaar, Chairman of Grain SA. For more information, send an email to jaco@compuking.co.za.

Keep on trying new things

The country is in desperate need for some good news, so is the agricultural sector. The past season was one of contrasts. Dry in the Western Cape and wet in the North. The Western Cape is struggling especially in the Swartland area. The Southern Cape had quite a few good to very good seasons preceding this average one. In the North we have experienced what the real potential of the varieties are.

Record yields were recorded, but the Bank Managers are very difficult as the prices dropped below the cost of producing the grains. One keeps on asking the question as a farmer: What am I to do in these type of extreme circumstances? There are no quick answers to these questions.

The South African grain farmers have proven their resilience over many years. Resilience is the ability to hang in there when things get tough, to find new solutions to the current problems. Thus, my first piece of advice for 2018 is to keep on trying new things that can bring sustainability to your farming operations. Vasbyt! The second thing is to make a sum before you start buying, planting and marketing.

There are still too many stories of grain farmers just starting up their tractors to plant without making the books balance. Sustainability is about making profits to generate new capital for expansion and upgrade of your current technologies. Make sure you get good advice from your input providers as well as seasoned grain farmers that have been through more than one drought or crises. The Grain SA platforms (study groups, magazines and mentors) are ideal for this purpose. Nobody will keep good advice away from those that enquire.

For 2018 the Grain SA team will continue to invest more funds and energy into research to find solutions for the current challenges especially around climate change. We will monitor whether the Fall Army Worm (FAW) will again pester our crops in the summer. We did not find any traces in the Western Cape during the growing season. Our partnership with the Department of Agriculture, Forestry and Fisheries is of note here. Our efforts to get the financial institutions to avail production loans to our farmers remain very high on the agenda and it seems as if our Farmer Leaders need to engage the political leaders on this matter to get any meaningful results.

Despite all the difficulties of 2017, let's do our utmost to make use of the opportunities given by God in the New Year. I am optimistic that God will hear our prayers not just for our farms, but also for our beloved country.

Grain SA wishes you a productive and prosperous season in 2018.

Article submitted by Jannie de Villiers, CEO of Grain SA. For more information, send an email to jannie@grainsa.co.za.

Canola – make every shot count

Prof Steven Powels from West Australia is an expert in the field of herbicide resistance management and he recommends that we should 'Make every shot count'.

This means that we must make sure that when we administer herbicide, it is done correctly to obtain the best possible results. In the case of canola, there are a relatively limited number of herbicides that can be used. Therefore it is even more important to follow his advice. Selection pressure leads to the build-up of resistance, and where the spraying needs to be repeated, the selection pressure is increased even more.

One of the most important products available for annual grass control in canola is trifluralin (trif). However, the efficiency of trifluralin is reduced with the increasing popularity of conservation farming and keeping the crop residue on the soil surface. The product binds strongly to any plant residues and is not washed away by water (rain). Very little product therefore ends up on the soil.

The trifluralin works through the roots of the grass plants and should therefore end up in the weeds during the germination stage, before the plants appear above the ground. Furthermore, it is also broken down by the ultraviolet rays of the sun – another reason why it is very important for the product to be mixed with the top layer of soil directly after administration

What to do now?

Trifluralin gives the best results when sprayed broadly on the soil surface and then mixed thoroughly with the top 5 cm to 10 cm of the soil profile before the canola is planted. The current practice, where this product is mostly administered during the plant process in thick layers of crop residue, will at best ensure 70% grass control, and this percentage will drop with the increase in crop residue on the surface and/or where less product is mixed with the soil, for example where a disk-type planter is used. On the other hand, the practice described above should give 100% control if the topsoil mixing is done properly.

However, this means that stubble management in conservation tillage systems will have to be adapted where grass weeds are a problem. Fields targeted for canola cultivation will have to be prepared differently in order to use the trifluralin efficiently. To reduce the previous year's small grain stubble, it could be baled or grazed by cattle.

An efficient practice in Australia is to put the chaff in a narrow lane and burn it. In this way, only a small area of the field is burned. This practice will also destroy a large percentage of weed seeds. Sometimes producers drag heavy tyres across the field to break up the residues and to level the soil. A once-off shallow tillage after spraying the trifluralin and before the canola is planted, can also be considered. Using the cutter and spreader on the combine harvester also helps to make the straw easier to work with and to spread it evenly across the field.

Producers who struggle to get rid of the annual grass weeds should decide what is more important to them – effective grass management in the canola phase that will not only increase canola yields because it is easier to establish small-seeded canola successfully when there is not much crop residue on the field, but will also reduce grass weed

problems in the follow-up grain crop, or the loss of ground cover (mulch in one out of four years).

The three other herbicide options that can contribute to ryegrass management are Kerb, Cysure and atrazine. Kerb is administered postemergence of the canola and ryegrass. The canola should be at two to three-leaf stage, and the grass preferably not further than two-leaf stage. Kerb needs a moist topsoil to enter the vapour phase and the soil should not be too loose, because it will support the deeper germination of weeds that cannot then be controlled successfully.

Although sulphonyl-urea (SU) resistance in ryegrass is common, there are still many producers who achieve acceptable control with Cysure. Only the Clearfield canola cultivars can be sprayed with Cysure. The canola should be past the five-leaf stage before Cysure is administered.

Atrazine can only be sprayed on triazine-tolerant (TT) cultivars. It can be administered with planting or early postemergence of the weeds. The atrazine should be administered right before rain for best results, as the product is mainly absorbed by the weed roots and the rain will wash it into the soil. Atrazine should also control broad-leaved weeds like wild radish successfully. It is important to not actively administer more than 1 kg/ha of any triazine, as it will harm the subsequent grain crop to the point where the yield benefit that the canola is supposed to give will not be achieved.

Canola has various advantages as a rotation crop for small grains. It is now a cash crop in its own right, because the availability of hybrid cultivars has increased the yield potential significantly.

The fact that other chemistry groups can be utilised in canola than in the grain phase means that successful weed resistance strategies can be put in place. Good grass control in the canola can also save on expensive grass herbicides in the grain phase.

One of the most important properties of canola is the crop's ability to completely suppress later germinating weeds, which have become an increasing problem, through a dense, strongly competitive leaf canopy that is already achieved during four to five-leaf stage. An even, dense stand of canola is extremely important, because weeds will flourish in any empty spots. This can be obtained by planting canola in narrower rows. In this way, the inner-row competition between canola plants, causing the young canola plants to die, is reduced. Producers should aim to keep 50 to 70 plants per square metre spread evenly across the field to ensure maximum yields.

Although the greater variety of products for grass control in canola facilitates successful weed control, it is still important to do everything right. ***Make every shot count!***

Article submitted by Chris Cumming, consultant for the PRF (Protein Research Foundation). For more information, send an email to cummingza1946@telkomsa.net.

Thumbs up for SOYBEANS due to upward trend

Soybean has certainly become a favourite among producers. The growing trend in soybean production is not only seen on the local landscape but across the globe.

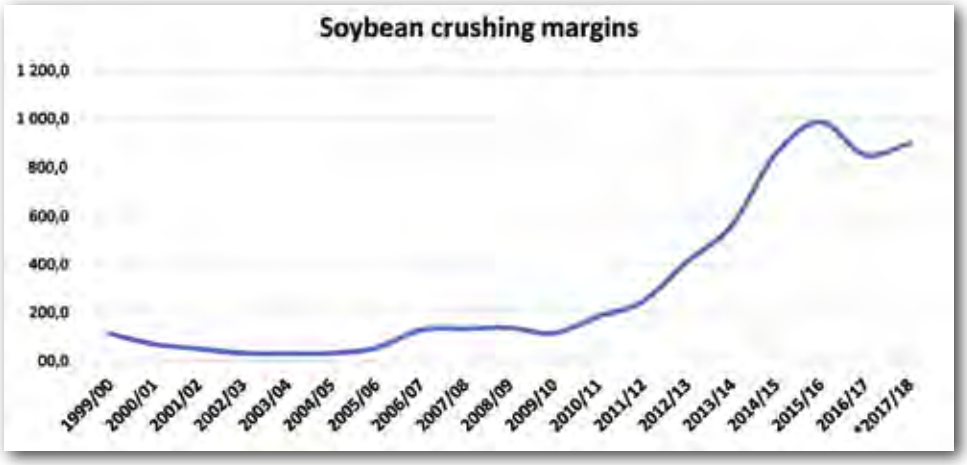
Prior to the drought in 2016/2017, South Africa produced its highest soybean production of just over 1 million tons. By then, production had already been on an upward trend but got interrupted by the severe drought, resulting in a 30% decline in overall production in the 2016/2017 marketing year. In the current marketing year (2017/2018), soybean production is estimated at a record 1,3 million tons, with the area planted higher by 13,4% from the previous season, and by the looks of things it seems production is likely to continue on an upward trend.

In the latest intentions to plant, released by the Crop Estimates Committee, the area planted to soybean is expected to increase by 25%, from 573 950 ha in 2016 to 720 000 ha in 2017. A large part of that shift is mainly farmers moving away from planting maize to substituting it with soybeans. The attractiveness of soybean production has recently been supported by a growing local demand and profitability of the crop as compared with that of maize.

In recent years, consumers have shown a strong demand for food high in protein. Such an increase in demand spills over to the livestock industry which has subsequently driven rapid demand for feed such as oilcake.

In the current marketing season, the soybean crushed to produce oil and oilcake accounted for 86% of total domestic soybean demand and has risen over the years. **Graph 1**, indicates local crushing margin from 1999 to 2017/2018 marketing season.

Graph 1: Domestic soybean crushing margins.



> *Production is likely to continue on an upward trend.*

There has been a rapid increase in soybean crushing margins from 2009/2010 marketing year to date, however this steady rise was also accompanied by a few dips in the crushing margins and that can be attributed to years when South Africa had shortages, such as the 2016/2017 marketing year. However, in 2017/2018, crushing margin is once again picking up and is estimated to reach 900 000 tons.

This healthy rise in demand can be largely attributed to the attractiveness of the industry, however it is important to note that although soybean production is on a rise in South Africa, some farmers have experienced the crop to be much more difficult to grow than other crops and its perceived to be less resilient than maize particularly in the drier areas such as the Free State, so just as any other crop, it too has a risk factor.

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

Pula Imvula's Quote of the Month

Life is 10% what happens to me and 90% how I react to it.

~ Charles Swindoll

Sunflowers – a valuable tool in your cropping programme

Sunflowers are an amazing crop that can be planted in a number of regions throughout South Africa. The primary sunflower producing areas in South Africa are Northern Free Sate, Eastern North-West province and Southern areas of Mpumalanga.

Sunflowers provide farmers with a good crop rotation option. They can also be an alternative option when optimum planting dates have expired for other crops such as maize, as sunflowers can be planted until the end of January.

Sunflowers require a warm dry climate with an annual rainfall of between 400 mm and 600 mm. They are a tough crop that can be resilient in drought years. Where there is acid or clay type soils, sunflowers will perform better than maize, provided the climatic conditions are suitable. So, in essence sunflowers really provide farmers with options and can become a valuable tool in ones cropping programme.

January is prime planting time for sunflowers. Therefore, things one should keep in mind at this time are all aspects revolving around the planting of sunflowers.

Be sure that you choose the correct cultivar which will perform well under your farm circumstances. It is a good practice to consult with a seed representative for this. He or she will also be able to advise you on the best plant population to plant, which will allow you to calculate the amount of seed that you will require. The plant population will also be influenced by whether or not you will be planting under irrigation or dry-land conditions.

> *"Always have a goal. Establish a realistic yield target and work towards achieving it.*

Make sure to do soil analyses by taking soil samples. You should do this well in advance so that you can have time to analyse results and order your required fertiliser before planting time begins. Before sending your soil samples to be tested, make sure to state the crops that you wish to plant. Your fertilisation should be based on your soil sample results.

The above are all very important factors to consider and implement. But there is one management factor that needs special attention especially at planting time, and that is weed control. Sunflowers are particularly sensitive to weed competition for the first six weeks after planting. At planting time one needs to make particular efforts to get a nice clean, level seed bed. Mechanical weed control is the most common method used as it provides the farmer with a soft sandy top layer of soil which is ideal to plant into. After planting you will need to follow up with a good pre-emergence herbicide. This needs to be done soon after planting as sunflower seeds usually germinate and emerge 7 - 10 days after planting depending on climatic conditions. If conditions are wet and warm, the farmer will need to once again follow up with a good post-emergence herbicide mixture. It is essential to do this before the sunflowers get too tall or else a tractor and spray-rig will not be able to enter the field.

Sunflower seedlings are very sensitive to the elements and special attention and care needs to be given to them at this critical stage. They are susceptible to sun scorch and wind burn which will have an adverse effect on your plant population and your yields. If your area is experiencing hot, windy and dusty weather conditions at this stage, it will be a good idea to scratch the soil in between the planted rows, in order to reduce your losses. The disturbed soil bands will reduce dust and can also break the top crust of soil to aid in emergence of the sunflowers.

Always have a goal. Establish a realistic yield target and work towards achieving it. Make sure that your pre-season planning is thorough, so that when planting starts you will be able to make good progress with fewer hold ups. Finally, make sure that you understand the crop that you are planting. You need to do the required research on sunflowers before you go ahead and plant it for the first time.

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

Conventional vs minimum tillage and its effect on soil

Primary tillage preparing the lands.

While travelling around South Africa and looking at various grain cropping practises one can observe the various attempts on our farming lands to introduce or continue with minimum or conservation tillage over conventional tillage.

Conventional tillage involves many mechanical operations starting with deep ploughing, deep discing, ripping, shallow tyne workings, and fine seedbed preparation after the harvesting of different grain crops, in both winter and summer production seasons. Thereafter a fallow period is given to enable moisture capture before the planting of the next crop. This approach results in a bare soil surface exposed to wind and water erosion and high compaction after heavy rains which then needs to be loosened again to assist in weed control and to promote moisture absorption from subsequent rainfalls.

Conservation or minimum tillage was introduced on quite a large scale in the late 1970s throughout the USA grain producing areas and adopted by farmers in many other countries including grain farmers in South Africa. There is thus a large body of research and information available on the success or failure of the different systems implemented.

Conservation tillage encompasses many different levels within a reduced tillage menu. The techniques used range from stubble-mulching techniques keeping some residue on the soil surface by doing only some tyne operations. Then you get no-tillage where the only disturbance to the soil between crops is the planting operation with specially adapted ground engaging planter discs or tynes. Conservation tillage is defined by keeping at least 30% of the previous crops residue on the soil surface between crops.

Weed control in conservation tillage relies on the total use of multiple combinations of chemical sprays in several applications.

The success of any method or system adopted largely depends on the soil potential and type within the limitations of the rainfall and climate in your farming region, the micro environment and the farmer's ability to apply the correct operations on time. Some farmers seem to find it difficult to adapt to the requirements and proper implementation of conservation tillage while others improve their soils and thrive with improved yields and higher profits. Where do you stand in your farming operation?

Second tillage was done before the farmer received 50 mm of rain.

The success of any system chosen largely depends on the optimisation of the equipment chosen and the pre-planning of the no-till planting operation. In the medium potential areas with sandy loam soils and the continuous use of the same chemicals year after year one can see farms where the lands seem to be 'dead'.

Planning for crop rotations and grass leys in a 5 to 7-year cycle should be carried out to reduce the dependence on any one chemical. Some farmers have virtually bankrupted themselves following badly implemented no-till farming techniques over several years. You must choose what suits the existing set or combination of tractors and implements that you have on your farm best. The cost and risk of moving into no-till or minimum with new expensive equipment must be carefully considered.

Effect on soils

If you want to be inspired to change from your conventional tillage to conservation tillage please visit a farm where no-till or minimum till has been implemented over seven years on dryland, where the rainfall is adequate (probably over 650 mm per year), or on high potential centre pivot irrigated land.

Dig into the soils and you will find no soil crusting, earthworms abounding, improved aggregation of soil particles, increased humus content, no compaction, improved soil tilth, retention of moisture and vastly improved fertility with a high build-up of diverse good soil bacteria and mycorrhiza. The soil system thus created can provide the crop planted with nutrients over the whole season and produce highly profitable crops.

The full conventional system produces the opposite effect of every factor mentioned above. Remember it takes many years to achieve the creation of an ideal soil in practice.

Conclusion

Carefully consider the factors involved, as outlined above, to be able to make a change, in order to improve your soils and potential income so as to be able to survive as a successful farmer in the coming years.

Article submitted by a retired farmer.

Table 1: General advantages and disadvantages of selected tillage systems.

System	Major advantages	Major disadvantages
Plough	Suited for poorly drained soils. Excellent incorporation of crop residues. Well tilled seed bed. Primary tillage operation.	Very high possibility of soil erosion. High soil moisture loss. Soil must be at optimum soil moisture. Impenetrable plough pans formed. Highest fuel and labour costs.
Chisel	Leaves rough soil surface in mulch tillage. Less wind erosion and moisture evaporation than ploughing. Well adapted to poorly drained soils. Desired incorporation of plant residue can be controlled by use of specific tynes. Use of cost effective 'rolmoer' mulching implements prior to the operation can be used.	More erosion control than ploughing. Still relatively high moisture loss. Shredding of plant residues required for residue flow through the implement. Tyne spacing and type must be specific to your farms conditions. Medium fuel and labour requirements.
Disk	Less erosion with more residue than ploughing depending on the disc size type and speed of incorporation. Well adapted for well-drained and sandy soils. Good incorporation of residue if required.	Very low erosion of soil control. High moisture loss. Very high destruction of soil structure. Compaction of wet soil. Medium fuel and labour costs.
Conservation tillage – minimum to no-till	Excellent erosion control. High soil moisture conservation. Minimum fuel and labour costs. Builds soil structure and health.	No or very little incorporation of crop residues. High dependence on herbicide programmes and the knowledge and experience required with their use. Slow warming of soils on poorly drained soils. Reduced compaction if the correct equipment and broad tyres on tractors and combines are used. High kilowatt tractors required matched to sophisticated planters. High performance and expensive crop spraying rigs with very accurate calibration possible required. Timeliness of weed control operations critical. Increased fertiliser application in the first few years.

It's not easy, but it's worth it

On 21 September 2017 a Grain SA member, Wilmar Adams, a 37-year old farmer from Suurbraak in the Southern Cape, received the award as the SAB's Emerging Barley Producer of the Year.

The award was presented to him during the Grower's Appreciation Day held at the SAB Barley Farm in Caledon. The event was held by the South African Breweries (SAB) and AB InBev to show their commitment to grow and develop the South African agricultural sector.

Winning methods and practices

Suurbraak is a small town in the Overberg District Municipality in the Western Cape. The village was founded in 1812, when the London Missionary Society established a mission station there. This area is close to Wilmar's heart as it is here where his father, Eddie, introduced him to farming. He grew up in the area – the youngest of three children – and now farms on approximately 300 hectares of communal land which he rents from the local municipality.

Mahatma Ghandi, leader of the Indian independence movement, said: 'The future depends on what we do in the present'. Conservation agricultural is proof of this and Wilmar firmly believes in the advantages thereof. It has not only helped to reduce soil erosion and increase water conservation, but has made a noticeable difference in his yield. In the past four years his average grain yield has increased from 1,4 ton/ha to 3,6 tons/ha.

He shares that his father often said, 'A farmer is not made, he is born. A man cannot just decide one day that he is going to farm. If you want to take chances in life, farming is definitely not the place to do it.' He knew, therefore, that there was only one way to do things and that was the right way. As a result of poor farming practices on the communal land Wilmar had to first correct the imbalances in the soil to improve the soil fertility after taking over the farming activities from his father, Eddie, who passed away a few years ago. Lime was applied to correct the pH of the soil and attempts were made to save the moisture by improving the stubble cover.

Today he cultivates barley, wheat, oats and canola in a crop rotation system. Rotations are adapted according to yield and seasons and are flexible enough to accommodate

After implementing conservation agriculture and sticking to good agronomical practices Wilmar ensured a healthy crop and higher yield on his land.

During the SAB's Grower Appreciation Day Frikkie Lubbe, agriculturist from the South African Barley Breeding Institute (SABBI), and David Hauxwell, vice president of procurement and sustainability at AB InBev, presented the 2016 Emerging Barley Producer (dryland) award to Wilmar Adams (far right) for his contribution to the industry and excellence in barley production. They were impressed by his ability to manage production cost, budget and income per hectare.

changes and challenges as they arise. In the 2016 season he managed to produce a barley yield of 3,6 ton/ha. With a drier 2017 season with a rainfall of only 102 mm during the planting season he still delivered a 3 ton/ha crop. Canola is delivered to the canola plant, Soill in Swellendam, while harvested grain is delivered to Sentraal-Suid Koöperasie (SSK) of which he is a member – an agricultural co-operative founded in 1931 by farmers in the Overberg region of South Africa. Marketing is done through a company which specialises in grain marketing.

For the past six years Wilmar has also been employing no tillage on the lands, reducing erosion and the loss of soil moisture. He says that this practise positively impacts the microorganisms in the soil, essential to supporting a good crop. It has helped reduce cost with a reduction in the amount of fertiliser needed and has lowered fuel consumption.

Since the onset of his farming career he has invested in 'Farming God's Way'. This production model and guide was developed by Boet Pretorius, one of the many commercial farmers who lost their farms in the Zimbabwean land takeovers. He decided to help small scale farmers farm successfully using this 'farming for the future' model. The model consists of four principles:

- **On time:** Farmers need to do things on time. If it is necessary to apply pesticide, don't delay. This makes the difference between an average farmer and a great farmer.
- **At standard:** Production practices must be carried out correctly the first time and no short cuts should be taken.
- **No wastage:** Wasting water, seed or products is throwing money in the water.
- **With joy:** Love what you do or don't do it.

According to Dirk van Papendorp who was one of his mentors for a few years, Wilmar' success is a combination of hard work and excellent agronomical practices. Dirk was so impressed by this determined passionate farmer that he nominated him for the National LandCare

The Adams family are proud of their contribution to food security in the country. Wilmar with his wife, Chrishenda and their son, Wade (5).

It's not easy, but it's worth it

Conference Best Conservation Agriculture: Advanced Smallholder award.

Hope for tomorrow

He is positive about the future of agriculture in South Africa and says emerging farmers must work hard and trust in God to be successful. To young and emerging farmers, he has the following advice: 'If you want to farm, go for it, do not doubt yourself. But if you do it, do it with passion'.

He would love to acquire more land, but this is not possible in his current location. Arable land in the Suurbraak area is limited and has to be divided amongst the residents there. With many still waiting for a piece of land, he knows his chances of expanding there are slim. He dreams of farming on his own land, but with the price of commercial agricultural land this dream seems out of reach. 'Without assistance from the state it is impossible for emerging farmers to acquire land.

Success brings content

If there is one quote that Wilmar fully agrees with it is: 'Success is not the key to happiness. Happiness is the key to success, because if you love what you are doing, you will be successful'. 'To me what I do, is not work, nor is it a hobby, it is my passion,' he says. He loves the variation of the farming industry where not one day is the same as the next. 'There is no monotony on a farm,' he says. He loves what he does and when the Adams family has a chance Wilmar likes to take them to visit farms to learn from other farmers and to see what impact different agricultural practices have on the crops.

One of the best farming decisions Wilmar made, was to invest in his own equipment. He makes use of contractors if he needs something that he might not yet own or hires the help of commercial farmers in the area.

The famous professional American basketball player, Michael Jordan, said about success: 'Some people want it to happen, some wish it would happen, others make it happen.' Wilmar is someone who wanted it to happen, wished it would happen and ultimately made it happen. With his determination, the dream of owning his own land one day will one day become a reality.

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

Canola is an excellent crop to have in your crop rotation as it helps to control weeds and diseases.

MADE POSSIBLE BY THE WINTER CEREAL TRUST

WESTERN CAPE DROUGHT results in higher wheat imports

The past three production seasons have given us an interesting trend in terms of production volumes across all grains and oilseeds in South Africa.

With particular reference to wheat, the changes in the production trend was mainly due to the change in climate, where in the 2014/2015 production year the industry experienced widespread drought, to average rainfall in the previous production season and then recently another dry spell, particularly in the Western Cape in the 2016/2017 production season.

In the 2017/2018 marketing season, which is the current marketing season, wheat production is estimated to reach 1,655 million tons. Areas planted to wheat only declined by 3,3% however, production is expected to decline by 13,4% from the previous production season, which yielded a total of 1,9 million tons. The decline in production this season was mainly caused by inadequate rainfall in the Western Cape. Due to below average rainfall and very low soil moisture in some parts of the Western Cape, a large variation in the condition of the crop existed, effectively affecting overall yields.

Over the years, local wheat production has declined considerably, resulting in the country relying on imports in order to meet local demand of 3,1 million tons. Therefore, it is no surprise, that in the current season with low production volumes, South Africa is likely to increase its import requirements in order to meet total domestic demand. **Table 1** indicates the different changes expected in the current season, in comparison to the two previous seasons from 2015/2016 ton 2017/2018.

It is likely that wheat imports could increase to 2 million tons in the current season, compared to 934 000 tons in the previous season. This would be the second highest level of wheat imports since the drought in the 2015/2016 marketing year.

From the above data it is clear that the results from the recent drought experienced in the Western Cape, posted a similar trend as the wide spread drought experienced in the 2015/2016 season, which was labelled as the worst drought in over 100 years. It is also clear that wheat producers in the Western Cape have been hampered by a number of challenges in the years gone past as a result of climate change. Looking ahead, it is expected that the trend of import increase may continue until farmers can have access to better seed technology that is more resilient to changing climate.

Table 1: The supply and demand for wheat in South Africa.

Updated: 26 October 2017	Grain SA estimates	Grain SA projections	Grain SA projections
Marketing year	**2015/2016**	**2016/2017***	**2017/2018****
Area planted (x 1 000 ha)	482	508	492
Yield (ton/ha)	2,99	3,76	3,37
CEC crop estimate ('000 ton)	1 440	1 910	1 655
Available for commercial deliveries	1 440	1 875	1 655
Commercial supply	**('000 ton)**	**('000 ton)**	**('000 ton)**
Opening stocks (1 October)	597	827	343
Commercial production	1 407	1 870	1 655
Imports	2 063	934	2 000
Total commercial supply	**4 075**	**3 641**	**4 004**
Commercial demand			
Commercial consumption	3 144	3 163	3 140
Total RSA consumption	3 179	3 194	3 165
Exports	69	104	110
Total demand	**3 248**	**3 298**	**3 275**
Carry-out (30 September)	**827**	**343**	**729**
Pipeline requirements	689	693	684
Surplus above pipeline	**139**	**-350**	**46**

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

More than 3 500 farmers empowered in 2017

'Learning experiences are like journeys. The journey starts where the learning is now, and ends when the learner is successful. The end of the journey is not about knowing more, it's about doing more' – Julie Dirksen, learning strategy and design consultant.

When we consider the Grain SA Farmer Development Training that transpires every year, this quote rings very true. Knowledge means nothing if not implemented. Training is not just done for the sake of training. You as farmers are enriched with the knowledge and practical skills to grow and continuously improve your own crops, how to store your crop, how to sell your crop, how take care of your equipment, how to assess what you have and to plan ahead, how to be financially sustainable and so much more. This knowledge is used on a daily basis to provide for yourselves, your family and to contribute to household food security in our beautiful country.

It is an honour to report that **3 510** farmers have attended the **214** Grain SA courses presented during 2017! Every farmer who took the decision to better himself or herself by choosing to attend these courses should be very proud.

Funding

We would like to thank our various funders namely the Maize Trust, Winter Cereal Trust, OPOT, Sorghum Trust, DST (Department of Science and Technology), Jobs Fund, DRDAR EC (Department of Rural Development and Agrarian Reform, Eastern Cape) for making these 2017 training courses possible.

Article submitted by Liana Stroebel, Provincial Co-ordinator, (Western Cape) of the Grain SA Farmer Development Programme. For more information, send an email to liana@grainsa.co.za.

Table 1: Courses presented from 1 January 2017 to 22 November 2017 (excluding the December courses).

Advanced Maize Production and Marketing	Introduction to Maize Production under Irrigation	Resource Assessment and Farm Planning
Basic Engine Repair	Introduction to Soya Bean Production	Safe Handling of Tools and Farm Equipment
Business Ethics	Introduction to Sunflower Production	Tractor and Farm Implement Maintenance
Contractors Course	Introduction to Wheat Production	Tractor Maintenance Part 2
Farming for Profits	Life Skills	Tractor Maintenance Part 1
High Application Tractor Maintenance	Mechanisation Management	Workshop Skills (Welding)
Introduction to Groundnut Production	Mycotoxins – Safe Storage of Maize	
Introduction to Maize Production	Practical Skills Course – Planter and Boom Sprayer Calibration	

Photos: From 1 January 2017 up until 22 November 2017 a total of 3 510 farmers attended the 214 Grain SA courses presented.

Teach your children well…

Long gone are the days when children knew exactly where their food came from i.e. their own back gardens! Too many children of today think milk is made in a factory or somehow magically appears in the grocery store!

Young people have become distanced from agriculture and have lost perspective of the connections between farming and the food we eat or the clothes we wear. Furthermore, many of the youth associate with agriculture negatively and see it as employment which makes one very tired, from working long hard hours, under the hot sun, for minimal income!

There is a growing sense of urgency worldwide that recognises the need to educate the youth about agriculture. Educating the youth about agriculture is considered an important strategy in the disaster risk management toolbox towards managing the threat to food security levels.

This is especially important in South Africa where latest statistics record the average age of farmers at 62 years! In Africa, the demographic structure is particularly youthful, with over 60 percent of the population currently below the age of 25. Large numbers of young people live and work in rural towns.

It is significant that the potential of the urban sector to offer these young people wage-earning employment is low. Clearly, the role of agriculture as a source of employment and livelihood opportunities will be increasingly important. But the biggest challenge is that the majority of youth do not see agriculture as a viable career path. Too many have witnessed their elders' struggles in the sector with low productivity and low return to feel drawn to it. This is exactly why a schools programme is so important in developing the knowledge, skills, and talent of youth. Through our schools programme we must ultimately aim to demonstrate the huge potential afforded them in the agricultural sector.

> *"Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness. – Thomas Jefferson*

We have a responsibility to the future to open the eyes of our children to the value of a healthy agricultural sector now. Children are current consumers, consumers of the future, and the next generation of workers and employers, and the sooner we can make them

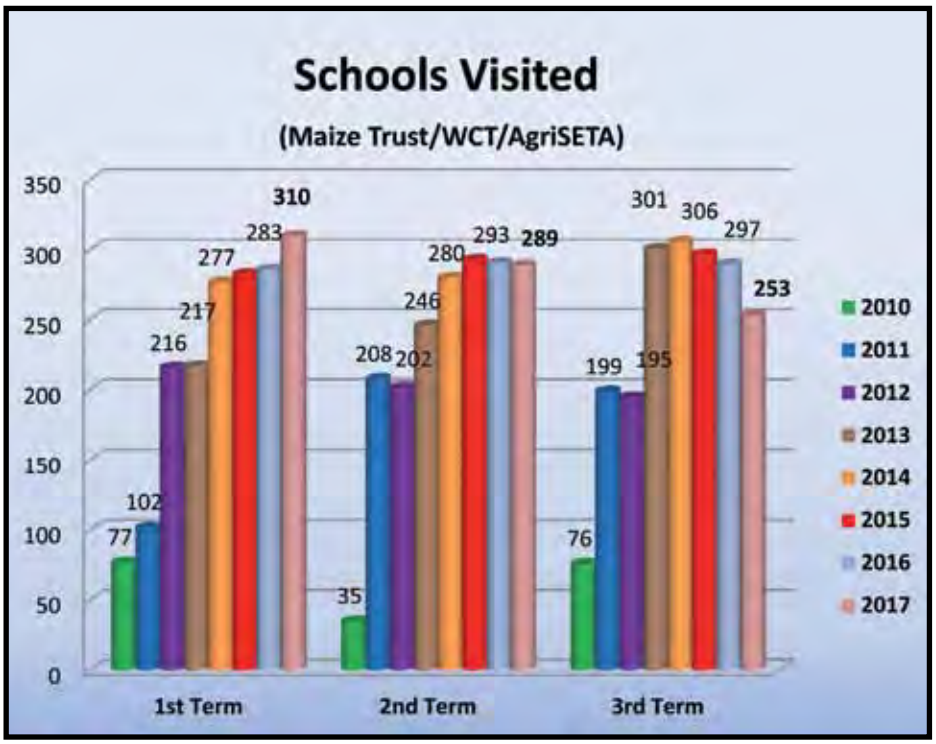
Photos: During 2017 we visited 852 schools and opened the eyes of 115 695 learners.

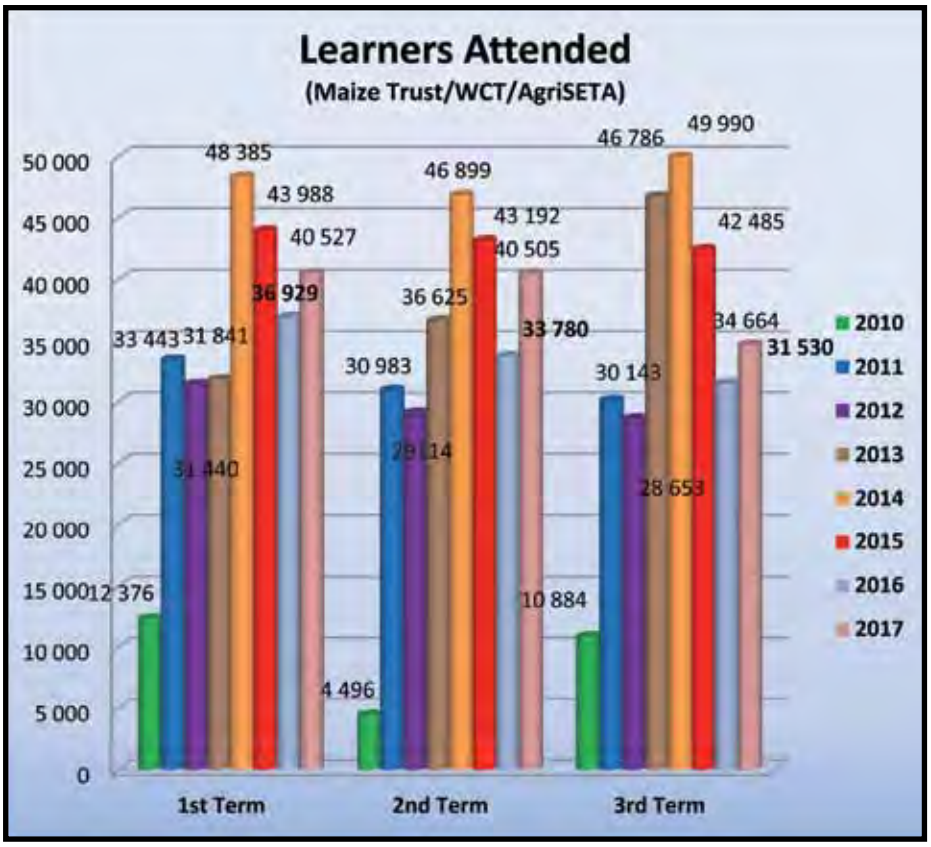
> *We have a responsibility to the future to open the eyes of our children to the value of a healthy agricultural sector now.*

aware of the value of agriculture in general, and the maize industry in particular, the sooner we can hope to have them understand the importance thereof.

In June 2016 Dr Akinwumi Adesina, President of the African Development Bank stated that Africa has immense agricultural potential and called for greater commitment to turning farms into 'intelligent farms' with investment into science and technology to increase efficiency and competitiveness. Africa is characterised by under investment which has had a negative effect and left people in poverty and the agri-sector in economic crisis. He says Africa has 65% of all arable land left in the world to

Teach your children well…





feed 9 billion people by 2050 and therefore, 'What Africa does with agriculture is not only important for Africa: It will shape the future of food in the world!' Agriculture should be seen as an opportunity for wealth creation and not only as a tool in the social and development sector to manage rural poverty!

Clearly the sector needs an injection of youth to bring a fresh passion and energy. In the not too distant future the learners in the classrooms around our country will be adults who are making important decisions about food systems and agricultural sector policies! It is essential to encourage young people to:

- Make connections to food and be aware of the value of agriculture as a source of food and fibre → **Agriculture matters to the future of development**;
- Recognise agriculture as a field filled with diverse career/employment opportunities → **Agriculture research needs young brain power**;
- Make connections to the land as a major role-player in the economy → **Agriculture can be a source of income for young entrepreneurs**.

Why do we think the youth can contribute to changed communities through farming? Abundance does not spread… famine does!

- Engaging young people in farming activities can be a dynamic way to promote healthy communities through → household food gardens and community gardens. The youth can contribute to food security and raise awareness about the environment.
- Marketing skills can be developed where young people grow their own foods and more → they can become young entrepreneurs by selling or bartering excess produce.
- Young people who believe in the value of something will pursue it with energy and passion. It is a constructive way of spending time and acquiring lifelong skills.
- Youth leadership can transform communities, ensure healthy foods for rural and urban places, and transform their relationships within themselves and the world around them.

The Grain SA Farmer Development Schools Programme is the result of a partnership between the Maize Trust, Winter Cereal Trust and the AgriSETA, which all fund the programme in different ways and in the different areas. Several facilitators have been contracted to do the presentations at schools in all nine provinces of South Africa. Three visits are paid to each school in one school year and a selection of DVD's is shown to the learners which are then discussed in the classroom environment.

> *"At the bottom of patience one finds heaven.*
> *– West African proverb*

"Train up a child in the way he should go (Proverbs 22:6).

The learners are usually in Grade 9 (subject choice) or Grade 12 (career choice). These DVDs portray messages such as:

- **Food, Fiber, Life:** This focusses on creating awareness among learners of the type of products that are derived from agriculture. Available online: *https://youtu.be/TPT4GXsNIVM*;
- **Dig in – Introduction to Farming:** This teaches learners about the agricultural production areas in South Africa. It also gives a broad overview of soil, the factors influencing it and soil conservation methods. Available online: *https://youtu.be/yYRy3m-Sn1vA*;
- **Economics – What's in it for me?** This DVD places emphasis on various economical concepts such as needs vs. wants,

Teach your children well…

trading patterns like bartering vs. marketing, production and GDP, What are resources e.g. land and human resources, capital, production inputs etc. Available online: *https://youtu.be/GR4iOyc5Mvk*;

- **Plant yourself in the future:** This DVD is presented in the third term and has a strong focus on career choices and gives an overview of the types of careers that the agricultural sector has to offer. Available online: *https://youtu.be/hlfH-3SY2K1s*;
- **Careers in Agriculture – Livestock:** This is a slightly more in-depth view on various types of careers that originate within or are associated with agriculture. Available online: *https://youtu.be/2WVVP1St3hM*.

> *During 2017 our facilitators have visited 852 schools and opened the eyes of 115 695 learners.*

During 2017 our facilitators have visited 852 schools and opened the eyes of 115 695 learners to the impact agriculture has on their lives. We are constantly excited by the learners' responses who without fail, relate that they were unaware of the important role of agriculture in their everyday lives. Many learners are unaware of the diversity of career opportunities offered in the agric-sector. The educators receive us well and say they need MORE visits from the team. As a team we are committed to creating greater awareness about the importance of agriculture amongst the youth!

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

MADE POSSIBLE BY
THE MAIZE TRUST

See **OPPORTUNITY** in recession and downgrading

As normal citizens we can ask the questions – what is downgrading and recession? How does it affect me and my business? What can I do about it?

Let's first explain these two terms. A recession is when the economy of a country declines significantly for at least six consecutive months or two consecutive quarters. The gross domestic product (GDP) is one of the primary indicators used to gauge the health of a country's economy. It represents the total Rand value of all goods and services produced in a country over a specific period. Normally during a recession there's also a reduction in income for the country, employment, and manufacturing and retail sales.

Think of it in terms of your business. The GDP of your business would be the total value of the products produced on your farm, in other words the gross production value. This income is used to cover all the costs of your business and to repay any debt you may have. It is logic, should your business income decrease, you will find it difficult to cover all your costs. And should you have any debt, you will find it even more difficult to repay the debt.

The same with a country. A country has certain obligations such as paying the salaries of government employees, to provide infrastructure that is needed for the country to grow such as roads, to provide education and health services, and so on. Income is needed to cover all the costs of these obligations. The income of a country is mainly taxes collected and if there is a shortfall the country borrows money to pay all obligations. The less a country grows, the less tax will be available and more money will have to be borrowed. But remember loans must be repaid and without the necessary income from the growth of a country, the more difficult it will be to repay debt.

> *Accept it as a challenge and sharpen your pencil regarding all the aspects of the management of your business and improve your business to deliver a sustainable profit over the long term.*

> *Our country and many businesses in South Africa are in a difficult position now but things will improve again. Therefore, be ready for the good years that will follow again.*

In comparison to your business – should you wish to borrow money from a financial institution they will 'grade' the possibility of your business to repay the loan using different criteria. If your business is in a sound financial position a financial institution will judge that you will be able to repay the loan and they will 'grade' you favourably. Should the financial institution judge that there is a substantial risk that you will not be able to repay the loan, they will 'downgrade' you and either not lend you the money or levy a higher interest rate on the loan.

The same with a country. The only difference being, in the case of countries there are so-called credit rating agencies that consider the risk of a country to repay loans. In the case of South Africa three credit rating agencies (Standard & Poor's, Moody's and Fitch) are involved. Based on the recession (low/negative growth), high unemployment, political factors, and other factors, two of the ratings agencies have downgraded South Africa. In other words, in their opinion they judge South Africa to be a high-risk profile to repay any loans. The third agency must still take a final decision. When all three agencies have downgraded South Africa, we will be in a full junk-status grade. Then it will be very difficult for the country to borrow funds needed to run the country and it will be available at much higher interest rates.

A credit rating can be assigned to any entity that seeks to borrow money – an individual, corporation, state or provincial authority, or sovereign government.

How will all this now affect myself and my business? First, should you wish or need to borrow money expect the rating criteria to be applied more stringent and higher interest rates to be levied. Money will become scarce and more expensive. Secondly, the value of the Rand could decline further which will pave the way for price increases of imported inputs such as oil. Business profits will be affected negatively by all of this.

What can I do about this? As a single person, one of some 56 000 000 million people living in South Africa. Not much.

Perhaps you will remember the words of a song of a couple of years ago – 'Don't worry, be happy'. This is basically how you should approach this situation. Accept it as a challenge and sharpen your pencil regarding all the aspects of the management of your business and improve your business to deliver a sustainable profit over the long term.

Remember, the economics of the world or any country or any business goes through economic cycles – ups and downs or good years and bad years. Our country and many businesses in South Africa are in a difficult position now but things will improve again. Therefore, be ready for the good years that will follow again. Therefore, treat the recession and downgrading as an opportunity. Improve your business.

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

HOW TO CHOOSE THE RIGHT SPRAY NOZZLE

The use of agrochemicals remains one of the most important aspects of crop production in South Africa. Despite the research and quality management that go hand in hand with producing agrochemicals, the registration holders of these products are still confronted annually with producers' complaints saying 'Your poison did not work'.

Numerous hectares of damage is also recorded annually due to drift of herbicides to sensitive neighbouring crops. Although a large component of this is done through air administration, more and more drift damage occurs due to soil administration, as indicated in **Photo 1**.

Many factors need to be in place to benefit completely from the potential of a harvest protection product, of which accurate administration to the target area at the right time (targeting the crop and the pest) under suitable environmental conditions is probably the most important.

Therefore, for this article, we will focus on choosing the correct spray nozzles as part of accurate administration in row crops.

Interestingly enough, the increasing use of highly technological high-clearance sprayers has led to an increase in complaints of ineffective pest control at agrochemical companies, which is an indication that this technology is not necessarily used correctly.

Investigations by various agrochemical companies have revealed that the wrong spray nozzles were used on the systems in a large percentage of cases, or the correct spray nozzles were used at the wrong parameters (for example spray pressure).

The best pesticide will only work as well as it is administered, and using the correct spray nozzle in the administration plays a vital role in the efficiency of the pesticide.

It is important to realise that the target and the crop situation will dictate the administration requirements as well as the choice of spray nozzles. The fact that a modern high-clearance sprayer can spray glyphosate at 30 km/h and faster and can administer a spray mix volume of 50 litre/ha does not mean that it should be done. The spray nozzles that came with the equipment are not necessarily suitable for the type of administration the producer has in mind.

Factors influencing the choice of spray nozzles:

- Nature of application: General broad or band administration over the plant row?
- Action of the product: Systemic or contact? As a rule, products with contact action require more cover (more droplets per cm^2). In the case of tank mixes, contact action products should be seen as the determining factor. Effective cover for the contact action product would also mean effective cover for the systemic component. The opposite is not necessarily true.
- Nature of the target: How critical is penetration into the crop and how easily can it be achieved?
- Is restraining droplets drift very important?

Spray nozzles for general broad administration

The spray nozzles that have proved effective for general administration through the years are still the ones delivering a *flat fan* spray pattern. However, there are many different varieties of these spray nozzles available on the market – with new built-in technology – and therefore it is important to make the right choice.

Two useful developments in this regard are the twin-fan double-outlet spray nozzles, where one nozzle sprays in two directions – which especially benefits penetration in the crop. The second development is air-induction/venturi spray nozzles, where air is sucked into the spray nozzle and mixed with the spray content to deliver larger droplets – this helps to reduce drift.

It is important to note that the story regarding air-filled 'bubble droplets' being produced by the latter spray nozzles is not completely true, as many of the formulation ingredients and additives negate this effect. The optimal uses of different flat-fan spray nozzles for general broad administration are summarised in **Table 1**.

Important comments relating to spray nozzles for general broad administration.

Height above the target area (top of the crop or soil [for example pre-emergence herbicides] and overlapping)

Flat-fan spray nozzles produce less volume on the sides of the spray pattern (see the representation of the spray pattern of a standard flat-fan spray nozzle in Table 1) and it is therefore important that the spray pattern of adjacent spray nozzles overlaps by 40% to 50% to ensure an even cover pattern.

The height largely depends on the spray angle that the relevant spray nozzles produce. For a spray boom with 50 cm spacing it is usually 50 cm high for 110° spray nozzles (for example 11004), and 75 cm high for 80° spray nozzles (for example 8004).

It has to be emphasised that these spray heights still apply with high-clearance sprayers. If the spray boom runs at 1,5 m above the target area, for example, then incorrect overlapping is obtained in the target area.

1

Two adjacent spray nozzles (80° and 110°) that were mounted on a spray beam, both in the same colour (= volume output), but that spray at different angles. A typical error on general broad spray booms.

Table 1: Applications for general broad administration spray nozzles.

Spray nozzle	Example	Spray pressure and droplet spectrum*	Comments and recommended uses
Traditional flat fan – single		1 bar - 4 bars Fine to coarse	Contact action substances at higher spray pressure – insecticides, herbicides or fungicides. Systemic substances at lower pressure.
TwinJet		2 bars - 4 bars Very fine to medium	Contact action substances at higher spray pressure – insecticides, herbicides or fungicides.
Turbo flat fan – single		1 bar - 6 bars Fine to very coarse	Contact and systemic substances. Systemic substances at lower spray pressure – insecticides, herbicides or fungicides. Also pre-emergence herbicides. The air-induction single-opening turbo spray nozzle produces very large droplets and should not be used for contact action substances.
TwinJet		1,5 bars - 6 bars Medium to very coarse	Systemic substances at lower spray pressure – insecticides, herbicides or fungicides. Good drift control.
Air-induction turbo – single or TwinJet		1,5 bars - 6 bars or 1 bar - 7 bars (depending on the type of air-induction spray nozzle) Medium to ultra coarse	Systemic substances where drift should be controlled. Pre-emergence herbicides.
FloodJet flat fan		1 bar - 3 bars Medium to ultra-large droplets	Systemic substances and pre-emergence herbicides, as well as soil-incorporated substances. Good drift control. Turbo FloodJet spray nozzles offer very large droplets and are better suited for administration on the ground.
Air-induction flat fan		2 bars - 8 bars Medium to ultra-large droplets (depending on the type of air-induction spray nozzle)	Systemic substances where drift should be controlled. Pre-emergence herbicides. Very good drift control, reduction of up to 90% of the fine droplet spectrum. The AIXR extended-range air-induction spray nozzle offers good flexibility for wide application, depending on the pressure selected.

**Coarser droplets at lower pressure, finer at higher pressure.*
Photos: All spray nozzle photos from Teejet Technologies.

How to choose the right spray nozzle

Diagonal mounting

Closely placed flat-fan spray nozzles should be mounted about 10° across on the beam so that the spray nozzles do not spray into each other.

Air-induction spray nozzles – droplet size versus spray volume

Table 1 shows that air-induction spray nozzles produce a large to ultra-large (*coarse to ultra-coarse*) droplet spectrum – especially with the Turbo TeeJet air-induction spray nozzles. Using low water volumes with these spray nozzles will produce low droplet cover on the target area.

Where penetration and high droplet cover (for example, contact-action pesticides) are important, a higher water volume is required for administration. If drift control and cover are important, a twin turbo-type spray nozzle should rather be considered – which still produces a larger droplet spectrum (although slightly smaller than the air-induction points), but can produce better coverage.

Double-outlet twin-type spray nozzles

Although these spray nozzles are very beneficial when it comes to situations where penetration within the target area is difficult due to dense leaves or the height of the target area, one disadvantage of these spray nozzles is the size of the spray openings.

A double 04-sized spray nozzle (for example 8004) actually consists of a spray nozzle with two openings sized 02, which therefore has the same flow volume as a single 04 spray nozzle. This can become a problem with lower volume administrations, as the smaller nozzles can clog easily if there are no effective filtration systems.

Colour of the spray nozzles

This is a critical aspect misunderstood by many producers and farm personnel. Check the photographs of the spray nozzles in **Table 1** and **Table 2**. All the spray nozzles are red, but there are clearly different types of spray nozzles.

The colour of the spray nozzle refers to the volume delivered per minute at 40 PSI (2,8 bars) spray pressure, as determined by the ISO 10625 standard. All the spray nozzles producing the same volume will have a specific colour. Therefore, it is not practical to ask for 'red spray nozzles' when nozzles are replaced. There are literally more than a dozen different types of red (and other colours) spray nozzles. The code should be specified fully, for example XR8004VS, for a stainless-steel extended-series size 04 flat-fan nozzle.

Ensure that all the spray nozzles on the beam have the same code. **Photo 1** shows

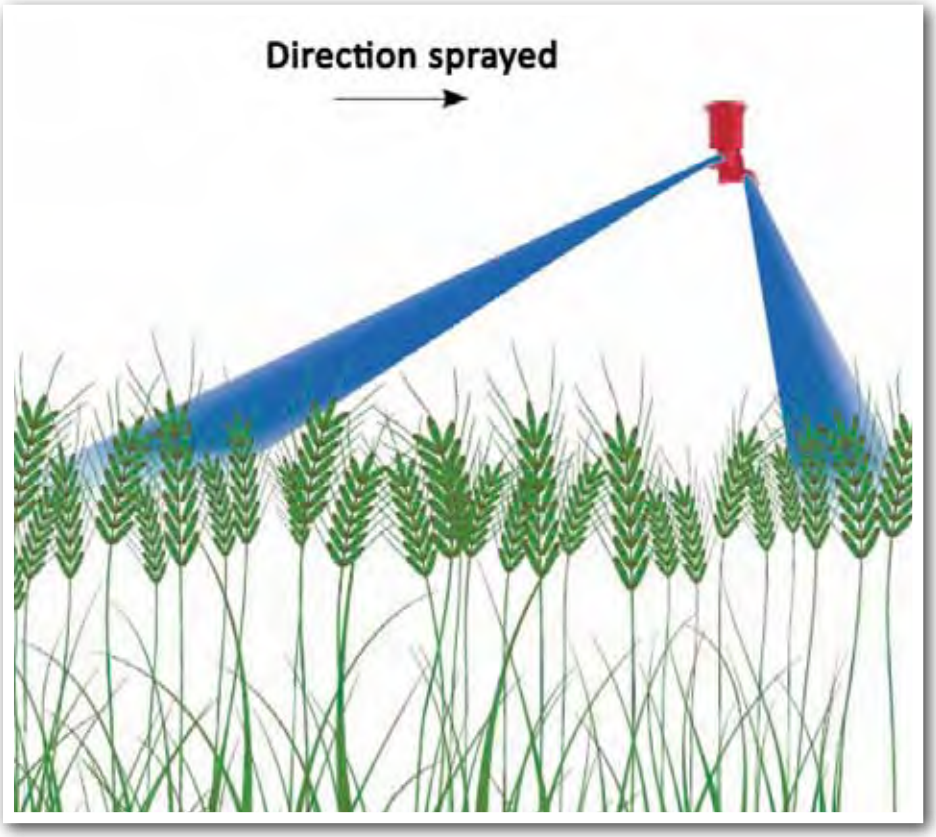


Figure 1: Graphic representation of the effect of the Teejet AI 3070 TwinJet spray nozzle.

spray nozzles that deliver the same volume, but will spray at 80° and 110° angles respectively, at 2,8 bars spray pressure. This will cause ineffective overlapping and consequently cover on the target area.

The use of spray nozzles on the spray boom with cone-type spray patterns (for example hollow cone) are not recommended for general broad administration. The nature of the cone spray pattern prevents overlapping and even cover from occurring optimally. Flat-fan spray nozzles with double twin outlets afford the same multi-dimensional advantage to the spray pattern, which promotes cover and penetration within the crop.

Pulse-width modulation spraying systems and AI air-induction/venturi spray nozzles

It is important to know that air-induction/venturi spray nozzles cannot be used together with pulse-width modulation spray technology. These spray nozzles need constant negative pressure at the spray nozzle's air opening – something cancelled out by the pulse-width modulation mechanism.

New technology: Wheat/small-grain purpose-built spray nozzle

One of the newest spray nozzles on the market was developed to control diseases in grain crops such as wheat. The purpose-built TeeJet AI 3070 spray nozzle is a double-outlet/twin-type nozzle, which can spray at 30° and 70° angles respectively to the front and to the back. The forwards 30° droplet pattern provides good downwards penetration into the leaves, whereas the backwards 70° droplet pattern covers the top part of the foliage and the veins.

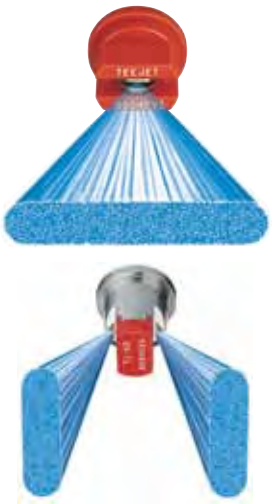
Spray nozzles for band or directed spraying

Different spray nozzles are required where administration takes place just above the plant row (soil or crop) or rows with the unsprayed area in between. Flat-fan nozzles can be used, but the most important difference is that it has to be a so-called even type of spray nozzle where the spray pattern delivers the same volume across the spray pattern (note the spray pattern of the even-fan spray nozzle in Table 2).

In many cases the letter 'E' will appear on the nozzle as part of the spray nozzle code. It is important that these even-type spray nozzles are not used on spray booms that spray general broadly.

Using two or three spray nozzles, cone-pattern spray nozzles in the case of directed application of insecticides over crop rows (for example maize stalk borer or in cotton) is beneficial for good penetration and cover.

Table 2: Application for band administration across the plant row or directed spray nozzles.

Spray nozzle	Example	Spray pressure and droplet spectrum*	Comments and recommended uses
Even flat fan – single Even flat fan – TwinJet		2 bars - 4 bars Fine to coarse	Contact-action insecticides, herbicides or fungicides.
Even air induction		2 bars - 8 bars Large to ultra large	Pre-emergence herbicides. Systemic insecticides, herbicides or fungicides.
Traditional hollow cone		3 bars - 7 bars Fine to very coarse	Contact action insecticides, herbicides or fungicides. Multi-spray nozzle, directed application above crop rows.
Air-induction hollow cone		4 bars - 12 bars Large to ultra large	Systemic insecticides, herbicides or fungicides.

**Coarser droplets at lower pressure, finer at higher pressure.*
Photos: All spray nozzle photos from Teejet Technologies.

It is therefore clear from the above that there is not one single silver-bullet-type spray nozzle that will work effectively for all spray scenarios. The investment the producer makes in his chemicals can be completely voided by using the wrong spray nozzles.

Follow the instructions on the label for water volumes. It is very important to use the correct spray nozzle, which will not produce too few droplets or droplets that are too big, if modern spray equipment is used with reduced water volumes.

Postemergence weed control after a stress period like drought might call for higher water volumes – to have a prolonged period of absorption of the active ingredient that is obtained with the larger droplets. This requires a spray nozzle with a larger opening rather than increasing the water pressure, which will then produce smaller droplets.

There are different sub-categories of spray nozzles within the various categories mentioned above. Unfortunately, this article cannot discuss all these nozzles in detail. The general spray nozzles used for most applications were discussed.

For further detailed information regarding administration technology, in-depth discussions and the practical demonstration of spray-nozzle technology, producers can consider attending an administration technology course at the Villa Academy. Contact them at 011 396 2233.

Note: For the purpose of the article, Teejet spray nozzle graphics were mainly used. This does not mean that this brand is recommended above others. There are other trusted brands with similar spray nozzles that will also be suitable for the types of administrations that were discussed here.

Article submitted by Gerrit van Vuuren, Principal Technical Advisor, Villa Crop, for SA Graan/Grain October 2016.
For more information, send an email to gvvuuren@villacrop.co.za.

Pinpointing PESTICIDE CONTAMINATION and the damage it can do to people

In a South African first, a Water Research Commission (WRC) study has created agricultural pesticide maps for improved risk management.

As with many developing countries, agriculture remains vitally important to South Africa's economy. Though it has decreased as a percentage of gross domestic product (GDP) over the past four decades, currently contributing around 2%, the sector formally employs 638 000 people, and an estimated 8,5 million people are directly or indirectly dependent on it for an income. The sector's significance is a key focus of the New Growth Path, a governmental strategy to create five million new jobs by 2020.

Yet, the sector is impacting negatively on the resource that it is most dependent on – our limited freshwater supplies. Regardless of limited monitoring studies, there is sufficient information to indicate that agricultural pesticides enter surface and groundwater.

According to the latest Department of Agriculture, Forestry and Fisheries (DAFF) database, there are in excess of 8 000 herbicide, insecticide and fungicide products registered for use in South Africa. Many of these include active ingredients that are either carcinogenic or classified as endocrine disruptors (EDs), while for most pesticides these endpoints have yet to be defined.

This is particularly concerning considering that many communities do not have any or reliable access to treated water, and often make use of water collected directly from the resource for drinking purposes. Given the potential human health effects associated with exposure to agrochemicals and their intensity of use, in combination with the questionable supply and quality of drinking water in many South African communities, it is important to identify and prioritise pesticides that are particularly toxic and areas where people may be exposed to these priority chemicals.

'We know that these things do enter the water and much research focus has been on the impact on the aquatic ecosystem,' notes Dr James Dabrowski, former principal researcher in Environmental Chemistry and Water Quality at CSIR.

Maize is the most highly produced crop in South Africa and is associated with high atrazine application.

Air sampling and spraying for AGDISP validation.

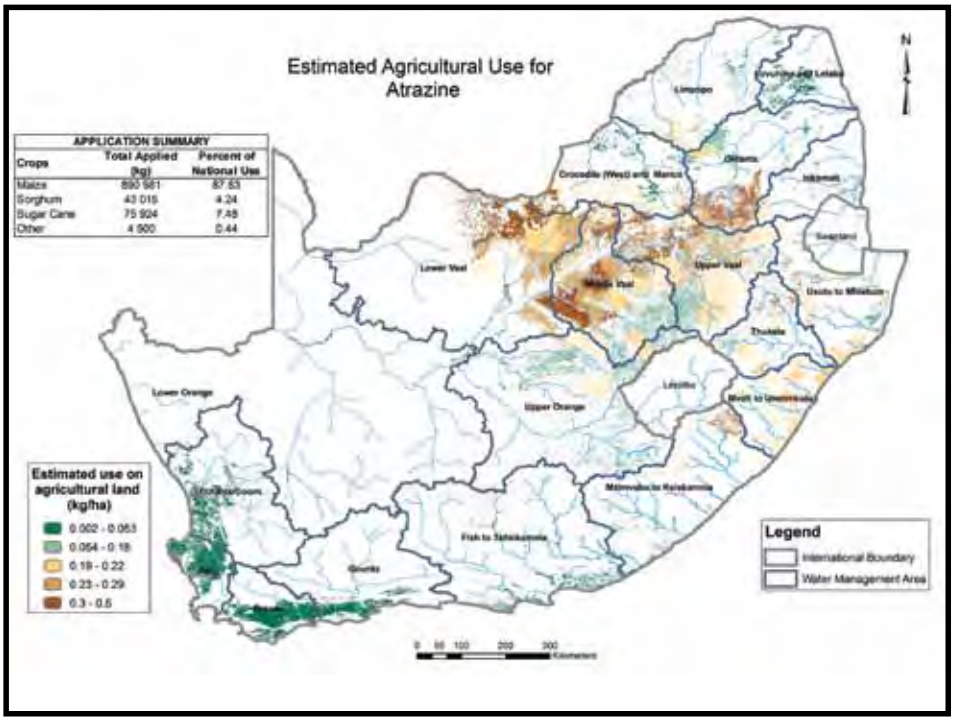


Figure 1: One of the maps that provides a spatial overview of the likely distribution of specific active ingredients (in this case atrazine), based on their application to crops and the distribution of those crops throughout the country.

'We also need to focus on the potential effects on human health with water as the pathway, and in particular the impact of current pesticides,' he says, pointing out that rather much work has been done on pesticides banned for agricultural use, such as dichlorodiphenyltrichloroethane, popularly known as DDT.

Dr Dabrowski the former principal researcher of a WRC initiated project answered some of these questions. The five-year study, which was concluded in 2015, aimed to determine the extent and the level of contamination by agricultural chemicals in selected water resources and also to determine their risk to animal and human health, both in terms of toxicity and endocrine disruptor effects.

The study was led by the CSIR together with collaborators from the universities of Pretoria and North-West, and made significant advances in addressing knowledge gaps in managing the risks of agricultural pesticides in South Africa.

According to Dr Dabrowski, the study involved multiple aspects, including identifying the most problematic pesticides among the huge amount registered, looking at their potential impact on human health, identifying which ones are most likely to enter the resources and identifying where in the country these pesticides are being used.

Prioritising pesticides according to risk and locality

The project selected three agriculturally intensive catchments representative of important commercial crops produced in South Africa, namely maize, sugarcane, citrus and subtropical fruit.

The study areas were the Letsitele catchment in the vicinity of Tzaneen, an area dominated by tropical and citrus fruit production, the Lomati catchment which drains into the Komati River in the vicinity of Komatipoort (dominated by sugar cane production as well as by other tropical and citrus fruits) and the Vals and Renoster catch ments in the Free State, both of which enter the Vaal River in the vicinity of Kroonstad and Viljoenskroon. The latter is an area of intensive maize production.

Seasonal sampling for endocrine disruptor bioassays and organic and inorganic constituents from surface water resources, sediments and groundwater in the three selected sites were conducted.

These results were interpreted against guideline values (in the case of inorganic constituents) or subjected to detailed risk assessment methodologies (in the case of pesticides) so as to assess the potential risk of agricultural chemicals to human and animal health.

In addition, pesticides were prioritised based on quantity of use (QI), toxicity potential to human health (TP) and hazard potential (HP), which combine toxicity with environmental mobility. The data was fed into an Excel-based risk indicator. When all three are combined, the weighted hazard potential, which expresses the HP as a function of the quantity of use of the pesticide, is determined.

'It is a simple process enabling users such as water resource managers, catchment management agencies, water treatment works and producers to prioritise pesticides at a national or crop-specific scale according to any one of these indices.'

A further outcome of the study is a set of maps that give a spatial overview of the likely distribution of specific active ingredients, based on their application to crops and the distribution of those crops throughout the country. It's a first for South Africa. The maps thus prioritise those areas that are likely to be of greatest concern and can therefore make useful contributions to the design of water quality monitoring programmes, interpretation of monitoring data and as input into regional human health and ecosystem risk assessments.

The impact of pesticides on human health

Concerning pesticides' risk to human health, researchers actually found levels to be 'pretty low, with negligible risk associated with consumption or use of water from the study areas'. Yet, there are some warning signals. Despite the monitoring limitations mentioned, the study revealed relatively high concentrations of particularly atrazine, terbuthylazine and simazine (all known endocrine disruptors) in maize and sugarcane areas.

Samples collected in the Vals and Renoster rivers in particular showed comparatively higher values than other study areas. Furthermore, atrazine in particular was detected at similar concentrations over different seasons (wet and dry) indicating that it has essentially saturated water resources in these catchments.

Though there was not much risk found from a human health perspective, it does require more research, particularly regarding their potential endocrine disruptor effects, notes Dr Dabrowski. Bioassays conducted on water and sediment samples collected in the study areas indicated ED activity on many occasions.

Dr Dabrowski cautions that it must be kept in mind that the researchers did not look at all the listed pesticides and, where bioassays indicated endocrine disruptor effects, it was not possible to link these to the use of a specific pesticide.

'This would be very difficult to do,' he says, referring to the range of other contaminants such as sewage flow, which also contribute to the contamination of water resources. Dr Dabrowski suggests that a possible approach could be to link or prioritise land use types or activities to endocrine disruptor effects instead of to specific pollutants.

On a positive note, the detection of pesticides was well predicted by indices used in the prioritisation procedure in all study areas, particularly quantity of use and mobility. The frequent detection of atrazine, terbuthylazine and simazine in maize and sugarcane areas is undoubtedly a reflection of their high quantity of use as well as their high mobility in the environment.

Pinpointing pesticide contamination and the damage it can do to people

The Letsitele River, with locals collecting water and doing washing.

A rural residential area with fruit orchards in close proximity.

Similarly, imidacloprid, which was also highlighted as being highly mobile in the environment, although not detected as frequently, was also found in comparatively high concentrations when detected. Other frequently detected pesticides (for example carbofuran, diuron and hexazinone) were also well predicted by outputs from the prioritisation procedure (that is crop-specific use and mobility).

These results indicate that indices of use and mobility are very useful in terms of prioritising specific pesticides for detailed monitoring in study areas of interest.

Moving forward

The pesticide-use maps and supplementary data developed in this study provide the most detailed overview of pesticide use in South Africa produced to date. This information can be used to make national, provincial and catchment-based assessments which are essential for performing spatial assessments of human and environmental risk associated with pesticide use. Yet, according to Dr Dabrowski their application can be much broader, and can be developed as a prioritisation tool for the monitoring of aquatic ecosystems that could potentially be at risk. 'For example, we can look at where endangered fish species occur in relation to the maps,' he says.

The team's work is not over, as there are a number of recommendations that flowed from the study. For example, passive monitoring, which measures contamination over time, could be applied, in order to include peak pesticide concentrations associated with certain events.

Though the current project results are of particular use to policy makers, a follow-up study is in progress to produce products that can be used by producers. In the meantime, the project results have been published. All data collected and produced during the course of this project (including the maps) is available in the reports or from the CSIR, Natural Resources and Environment in Pretoria.

Get your own copy

To order the reports emanating from this project, *Investigation of the contamination of water resources by agricultural chemicals and the impact on environmental health Volume 1: Risk assessment of agricultural chemicals to human and animal health (Report No. 1956/1/15) and Volume 2: Prioritising human health effects and mapping sources of agricultural pesticides used in South Africa* (Report No. TT 642/15) contact Publications at 012 330 0340 or *orders@wrc.org.za* or visit *www.wrc.org.za* to download a free copy.

Article submitted by Lani van Vuuren, Water Research Commission (WRC), for SA Graan/ Grain January 2017. For more information, send an email to laniv@wrc.org.za.

Manage the health and safety aspects of your business

We are all aware of the fact that there are several laws in our country that influences the management of a farming business. The responsibility of management is to manage these laws.

One of these laws is The Occupational Health and Safety Act (No. 85 of 1993). This law regulates health and safety in the workplace, being your farm.

Farmers as employers must provide and maintain, as far as is reasonably possible, a working environment that is safe and without risk to the health of employees. However, both employers and employees have a responsibility to ensure that the regulations of this law are carried out properly.

In this article, we will focus on the responsibilities of the employer. As employers, you

- must ensure that all employees understand the Act;
- must furthermore identify potential hazards relating to the type of work being done;
- establish and enforce precautionary measures to protect employees against potential hazards and provide means to implement these;
- provide the information, instructions, training and supervision needed for employees to complete their task safely;
- ensure that the work is done and equipment used are under the general supervision of an employee trained to understand the potential hazards associated with these; and
- ensure that no employee continues with a task placing him/her at a risk unless the necessary precautionary control measures have been taken.

Should an injury occur and the employer found to be negligent, there could be serious repercussions for the employer. You could be fined a substantial fine and/or face imprisonment and be ordered to rectify the matter. Unqualified repercussions could be that the productivity and attitude of your employees may be affected negatively by regular injuries occurring.

Therefore, it is worthwhile to manage the health and safety aspects of your business. Our approach is stimulated by the proverb 'prevention is better than cure'. Remember to manage implies that you must plan, organise, implement and control. But to be able to do this you need information – 'if you do not measure you cannot manage'. In the case of health and safety you will not for instance use a tape to measure but it will be an inspection of all resources on your farm and getting an answer – yes or no – to questions to be asked.

A few examples of questions you must ask yourself in this regard.

Your staff

- Are your staff properly trained regarding all tools, machinery, equipment and so forth that they use?
- Do you communicate regularly with your staff regarding matters of health and safety?
- Do you supply your staff with the necessary protective clothing and enforce proper use of the clothing?

Administration

- Do you have all emergency phone numbers readily available?
- Do you have all relevant forms available?

Buildings

- Are materials and supplies stored so that they can't fall on someone, block his passage nor collapse under a worker climbing over them?
- Are doors and gates to hazardous places (manure storage, animal quarters, etc.) kept closed and secured to keep children and unauthorised persons out?

Animal facilities

- Are pens, gates, chutes and fences adequate for the job, sturdy and well repaired?

Grain and silage structures

- Are drivelines and working parts of filling and unloading machinery well shielded?

Workshop

- Are stationary tools such as grinders, saws, etc. properly guarded?
- Is personal protective equipment such as goggles, bump caps, filter respirators, rubber or plastic gloves, ear muffs, shop aprons and welding helmets kept ready available in the shop?
- Is a fire extinguisher (of the correct type) readily available?

Storage buildings

- Is the floor surface firm and level and free of obstacles?

Chemical storage

- Is the storage place well-lit to easily identify chemicals and to read labels?

Fuel storage

- Are storage areas fenced off and secured?
- Are workers instructed on rules of safe refuelling such as to shut-off the engine and let it cool a little, not to smoke, to fill the tank carefully to avoid spills and overflowing, to return nozzle to its holder?

Farm machinery

- Are shields and guards always in place when operating?

Ladders

- Is a ladder kept in a good condition so that is safe to use and will it be able to carry the weight of an employee?

There are many more questions to be asked. It is advisable to draw up a table with all the questions to be asked. If you do not know how to compile a table, get assistance. For instance, in the course material of Grain SA for the course 'Farm management for Profits' there is a table with 125 questions related to all resources on a farm that you may use.

Once you have all the information you can plan and organise and implement to rectify all problem areas to reduce and limit injuries.

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

Forage crops

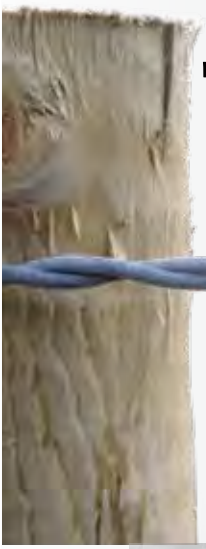
for sustainable animal production

PANNAR SEED is a leader in the certified pasture seed industry and complies with the regulations for genetic and physical quality set by the Seed Certification Scheme. PANNAR is synonymous with quality. We have a wealth of expertise in planted pasture and a wide range of versatile cultivars to meet your unique needs. PANNAR's forage crops are thoroughly tested under local growing conditions for high carrying capacity and palatability for sustainable animal production.

Article submitted by Reggie Mchunu and Petrus van Rooyen, PANNAR SEED. For more information send an email to reggie.mchunu@pannar.co.za or petrus.vanrooyen@pannar.co.za.

Crops	Establishment	Seeding rate (kg/ha)			Characteristics
		Rainfall (mm)	Broadcast	Rows	
Mild or winter forage crops					
Ryegrass: **SUKARI** Italian Diploid	Feb - Apr or Aug - Sep	Irrigation	25 - 30	20 - 25	Pastures for milk, fat lamb production and finishing weaners. Establish under irrigation and utilise during autumn, winter and spring. SUKARI is a Diploid, Italian ryegrass that lasts exceptionally long through the summer and in some cases, even until autumn. High dry matter and sugar content. Outstanding high midwinter production. Italian types can be established in early autumn (February/March) or alternatively early spring after the major frosts (August/September), in which case it should provide pasture for about 15 months.
Japanese Radish: **ENDURANCE**	Dec - Jan/Feb	Supl. Irrig./ Dryland	–	2 - 3,5	ENDURANCE is a unique late flowering, soft leaved fodder radish. It usually produces good quality root and leaf material right through to the end of August. In some areas production can extend into September. Dry matter is highly digestible. For cattle, best pulled or ploughed out and fed whole. It is usually not cold or frost sensitive. Requires approximately 350 mm rainfall over the four-month growing period.
Oats: **MAJORIS** Spring Type	Feb - Mar	Supl. Irrig./ Dryland	50 - 70	40 - 50	MAJORIS is a medium season white oats cultivar with an excellent yield potential, rust resistance and cold tolerance.
Triticale: **PAN 248** Intermediate Type	Feb - Apr	Supl. Irrig./ Dryland	60 - 80	35 - 45	PAN 248 is a relatively quick triticale type that is ideally suited to green feed production on shallow marginal soils. Suitable for providing grazing in the late autumn and winter months. Also suitable for silage in the winter rainfall areas.
Stooling Rye: **SOROM** Spring Type	Mar - Apr	Supl. Irrig./ Dryland	40 - 60	30 - 50	A quick spring type stooling rye also suitable for late plantings in June, July and even the beginning of August when the demand for forage is high. High yield potential. Not as palatable as oats, but more cold tolerant.
Summer forage crops					
Lucerne: **PAN 4770** Intermediate Dormant	Cool areas: Feb - Apr Warm areas: Mar - Jun	<700 700 - 900 Irrigation	– – 20 - 25	5 5 - 12 12 - 15	PAN 4770 is an intermediate dormancy Class 7 and very robust variety, suitable for hay production or grazing. Relatively thin stems. Retains its bottommost leaves well. High yield potential.

The Corner Post



JERRY MTHOMBOTHI
The hands-on approach works

In this series of The Corner Post we feature the mentors and provincial co-ordinators who form part of the Grain SA mentorship programme, giving advice on how to achieve your own goals and dreams.

It has been proven that people learn much faster from 'hands-on' experience than they do by simply watching someone else doing the activity. To do something hands-on, means you gain knowledge while doing something, rather than just learning about it from books or lectures. Jerry Mthombothi, Grain SA Provincial Co-ordinator, believes this is the reason why the mentorship programme of Grain SA has been one of the most successful programmes in developing and equipping emerging farmers.

From a job to a passion

'I am passionate about the job I am doing now,' says Jerry who worked for the Department of Agriculture as an extension officer for 19 years before joining Grain SA in February 2004. 'The biggest difference between these two jobs is that in government I worked with papers and now I work with people.' Jerry laughs and adds 'I work closely with farmers now and love every minute of my job.'

Currently his responsibilities include transferring skills to developing farmers who are planting maize in the Mpumalanga Highveld region – mainly in Carolina and Badplaas. With almost 500 Jobs Fund farmers under his supervision, mentorship forms part of his job description. Jerry visits each of his 20 study groups twice monthly. During planting season mentors are employed temporarily to assist with the necessary advice.

To see his farmers succeed brings him immense joy. 'Their accomplishments have become my success story,' he says. Some of the farmers were only producing 15 to 20 bags/ha when he started mentoring them to improve their farming skills and agricultural practices. Now they are achieving yields of 6 tons/ha with some even reaching 10 tons/ha.

One of these successful farmers, Mavis Nomvula Hlatshwayo (55) from Mpuluzi in Mpumalanga, was announced as the winner of the 2017 Grain SA/Absa Subsistence Farmer of the Year. With Jerry's input and the support of Grain SA Mavis and her team introduced the new farming methods and harvested more than 8 tons/ha in the past season. This just proves the value of the mentorship programme. 'It works,' says Jerry. 'Hundreds of farmers are benefiting from it. With further guidance about correct agricultural practices the country can be sure that enough food will be produced.'

Effort and commitment makes the difference

American TV personality and personal trainer, Jillian Michaels, once said about exercise, 'It's not about perfect. It's about effort. And when you bring that effort every single day, that's where transformation happens.' As many sport stars (and students) know, you get out what you put in. If you want more, you have to do more. That's the only way change and growth occurs. Jerry is a firm believer in this principle and feels it also applies to farming.

He therefore focuses on these key areas to help farmers realise higher yields:

- **Learn to spend money, to make money.** In the beginning farmers battled with this concept. They were not prepared to spend money, but still they wanted to achieve a higher yield. Through the input from the study groups they have seen that if they do not buy the correct seeds, invest in the necessary fertiliser and chemicals, they will get what they put in, which will not be a superior quality product. 'I am training them to invest in their harvest to produce good quality products so that they will get a market for their maize. No one wants to sell inferior goods.'
- **Farming cannot be done with a remote control.** You must be hands-on and do the work yourself. If you aren't involved, you can't be disappointed if you do not achieve your dream. 'You can't expect to succeed if you only work when you feel like it. In farming you have to be totally committed,' he motivates this important lesson.

> *"To do something hands-on, means you gain knowledge while doing something, rather than just learning about it from books or lectures.*

> *"Their accomplishments have become my success story.*

To see his farmers generating more money, excites him as he knows that their lives will improve. There will be money for a better education for their children and they will be able to invest in better supplies to further improve their farming enterprises. 'There really is a lot of value in this programme. The proof can already be seen – farmers are being taught skills to follow better agricultural practices and they are increasing their yields. With more money they can improve the quality of their lives.

This month's edition of The Corner Post was written by Louise Kunz, Pula Imvula contributor. For more information, send an email to louise@infoworks.biz.

Forage crops you can depend on. Feed with high carrying capacity and palatability for a wide range of needs, from dairy cow to beef cattle and sheep production.

Our Forage Crop Package

Lucerne	Intensive Grasses	Dryland Winter Crops	Annual Subtropical Crops
Dormancy classes 7 and 9, grazing and hay types	Annual Ryegrass Perennial Ryegrass	Oats Stooling Rye Triticale Japanese Radish	Forage Sorghum Teff

PANNAR®

Together we farm for the future™

infoserve@pannar.co.za
www.pannar.com

2018/FORAGE/E/18COMBO