

PULA IMVUILA

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



DECEMBER
2016



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



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 ◀ Nonhlanhla Sithole

Jurie Mentz

Mpumalanga/KwaZulu-Natal (Louwsburg)
▶ 082 354 5749 ◀ jurie@grainsa.co.za
▶ Office: 034 907 5040 ◀ Sydwel Nkosi

Graeme Engelbrecht

KwaZulu-Natal (Louwsburg)
▶ 082 650 9315 ◀ graeme@grainsa.co.za
▶ Office: 012 816 8069 ◀ Sydwel Nkosi

Ian Househam

Eastern Cape (Kokstad)
▶ 078 791 1004 ◀ ian@grainsa.co.za
▶ 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

Julius Motsoeneng

North West (Taung)
▶ 076 182 7889 ◀ julius@grainsa.co.za

Sinelizwi Fakade

Mthatha
▶ 071 519 4192 ◀ sinelizwifakade@grainsa.co.za
▶ Office: 012 816 8077 ◀ Cwayita Mpotyi

Articles written by independent writers are the views
of the writer and not of Grain SA.

NKGONO JANE SAYS...



IN THIS ISSUE...

04

Farmers and industry celebrate
the result of learning and perseverance
The Scottish novelist Robert Louis Stevenson said...

07

Importance of weed control
during summer months
Weeds are the farmer's biggest enemy...

08

Soil profiles and assessing
stored moisture capacity
One of the most valuable tools used by farmers...

10

A message of hope for farmers
after a few seasons of hardship!
Times of economic hardship and political turbulence...

12

Management of wheat stubble
and your choice of cover crops
The management of residue following harvest...

14

Recognise the signs of bankruptcy
Bankruptcy refers to the position where
the farming business has more liabilities than assets...



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

It is this beautiful time of year when most people are able to rest a little and spend time with their families. Farmers on the other hand are looking after their crops and keeping the weeds at bay. Don't tire because you will reap the rewards of your efforts in the coming months.

The Americans have a huge maize crop in their fields and

this will affect the local price of maize. We need to understand that the high prices experienced this year are unlikely in the coming year. We should start thinking about where we plan to sell our crop so as to be assured of making a profit.

For those of you who grow a lot of food for yourself— remember that there is time still to plant beans. Dry beans are a wonderful source of protein in our diets – the beans are easy to store and can be kept for the whole year.

While thinking about the Christmas period, the quotation below caught my attention and I thought how great it would be if we could give as the quotation suggests.

May the spirit of Christmas live in your heart for the whole year. 🍀

CHRISTMAS GIFT SUGGESTIONS

Give:

To your enemy, forgiveness.

To an opponent, tolerance.

To a friend, your heart.

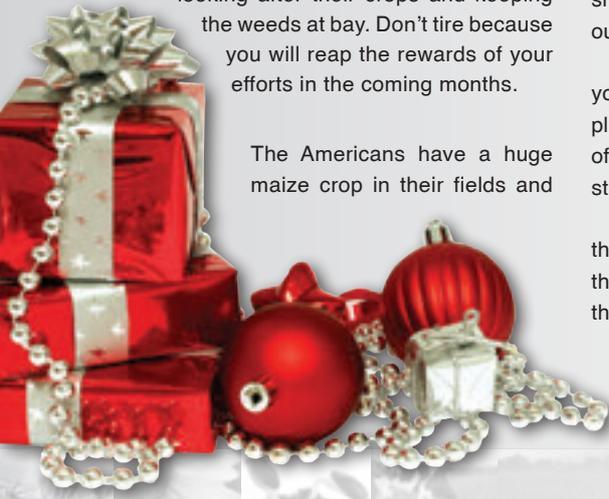
To a customer, service.

To all, charity.

To every child, a good example.

To yourself, respect.

~ Oren Arnold



15

Monsanto at the forefront of sustainable food production

At Monsanto we are focused on a variety of areas..

16

Integrated crop and pasture-based livestock production systems

This article is the 21st of a series of articles highlighting...

18

Weeds in the winter rainfall area Devil's-thorn (Spiny Emex)

Only one Emex species occurs in South Africa – a weed in cultivated...

22

Profile

Grain SA interviews...Zoliwe Nombewu

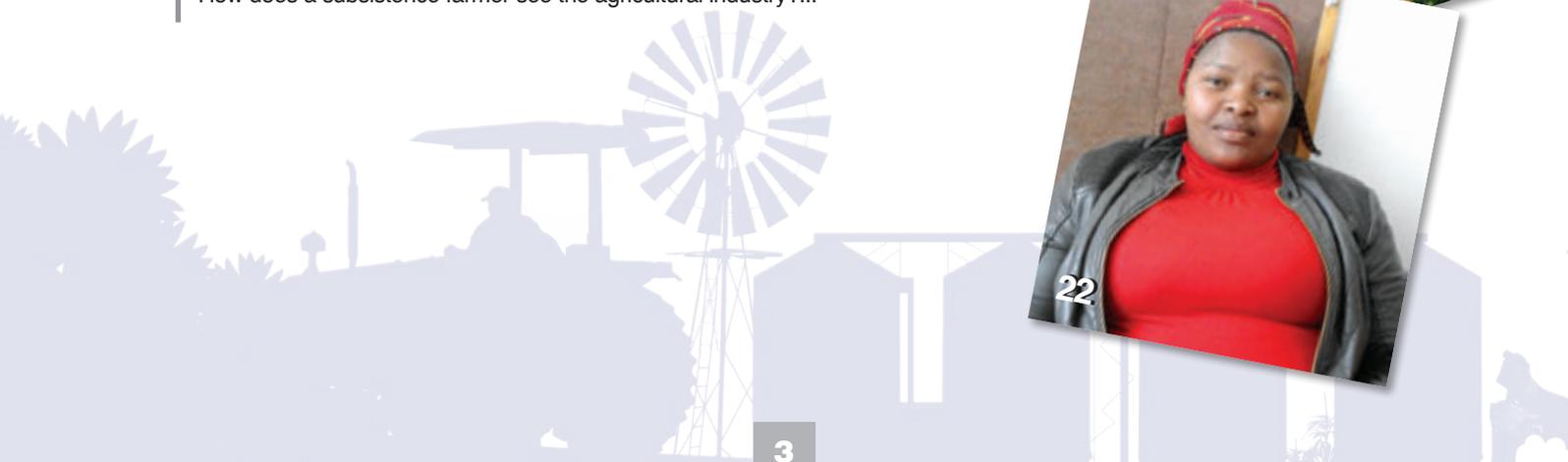
Passion, hard work and the willingness to learn...

23

The Corner Post

Melvin Ncedo

How does a subsistence farmer see the agricultural industry?...



FARMERS AND INDUSTRY celebrate the result of learning and perseverance

The Scottish novelist Robert Louis Stevenson said, 'Do not judge a day by the harvest you reap, but by the seeds you plant'. Commercial producers who are involved in Grain SA's Farmer Development Programme may not have had a harvest to yield the past season as a result of the drought, but at the Day of Celebration it was clear to see that the seeds of knowledge planted under their mentorship have had an enormous impact in the area of farmer development.

On 22 September this year more than 250 guests including government representatives, agricultural stakeholders and approximately 160 emerging grain producers attended the Day of Celebration in Bloemfontein. The category sponsors were represented by Antois van der Westhuizen (John Deere Financial), dr Langa Simela (Absa AgriBusiness), Antonie Delport (Syngenta) and Clara Mohashoa (Monsanto).

All nominees had shown growth in their farming operations through input from the Farmer Development Programme and their hard work was acknowledged at the event. This programme proves that increased knowledge on weed control, soil health and seed selection can have a dramatic impact on farming operations. All nine finalists mentioned how important the input from this programme had been in achieving success. Grain SA is very grateful to the sponsors who make this programme possible: The Maize Trust, Winter Cereal Trust, Sorghum Trust, OPOT, AgriSETA and Pioneer.

The 2016 winners

The 2016 Grain SA/Absa Subsistence Farmer of the Year was announced as Mswayi David Zuma (66) from Estcourt in KwaZulu-Natal. David and his wife, Goodness, work as a team and despite the late rain harvested 22 tons of maize from 8 hectares which they planted by hand.

An ambitious young man, Sizwe Innocent Mgwenya (31), from the Piet Retief area received the award as the 2016 Grain SA/Syngenta Smallholder Farmer of the Year. Sizwe is building on the 50 hectares of land he received from his father. He yielded 250 tons of maize this year all harvested by hand. His success is a result of excellent soil management including



Photo 1: The three finalists in the category 2016 Grain SA/Absa/John Deere Financial New Era Commercial Farmer of the Year are Frans Mokoena (Tweespruit in the Free State), Zondiwe Motshwene (Emalahleni in Mpumalanga, who was represented by his son, Karabo) and Maseli Letuka (Kestell in the Free State). At the back are Antois van der Westhuizen (Managing Director: John Deere Financial Sub Sahara Africa) and Jannie de Villiers (CEO: Grain SA).

Photo 2: The 2016 finalists in the Grain SA/Syngenta Smallholder of the Year are Sizwe Mgwenya (Piet Retief, winner), Thembalihle Tobo (Kokstad) and Hamu Shuwisa (Louwsburg).

DAY OF CELEBRATION



Photo 3: Isaac Hlatshwayo (Nelspruit), Delisile Nkosi (Louwsburg) and Mswayi Zuma (Estcourt, winner) are the finalists of the 2016 Grain SA/Absa Subsistence Farmer of the Year.

Photo 4: Three farmers have increased their yield and are now proud members of the 1 500 Ton Club: Jeremia Mthebula, Lucky Khumalo and Job Dube.

Photo 5: Simon Teffo and Remember Mthethwa joined the 500 Ton Club.

Photo 6: The newest members of the 250 Ton Club are Herbert Mabuza, Sizwe Ngwenya, Edwin Mahlatsi and Vuyani Lolwane.

Photo 7: Vuyokazi Mvunge en Nosabelo Mgolombane from Mthatha in the Eastern Cape were two of the female farmers wearing colourful traditional outfits.

Photo 8: Preline Swart (Vice Chairperson: Grain SA) with a group of ladies from Mthatha in the Eastern Cape.

Farmers and industry celebrate the result of learning and perseverance

conservation practises and a strong focus on pH and nutritional balancing.

The three finalists in the category 2016 Grain SA/Absa/John Deere Financial New Era Commercial Farmer of the Year are Maseli Letuka (Ladybrand), Zondiwe Motshwene (Louwsburg) and Frans Mokoena (Ladybrand). Each finalist received a voucher from John Deere Financial which they can exchange for a piece of farming equipment from John Deere. The winner was announced at the Grain SA Grain Producers of the Year gala event on 14 October in Midrand. The winner will once again receive a John Deere tractor sponsored by John Deere Financial in partnership with Absa.

Jane McPherson (Manager: Farmer Development, Grain SA) thanked the friends of the programme – those individuals who support the programme to ensure its continued existence. Grain SA CEO, Jannie de Villiers expressed his gratitude to every developing grain producer who is willing to be mentored and taught, thereby ensuring a growing harvest of grain producers each year. After experiencing a difficult season on their own farm Jenny Mathews (producer from Sannieshof and previous chairman of the board

of the Grain Farmer Development Association) shared a special message of encouragement with farmers. 'Coping with a season like this one has been a roller coaster.' She said, 'A season like this has brought our farmers to their knees, but life goes on. We have a hungry nation to feed and we still are the people with the power in our hands to produce food.' She encouraged farmers to follow the advice of Psalm 121 and to 'look up' and not to dwell on the negative and concluded with an African proverb, 'However long the night, the dawn will break'.

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



Importance of weed control during summer months

Control weeds early in their life when they are at their weakest.

Weeds are the farmer's biggest enemy and are the single biggest threat to a farmer's potential crop. Controlling weeds can be a huge challenge especially during the summer months from November to January when they are in their most vigorous growth stages and when climatic conditions are favourable.

The best time to control weeds is in the early stages of their development when they are still weak and fragile, early in the summer months. Unfortunately, due to poor time management and planning we do not always get this right.

This leaves us the arduous task of trying to keep weeds under control when they are growing at full force and at their strongest. It may be harder to manage weeds at this time, but we still need to do it! It is crucially important to not let the weeds get ahead of us. It is an ongoing task which we need to stick at in order to reap the benefits of good yields during harvest time.

Best time to control weeds

We need to always remember that the best time to control weeds is early in their life when they are at their weakest. When we leave a weed too long it becomes more resilient which makes it much harder to kill. Weeds also have a much higher nutrient and moisture intake when they are young and actively growing, therefore when we spray at this time their intake of chemical will also be higher giving us the best results.

Weed control strategies during the summer months

As farmers we have two tools at our disposal to try and keep weeds under control. These are chemical weed control and mechanical weed control. Our management practices will determine which one of these we make use of the most. For example, if you follow no tillage practices on your farm then you will rely solely on chemical control. Whereas in a conventional system you will make use of both.

The ideal scenario when using no tillage practices would be to control all young weeds early on in the summer by using a broad based product which kills on contact. This can be done in conjunction with a pre-emergent herbicide which will give you longer lasting results. Many farmers however prefer to do these applications independently as the ideal conditions for control is clear warm weather.

For pre-emergent application the desired conditions are cool drizzly weather which assists the chemical to absorb into the sub-soil which gives the best results. Post planting one would do another application of herbicide as one wants to give the young seedlings the best chance to get ahead with no competition. When maize is in the growing stage, one should continually be assessing the crop for weeds. If there is evidence of weeds one should perform another application. There will be a constant threat of weeds until the point where the crop can provide good basal cover of the soil. Once this occurs there will be a lack of sunlight penetrating to the ground reducing the number of weeds germinating.

In a conventional system, farmers usually plant into a well prepared, clean seed bed. The seed bed would have been prepared soon after the first rains. Many conventional farmers will go just ahead of the planter with a scarifying cultivator or vibroflex so that there are no weeds at planting time. Just after planting they will spray the crop with a pre-emergent herbicide. Once the crop has emerged, one would perform another mechanical weed control in conjunction with a top dressing application by using a cultivator which is configured to clean in between the crop rows and which is set up with fertiliser bins. This can only be done to a certain point until the maize is too tall.

Ideal conditions for chemical application

Always remember that when spraying contact chemicals, that the ideal conditions are warm,



Weed control becoming more difficult because the weed plants are getting strong.

calm clear conditions. The weeds should be actively growing to achieve the best results. Make sure that the spray is set up correctly and that there is little to no wind in order to limit spray drift. When spraying pre-emergent chemicals, the ideal conditions are calm and drizzly weather conditions. This will aid the chemicals to be absorbed into the soil where it can effectively inhibit the germination process of the weeds.

Weeds can have a devastating effect on the potential yield of your crop. Farmers should always be assessing their fields for weeds. Nothing can perform well when there is adverse competition. This is why we as farmers need to do all that we can to limit the impacts of weeds on our crops. Our success will be determined by our ability to plan ahead and our diligence in assessing the conditions of our fields and the actions that we take to maintain them.

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

Soil profiles and assessing stored moisture capacity

One of the most valuable tools used by farmers, consultants and researchers is the examination of soil profiles on a particular block of land that is used for the full range of agricultural production. This could range from evaluation of veld types for soil depth and structure, through crop and pasture production, to the planning to establish commercial viable forestation.

A profile hole will enable the assessment, evaluation and quantification of the kind and extent of ground cover, soil health and tilth, soil depth, soil type, soil stratification into top, middle and bottom layers. If the land has growing crops on it the root development can be tracked in the soil as well as any layer that might act as an impediment to full root growth such as plough or disc pans, structurally hard layers or impenetrable layers due to the chemical composition or nutritional deficiency of a particular lower layer.

Soil profiles should be examined throughout the growing season on each different soil type found in your operation. Examining and quantifying a soil profile for the total amount of stored moisture after a winter fallow period can indicate several critical factors. An evaluation can be made of how much early summer rain is required to be able to plant with confidence and whether or not the crop is likely to be able to complete its growth cycle, given the average or normal rainfall patterns experienced on your farm.

Profile holes

Profile holes should be at least 1 metre by 1 metre and deep enough to show the whole profile for the deepest effective rooting depth of the crops or pastures to be grown on a particular land. An East/West orientation assists in taking photos during midmorning. The holes can be dug by hand or quickly established by using a mechanical backhoe that is almost a standard piece of equipment on many farms these days.

If a few holes are to be examined for an initial evaluation choose what you would consider the best or worst crop production blocks and differing soils that are under pastures.

“*Examining and quantifying a soil profile for the total amount of stored moisture after a winter fallow period can indicate several critical factors.*”

If you have farmed for several years do at least one on a soil within a land that always seems to produce good crops. This may become the benchmark soil profile on your farm. Keep in mind that the deepest soil might not be producing at optimum due to a range of fertility problems including high acidity or low levels of phosphates or other minerals. It is always a good idea to take soil samples when evaluating soil profile holes. The general structure of the soil as well as the fertility status as well as moisture content can act as the basis for future evaluation as to the effectiveness of cultivation methods and track the changes to soil tilth and fertility.

Once your knowledge of the soils found on your farm is broadened a good soil augur can be used to quickly evaluate which class of soil a particular block will fall into. The economic potential for each block and then the whole farm can then be determined.

Other tools to take with you is a broad yellow tape to measure topsoil depth and other strata, a penknife or geological hammer to check for hardened layers and a clip board to record the analysis and details of each hole.

Water use by crops

The water use by crops from a soil profile is largely determined by the growing period of the crop, the millimetres (mm) of water used by transpiration through the plant from the soil and the evapotranspiration of rain water from the surface of the plant and soil. Maximum usage of moisture usually occurs at flowering and seed filling.

For example maize might have a growing period from 125 to 180 days and could use anything from 500 mm to 800 mm depending on climatic factors and cultivar chosen. Related values for sunflowers are 125 - 130 days and 600 mm to 1 000 mm.

Evaluation of stored soil moisture

Some of the main objectives of evaluating the soil moisture would be to determine current status of moisture in the soil at any time in the growing season or between crops. An estimation of total crop requirements less the retained moisture at planting would give you an idea of the rainfall or irrigation required in the growing season to enable the crop to complete its normal growth cycle.

Field capacity is the amount of water remaining or retained in the soil a few days after having being wetted and after free drainage of excess water has stopped. Field capacity in top soil is also defined as a condition of soil when there is a balance of 50% water and 50% air in a particular sample.

The 'feel and appearance method' is a practical method of estimating soil moisture in the various layers, with differing soil textures, by squeezing the soil sample from each different strata in your hand to form an irregularly shaped 'ball'. The sample is also squeezed in your hand between thumb and forefinger to form a ribbon. The soil texture, ability to form to ribbon, water glistening, loose soil particles, soil/water staining on the fingers can then be compared to charts, and by using experience, for the estimation of available water percentage for sandy loams, loams, or the lower underlying clays. The farmer must do a course on the identification of the differing soil types to be able to assess the different soils in the strata accurately.

Calculating the available water

As a general rule a fine sandy loam will retain 25,4 mm per 150 mm of depth and a clay 25,4 mm per 76 mm of depth. Other soil types will retain moisture levels between these values.

As a simple example the profile hole in **Photo 1** shows a Westleigh soil, located in the Eastern Free State, with about 45 cm of fine sandy clay loam topsoil on soft plinthic clay. The land was planted to *eragrostis curvula* pasture grass over 15 years ago. There is evidence of high organic matter and humus build up with no hardpans or impediments to root growth. Evidence of strong root growth was found deep in the soft plinthic clay.

The effective rooting depth is thus estimated at about 60 cm. This land had received 128 mm of rain during March, April and May of 2016. The soil moisture can be estimated



“

Profile holes should be at least 1 metre by 1 metre and deep enough to show the whole profile for the deepest effective rooting depth of the crops or pastures to be grown on a particular land.

as follows: 450 mm divided by 150 mm topsoil x 25,4 mm at 60% field capacity equals 45 mm of stored moisture in the topsoil layer. 300 mm of soft plinthic clay would hold about 60 mm of moisture giving us a total of a 105 mm or 4 inches of stored moisture. The land will be put back to crops starting with a no-till crop of soybeans. Weed control with a glyphosate base and other chemicals applied in two sprays will control any regrowth of grass. 30 mm of rainfall was received on 20 October 2016. Having assessed the soil moisture this farmer can plant with confidence that the crop will be able to go through until January without further rain and will have a very good likelihood of success given future normal rainfall patterns.

Keep in mind that a very deep Hutton or Avalon soil in a rainfall area receiving a long term average of 850 mm will have a minimum of 6 t/ha maize production potential. The Westleigh shown in the photo, in a region with a 625 mm long term rainfall average would have an estimated maximum 3 t/ha maize production potential with a possible 4 ton maize potential in an exceptional year.

Conclusion

As a farmer it is wise to know your soils and be able to assess soil moisture to be able to monitor effective cultivation methods so as to store as much soil moisture as possible to be able to reduce the financial risks of planting crops or managing pastures in the coming seasons.

It is highly recommended that the publication *Soil Classification – A taxonomic system for South Africa, 2nd Revised version*, ISBN 0-621-10784-0, be obtained from The Research and Technology Manager, Private Bag X79, Pretoria, or ordered from reputable bookshops using the ISBN reference. This is the ‘bible’ of South African soil classification and should be in every farmer’s bookcase as a reference to accurately determine the class of soils on your farm and as an aid in determining the true agricultural potential of your farm. 🍷



Article submitted by a retired farmer.

Westleigh soil, located in the Eastern Free State, with about 45 cm of fine sandy clay loam topsoil on soft plinthic clay.

A MESSAGE OF HOPE for farmers after a few seasons of hardship!

Times of economic hardship and political turbulence, times of climate change and drought – these things all affect our lives in so many different ways; but the farming community *most of all FEELS* the drought...because we see the effect of high temperatures and no rains on our fields and crops, our animals and their grazing – and of course, in our pockets too. We even see the drought in the eyes of our children when we have to tell them there is no money for anything 'extra' this year...

Coping with the events of this past season has been like riding a roller coaster with emotions; up with hope, then down with worry – then into the depths of despair! Never before have our inputs and finances been at greater risk. Yes, farmers have been brought to their knees in the face of one of the worst droughts and cruellest heat waves in living memory!

A farmer friend was getting counselling for his depression. The psychiatrist told him that the secret to getting out of the dark depression is to stop looking down at the ground and rather LOOK UP...look people in their eyes; look at problems head on. Long ago the Lord told us in His Word in **Psalm 121: LOOK UP TO THE HILLS...THAT'S WHERE YOUR HELP COMES FROM!**

And yet – life goes on! And we must too! We need to survive both as businesses and as individuals. We all have fathers and mothers, husbands and wives, children and brothers and sisters as well as our employees to care for. We have to do our very best to survive and to make plans for the new season – WE CAN'T GIVE UP! And what's more: **We need** to produce food for the population of our country and as farmers **we are called** to be caretakers of the earth.

There are so many things over which we have absolutely no control. We can do nothing about things like world politics or global economic hardships...so we should **stop worrying** about them because therein lies the root of helplessness and sometimes even **overwhelming depression**.

REMEMBER: The only times you fail – REALLY FAIL – is when you fall down and stay down!

Instead take a good look at yourself. Decide how you are going to respond to external conditions with your own reserve of internal

strength and faith. Try not to sit still and do nothing. Try not to dwell on the negatives too long. Things are what they are! There is nothing we can do to change the heat wave or to stop the drought – we cannot make the rains fall or cause the grass to grow...spend time in prayer and meditation every day to find an inner calm and strength. Focus on what you do have – and on what you can do. Are you still healthy and strong? Can you still make plans?

Do things that require labour and not money

Keep busy and do things you don't normally get around to doing. Tidy up the sheds and the farm yard. Check through all your implements; give them a coat of paint. Consider doing things around your home – like repairs and maintenance that your wife has been nagging you to do. Happiness in the household helps and will make her feel more inclined to support you through the hard times!

Think about small ways to make some money which will help the cash flow situation – chop and sell wood; work on your home vegetable garden – even if it is mainly to keep your hands busy and your mind occupied – and of course every few cents help!

The bottom line: We farmers should never be too proud to work hard physically or to tell partners about our circumstances. We must do whatever it takes to heal our businesses and feed our families. The energy we use in so doing will already make us feel focussed on our long term goals and will fill us with enough passion to fight for survival!

Ultimately **ALL that matters is what YOU do about your circumstances and how negatively YOU allow your problems to affect you**. Are your problems going to weigh you down, or will they drive you to action?

Galatians 6.v.9 says: 'Let us not become weary in doing good; for at the proper time we will reap a harvest - if we do not give up.'

There is so much to be said about the power of the individual. One of my all-time favourite books is Bryce Courtenay's 'The Power of One'. He writes, '**The power of one** is above all things **the power to believe in yourself... the mind is the athlete, the body is simply**



One tree can start a forest, one smile can begin a friendship,
one hand can lift a soul, one word can frame the goal,
one vote can change a nation, one sunbeam can light a room,
one candle can wipe out darkness and one touch can show you
care – one life can make the difference!

Author Unknown

“

*The only times you fail
– REALLY FAIL – is when
you fall down and stay down!*

the means it uses to *run faster or longer, jump higher, shoot straighter, kick better, swim harder, hit further, or box better.*

I believe that adopting a positive attitude and making a difference is my path to a more fulfilling, satisfying existence therefore I must be prepared to make small changes and I must live my life aware that I CAN make a difference!

When an old farmer was asked the question: *Why do farmers farm, given their economic adversities on top of the many frustrations and difficulties normal to farming?*

He replied: Always, always the answer is: Love. We do it for love. Farmers farm for the love of farming. We love to watch and nurture the growth of plants. We love to live in the presence of animals. We love to work outdoors. We love the weather. We love to live where we work and to work where we live. We like to work in the company of our partners and our children. We love working independently and we love not having a manager telling us what to do!

What about you? Do you farm because you love it?

Will you fight for what you have had and will you do everything possible to save your farm? Are you going to stay indoors with the curtains closed or will you be found in your fields chasing the goats and crows, protecting every last grain of corn until harvest time like Mr Khumalo and Mr Ndhlovu did near Ntabamhlope last summer?

Finally, brothers, whatever is true, whatever is honourable, whatever is just, whatever is pure, whatever is lovely, whatever is commendable, if there is any excellence, if there is anything worthy of praise – think about these things. (Philippians 4:8)

May you find hope in being steadfast; may the rains fall soft on your fields and may you live in peace!

An old African proverb says: However long the night, the dawn will break. **Drought has come in the past but it has always been broken in the end – we need to make sure it doesn't break us first!** 🌧️

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

Management of wheat stubble and your choice of cover crops



Wheat stubble to protect the soil.

The management of residue following harvest is very important, be that wheat stubble or possible cover crops. The management will play an important role in the success of the crop that follows.

Conventional or conservation agriculture practices will have different ways of dealing with the wheat residue. In conventional farming practices residue is incorporated into the soil

through different tillage practices before the next crop is produced. It is certainly the easiest way of dealing with your residues other than baling it for animal feed or bedding. Unfortunately it is not a sustainable practice with huge amounts of carbon being lost in the form of CO₂ during the tillage actions and with that the degradation due to a loss in soil structure. Removal of the stubble or residue for feed or bedding relates to a loss in nutrients from the system, resulting in increased fertiliser need during the next season.

This process leaves the soil bare without any protection against the elements such as rain and wind, which leads to excessive loss of topsoil through erosion. Conservation agriculture has the opposite in mind, with the retention

of residue on top of the soil to prevent erosion, forming a protective layer against the elements. It keeps the soil cooler in summer, which helps protect the important microbial life in the soil. The latter management practice does not prevent a farmer from having animals grazing on the residue during the summer season.

At the Langgewens Research Farm of the Western Cape Department of Agriculture, near Moorreesburg in the Western Cape, four of the cropping systems tested include an animal factor which grazes on the pasture and wheat residue over the summer. The animals in these systems are managed in such a way as to ensure that no more than 50% of the residues are removed. In doing so you are able to retain enough cover on the soil.

“ *The most important thing to remember with a winter cover crop is to terminate it before a can set seed.*

“

The management of cover crops depends on what the farmer wants to achieve.

The advantages of the grazing is a quicker recycling of nutrients through the animal and less soil cover eases the planting of the next crop, especially when you are planting with a tine seeder. The animals' hooves also help to break up the residue into smaller sections to ease the flow of the residue through a seeder. Although full cover is preferable it can make life difficult during the planting action.

To help ease the problem, a farmer can drag some rubber tyres across the field to break stubble into manageable sections and to spread the residue evenly across the field. There are also rake-type implements available that can be used to spread the residue more evenly directly after harvest or before planting the next crop.

The management of cover crops depends on what the farmer want to achieve. If you planted a winter cover crop, the management will be determined by what the use of the crop will be. It could be used as a hay or silage crop, soil cover or even for grazing. In all these cases the cover crop will help with weed control. It is important that it is planted early in the season to extend the growing season for as long as possible. The longer the growth period, the more material is produced.

When the cover crop is used for hay or left for soil cover it is important to terminate the cover before viable seed is set. In the case of hay, the cover will be cut and left to dry before baling it or rolling it flat in the case of producing cover for the soil. In both these cases it can also be terminated with a registered herbicide. When used as silage, it will be cut at the time when the cover crop is at an optimum for making silage.



Good soil cover stores moisture and suppresses weeds during the following season.

If the cover crop is used for grazing, there are two options. The first is to let the cover crop grow for as long as possible before grazing it, which is probably the best option when grazed with cattle. The second option might be better when grazing with sheep or goats. In this option you have an early graze, after which the cover crop is left to regrow. The animals are then moved to permanent pasture until a possible second grazing later in the season (if there is enough regrowth). If the cover crop recovers well, instead of the second grazing, the cover could be terminated and used for hay. The most important thing to remember with a winter cover crop is to terminate it before a can set seed.

A summer cover could be managed similarly if you are in a predominantly summer rainfall area. If you want to plant a summer cover in the winter rainfall area or a winter cover in the summer rainfall areas it would be wise to terminate the cover early enough to ensure enough time to accumulate water in the soil profile. 🌧️

Article submitted by Dr Johann Strauss, Directorate Plant Sciences, Research and Technology Development Services, Department of Agriculture Western Cape. For more information, send an email to johannst@elsenburg.com.

Pula Imvula's Quote of the Month

Life is about making an impact, not making an income.

~Kevin Kruse

Recognise the signs of BANKRUPTCY

Bankruptcy refers to the position where the farming business has more liabilities than assets and is not able to fulfil all obligations. Looming bankruptcy does not happen overnight. It is a slow process and takes quite a while (most of the time at least more than a year) before the farming business is declared bankrupt or the technical correct word insolvent.

This leads to the question 'Why are there farmers, in a middle of a crisis (for instance the present drought), who are able to farm successfully and meet all their obligations?' This can be debated endlessly. However, finally all reasons can be relayed to the quality of management, and in the case of a farming business – farm management as was confirmed by a number of studies to this affect.

Numerous definitions for Farm Management exist but by combining all definitions they all more or less state that farm management is 'THE EFFICIENT EMPLOYMENT OR COMBINATION OF ALL RESOURCES, HUMAN AND PHYSICAL, TO ACHIEVE THE AIMS OF THE FARMING BUSINESS.' Therefore the physical resource base of a farm is not a recipe for success or failure. Instead performance is determined by the way the farm is managed to use the resources efficiently.

In practise management means to plan, organise, implement and control all management areas properly. The management areas being production-, marketing-, purchasing, financial, administrative-, human resource, public relations, asset and stock, and general management. Thus the farmer must be a champion manager. The champion farmer will then be able to employ his employees, his land and all immovable assets and all movable assets efficiently to produce quality products customers need, at a profit.

Some farmers think their farms generate a lot of money but proper record-keeping may probably indicate that for instance self-produced maize is not 'free'.

At the same time, whilst applying each of the management tasks – planning, organising, implementing and controlling – the champion farmer/manager will be the good leader, who can take decisions, communicate internally and externally, delegate work, co-ordinate sections, motivate his people and maintain discipline both informally and formally.

Conduct of managers which suggest poor management and which can affect the success of a farm are for instance:

- **Slackness or lack of discipline** – as managers, some farmers know what they are supposed to do, but are simply too slack and cannot discipline themselves to apply the correct management principles.
- **Timeousness** – some farmers apply correct management methods, but always run a day or a week behind their activities. They either plant a week too late, treat a sick cow a day too late, or fix their grain prices too late.
- **Standard of living** – homes and private cars are unproductive assets and therefore those costs form part of the farmer's management remuneration. The higher the cost, the more pressure on the profit of the business.
- **Keeping records** – farming is often practised without proper information. Some farmers think their farms generate a lot of money but proper record-keeping may probably indicate that for instance self-produced maize is not 'free'.
- **Adaptability** – some farmers are not sufficiently diversified to adapt to changing market or climate conditions.
- **Stagnation** – some farmers get stuck in obsolete management practises outdated by a decade, and fail to realise that new technology and improved practises have been developed since.

Signs of bankruptcy

As stated in the first paragraph becoming bankrupt is a gradual process of which the following are signs that bankruptcy might be on its way

- Creditors continually pressurising and threatening a farmer for payments.
- Loan balance continues to increase.
- Extending the repayment terms. For example, no deposit or a very small one over a repayment period that is as long as possible.

“

The champion farmer will then be able to employ his employees, his land and all immovable assets and all movable assets efficiently to produce quality products customers need, at a profit.

- Repayments are made late, with only the minimum required amount being paid.
- Rescheduling loan payments for a later date.
- Inability to pay VAT if applicable.
- Selling loose assets privately for cash to pay private expenses.
- Borrowing money from friends or family without set repayment arrangements.
- Purposefully making errors on cheques to win time for a second cheque.
- Many queries on the accuracy of amounts on account statements or requests for duplicate invoices.
- The excuse that the payment is in the post.
- Circulating rumours about the farmer's financial position.
- The farmer becoming aggressive or elusive when talking about money.
- Refusing to speak to creditors, an excuse of always being in meetings, never returning calls or referring the matter to somebody else as the accountant or office assistant.

When these actions occur it is time to thoroughly analyse your financial situation. If you are not making a profit, a concerted effort should be made to increase income, decrease expenses and/or restructure debt. If this is not possible, unproductive assets must be sold or an alternative agreement must be made with creditors. If these options do not offer a reasonable chance for financial survival, sequestration might be an unavoidable consequence. 🍷

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

MONSANTO at the forefront of sustainable food production

At Monsanto we are focused on a variety of areas that can have a positive effect on food production while using less land. We also strive to continue adding value despite difficult and challenging circumstances.

Breeding and biotechnology contribute to the development of seed and crops that are better adapted to drought, pests and disease while still improving yield and facilitating food production. Crop protection and biotechnological innovation help us and the farmer to protect crops and the resulting yield. Precision-farming techniques help the farmer to plant the right seeds and crops in the right place at the optimum time to improve productivity and efficiency.

Information technology

We also focus on a lesser known technology – data or information technology. We are merely scratching the surface of all the possibilities these technologies offer, but in the end they will help us and the farmer to improve farming practices. With the information currently at our disposal, we can already assist farmers in processing and analysing the information they have gathered on their farms, so that they can optimally produce on every piece of arable land while using water, nutrients and energy efficiently. Data technology enables us to analyse detailed information about soil, disease, pests and other variables to make informed recommendations about seed, crop protection and farming practices. Examples include variable planting practices that adapt plant populations and spacing based on historical data of farm land and production area.

The benefit of all these advancements is that they are suitable for farmers of all sizes, i.e. they are scale-neutral. Data and information on weather, disease or products can be made available to everyone through the use of smartphones and tablets. This means expensive, sophisticated equipment is not always necessary to add value.

Biologicals and microbial chemistries

With regard to our BioDirect and microbial agents, these have the potential to introduce new spray or seed treatment products to the market and are therefore in line with our integrated farming system approach. Microbial-based products are derived from micro-



organisms that occur naturally in the environment, such as bacteria and fungi. They protect crops against pests and disease, but can also improve production.

Our BioDirect technology and research focuses on four areas namely: Weed control, insect management, virus control and bee health.

The microbial technology and research focuses on pest and disease control and plant yield and growth.

Drought tolerance and innovative use of available water

There are many innovations that can help farmers to manage water better. One is drought tolerant technology and germplasm. The seeds produced through these methods are developed by making use of breeding techniques and biotechnology and can help farmers to better manage and survive yield loss due to drought. Monsanto is working on the development of drought tolerant cotton after introducing drought tolerant maize hybrids in the USA in 2013. In South Africa, we are in the advanced stages of making this technology commercially available. 

Article submitted by Magda du Toit, Corporate Communication Manager, Monsanto South Africa. For more information, send an email to magda.du.toit@monsanto.com.

Integrated crop and pasture-based livestock production systems

This article is the 21st of a series of articles highlighting a specific pasture crop species that can play an imperative role in conservation agriculture (CA)-based crop-pasture rotations.

Besides improving the physical, chemical, hydrological and biological properties of the soil, such species, including annual or perennial cover crops, can successfully be used as animal feed.

Livestock production systems are in many ways dependant on the utilisation of pasture species, in this case as a pasture ley crop, and can therefore become an integral component of CA-based croppasture rotations.

It is imperative to identify a plant species fulfilling the requirements of a dual purpose crop, i.e. for livestock fodder and/or soil restoration. This article focuses on a cover crop with pasture crop potential used to improve soil conditions and to provide a high quality grazing for ruminants.

Mucuna pruriens (L.), velvet bean or fluweelboon

Velvet bean is a twining, annual legume that can reach 7 m in length. There are two common varieties *M. pruriens* var. *pruriens* and var. *utilis*. This species is a very well-known green manure and cover crop.

Velvet bean is very vigorous and its growth suppresses companion species. If velvet bean is grown in intercropping system, it should preferably be sown at least 45 days after the other crop – especially a crop such as maize – to overcome interspecies competition.

Agro ecological distribution

Mucuna pruriens can either be sub-tropical or tropical. This species is known to grow in many different habitats which include pastures, forest edges, roadsides, riverbanks or even woodlands. *M. pruriens* can adapt to well-drained sandy soils as well as clay soils.

This species is not drought tolerant since it has a shallow root system, and is also known to not tolerate waterlogged conditions. Velvet bean requires a long growing season and is sensitive to frost and therefore requires at least 180 frost free days. Since the species does not succeed on cold, wet soils, when grown as a crop it should not be planted before the soil has reached warm temperatures.

Since velvet bean cannot tolerate temperatures below 5°C, temperatures of 20°C - 30°C are recommended during the growing season.



Velvet bean in an early vegetative stage, looking promising.



Velvet bean in a late vegetative stage.

An ideal soil pH to grow velvet bean successfully is 5 - 6,5 on light, sandy loam soils. *M. pruriens* is adaptable to a wide rainfall range as low as 400 mm - > 1 200 mm.

Management and utilisation

Mucuna pruriens is known to be a common forage crop with great value. This species is known for its amazing weed control abilities. The most common use of velvet bean is as a cover crop and green manure.

It has been widely used to reclaim land that has been infested with weeds. When planting velvet bean, it does not require a high degree

of land preparation. The best method to plant velvet bean is by drilling it into the soil with about 1 m between rows and 20 cm - 80 cm between plants (20 kg/ha - 40 kg/ha seed). Seeds are large, so seeding depth can be as deep as 10 cm but not less than 3 cm. Seed does not require scarification or inoculation with rhizobia prior to planting.

This species has also frequently been intercropped with maize and left to grow after maize has been harvested to maintain and increase the soil's fertility before establishing the following season's crop. There are two options to manage velvet bean in such a situation and that



Velvet bean after rolling.



Pods of the velvet bean.

is to incorporate it just before the next planting season, or partially graze it together with some maize residues to sustain ruminants through the dry winter season in a subtropical area.

Velvet bean has a high dry matter production for a subtropical legume. Yields range from 5 t/ha - 13 t/ha depending on the rainfall. As it is known that soil phosphorus (P) is an important growth element for legumes, velvet bean can produce high yields even in marginal soils that have a low available P value.

Soil conservation and health benefits

Velvet bean has proven to be resistant to the attack of certain pests and diseases due to its content of toxic secondary metabolites, which gives this species the ability to outcompete weeds. Research has shown a significant increase in organic matter when velvet bean biomass was incorporated into the soil. The soil moisture content also increased by 20% to 30%, and showed a higher cation exchange capacity, lower pH, lower apparent density and a reduction in micronutrient recycling.

At the same time, with the use of *M. pruriens*, reductions in the damage and mortality caused by *Pythium*, *Rhizoctonia* and *Fusarium* on maize seedlings have been documented, probably due to the type of organic matter that is incorporated into the soil, and the effects of this on the soil's microclimate and/or its allelopathic effects (Versteeg & Koudokpon, 1990).

Management challenges

Although velvet bean is used to control weeds in agricultural settings, it is an invasive species and can negatively impact on environments outside of cultivation. Some agronomic disadvantages of velvet bean include:

- It is susceptible to burning during the dry season of the year, especially when it is grown in areas that are managed by slash-and-burn.
- It is defoliated by some rodents.
- It can attract certain sap sucking insects.

When a legume such as *M. pruriens* is grown in association or is intercropped with maize, a reduction in maize yield often occurs during the first cycle. The severity of such reduction

depends on the legume species as well as its density and management.

Soil nitrogen losses through leaching and volatilisation have been recorded in research projects, because of the absence of a crop able to absorb the nitrogen being released through decomposition – the immobilisation of nitrogen at the same time when the crop has the highest demand for this nutrient.

Animal production aspects

Despite velvet bean being such a useful forage crop, the seeds can often be toxic to mammals, with reported cases in pigs. This fairly high-protein fodder (greens and pods) can be eaten by most livestock, except pigs and chickens, since the seeds contain an anti-nutritional factor that will retard the growth of non-ruminants.

Depending on the stage of maturity, the crude protein content of the dry matter foliage is between 10% - 25% and 20% - 35% in the grain. Velvet bean has a digestibility of 60% - 65%. Many reports have indicated that *M. pruriens* can have either a low palatability or an extremely high palatability, and this is often related to the climatic conditions in which it is grown, further affected by the way it is managed and utilised.

Conclusion

After consulting literature, we can conclude that *Mucuna pruriens* will increase the functional properties of an agro-ecosystem, which will increase its productivity through the biocontrol of weeds and diseases in addition to the incorporation of organic matter (OM) and N into the soil.

Velvet bean has also shown that soil biota can be improved, and when soil properties change, soil moisture and temperature will be regulated better and soil will be protected from erosion and ultimately better intercropped grain harvests can be achieved. Alternatively, when velvet bean is being used as a cover crop, it can be partially grazed by ruminants during the drier season to sustain their growth.

References

Versteeg, MN & Koudokpon, V (1990). *Mucuna helps control imperata in shuthern Benin*. pp. 7 - 10, *Bulletin 7, West African Farming Systems Research Network, Benin, Africa.*

Article submitted by Wayne Truter, University of Pretoria, Chris Dannhauser, Grass SA, Hendrik Smith, Grain SA and Gerrie Trytsman, ARC-Animal Production Institute, for SA Graan/Grain SA December 2015. For more information, send an email to Wayne.Truter@up.ac.za, admin@GrassSA.co.za, hendrik.smith@grainsa.co.za or GTrytsman@arc.agric.za.

Weeds in the winter rainfall area

Devil's-thorn (Spiny Emex)

Scientific name: *Emex australis*
Afrikaans name: Kaapse dubbeltjie of Emex dubbeltjie
English name: Spiny *emex* or *devil's-thorn*

Only one *Emex* species occurs in South Africa – a weed in cultivated fields and disturbed places. It is indigenous to the Cape provinces, but currently occurs throughout the whole of South Africa and even the world.

In Australia it is seen as a very serious weed after it was taken there from South Africa by sailing ships. The plants were grown on the ships as a source of vitamin C, because the young leaves are edible. The fruit, borne throughout the year, has three strong thorns that can cause painful wounds to people walking barefoot and can cause severe pain and discomfort to animals walking through dense stands of it.

Devil's-thorns are moderate competitors that generally have a spreading growth form.



Devil's thorn seedling – observe the oblong cotyledon leaves. Photo taken by Hannes Schoeman from Monsanto

However, if they occur in dense stands where conditions are favourable for their growth, they can compete seriously with other crops and in these cases they have a more upright habit.

In Australia, it was found that densities of 30 and 90 devil's-thorn plants per square metre reduced wheat yield by 25% and 50% respectively (<http://www.cabi.org/isc/data-sheet/20826>). Also in Australia it was found that 300 from a herd of 1 800 sheep contracted blackleg (*Clostridium chauvoei*) due to wounds caused by devil's-thorns; 60 of these died.

It was also found that the reduction of devil's-thorn stands from 150 plants to 30 plants per square metre doubled the grazing production and increased ewes' weight by 73%. Quite a lot of the disadvantages of the devil's-thorn plants are therefore indirect and not that obvious.

Devil's-thorns are herbaceous, prostrate-growing to sub-erect annual plants that can grow up to 60 cm high. The plants have strong tap roots and branch out from the base. The stems are green, finely ribbed and smooth or covered with soft hairs. The leaves are simple and arranged alternately or in small clusters. The leaves are ovate to oblong and are entire to shallow undulated. They can become 8 cm long and 5 cm wide. The cotyledon leaves of the devil's-thorn are completely oblong at post-emergence.

The flowers are green, axillary in clusters and are bisexual – although the male and female flowers are found on the same plant.

The fruit are triangular and have three dents on each plane, with three strong, spreading thorns. The seeds can be up to 5 mm long and are triangular, with a round base and a sharp point. The levels are slightly indented.

Prevalence and distribution

Devil's-thorn can be found across southern Africa. It is a less important weed in the wheat fields of the eastern Free State, but is an important weed among the crops of the winter rainfall area.

Around the 1980s it was regarded as one of the three main weeds in wheat and the most important in medics in the winter rainfall region. The appearance of more effective herbicides changed tilling practices and the development of herbicide resistance in some other weeds pushed devil's-thorns down in the ranks of important weeds. However, in some areas with a large livestock component, it remains the most important broad-leaved weed.



Fruit and seeds from the devil's-thorn – the triangular fruit with thorns ensure that the fruits are spread by animals, people and machines with rubber tyres.

It flourishes in sandy soil. Especially in areas where annual legume pastures such as medics are cultivated continuously for more than one season, devil's-thorns can become a serious problem.

Devil's-thorns propagate only with seed. The seeds are big and can germinate from deep under the soil surface and can stay viable in the soil for eight years. Massive seed banks of more than 10 000 seeds per square metre were documented in Australia after only one pasture year.

Generally less than 20% of the devil's-thorn seed germinate during the first season after maturation and the other seeds stay dormant in the seed bank (<http://www.cabi.org/isc/data-sheet/20826>). They can germinate throughout the year and establish if sufficient moisture is available, but in the winter rainfall area establishment naturally happens mostly during autumn.

Two types of fruit can be found on the devil's-thorn plant. The fruits borne close to the soil surface are flatter and have shorter thorns. The



A young devil's-thorn plant.

Table 1: Herbicides registered for controlling the devil's-thorn.

Active ingredient	Formulation	Crops for which registered	Time of application	Resistance status	Mechanism of action group
2,4-D/dicamba	240/80 grams per litre	Wheat	Apply postemergence between growth stages 7 and 13 of the wheat	No	O
2,4-DB	400 grams per litre	Lucerne and other legume pastures	Apply postemergence on lucerne and clovers after first tripartite compound leaf has formed. Apply as pasture topping to medics	No	O
Aminopyralid	240 grams per litre	Barley and wheat	Apply postemergence in tank mixtures with bromoxynil or metsulfuron methyl	No	O
Bromoxynil1	225/400/450/500 grams per litre	Barley, oats, lucerne and wheat	Apply postemergence before three-leaf stage of weed	No	C3 & M
Bromoxynil /pyrasulfotole	210/37,5 grams per litre	Barley and wheat	Apply postemergence between four and six-leaf stage of weeds	No	F2, C3 & M
Carfentrazone-ethyl	400 grams per kilogram	Barley and wheat	Apply postemergence together with MCPA and metsulfuron methyl or chlorsulfuron when crop is in growth stages 7 to 13	No	E
Chlorsulfuron	750 grams per kilogram	Barley, oats and wheat	Apply postemergence in mixture with bromoxynil or methsulfuron methyl when crop is in two to five-leaf stage and no later than four weeks after the weed has germinated	No	B
Chlorsulfuron/ metsulfuron-methyl/ tribenuron-methyl	119/79/222 grams per kilogram	Barley and wheat	Apply postemergence when grain is in four to six-leaf stage and no later than four weeks after the weed has germinated	No	B
Florasulam /flumetsulam	75/100 grams per litre	Oats and wheat	Apply postemergence in tank mixtures with bromoxynil	No	B
Flumetsulam	800 grams per litre	Clovers, lucerne, legume pastures and medics	Apply postemergence when the crop has formed three fully compound leaves and before it flowers and before weed reaches diameter of 5 cm - 15 cm	No	B
Glufosinate-ammonium	200 grams per litre	Most agricultural situations	Pre-sowing	No	H
Glyphosate	360/450/480/510 grams per litre	Most agricultural situations	Pre-sowing	No	G
	680/700/710 grams per kilogram				
Imazamox	40 grams per litre	Canola, lucerne, legume pastures and medics	Apply postemergence on actively growing weed – only on Clearfield canola cultivars – only 85% control on devil's-thorn	No	B
Iodosulfuron-methyl-sodium /mefenpyr-diethyl	50/150 grams per kilogram	Barley and wheat	Apply postemergence when weed is at the two to four-leaf stage	No	B
lodosulfuron-methyl-sodium/ mesosulfuron-methyl/ mefenpyr-diethyl	30/30/90 grams per kilogram	Wheat	Apply postemergence when weed is at the two to four-leaf stage	No	B

Weeds in the winter rainfall area

Devil's-thorn (Spiny Emex)

Active ingredient	Formulation	Crops for which registered	Time of application	Resistance status	Mechanism of action group
Metribuzine	480 grams per litre	Lucerne	Apply pre-emergence only on certain cultivars – see label	No	C1
	700 grams per litre	Barley and lucerne	Apply pre-emergence to lucerne and early postemergence to barley		
Metsulfuron methyl	500 grams per kilogram	Barley and wheat	Apply postemergence when the crop is in the three to five-leaf stage	No	B
	200/600 grams per kilogram	Barley, oats and wheat			
Metsulfuron-methyl/ thifensulfuron methyl	68/680 grams per kilogram	Barley, oats and wheat	Apply postemergence to weeds before the four to five-leaf stage; no later than two weeks postemergence of weed	No	B
Metsulfuron methyl/ tribenuron methyl	80/300 and 120/600 grams per kilogram	Barley and wheat	Apply postemergence when crop is in four to six-leaf stage, but before three weeks postemergence of weed	No	B
Paraquat	200 grams per litre	All crops	Pre-sowing	No	D
Paraquat/diquat	120/80 grams per litre	All crops	Pre-sowing	No	D
Prosulfocarb	800 grams per litre	Wheat	Apply pre-emergence in tank mixture with triasulfuron – 65% - 90% control of devil's thorn	No	N
Prosulfuron	750 grams per kilogram	Barley, oats, wheat	Apply postemergence in mixture with bromoxynil or metsulfuron methyl	No	B
Pyraflufen-ethyl	20 grams per litre	Barley, wheat	Apply postemergence in tank mixture with bromoxynil or MCPA on weed no bigger than two to four-leaf stage	No	E
Pyroxsulam	45 grams per litre	Wheat	Apply postemergence only as tank mixture with florasulam/flumetsulam	No	B
Simazine	500 grams per litre	Canola and lupins	Apply pre-emergence directly after planting in well-prepared seedbed – only to triazine-resistant canola cultivars – uncertain control of devil's thorn	No	C1
Simazine/ terbuthylazine	213/287 grams per litre	Canola	Apply pre-emergence only in tank mixture with metazachlor	No	C1
	450/450 grams per kilogram				
Sulfosulfuron	750 grams per kilogram	Wheat	Apply postemergence in tank mixture with bromoxynil when devil's thorn is at one to four-leaf stage		
Triasulfuron	750 grams per kilogram	Barley, oats and wheat	Apply pre-emergence in mixture with prosulfocarb	No	B

¹ To prevent confusion, the English names for active ingredients are mentioned here.

NB – Always consult the label of the herbicide to ascertain the correct dosage and application method – make sure that mechanism of action groups are alternated, and not the active ingredients. Make sure that the weed to be controlled appears on the label of the herbicide to be applied.

ripe fruits at the bottom stay attached to the plant even after it has died and will in subsequent years probably germinate close to the place where the mother plant was. The other fruits borne higher up on the plant fall off when they are ripe and are more triangular, which means that there is always a thorn pointing upwards. Because of this

the fruits are distributed more easily by animals and people and even vehicles.

Control

Chemical control

The list of herbicides registered for devil's-thorns that are published in *A guide for the*

chemical control of weeds in South Africa is shown in Table 1. A few herbicides and applications have been added that were registered after the guide was published, as have some non-selective herbicides that do not specify which weed species is controlled, but that are effective against devil's-thorns if there is no resistance.



The spreading habit of a mature devil's-thorn plant in the absence of competition.

Devil's-thorns are among the broad-leaved weeds that are a bit more hardy and are not so easily controlled by all selective broad-leaved herbicides. In many cases the control is uncertain and can be anywhere between 60% and 90%.

As far as is known, no resistance has been observed in devil's-thorn anywhere in the world. However, it remains important for anti-resistance measures to be employed to prevent resistance against herbicides from developing. Care should be taken that the herbicide is applied under good spraying conditions and that the correct dosage is applied to weeds not bigger than the four-leaf stage.



Flowers and fruits on the stem of the devil's-thorn.

Too high and too low dosages cause high selection pressure for target site and non-target site resistance respectively. Alternate the use of an effective herbicide as regularly as possible with other herbicides with a different action (in other words in a different action group).

Alternative control

In order to prevent and manage herbicide resistance it is essential not to rely only on chemical control. Tillage and physical removal are effective, but very time consuming. Shallow tillage is effective in controlling devil's-thorn seedlings.

According to Australian studies, devil's-thorn is one of the few weeds that benefit from crop rotation where pastures are rotated with cash crops. This is because it is difficult to chemically control devil's-thorns in legume plant pastures effectively. Continuous cultivation of grain crops (grain crops can be alternated) or continuous perennial grazing production, as is the case in New Zealand, should suppress devil's-thorns. Integrated control where chemical control and grazing are used, the so-called *spray topping* method, is also a relatively effective way to control devil's-thorns. The application of integrated management actions is very important, not only to prevent resistance, but to also make weed control more environmentally friendly.

Acknowledgements and references

The following persons read the article critically and suggested improvements where necessary: Prof. Andy Cairns (Stellenbosch University), Dr Erik Eksteen (Syngenta), Mr Org Lotter (Bayer CropScience), Mr Jim McDermott (Du Pont), Mr Hannes Schoeman (Monsanto), Mr Frik Potgieter (Nulandis) and Mr Dirk van Eeden (Terason).



Flowers of the devil's-thorn.

The list of registered herbicides was obtained from the publication: *A guide to the chemical control of weeds in South Africa: A CropLife South Africa Compendium*. Order from info@croplife.co.za or 011 079 4199.

Information was also obtained from the book *Onkruid in gewasse en tuine in Suidelike Afrika*, which can be obtained from the ARC-Grain Crops Institute, Private Bag X1251, Potchefstroom, 2520. Contact Mary James on 018 2996253 or JamesM@arc.agric.za.

The book *Probleemplant en indringeronkruid van Suid-Afrika* by Clive Bromilow was also consulted and is available from most bookstores, or consult the publisher's website at www.briza.co.za.

The pamphlet *Volhoubare gewasproduksie in die teenwoordigheid van onkruidwerstand* is obtainable in PDF format from the writer of this article at pjp@sun.ac.za. It is also available in English on the CropLife SA website (www.croplife.co.za).

Article submitted by PJ Pieterse, Department of Agronomy, Stellenbosch University, for SA Graan/Grain December 2014. For more information, send an email to PJP@sun.ac.za.



Grain SA interviews...

Zoliwe Nombewu

which I thrive to improve daily, my ability to get the best price for whatever I need and communicating with people.

Weaknesses: My weaknesses are being impatient at times, anxiety and being talkative.

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

When I first started out, it was on my husband's land which was 4 ha in size. We were producing nothing more than 1,5 t/ha in a good yield.

Then Grain SA came along with better ways to produce maize and cultivated our lands. I am now in the 4 t/ha - 5 t/ha region under dryland. Obviously with the severe drought last year I yielded less.

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

My husband, the passion I have for farming, my willingness to continuously learn and the perseverance and drive to succeed with what I am doing.

Where do you see yourself in five years time? What would you like to achieve?

In five years time I would like to plant at least 100 ha - 150 ha on communal land. I would like to run a successful farming business, become a market relevant farmer for the region of Mthatha as well as growing from strength to strength with farming.

Passion, hard work and the willingness to learn are the key factors why Zoliwe Nombewu, from Mthatha in the Eastern Cape is bound to be a success in any challenge she takes on.

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

I am currently farming on 32 ha, with predominantly maize. I also farm with vegetables on 3 ha of which I supply to Spar, Spargs and other surrounding markets who are willing to buy.

What motivates/inspires you?

My husband inspires me because he started from nothing and today is steadily progressing within the farming arena. The passion he has for agriculture and farming encouraged me to support him, and this made me grow more towards appreciating what I do today.

Describe your strengths and weaknesses

Strengths: My strengths are the ability to market what I produce, my production practices

Article submitted by Sinelizwi Fakade, Provincial co-ordinator Mthatha, Eastern Cape. For more information, send an email to sinelizwe@grainsa.co.za.

THE CORNER POST

MELVIN NCEDE

How does a subsistence farmer see the agricultural industry?

The role Melvin Ncede, a smallholder farmer from the Eastern Cape, is playing in agriculture is helping to make an impact in the agricultural industry in South Africa. Although he is at this stage only producing food for his local market in Engcobo, which is situated in the western part of the former Transkei, he knows his hard work is making a difference.

‘Being a farmer in this community allows me to be seen as an important individual to the people of this community because of the role I am playing in ensuring food security,’ he says. He adds that feeding the masses begins with the small-scale farmers feeding their community in the rural setups. This viewpoint is similar to one shared by a Catholic saint – the well-known nun and missionary, Mother Teresa, who once encouraged people to get involved in feeding the hungry by stating: ‘If you can’t feed a hundred people, then just feed one.’

Melvin says that small-scale farmers should all feel part of the bigger agricultural industry. The reason is that the work they do as farmers is crucial to those in their communities who depend on them and their produce for survival. According to him subsistence farmers may only be farming on small pieces of land, producing primarily for themselves and selling whatever surplus is leftover for financial returns, but the impact they are making in ensuring food security is huge. The saying, ‘Tall oaks grow from little acorns’ means that great things come from small beginnings. This is exactly how Melvin sees the role of the small-scale farmer in the bigger agricultural picture.

To him the term agricultural industry represents the production of crops by all farmers – small and commercial, the marketing of the farmer’s produce, financial resources, land and land access, bank loans to ensure that production

can continue, the variety of agricultural products – whether it be mechanisation or seed and herbicides as well as the representatives of these products.

When asked what needs to be done differently in the agricultural industry he answers: ‘A different approach in supporting small-scale farmers is required. Access to land and ownership thereof is paramount to small-scale farmers. The need to access production credit at financial institutions will position the farmers to grow and develop the vast amount of hectares which lay fallow in this region of the Eastern Cape.’ In addition, skills development and access to relevant information is also crucial towards ensuring that small-scale farmers develop into productive farmers in the communal areas.

Melvin adds that at this stage, Grain SA is the only organisation that has been providing up to standard assistance. ‘The government is battling and cannot sustain their method of supporting farmers,’ he says. ‘Although a lot has been practiced theoretically in ensuring that smallholder and subsistence farmers are absorbed into the main stream of the agricultural industry, this industry has sidelined and under-estimated the role which could be played by small-scale farmers.’

In his opinion what is important to the industry is the continuous assistance of smallholder farmers through financial and skills development. This will enable them to play a bigger role with regards to food security at poorer household levels. What is needed for this to transpire is the access to productive land. Furthermore, the empowering of youth to become farmers should also be a priority so that this sector is sustained and can survive.

This enthusiastic farmer farms mainly with maize, sheep and cattle. Melvin is married to

A different approach in supporting small-scale farmers is required. Access to land and ownership thereof is paramount to small-scale farmers. The need to access production credit at financial institutions will position the farmers to grow and develop the vast amount of hectares which lay fallow in this region of the Eastern Cape.

“

Kuthazwa Ncede and they have six children, of which two are actively involved in the business. ‘I want to become a successful farmer within the communal land setup, because the ground in this area has a lot of potential. As small farmers we must trust that success can be achieved from farming the lands of the Eastern Cape,’ he shares his wish for the future. Together this supportive family dreams of the day that Melvin will be a ‘mighty oak’ farmer.

A special word of thanks to Sinelizwi Fakade, Grain SA Provincial co-ordinator in Mthatha, Eastern Cape, for his support to subsistence farmers in the area as well as his assistance in acquiring the requested information from Melvin Ncede for this article.

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.

uppe marketing A15186/65API



DEKALB® AND YOU ...

CULTIVARS

Yellow maize

- DKC73-72
- SNK2778
- DKC71-42
- DKC71-44B
- DKC80-30R
- DKC73-76R
- DKC68-56R
- DKC73-74BR GEN
- DKC80-40BR GEN

White maize

- CG4141
- CRN3505
- DK8031
- DKC90-89
- DKC2147
- DKC78-17B
- DKC78-87B
- DKC78-35R
- DKC78-83R
- DKC78-45BR GEN

... can make a resounding success of your farming.

In **DEKALB®** you have a partner who will walk with you all the way to success. With **DEKALB®** from Monsanto, you have a range of high-quality white and yellow maize hybrids for exceptional yields suited to your specific needs.

Call Monsanto today to find out more.



Contact us on: **011 790-8200** or
customer care.sa@monsanto.com

Monsanto and **DEKALB®** are registered trademarks of Monsanto Technology LLC. Monsanto South Africa (Pty) Ltd, PO Box 69933, Bryanston, 2021.

