



PULA IMVULA

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A WORD FROM...

Jane McPherson

UCCESS IS NO ACCIDENT. IT IS HARD WORK, PERSEVER-ANCE, LEARNING, STUDYING, SACRIFICE AND MOST OF ALL, LOVE OF WHAT YOU ARE DOING OR LEARNING TO DO. – PELE.

The quote for this month could have been written by a farmer – you have to love what you are doing, then you work hard, then you work harder, and then maybe you will succeed. It all comes back to loving what you do and doing it well. Farming is a way of life and not only a way to make an income.

Over the past few months, I have had the opportunity to visit some of our small farmers who are part of the Jobs Fund project in the Eastern Cape. When you see how far away from the cities these farmers live, the poor and unreliable transport system, the poor roads, the lack of infrastructure, the distance they walk to schools and clinics – it begs the question of why they choose to live there? They are happy there and they don't want to move away in 'search of the better life'. They don't believe that the city has a better life to offer. They spoke of the permanence of living in the family home, the sense of community and belonging, the safety, the natural beauty, the quiet and the opportunity to enjoy family life. The most important factor they mentioned is their access to the land on which they can produce food for the family.

The past seasons have been challenging – some areas have been very hot and dry, some have experienced too much rain, some have had bad hail, few have had extremely cold winters. None of us really know if this is as a result of the global warming, or just a dry spell? We don't know and we also don't know how to prepare for the changing weather patterns. Do we expect too much rain, or too little rain? Very hot summers and very cold winters? Early or late frost? We don't know and this makes it very difficult to prepare.

In these trying times, we need to make sure that we have done our sums carefully so that we are able to make a profit. You know what yields you can expect in your areas (in a normal year) – if you are not going to make a good profit, rather consider planting a different crop that might be a lower risk. Once you are sure that you are planting the correct crop, then you have to make sure that you are doing all the land work correctly – that there is enough soil moisture for the crop, that you have prepared the lands to the correct depth, that you are using the correct seed cultivar, the correct fertiliser in the correct amount; and that you will be able to manage your weeds.

As you are harvesting your crop, I hope that you will experience the rewards of good planning and hard work. Remember to love what you do and do what you love – you will succeed at farming if this is what you love!

TAKING YOUR GRAIN FURTHER

HAT HAPPENS TO THE GRAIN YOU HARVEST AFTER YOU SELL IT? YES, WE KNOW THAT IT ENTERS THE FOOD PROCESSING CHAIN. BUT HAVE YOU EVER THOUGHT THAT PER-HAPS CERTAIN STEPS IN THIS CHAIN COULD BE DONE BY YOU ON YOUR FARM?

From the point that you harvest the grain there are numerous different stages that it goes though depending on the food product it will become or form part of. The simplest and most straight forward of these being maize meal in the case of maize grain and flour in the case of wheat.

For most South Africans these products form part of our everyday diets and are vital in ensuring food security in our country. If we are producing the grain ourselves; why can't we produce the maize meal ourselves and cut out the extra expense that the retailers add on as well as the effort of carting a big 50 kg bag back from town after our shopping trip? Let's take the grain further, let's take the grain from field to fork.

Looking back into the history of mankind, we can see that the art of grinding grain into food has been passed down through generations and although we have progressed from grind stone to modern mills, the concept remains the same.

So why is it that we pass the responsibility of processing on to someone else just to buy it back? Well, it is simple; we have chosen the fulfilment of cash in hand over grain in the tank. But does this really put us in a better position? I don't think so. I think we need to be looking at balanced diversification. How about we use some at green mealie stage for selling as well as eating and harvest the rest for own use and for sale. This sounds complicated I'm sure, but all it needs is some thorough planning.



Store your grain and sell it at a later stage.



Gavin Mathews, Bachelors in environmental management. Send an email to gavmat@gmail.com

HOW DO I PLAN FOR BALANCED DIVERSIFICATION IN MY GRAIN HARVEST?

First and foremost, you need to think about the needs of yourself and your family. What are your financial needs as well as your food needs? Now you need to plan how your grain crop can best supplement your needs. Maize has a life cycle which allows us to consume it at two different stages; the green mealie stage and the dry grain stage. As farmer you can use this to your advantage to sell a percentage at green mealie stage, perhaps 10%. You can harvest the ripe ears of maize and sell them locally or in town at a premium price. This is direct cash in the pocket for you and your family.

How much income can green mealies bring?

This is a simple calculation. Let us say for example that you have planted one hectare of maize and you planted 40 000 plants per hectare. 10% of 40 000 plants is 4 000 plants. Let us assume that each plant has one cob per plant which means that you will have 4 000 cobs of green mealies to sell. The average market price for a green mealie is approximately R5 depending on size. This means that you can generate an income of roughly R20 000 through the sale of green mealies. Your family will also have the nutritional benefit of having green mealies to eat at the dining room table. This is fantastic; your maize is not even fully matured and you are starting to reap the benefits of planting a crop.



If you and your family consumed another 5% over and above the 10% sold as green mealies it would mean that you have about 85% left to mature and dry for later use. The question is what will you do with the grain once harvested? If we continue planning for balanced diversification, we could decide to sell 40% as grain to bring in some quick income. The amount of money that this will bring in will depend on a number of factors including the climatic conditions of that year, how good your management was and what the maize price is. But let us assume that it has been a good year and you managed to harvest four tons of grain from the remaining 85% of your plants. If you sell 40% of four tons, it would mean that you will sell approximately 1,6 tons of dry grain. At today's maize price this will convert into roughly R4 000 (at R2 500/ton). This is a good position to be in especially considering you still have 45% that will be stored.



Owning a grinder can be money well spent.

What to do with your stored grain?

You could plan to store your grain and sell it a little bit at a time to spread your income over a long period of time or you could consider processing it further and adding value to your product as discussed in the introduction to this article.

HOW TO PROCESS IT FURTHER

There are many modern small-scale diesel or electric operated maize mills that are on the market these days which are providing small scale farmers with new options to take their grain further to the next stage of processing – maize meal.

The new mills can grind the maize to virtually the same standard as you would purchase from the supermarket. It also provides options to grind feed for your animals. Feeding a ration of grain into your animal's diets in conjunction with a good dosing programme will ensure healthy animals and generate increased income for your household. Obviously it costs money to purchase such a milling machine but if one looks at it as an investment where value is added and more money can be made by selling maize meal or where money can be saved by producing maize meal for your own consumption, then it may just be an option worth considering and worth saving for. If the expense of such a machine is simply out of the question then perhaps you could consider buying it with a group of fellow farmers and share the use of it.



Let's take the grain further, let's take the grain from field to fork.





Start thinking and planning for balanced diversification.

We need to start being clever about the way that we use our grain. Start thinking and planning for balanced diversification. Take advantage of green mealies – look at options of grinding your maize into meal and adding value to your product. Make sure that your family is fed and aim to have a supplementary income from your maize crop. By planting as little as one hectare, you can make a huge difference to the well being of your family as well as your community.

For information on small scale maize mills please feel free to contact your mentor or your nearest Grain SA office. There are a number of farmers who are already using these mills and adding value to their grain. The Grain SA Small Scale Farmer of the Year for 2018 is one such farmer, Mr Sicelo Nhlanhla Mngadi, who won one of these mills as his prize at the annual Grain SA Farmer Development Day of Celebration in Bothaville. He says that the machine is amazing and has given him so many more options to market his maize.

GRAIN SA:

An organisation by farmers for farmers

S A MEMBER OF GRAIN SA YOU ARE SUPPORTING AN ORGANISATION THAT WAS ESTABLISHED TO PROVIDE SUPPORT AND SERVICES SPECIFICALLY TO SOUTH AFRICAN GRAIN PRODUCERS SO THEY HAVE A BETTER CHANCE OF HIGHER PERFOR-MANCE AND REMAINING SUSTAINABLE IN A CHALLENGING INDUSTRY INFLUENCED BY MANY DIFFERENT FACTORS.

Helping you grow your farming enterprise and stay a successful farmer is the reason Grain SA exists.

Grain SA is a service organisation. The managers and team gather important information and send updates to farmers on a wide variety of factors influencing crop production and marketing.

There are many things that affect our prices. For example, imagine there was no one monitoring imports of the commodities we grow and grain or oil seeds were freely 'dumped' at our harbours at a much lower price than we can grow the crops? The traders don't care where the grain comes from, they have no loyalty to local farmers, they just want the best deal to make them best positioned in the market place.

We need protection at our borders which is why there is an import tariff in place. An import tariff is a tax imposed on imported goods and services. Different rates of duty are applicable to different goods or commodities. Farmers don't all have the skills to know what a fair import tariff is so we need experts to represent us by talking to government and the officials who set the rates and make them aware of how the rates impact local farmers. The team has worked long and hard to get an acceptable wheat tariff implemented. It required them to make many calculations and presentations to government so that wheat farming could be more profitable and sustainable.



Grain SA also monitors **fuel prices** and strives to give farmers early warning when prices are likely to rise so they can be better prepared.

The team also gather **information about the different** crops represented by Grain SA. For example regarding maize, they will analyse the following: How many hectares have been planted to white maize and yellow maize; how much maize was imported and how much was exported; and, what were the price movements through the year. This information is useful for farmers and helps them to decide if they are going to plant maize or, if they see there is overproduction, they may decide to plant another crop which is in short supply.

The farmers also ask the Grain SA team to search for international markets so they can grow maize and know there is an **export** Jenny Mathews, Pula Imvula contributor. Send an email to jenjonmat@gmail.com



GRAIN SA CHARACTERISTICS

The four main characteristics of Grain SA are:

1 It is a voluntary organisation of grain farmers and it represents the interests of its members.
2 It is an independent organisation with no other controlling body and is focussed on all matters influencing the grain industry.
3 It is NOT a political organisation and has no political inclinations and is guided ONLY by good business principles and practices.
1 It is controlled by farmers for farmers and the Congress is the

highest authority over those elected into management positions.

market for the grain. Management has held discussions with many international delegations including Japan, Taiwan and China, informing them of the high standard of grain produced here. Farmers themselves generally have neither the expertise nor the time to be involved in this side of the business.

WATCHDOG ORGANISATION

Grain SA is also a watchdog organisation. This means the managers and team are constantly monitoring the business environment on behalf of farmers. Watchdog organisations view their role as critically monitoring the activities of governments, industry, or other organisations and alerting the farmers and wider agricultural sector when they detect actions that go against the best interests of the stakeholders. Grain SA has played a leadership role in discussions with government about the **agricultural policy environment** and attempts to seek solutions together with government for problems faced by the sector.

What does a watchdog Grain SA do for its farmer members? It monitors **quality of inputs** and will investigate and negotiate on behalf of farmers where a serious problem is identified. The Grain SA Farmer Development Programme is vigilant and protective of developing farmers as it strives to ensure they are given equal opportunity to access top quality inputs and accurate advice. Furthermore the Grain SA Farmer

The following members were elected to the Executive of Grain SA at the 2019 Congress:

Development Programme champions ALL developing farmers. The team believes that everyone who has access to land and wishes to farm, no matter how big or small, must be assisted to achieve the best results with the natural resources at their disposal. This is an important achievement in an organisation that has previously been focussed on large commercial farming businesses.

Do you know that Grain SA managers have long participated in the discussions on a diesel rebate from SARS for farming activities? This is still a hot topic and SARS requires very detailed information about diesel usage before it recognises a claim. The law requires a logbook be kept to prove all diesel usage.

LOOKING AHEAD

- At Congress 2019 management informed delegates it was focussing on highlighting the urgent need for subsidised crop insurance for farmers. The risks of hail, drought, floods and disease outbreaks are real threats to farmers' survival. The organisation includes smallholder farmers and is lobbying on their behalf too since they are equally exposed to these risks.
- A sad reality is that agricultural research has been compromised and spending on this important aspect has been neglected, so Grain SA has committed to lobby government for increased investment on research to make sure that we stay at the forefront of farming practises and profitability which impacts yields and food security. Without increased government investment into research and development we risk being left behind and unable to compete in the market place and stay in husiness
- · Another commitment made to Congress is that Grain SA will lobby for better financial support systems for farmers with a special focus on new farmers who struggle to access the current financing systems.

This is a summarised overview, but by no means conclusive, of the kind of business Grain SA managers are actively involved with. Hopefully this insight builds confidence that your farming interests are being guarded and championed by dedicated experts. What is a farmer's responsibility in all of this? Every farmer has a responsibility to get informed and to communicate with the management team of the organisation. When they know about our grain farming challenges, concerns and frustrations and pay attention to them, then the organisation is working effectively. Use the established channel of communication beginning with your board representative and congress delegates to make sure you are heard.



Ramodisa Monaisa VICE-CHAIRPERSON





Ramoso Pholo **REGION 28**



Alfreda Mars **REGION 30**



Preline Swart **REPRESENTATIVE:** FARMER DEVELOPMENT



Jeremia Mathebula **REGION 29**



Israel Mothabane **REGION 31**



Patrick Stuurman CO-OPTED

WORKSHOP set to boost collaboration and research

ROP PROTECTION IS A VITAL ASPECT FOR ALL PRODUCTION AREAS AND SUMMER GRAINS ARE NO EXCEPTION. RESEARCH HAS GONE A LONG WAY IN SUPPORTING CROP PRODUCTION IN SOUTH AFRICA. HOWEVER, CRITICAL EVALUA-TION OF THE CURRENT RESEARCH ENVIRONMENT IS CRU-CIAL TO ENSURE RESEARCH PROJECTS ARE RELEVANT AND OUTCOMES ADEQUATELY ADDRESS PRODUCERS' NEEDS.

CROP PROTECTION WORKSHOP FOR SUMMER GRAINS

A Workshop was held on 4 April in Pretoria and was attended by representatives from industry, government and public/private research institutions. The aim of the workshop was to discuss the organisational structures that need to be implemented in order to facilitate relevant, outcomes-based and producer-focused research projects to address the crop protection needs of the summer grain production region.

In addition, the workshop served as an initial step to foster closer collaboration between government, industry and research institutions.

TRUST IS KEY

Dr Ronald Heath (Forestry South Africa) and Prof Bernard Slippers (Forestry and Agricultural Biotechnology Institute, FABI, University of Pretoria) shared strategies implemented by the Forestry industry to ensure a sustainable research environment which delivers return on investment. The importance of building trust relationships between Article submitted by the Grain Research and Policy Centre. Send an email to Miekie Human, Research and Policy Officer at miekie@grainsa.co.za



stakeholders – especially with government – was identified as one of the key areas which led to the successful initiation and development of research structures within the Forestry Industry.

Dr Julian Jaftha (Department of Agriculture, Forestry and Fisheries, DAFF) provided insight into the structures currently in place to prevent and manage entry of quarantine pests, pathogens and weeds into South Africa. Despite budgetary constraints, government welcomes collaboration with industry to strengthen South Africa's national biosecurity.

> Grain SA will continue deliberations with partners to ensure a strategy is devised that is inclusive of all relevant role-players, which prevents duplication, strengthens existing programme and most importantly – is of benefit to all grain producers.



The need for clarity on the capabilities, capacity and infrastructure for appropriate application of available funding was emphasized by

> Dr Maneshree Jugmohan-Naidu (Department of Science and Technology, DST).

BREAK DOWN THE SILO MENTALITY

Numerous successful collaborations are already taking place across institutions and also between public/private research institutions, industry and government with all of the respective stakeholders. However, the number and quality of research networks need to be expanded to ensure a sustainable research environment.

Collaboration across disciplines and institutions can break down barriers resulting from a silo mentality due to competition for limited funding.

EXCEPTIONAL EXPERTISE DEVELOPED IN SOUTH AFRICA

The workshop provided a platform for some of our country's most renowned grain researchers as well as some brilliant younger researchers to interact



Dr Ida Wilson (Ida Wilson Consulting), Dr Ronald Heath (Forestry SA), Prof Bernard Slippers (FABI) and Dr Marinda Visser (Grain SA).

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Dr Julian Jaftha (DAFF), Dr Marinda Visser (Grain SA) and Dr Maneshree Jugmohan-Naidu (DST).

with each other and with government. The wealth of knowledge and experience combined with youthful vitality led to a productive meeting which delivered feasible future possibilities. Furthermore, continual involvement of students and young researchers with industry-relevant research will ensure an innovative and sustainable research environment for the summer grain production region.

> The wealth of knowledge and experience combined with youthful vitality led to a productive meeting which delivered feasible future possibilities.

FUTURE DIRECTIONS

A lot of work still lies ahead in restructuring crop protection research for the summer grain production region. This workshop has been a good first step forward in developing a strategic plan for research as well as to foster collaboration between stakeholders. Grain SA will continue deliberations with partners to ensure a strategy is devised that is inclusive of all relevant role-players, which prevents duplication, strengthens existing programme and most importantly – is of benefit to all grain producers.



Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do.

~ PELE



CANOLA PRODUCTION What to look out for during July to October

ERE IS HOPING THAT THE FARMERS HAVE MAN-AGED TO ACHIEVE A GOOD, UNIFORM AND EVEN CANOLA STAND THIS YEAR. UNIFORM IS IMPORTANT TO HELP US IN MANY TIMING DE-CISIONS, SUCH AS WHEN TO TOP DRESS WITH NITROGEN (N), WHEN TO APPLY BORON (B), GROWTH STAGE TO SPRAY FOR SCLEROTINIA AND THE RIGHT TIME TO SWATH.

When the plants are all at a similar size and growth stage these decisions are made much easier. An even stand refers to an evenly Chris Cumming, Protein Research Foundation Consultant. Send an email to cummingza1946@gmail.com



spaced stand of canola with no open patches where weeds can germinate and flourish. Canola is the only crop that can completely cover the whole surface, shading out any late germinating weeds and preventing them from setting seed.

NITROGEN (N)

The standard recommendation regarding timing of N topdressing is 30 to 40 days after germination for the first application, followed by a second 60 to 70 days post-emergence. The amount of N to be applied will depend on many factors, the most important including:

- Residual N at planting (N status of soil pre-planting).
- Target yield (which is determined by considering average annual rainfall, the specific land's long term yield potential, planting time and cultivar yield potential).
- Rainfall from start of growing season and prospects for remainder of season (reliable forecasting).

SULPHUR (S)

Sulphur (S) is an important element in canola production and canola's S requirements are four times that of wheat. Time for soil sampling to test for S requirements should be shortly prior to planting as S content in the soil can vary in the course of the season. Should the S level be below 6 mg/kg in the soil, then 15 kg/ha to 20 kg/ha S should be applied. Between 7 mg/kg and 12 mg/kg soil the maintenance level of 15 kg/ha S is recommended. For optimal production, S should preferably be applied in combination with N as topdressing during the growing season in an N:S ratio of 7:1.

BORON

Boron is also an extremely important element for canola production, especially in respect of flower fertility. A boron deficiency results in fewer pods as well as fewer seeds per pod. Boron applications should be done as a foliar spray during stem elongation (70 to 80 days after emergence). The application of 1 kg/ha to 1,5 kg/ha Solubor is recommended.



A good uniform stand.

TRACE ELEMENTS

Other trace elements should be considered when either a soil or leaf analysis indicates that they are deficient. In some instances area specific trace elements have been historically found to be deficient due to soil characteristics e.g. soils containing high calcium levels. When trace elements are applied as a foliar spray, the following guidelines should be considered:

- Do not mix trace elements with herbicides in spray tank.
- The plants must be growing actively for maximum uptake.
- Do not spray wet plants (heavy dew) or if rain is expected within 2 to 3 hours.
- Read the label and follow label instructions.

VERY IMPORTANT

Post-emergence grass herbicides from herbicide group A (fops and dims) should **NOT BE APPLIED TO CANOLA AFTER THE BUD INITIATION GROWTH STAGE**. Serious damage to flower formation in canola has occurred when late sprays of especially Clethodim have been applied.

Regular monitoring for insect pest infestations, especially aphids, bollworms and diamond back moth, is imperative during this period.



Aphids can cause serious damage.



Good material on the land.

APHIDS

Aphids can cause serious damage in the rosette stage of canola and populations can increase rapidly in warm, dry conditions. Particularly note any aphids between the young leaves at the growth tip as even a few aphids are enough to impair the growth of the canola plant at this stage.

If a decision has to be taken on whether to spray or not, it is advisable to determine the number of infested plants rather than the number of aphids per plant. The threshold level for aphid spraying is when 20% of plants are contaminated with aphids. Shorten the period of monitoring when infestation is noted and spray only if the population is on the increase. There are many beneficial insects that feed on aphids (ladybirds and their larvae, wasps, lacewings) and they can often keep the aphid population under the spray threshold, especially in cooler weather conditions.

BOLLWORM

Bollworm moths (large moths with reddish brown to light brown front wings and creamy white back wings) usually start occurring from the early flowering stage of canola. The night flying moth lays white eggs singly on the upper leaf surface and can lay up to 1 000 eggs during her lifespan of 5 to 8 days.

With careful scouting the eggs can easily be seen once moth activity has been noted. Small (less than 1 mm long) larvae hatch after \pm 6 days and start feeding on leaf tissue. The larva moult six times within 14 to 18 days and reach up to 3 cm in length when mature. The larva have characteristic stripes down the length of the body. Only larger larva (more than 1 cm in length) will damage pods. The threshold value for bollworm is when 5 to 10 larva are counted per m². Shake plants over a container or sheet on the ground to count larva.

As in the case with aphid monitoring, only spray when the population is on the increase. More frequent monitoring should be conducted once larva are noted. Under hot, dry conditions and in the presence of heavy aphid infestations (bollworm moths are attracted to aphid honeydew) and in the absence of alternative feed crops, bollworm populations can escalate alarmingly. Very serious damage to pods can occur in a short space of time when this happens.

DIAMOND BACK MOTHS

Diamond back moths (DBM) are considered a sporadic but serious pest in canola. The small (10 mm long) grey-brown moth has a diamond pattern down the centre of the back when the wings are folded. The moth is most active from evening and throughout the night. They fly short distances between plants when disturbed.

Female moths can lay more than 100 pale yellow, oval eggs in their lifetime. Eggs are laid singly or in clusters along the leaf veins on both sides of the leaf. Eggs hatch after 4 to 6 days and the first larvae burrow into the leaf tissue. The next 3 stages of larva feed on the underside of the leaf surface. The light green larva grow to 12 mm in length. When disturbed, the larva drop to the ground or are suspended on silken threads in the plant.

The rate of development of DBM depends on temperature, taking as little as 14 days to complete the lifecycle at 28°C or more than 100 days at 12°C. In warm weather conditions there will be considerable overlapping of generations. Cool, wet and windy weather can reduce DBM populations whereas under warmer, dry conditions populations can explode. Yield losses of over 80% can result when severe DBM outbreaks occur.

The spray threshold for DBM is as follows:

- Middle to late flowering stage 17 to 23 larva per ten plants.
- Pod filling stage 43 to 57 larva per ten plants.
- NB: Only count larva larger than 3 mm to 4 mm in length.
- Monitor by walking through the field and do counts at every 20 to 25 meter intervals. Shake the plant over a container and count larva.

IMPORTANT POINTS TO REMEMBER

- Monitor for pests on a regular basis. Shorten intervals once pests are noted.
- Only spray chemicals on an increasing pest population and the spray threshold has been reached.
- Get to know the predators and parasites of each pest and protect your unpaid workers as far as possible.
- Monitor weather forecast before spraying and consider the effect (especially cold, wet conditions) on pest populations.
- Read the product label and follow instructions.

MADE POSSIBLE BY OPOT 11

Long way ahead for soybean import strategy

HIS ARTICLES LOOKS AT THE PROGRESS MADE IN TERMS OF SOUTH AFRICA'S SOYBEAN IMPORT SUBSTITUTION STRATEGY BY THE DTI.

A couple of years ago the DTI came up with a policy to replace soybean imports in order to develop the South African soybean industry. Significant investment was made towards the establishment of soybean and sunflower seed crushing plants, with a total capacity of 2,5 million tons.

Since establishment of domestic crushing plants, there has been positive results, South Africa has seen a significant increase in production of soybeans as well as area planted (**Graph 1**). This also resulted in an increase in oilcake and oil production. For the 2019/2020 marketing season, South Africa is estimated to produce about 1,27 million tons of soybeans, which is more than double what we produced ten years ago.

Our dedicated soybean crushing capacity is estimated at 1,75 million tons. However, when including dual capacity plants that can crush both soya and sunflower, the maximum crush capacity is estimated at 2,5 million tons. South Africa currently only utilises about 64% of the processing capacity meaning there is a lot of potential for further growth.

Over the years, soybean and derived product imports have decreased considerably, however not enough for the local market to reach its full potential. **Graph 2** indicates that over the year's



Source: SARS and SAGIS (2019)

Oilcake imports	Amount of oilcake brought into the country		
Oilcake local production	Amount of oilcake produced locally		
Oilcake total usage	Amount of oilcake used locally		
Local crushing	Amount of soybean crushed locally		
Soybean crushing demand	Amount of soybean needed by crushers		
Local crushing capacity	Total amount of soybean that crushers are able to process		

Ikageng Maluleke, Junior Economist, Grain SA. Send an email to Ikageng@grainsa.co.za







Source: Grain SA (2019)

soybean oilcake production has increased and imports are slowly declining. Import substitutions have gained momentum since 2014, the amount of soybean demanded/needed to be crushed in order to fulfil the current oilcake usage still remains relatively high; however South Africa is slowly closing the gap with surplus soybean production and expansion of local processing. Local crushing capacity is definitely enough to service the current and additional demand.

> South Africa currently only utilises about 64% of the processing capacity meaning there is a lot of potential for further growth.

CONCLUSION

Looking at the current ending stocks (Graph 1) as well as unutilised crushing capacity of soybean into oilcake (Graph 2), I would say South Africa still has a long way to go in trying to fulfil the mandate of the import substitution policy by Dti. However, farmers have shown great commitment towards increasing production despite factors like drought over the years, including the current season. The industry just needs a commitment from the importers side to start sourcing oilcake locally in order to help push up the crushing capacity of our local market and drastically reduce oilcake imports.

MARKETING OF SOYBEANS what affects your quality and price

HE NATIONAL CROP ESTIMATES COMMITTEE FORECAST ON 26 MARCH FOR THE 2018/2019 SOY-BEAN CROP IS A PRODUCTION OF 1 276 035 TONS (1,27 MILLION TONS) FROM A PLANTED AREA OF 730 500 HA'S.

The average yield per hectare being an estimate of 1,75 tons per hectare. The value of the national crop using an average Safex price of R4 750 for April to July 2019 is thus in the region of R6 061 000 000 or in short 6 billion rand.

The current crop will be less than the 1,5 million tons of the 2017/2018 season and the 1,3 million tons of the 2016/2017 season.

Most farmers will deliver their crop to the nearest registered grain silos from their farm and accept the 'spot' price offered by their co-op or other co-op's operating in their production region.

The demand for soybeans largely comes from the crushing or processing industries which will usually purchase the soybeans delivered to the various co-ops with registered silos. The soybeans are processed into soybean meal for the livestock feed industry and oil for human consumption.

QUALITY STANDARDS – WHAT DO THE BUYERS LOOK FOR?

Your soybean or soya bean crop must meet the minimum standards for seed quality as laid down in the Agricultural Product Standards Act 1990 (Act No 119 of 1990) with any relevant amendments up to the 21 April 2017. These legal standards are used throughout the soybean value marketing chain to ensure that the product can be bought and sold with confidence by all parties and companies involved. The document is available from the following website: *sagis.org.za* and should be read by all farmers producing soybeans.

The weight or mass of individual soybean seeds or kernels can vary from 11 grams per 100 seeds under bad drought conditions to 18 grams per 100 seeds in good years for soybeans grown under good management and high soil fertility conditions. Most acceptable seed samples will contain a range of seed sizes from 15 to 18 grams per 100 seeds.

In brief, soybean seeds that meet the above standards are graded and sold as class SB1 soybeans.

PERMISSIBLE DEVIATIONS

Listed below are the maximum permissible deviations within a sample that meets the standards required.

- Wet pods 0,2%.
- Foreign matter including stones, other grains and sunflower seeds 5%.
- Other grain must not exceed 0,5%.
- Sunflower seed 0,1%.
- Stones 1%.
- Seeds with Sclerotinia or clumps of sclerotia 4%.
- Soybean seeds and parts of soybean seeds above the 1,8 mm slotted screen and which pass through a 4,75 mm round hole screen – 10%.
- Defective soybean seeds on the 4,75 mm round hole screen 10%.
- Soiled soybeans seeds 10%.
- Foreign matter with Sclerotinia not exceeding 7%.
- The moisture content cannot exceed 13%.

Written by a retired farmer



All buyers and users of soybeans can thus be confident that trade or purchase agreements made in the industry are of a known expected

The above summary indicates that there are a few very important criteria to keep in mind before delivering your crop to a registered grain silo. At this point if you have delivered an under-grade sample and it has been taken in by the co-op, it will be very difficult to have the seed upgraded and a large loss on this particular load will be incurred.

PRACTICAL CONSIDERATIONS

quality and standard.

The cycle for the production of quality seed really starts from before planting with the selection of the right cultivars, through planting and the management of the crop throughout its growth phase to physical maturity and finally the harvesting. It can be seen from the grading standards that Sclerotinia infestations must be avoided at all costs. This can be done by careful monitoring your lands and crop for the disease and using the appropriate crop rotations to avoid infections in any current or future crops.

The most important key to a good grade for most farmers is doing the best harvesting operation possible. The correct settings on the combine for the optimum drum speed and proper sieves to take out the very tiny seeds as well as blowing out as much foreign material as possible in the process and avoiding stones going onto the combine table are critical. The combine make and thrashing system used and state of the crop at harvesting will influence the correct settings to be used. It is very important that the farmer be on the land during the harvesting process either when using his own machines or that of a contractor.

Remember that if you are forced to deliver to the co-op directly from the land you need to produce the best sample possible. Always take an early sample from the first combining to your co-op to be tested so that you know that the quality will be acceptable.

CONCLUSION

Know the standards required for SB1 seed and try to achieve this by good management through all the phases of production to harvesting.

Watch out for these OBSTACLES WHEN TILLING SOIL

OIL TILLAGE IS AND REMAINS ONE OF THE PRIMARY COST ITEMS IN CROP FARMING. THE EFFECTIVENESS OF A TILLAGE ACTION SHOULD BE ASSESSED CONTINUOUSLY. THIS ARTICLE IS AN ATTEMPT AT HIGHLIGHTING THE ASPECTS OF PLANNING AND THE OBSTACLES OF DIFFERENT TYPES OF TILLING.

Martiens du Plessis, soil scientist, NWK Limited. First published in SA Graan/Grain August 2018. Send an email to martiens@nwk.co.za





The penetrometer is the designated instrument to measure soil compaction.

OBJECTIVES OF SOIL TILLAGE

Before a specific method of soil tillage is selected, the aim of soil tillage should be investigated thoroughly:

- It creates a favourable topsoil structure for root development and air movement and creates a temporary structure for combating wind erosion.
- During deep ripper tillage it creates a favourable subsoil structure for deeper root penetration, for example by alleviating soil compaction.
- It mixes the soil with crop residue, lime and fertilisers.
- It prepares a fine and firm seedbed.
- It increases water infiltration.
- Weed is controlled.
- Plant diseases as controlled.

CONVENTIONAL TILLAGE

For the purposes of this article, annual clean-till and annual tine till during which the entire field is tilled are regarded as conventional.

Before tillage

It is advisable to establish the objectives of each type of tillage beforehand. One of the main objectives of the primary tillage is to alleviate compaction layers in the soil. To do this in a meaningful manner it is definitely important to establish whether there are compaction layers and, if so, at what depth they occur.

A penetrometer is the designated instrument to measure this (**Photo 1**), particularly to establish the bottom of the compacted zone. The soil must then be tilled below the bottom layer of compaction. Profile holes can also be examined to establish the depth of compaction. However, it is challenging to establish the bottom of the compacted zone relatively accurately in a profile hole.

The occurrence of weed and the size will definitely affect the tillage method. If it is one of the objectives of the tillage action, the field must be cut and ploughed or tilled at a shallow depth with a winged share plough. Chisel ploughs and rippers generally do not clean a dirty field effectively.

The moisture content of the topsoil must be verified beforehand, as the soil will break too many large clods if it is too dry. This causes increased wear and tear on the tractor and the implement. You can determine this by digging the soil with a digging spade. If it digs easily, the chances are good that the field can be tilled. A hard, dry crust of more than 10 cm is more or less the limit, and the tilling should preferably be postponed until after good rain.





Tillage with a chisel plough with the depth of tillage being typically overestimated.

Soil that is too wet should be given a chance to dry out a bit. Sandy

3

Breaking up during ripper tillage is often not effective between the tines. This must be checked during tilling.

Soil that is too dry, starts breaking clods. As a guideline, if you have more than one or two large clods (as big as two hands next to each other) per square metre the soil is too dry. Large clods start breaking in the previous year's tractor tracks first.

After tillage

In clean tillage systems all the crop residue is worked into the soil. This often leads to crusting during the season. Crusting, in turn, leads to poor water infiltration and ultimately water erosion. Water that runs off is also lost to plant production. Shallow scuffling is effective for breaking up such surface crusts.

Deep ripper tillage can cause the planter tractor's front wheels to sink in deeply, which hampers accurate steering of the tractor. Deep ripper tillage loosens the soil considerably, which can affect even planting depth. A shallow seedbed tillage after the primary tillage is often required to make the soil firmer in order to plant effectively.

REDUCED TILLAGE

The concept of reduced tillage

A reduced tillage system attempts to totally eliminate the aggressive and expensive primary tillage, or at least to eliminate this. The secondary tillage is also reduced. Compaction is one of the major hazards of this system. The best way to manage compaction is with the aid of a track traffic system (Photo 4).

The latter concept can be expanded by keeping the tracks in the same places over the years. No planting is done on the tracks and it is therefore not necessary to loosen the soil in the tracks. The hard tracks help the traction of the tractor wheels and reduce rolling resistance. This means that the tractor moves more easily and therefore pulls the implement better.

The principle determines that all the implements must be of the same width: that of the planter. Sprayers are usually twice as wide and therefore use every second tractor track. No traffic in the field may drive on any other surface than the existing tracks. This includes the transfer wagon.



soil can usually be tilled two days after rain, while loam soil should preferably lie for three days. The window period for tilling clay soil is small, because it remains too wet for a long time, and then quickly becomes too dry.

During tillage

During tillage the tillage depth should be checked against the objective depth. In the case of a share plough or disc plough, it is easy to check this in the centre furrow. With chisel plough tillage the tillage depth is usually overestimated (Photo 2).



A marked stick is useful for determining the tillage depth by measuring the depth of the tine furrow. Remember to first level the soil at the measuring point and stamp it down a bit before measuring, as the soil is lifted during tillage and the level of reference is therefore higher. Also check the effectiveness of the tillage between the tines with the stick.

The implement often only draws furrows in the soil and nothing happens between the tines (Photo 3). This happens because the tines are too widely spaced. Try to space the tines at 70% of the proposed tillage depth. This significantly increases the effectiveness of the tillage.

Check the wear and tear on the shares. The shares on rippers and chisel ploughs become shorter as they wear. This causes the implement to make shallower furrows.

Watch out for these obstacles...



The tractor tracks in a track traffic system with soft soil in between and on either side of the track.



Poor root development of a maize plant that is planted in a tractor track.

An automatic steering system on at least one tractor that marks out the tracks is part of the success of this system. With the secondary tillage the tractors all drive in the same tracks. Some of the secondary tillages can be replaced by chemical sprayings. The row widths of the corps must be planned together with the system.

Before tillage

The reduced tillage system commences by effectively breaking up all compacted zones beforehand. They must be identified carefully beforehand – whether with a penetrometer or in profile holes. It is also advisable to correct chemical imbalances and complete liming. Like with conventional tillage, the moisture status of the soil should be checked so that not too many large clods are broken.

During tillage

Fields are tilled so that the compactions are alleviated and the lime and other fertiliser are worked into the soil. After this tillage the field should be weed free. The planter tracks for future years must now be marked out so that secondary tillage up to and including planting can use the same tracks.

This can be done with only one tractor with an automatic steering system and an accurate correction signal. Fields can now be kept clear either mechanically or chemically. If the planter tractors are all equipped with accurate automatic steering systems – which is the ideal situation – it will be relatively easy for them to use the same tracks. They can also be steered by hand, provided the tracks are clearly visible at all times.

Further scufflers, sprayers and top dressers all use the same tracks. The combine harvester usually does not use the same tracks. Because it drives on dry soil in winter, it usually does not cause serious compaction. If this does occur, the compaction is shallow and can be eliminated easily.

In the next year, everything occurs in the same rows and tracks. An effective planting action is the key management aspect of this system. Root tubers are often a challenge during planting. The one solution is to move the row a little bit so that the planting is done alongside the previous year's row. The other solution is to mechanically remove the root tubers and mount furrow cleaners on the planter. This can be done with a chisel plough equipped with sweeps.

If wind erosion allows this, the fields can be cut after harvesting. With a cutting you are ensured that you can plant effectively. The rest of the actions, like spraying and top dressing, all follow in the same tracks.

Long-term control

Compaction due to field traffic not running in permanent tracks means that the entire field may have to





The extent of a tractor track in sandy soil.

be tilled again in the future. Examples of such traffic are harvesters, high-clearance sprayers running across rows, stalk choppers and cuttings. This compaction can be checked with a penetrometer, and when necessary appropriate tillage can be carried out to keep everything loose. Liming and other corrections should preferably be cut in when they are carried out.

Because crop residue can be incorporated at a shallow level or left on top of the soil, you can expect disease pressure to increase in a monoculture system. Crop rotation, which is essentially the recommended route, is strongly recommended here too.

Because the soil is no longer clean-tilled, the weed pressure is higher and the weed control system must be adapted regularly according to the weed spectrum and weed pressure.

NO-TILL

Before it is implemented

The no-till system commences by effectively breaking up all compacted zones beforehand. They must be identified carefully first – whether with a penetrometer or in profile holes. It is also advisable to correct chemical imbalances, complete liming and incorporate everything properly.

The chemical weed control programme must be carefully planned, as no mechanical weed control is carried out. It must be adjusted according to the weed spectrum.

Compaction is one of the critical management aspects of no-till systems, particularly in sandy and loam soil, where compaction in the top soil leads to poor root development (**Photo 5**).

It is strongly recommended that the no-till system, like the reduced-till system, be combined with permanent track traffic.

In sandy soil and even loam soil, you can also consider removing the planter row on the tractor track, as the crops perform poorly on the track. The weed control system must take these wider paths into consideration, as weeds tend to flourish there.

Long-term control

Soil acidification must be checked and addressed regularly. Weed pressure tends to increase rapidly in no-till systems. Soil compaction must be monitored regularly.

WHAT DO SOIL TYPES HAVE TO DO WITH SOIL TILLAGE?

Soil texture (sand, silt, clay) has a major influence on the physical properties of soil. Soil tillage directly affects the physical properties of soil, therefore you can expect interaction between soil tillage and types of texture.

Sandy soil

Sandy soil is extremely sensitive to wind erosion. Clean-till systems like share ploughing and disc ploughing increase the sensitivity of the soil to wind erosion. Tillage systems where the crop residue is left on top of the soil should receive preference.

Compaction, bulk density, water infiltration, aerating, drainage, crusting and mixing of ameliorants are the most important matters to be kept in mind. The obstacles therefore also relate to these matters.



The sandier the soil and the finer the sand fraction, the easier and deeper it is compacted when it is moist (**Photo 6**). Compaction harms root growth and water infiltration. Compaction must be checked regularly and managed in the tillage system. Deep ripper tillage is often required to break up deeply compacted layers.

Track traffic systems are preferable.

Loam soil

Loam soil is less sensitive to wind erosion and makes more stable clods when ploughed. However, it tends to crust in a clean-till system. Crusting leads to challenges with seedling emergence and reduced water infiltration – and the latter leads to increased water runoff. Tillage systems in which crop residue is left on the surface alleviate these problems significantly.

Loam soil is also sensitive to compaction and compacts particularly hard. Compaction must be checked regularly and managed in the tillage system. Deep ripper tillage is often required to break up deeply compacted layers.

Clay soil

Clay soil normally has a strongly developed topsoil structure, so that wind erosion is not a challenge, except if it has dispersed on the surface and formed a crust. Water infiltration is generally slower, as run-off occurs easily. Tilling the soil shallowly with a chisel plough significantly increases the water infiltration of the soil. Crop residue on the topsoil is extremely beneficial here too.



New packaging material ends overproduction of virgin plastic

N FUTURE THE 1 LITRE ROUNDUP® 360 BOTTLE WILL BE MANUFACTURED FROM MORE ENVIRONMENTALLY FRIENDLY MATERIAL THAT IS DIFFERENT FROM THE PLASTIC CONTAINER USED IN THE PAST. WE ARE PROUD TO ANNOUNCE THAT WE WILL BE USING OUR 'NON-VIRGIN PLASTIC' ALTERNATIVE FROM AUGUST 2019 ONWARDS. THIS NEW CONTAINER CAN BE SEEN AS THE CONTAINER OF THE FUTURE AND AS OUR CONTRIBUTION TO REDUCE THE USE OF VIRGIN OR RAW PLASTIC.



Material innovations have helped to make plastics the material of choice in manufacturing end-markets around the globe. But plastics ending up where they don't belong, fuel negative consequences and pose serious risks to the industry's future. Bayer, with its partners, no longer support the production of non-recycled plastic. This new bottle is made of 50% post-consumer recycled resin (PCR).

Post-consumer recycled (PCR) resin is the recycled product of consumers' waste. As a consumer item, the material has completed its life cycle and can now be used as the basis of recycling. The result is a feedstock equivalent to virgin – or raw – material. Using PCR, the container has no negative impact on the current recycling chain and it meets the needs of a circular economy. Magda du Toit, Corporate Engagement and Communications Manager SA, Bayer. Send an email to magda.dutoit@bayer.com



But, by using post-consumer recycled resin as a feedstock, we avoid six silo trucks of plastic that could have ended as waste. Recycled plastics contain over 25% less carbon emissions than virgin resins.

The new packaging will contribute towards a cleaner and greener environment, a circular economy, and cost-effectiveness.

These bottles will be introduced in South Africa, Zambia, Malawi, Kenya, Tanzania and Nigeria. We believe that the new packaging will contribute towards a cleaner and greener environment, a circular economy, and cost-effectiveness while it will also remain to provide the quality, durability and safety that our customers were used to.

But, at Bayer, innovation never stops. Our Pack Innovation Steering Team is continuously working to improve sustainability and offers environmental-friendly products and green solutions. The 1 litre PCR-containers are just the first step. We are currently developing other PCR-containers to serve you even better in the future. Together, we take steps towards environmental sustainability.

Watch out for these obstacles...

Track traffic is even beneficial on clay soil, as compaction is limited to the tracks and the rest of the soil remains extremely susceptible to water infiltration. Deep ripper tillage increases the hydraulic conduction of the soil significantly and it remains this favourable for many years. When permanent crops like orchards are established in clay soil, once-off deep ripper tillage is also recommended.

CONCLUSION

Soil tillage should be carried out on the basis of set objectives. Naturally there are disadvantages associated with each method, with obstacles to be guarded against. Because soil tillage mainly has an impact on the physical properties of soil, the disadvantages and obstacles apply to the physical aspects of the soil too.

Compaction, bulk density, water infiltration, aerating, drainage, crusting and mixing of ameliorants are the most important matters to be kept in mind. The obstacles therefore also relate to these matters.

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DIVERSIFY and **PROSPER**

HIS ARTICLE HIGHLIGHTS THE IMPORTANCE OF DIVERSIFYING YOUR FARMING ENTERPRISE IN ORDER TO SPREAD RISK AND TO HAVE AN IN-COME THROUGHOUT THE YEAR.

WHAT IS DIVERSIFICATION?

Globally, farmers are met with so many challenges and decreasing farm income has been a major driver encouraging farming families to investigate diversification. Looking at grain farmers for instance, if you are only engaged in one enterprise (for example growing maize) and have a crop failure, it will be more devastating than if you grew more crops.

Most of us have heard the term 'don't put all of your eggs in one basket.' One meaning suggests that the basket will be too heavy to carry while another is that if you slip or fall, you may break more eggs if they are all in one basket. For the purpose of agriculture and business, I would say the second meaning is more suitable.

Diversification on a farm is when a farm branches out from traditional farming by adding new money making activities. This can be in place of or in addition to its traditional farming activities. Farm diversification involves anything, from adding free range poultry and livestock production to starting a bed and breakfast in the out buildings or setting up a local tourist attraction. This all depends on the size of your farm.

Generally, diversification simply refers to an increase in the number of enterprises operated on the farm. In practical terms, this can be done in many different ways and not necessarily limited to the list below:

- You may grow more than one field crop to spread the work over a longer planting and harvesting season. (You might even produce two crops on the same land within a twelve month period).
- You may spread the risk over more than one enterprise (such as livestock to provide income for months in which no grain is sold, thus producing better cash flow for the business).
- You may add value to a crop you currently produce, i.e. niximalization.
- You can engage in the same farm enterprise in different physical locations.
- You can generate income from off-farm activities, e.g. renting out your bakkie.

WORD OF CAUTION!

It is never a good idea to start something new if you currently struggle with your cash flow demands. Many new enterprises may not be profitable the first year and learning new crops and production methods may stretch your management abilities. You will need to learn all of the new practices and methods while trying to be profitable. Start small, i.e. one hectare or less the first year and grow the enterprise as you develop the new skills. Remember to develop your marketing plan while starting the small enterprise.

CONCLUSION

Globally, developed countries view farm diversification as a valuable strategy to deal with some of the current problems facing agriculture, together with the desire to keep their land and to maintain a steady income, these form part of the reasons they diversify from their traditional activities. Ikageng Maluleke, Junior Economist, Grain SA. Send an email to Ikageng@grainsa.co.za



Diversification can be seen to have both financial and environmental benefits for the farmer. Looking at the current climatic and economic conditions that farmers in developing countries like South Africa are faced with, my take is that farm diversification is not just an optional extra any more, but rather an essential part of a farmer's future all over the world.

THE BENEFITS OF DIVERSIFYING

INCREASED INCOME

Increased income from new activities could afford you an increased farm income and a better quality of life.

ADAPTABILITY

Branching out inspires you to look for new opportunities and to adapt quicker to challenges.

SECURITY AND SPREADING RISK

New activities can provide greater stability and increased income sources ensure that you are less prone to any one-income source letting you down.

DEVELOP NEW SKILLS

Running a new venture will provide the opportunity to increase your skills and you learn where your personal strengths lie.

CROP ROTATION

This would replenish soil nutrients especially if you add a legume crop into the rotation, which will help raise nitrogen levels in the soil and increase the organic matter within the soil structure.

TRADITION

Diversifying can provide you and your family with a means of carrying on your farming tradition.



PRODUCTION SYSTEMS: The basis of grain cultivation

ROP PRODUCTION SYSTEMS HAVE EXPERI-ENCED DRAMATIC CHANGES OVER TIME, AND THE BIGGEST OF THESE HAVE BEEN IN TILLAGE SYSTEMS. INITIALLY, LAND WAS TILLED AT A RELATIVELY SHALLOW LEVEL, BUT OVER TIME AND WITH THE ADVENT OF TRACTORS, THE LAND WAS TILLED INCREASINGLY AND MORE DEEPLY.

Originally, tillage was aimed at controlling weeds. Many people in agriculture still remember vividly the 2 m rows planted with a view to controlling weeds in the rows mechanically.

The introduction of herbicides like paraquat and diquat in the 1960s led to the start of the conservation tillage systems – something that changed crop cultivation systems forever. Today the holistic approach, which encompasses and includes everything, is definitely the direction to take.

CROP CULTIVATION SYSTEMS

Crop cultivation systems are still mainly classified and moulded according to soil tillage systems. This is where the biggest changes occurred over time. There were the rip-on-row, track traffic or no-till systems, to name but a few. For a crop cultivation system to succeed, the system must take the natural resources into account and the crop must be produced in harmony with the natural resources.

If the natural resources, which include rain, soil type and the soil depth, have the potential of producing 4 tons, they should be managed accordingly. The crop cultivation system must also include and address the management of risks. Diversification is a suitable way of hedging risk – crop rotation furthermore has a positive effect on the Pietman Botha, SA Graan/Grain contributor. First published in SA Graan/Grain August 2018. Send an email to pietmanbotha@gmail.com



system. Unfortunately, diversification requires a considerably higher degree of management skill and capital.

Profit per unit will always remain important. The crop cultivation system must also ensure the highest long-term profit for the producer. This means that the yield obtained must be calculated on every input, and that producers should be able to determine and plan prices and quantities of inputs.



Not adjusting and changing over time is the beginning of the end. Producers must be adaptable in order to use new technology and change as the demand for products changes.

TILLAGE SYSTEMS

Intensive soil tillage systems lead to the degradation of soil as a resource, and consequently also the potential of the soil. Producers

1 Fuel consumption and average yields in different tillage systems.						
Action	Fuel (l/ha)	No-till	Reduced tillage with chisel ploughs	Reduced tillage with double deep ploughing	Conventional tillage system with a ploughing action	
Chisel/cutting	23,93	0	1	1	0	
Chisel	12,77	0	1	0	0	
Deep	17,50	0	0	1	2	
Plough	20,50	0	0	0	1	
Plant-spray	13,25	1 (25,15)	1	1	1	
Top dress	7,30	1	1	1	1	
Weed control	4,98	1	0	0	0	
Disease control	4,98	1	1	1	1	
Total diesel consumption	R13/litre for calculation	42,41	62,23	66,96	81,03	
Average yield	R2 200/ton for calculation	6,74	6,75	6,73	6,63	
Margin above diesel costs		14 267,87	14 036,61	13 926,72	13 534,81	

This information was obtained from the 2010 Maize Information Guide, published by the ARC and adjusted for current values





Chisel-plough tillage is considerably cheaper than plough tillage. However, this tillage system is more management intensive.



At one stage the use of mono-directional ploughs was quite popular. This implement can control weeds particularly well.

should therefore realise that soil tillage is a sensitive action that must be approached with great care. The primary aims of soil tillage are to:

- Promote growing conditions;
- · control weeds;
- remove compaction;
- mix fertiliser and lime with the soil; and
- manage water.

If soil tillage is done incorrectly, it will not only have a negative effect on the financial side of farming, but also on the chemical, physical and biological aspects and characteristics of the soil. Soil structure and processes like infiltration, aeration, soil fauna activity and accumulated organic matter are affected negatively.

Over time we have seen and experienced very large shifts in tillage systems. In the 1960s the plough was perhaps the most important implement, and everybody used it. The 1970s and 1980s saw the use of chisel ploughs and rippers. Particularly in the water table soils, the use of tandem rippers with track traffic became very popular.

These systems were aimed at retaining the cover on the soil as far as possible and thus controlling wind erosion. Yet I think the biggest change came merely because it was cheaper than the conventional systems and because the yield was not necessarily lower. Finances were therefore responsible for the change.



Production systems...

These changes also held other benefits for farms. Water run-off and soil loss are the processes that have the most negative effect on soil potential. The establishment of mulch tillage and the use of tine implements changed this issue dramatically. Soil compaction was also reduced, the breakdown of organic matter was less and the water-retention properties of the soil were improved.

This change in the tillage systems was not without challenges, however. Foliage disease, more insects, high management requirements and the purchase of new equipment that was adapted within the system were some of the challenges that had to be overcome.



Reduced and mulch tillage also held many benefits for the farming community. The biggest of these was that the amount of diesel that was consumed was reduced drastically. Wind and water erosion were reduced and the system forced the seed breeders to adapt the cultivars to fit in with the tillage systems.

In order to make this system work, all the role-players in the industry collaborated and adapted the inputs for the system in such a



Plough tillage is perhaps the oldest tillage system. The management intensity is low, but the costs are high.

way that the best results for the system were achieved. Fortunately, the financial viability of the system also makes sense.

Table 1 depicts the results of a trial at Cedara (lasting eleven years). These results show a great variation between the different systems. According to this information there is, at first glance, significant differences between the systems, but a more detailed analysis makes it clear that if all the costs are included, there are no really major differences.

REDUCED TILLAGE

Reduced tillage has a few principles that have to be followed: The soil should preferably be disturbed as little as possible, and the ground

cover should occupy at least 15% of the area – the more the better.

This mulch reduces the effect of wind and water erosion and increases the soil nutrition status by breaking down plant residues. However, the biggest advantage is probably the management and reduction of soil compaction.

Besides these benefits, reduced tillage also makes higher demands of producers. It includes cultivar choices and crop combination, which – in turn – demand integrated pest control and herbicide programmes. Timing also becomes more important, as the use of the wrong chemicals cannot be overcome like with mechanical errors.

Most of this information was obtained from the ARC's *Maize Information Guide* (MIG) from 2002 to 2016.



The trend of direct planting or a no-till system is a new practice that has become increasingly popular over the past few years. The mechanisation costs for this system are lower, but it is considerably more management intensive.



THE CORNER POST

SINEGUGU NDAMASE What you put in, is what you get out

LTHOUGH GRAIN SA'S MENTORSHIP PRO-GRAMME WAS ESTABLISHED TO IMPROVE THE AGRICULTURAL SKILLS OF SMALL-SCALE FARMERS AND ULTIMATELY IMPROVE THEIR LIVES, THE MENTORS HAVE ALL DISCOVERED HOW MUCH THEY THEMSELVES ARE BENEFIT-TING FROM THE PROGRAMME.

GROWING THROUGH MENTORING

Sinegugu Ndamase is a junior mentor in the Eastern Cape who was trained by Sinelizwi Fakade, Grain SA's provincial co-ordinator in the Eastern Cape. She formed part of the intern programme and started working individually as mentor in the previous season. This positive young lady is full of praise for the changes this programme has brought about in her own life.

'I have become a better woman through the programme. The first time I had to go to a study group on my own, I was very scared. Now I can say that working independently is one of the best things that has happened in my life.'

She shares that her communication skills have improved with leaps and bounds as she has had to address large groups with no back up. 'This has also resulted in my confidence growing,' she says.

Before she became a mentor, Sinegugu had very little driving experience, but the programme has even helped develop her driving skills as she has had to learn to steer her vehicle on rugged terrain to reach her farmers. It has even helped her become fitter as she often takes a taxi to the more secluded areas and then must walk some distance on the gravel roads.

THE LEARNER BECOMES THE TEACHER

Sinegugu's interest in crop growing was sparked when she went to high school at Sehole Combined School in Harding, KwaZulu-Natal. She lived with her aunt who had a vegetable garden and she found it very exciting to see food being grown from seeds. She was the only one in the household who always helped attend to the plants. Agricultural studies were part of the curriculum at school. She found the subject content, which included crop production and livestock, so interesting that she decided to also make a future of it.

After finalising her matric studies, she completed a diploma and then a BTech degree in Agricultural Management, specialising in crop production at the Nelson Mandela University in Port Elizabeth. She then successfully completed her honours degree focusing on rural development.

Currently five study groups in the N2 Dutywa region in Mthatha with 119 farmers from the age of 40 upwards fall under Sinegugu's leadership. These smallholder farmers all plant on plots between 1 ha and 5 ha. Of these, four study groups are new to the programme. Last year the existing group's farmers reached a yield of between 3 t/ha and 4 t/ha. 'This is 60 to 80 bags of maize and I am so proud of them.' Louise Kunz, Pula Imvula contributor. Send an email to louise@infoworks.biz



Using the carefully worked out syllabus provided by Grain SA, guiding farmers to improve their skills has become almost effortless to Sinegugu as she loves the content of the programme. She is proud to say that she really knows the 'book' by heart which makes it easier to convey the information. Being confident as a teacher also helped gain the trust of the one group who was first mentored by Sinelizwi. 'They were first a bit wary of the girl who was following in the boy's footsteps,' she giggles, but once they saw she really was a farmer at heart, they accepted her with open arms.

Personal visitation is done regularly to ensure that what is being taught, is also put into practise on the plots. Although farmers planted under stress this season with high temperatures, low rainfall and problems with contractors, they are all very excited to see that crops are looking good. To me this season forms the highlight of my time as mentor,' she says as she saw despondent farmers faced by many challenges not thinking they would have a crop this season. 'To see them excited about what is growing, makes me very proud!'

TACKLING CHALLENGES HEAD ON

In her short time as mentor, Sinegugu has found three areas that need to be addressed often:

- The importance of weed control. 'Getting rid of weeds remains a huge challenge for these farmers. Sometimes even after the chemicals are applied there are still weeds and the farmers have to hire people to help get rid of the weeds with hand hoeing or *skoffeling*.
- 2. Storing the maize correctly to prevent it from rotting before it can be sold.
- 3. Marketing issues. 'Currently there is no market where the maize can be sold or when there is an opportunity the farmers aren't happy with the prices, so this area needs a lot of attention. Farmers keep selling in the community or use the maize to feed their livestock.'

For Sinegugu, being a mentor has just enhanced her belief that agriculture is not only a way of living, but it is life – without it there will be no food and no food means no life. As the American business magnate, Bill Gates said: 'Investments in agriculture are the best weapons against hunger and poverty – they have made life better for billions of people.'

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