APRIL 2019

PULA
IMVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS

GRAIN SA
GRAAN SA

PANNAR®

PULA IMVULA

Editorial team

GRAIN SA: BLOEMFONTEIN
46 Louw Wepener Street
1st Floor
Dan Pienaar
Bloemfontein, 9301
■ 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

PUBLISHING PARTNER
INFOWORKS
Johan Smit ■ ***Ingrid Bailey*** ■ ***Marisa Fourie***
■ 018 468 2716 ■ johan@infoworks.biz

infoworks
your ideas can fly

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 ■ Smangaliso Zimbili

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

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

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

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

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

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

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

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

CONTENTS

08

A BRIEF LOOK AT OILSEED MARKETS

13

20

23

A Word From...

Jane McPherson

WE SHOULD NEVER FORGET THAT FARMING IS BUSINESS AND IF A BUSINESS IS TO SURVIVE THEN IT HAS TO MAKE PROFITS. AS FARMERS, WE USE LAND TO PRODUCE PLANTS AND LIVESTOCK.

This past summer crop season has again been a very challenging one. Rains came late, and in some areas the rain was so late that no crops could be planted. In other areas, there was rain, but the rain was accompanied by hail and winds which destroyed the crops. Insurance can help you if you are able to plant a crop, but if it is too dry to plant at all, no insurance will help you.

Sometimes Mother Nature sends messages and we need to try to understand the message. Often, we don't want to understand the message because it is not what we want to hear. We don't really know if the recent heat and drought are as a result of the global warming that everyone has been speaking about, or if it is just a dry spell and we have been having these for hundreds of years. Either way, we have to survive economically while we watch to see if the hotter/drier weather is here to stay or just paying us a short visit.

I am concerned about the farmers in the drier western parts of the country. For several years, they have not achieved good crops, and this is not because they are poor farmers; it is because it has been too hot and too dry to plant crops. Maybe it's time to make some other plans.

Good farmers also plant crops in rotation. The farmers in the winter rainfall areas of the Western Cape are very good at planning their crop rotations so as to make the very best use of their soils. Somehow in the summer rainfall areas, we seem to do a little less planning and we only change from maize if the season does not allow us to plant maize. Maybe this should change?

There are a number of different cash crops and pasture crops that can cope with drought better than maize, soybeans and sunflowers. Dry beans are a good crop, and cow peas. Most farmers have livestock, cattle, sheep and goats, and they can also be farmed profitably. By growing perennial pasture crops, we reduce our annual costs, and the crop is always ready to receive whatever rain falls. By increasing and improving our pastures (grasses and legumes), we are able to increase the production of the livestock and make more money. Not only will we make more money, but we will also be preserving our land more effectively.

Let us take some time in this year to learn about other crops and think creatively about how best we could use the land that we have available. Enjoy the excitement of the new possibilities.

FACING GIANTS
– remain positive during trying times

EVERY NEW SEASON STARTS WITH NEW SEEDS. WE PLANT THESE SEEDS INTO THE GROUND WITH NO KNOWLEDGE OF WHAT LIES AHEAD. CLIMATE, MARKETS, PRICES, POLITICAL CHANGES; THESE CAN ALL BE VOLATILE AND UNPREDICTABLE. BUT YET WE CONTINUE TO PLANT THE SEEDS. WHY DO WE DO THIS? WHAT DRIVES US AS FARMERS TO BE WILLING TO FACE THESE GIANTS, THESE UNCERTAINTIES.

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

We do it to feed our families, our country and to keep the agricultural economy ticking. So many industries rely on us as farmers to produce the raw product which they can take further into various other finished products. If we cease to put the seeds in the ground it will have a significant negative ripple effect. But how do we keep positive when all to often so much is against us?

Firstly, I believe it is absolutely crucial to take each day and make the most of it!

Do as much as you can with the time you have in each day. Be good at planning and setting goals. If you don't have a mission set for the next day it will be that much harder to pull yourself out of bed in the morning; especially when the going gets tough. A farmer needs to have continuous motivation!

> *Have hope! Don't be afraid to have an expectation for positive outcomes. When the tough times persist, and they definitely will! Keep hoping and keep working. Life with no hope is like not having a mission for the day to wake up for.*

Sometimes you may want to hide away because things outside are not worth looking at. But remember that your farming operation is not only what is happening in the fields; it is also what is happening in your books and in your shed. There is always something that needs attention that is worth focusing on. When the good years do come along you can then enjoy the fields so much more because you can have peace of mind that all the smaller things in the office and in the shed are organised and in order.

RELATIONSHIPS AND COMMUNICATION

A farm is a small community with complex relationships that exist between farmer, family and farm labour. It is vital to have a harmonious work environment; not only for you, but also for your staff and your family. If an issue or an altercation arises make sure that you resolve it as quickly as possible for the sake of your entire farm community.

As the leader and head of your business you need to be willing to listen to the concerns of everyone and make them feel valued and that everyone is a part of a team. Be fair and be gracious. Remember that every person who works in your operation has a family and home of their own which all comes with responsibilities.

Take this to heart and be willing to allow your staff to tend to their family's needs. Always work on building a peaceful environment where mutual respect is the norm. If you can achieve this you will see

an increase in productivity, as your staff will feel valued like part of a link in a chain. Always pay fairly; even in the tough times. In the good years be sure to reward commitment and excellence. A school pupil always puts in even more effort when rewarded for good results. Having a happy work environment can make the tough times that much easier to manage whereas an unpleasant volatile work place can really be a recipe for depression and disaster.

> *As the leader and head of your business you need to be willing to listen to the concerns of everyone and make them feel valued and that everyone is a part of a team. Be fair and be gracious.*

INVEST TIME

Your family home is the heart of your business. Invest time into your family. Always strive to be open with each family member and use them as a support. At the end of the day they are the reason you put the seeds in the ground together with a nation of other families.

Be kind and gentle. Don't take out the stresses of the farming business on your family as they also have no control over all the negative factors influencing your crops. In your home make a point about talking about a wide variety of subjects and not only the farm. Try to get away occasionally, even if it is just for a day. If your home is a happy and safe place where the atmosphere is relaxed and calm it can go a long way in keeping you motivated and committed to your business.

EXPECT POSITIVE OUTCOMES

Have hope! Don't be afraid to have an expectation for positive outcomes. When the tough times persist, and they definitely will! Keep hoping and keep working. Life with no hope is like not having a mission for the day to wake up for. Many generations have passed before us and each generation has dealt with tough times. We can also, and we will. Be brave and be bold! Put the seeds into the ground and hope. If they wither; hope can remain as next season you can try again. May your business be blessed. ■

This is how you improve ADMINISTRATIVE MANAGEMENT

LIKE THE NAME INDICATES, ADMINISTRATIVE MANAGEMENT INVOLVES THE ADMINISTRATION OF A BUSINESS, IN OTHER WORDS, THE PAPERWORK. PAPERWORK IS THE ASPECT TO WHICH MOST FARMERS/OWNERS/MANAGERS DO NOT LIKE TO PAY ATTENTION. THEY PREFER TO WORK WITH TOOLS.

Adapted from the Grain SA Farm Management for Profit Course

However, it is a very important matter that also requires effective management. It does not matter whether the owner/manager attends to it himself or gets someone else to do it – it is important for somebody to accept responsibility. However, in the end it remains the responsibility of the owner/manager. A farm office is required for effective management.

OBJECTIVES OF EFFECTIVE ADMINISTRATIVE MANAGEMENT

- At the least to maintain, and preferably to improve the financial results and financial position of the business.
- To improve the level of planning, organising, implementation and control of administrative management.
- To improve the decision-making process with respect to administrative management – what should be done to improve the paperwork.
- To organise the business and contribute to the image of the business.

THE FARM OFFICE

In today's business environment it is vital for the owner/manager to have a proper office available. The office should preferably be a separate room to serve as the centre for gathering, processing, using and preserving management information. However, depending on the size of the farm, an office can be located in any convenient place, for example in a dining room/bedroom, etc.

The nature of the farm office

It is very important to establish an office somewhere to serve as the control room for the business activities. Ideally, the office should be accessible from outside, be big enough and equipped with the required communications and other equipment. The following equipment and items should be available in the office:

- Table/desk
- Chairs
- Filing cabinets
- Bookshelves

- Safe
- Computer with access to email and the internet, and a printer
- Telephone/cellphone with fax and message recording facilities
- Photocopying facilities
- Two-way radios
- Intercom
- Correspondence files
- Complete map of the farm
- Pin board
- Calendar
- Files for documents
- The necessary stationery

Office routine

The above equipment is of no value at all if it is not used correctly. An organised office routine is therefore essential.

Correspondence

Correspondence should be attended to every day by filing it in one of the following correspondence files:

- **IN** file for temporary filing and attending to later.
- **FOR ATTENTION** file for immediate attention.
- **FILING** file for permanent filing after the correspondence concerned has received attention.

It is vital to keep copies of all outbound correspondence and documents and to file them properly.

Source documents

Source documents of financial transactions should be processed immediately according to the method that is used, and then filed.

In accordance with tax laws, these documents should be retained for a minimum period of five years.

Source documents and other business information can be filed in the following groups for safekeeping:

- Bank statements, bank and deposit slips
- Purchase invoices and delivery advices
- Sales invoices and delivery advices
- Used cheques and cheque counterfoils
- Labour records
- Machinery records
- Rainfall records
- Financial statements
- Personal documents
- Household accounts

Filing

A lot of time is lost in searching for documents. That is why you should preferably attend to filing daily, and the filing should:

- Be simple and easy to implement
- Save space and be as effective as possible
- Make it easy to find and reach documents
- Be easy to expand or reduce

An index system for classifying files is essential. Filed documents should be identified in such a way that they are easy to trace and can be easily re-filed correctly.

Planning and recording important events

Planning and recording of important events should occur daily. A wall calendar or a pin board is very convenient for noting and remembering important dates.

PRACTICAL RECOMMENDATIONS FOR IMPROVING ADMINISTRATIVE MANAGEMENT

- Establish an office somewhere in order to attend properly to paperwork.
- Preferably deal with the office work on a daily basis, even though it means it is done in the evenings, or then at least every week/month.
- If necessary, attend a course to acquire the skills for managing an office.

BENEFITS OF EFFECTIVE ADMINISTRATIVE MANAGEMENT

- If the office is properly managed, it can be the heart of the business in terms of planning, organising, implementing and controlling the business.
- Effective administrative management can play a significant role in maintaining or, preferably, improving the financial results and the financial position of the business.
- By law all financial source documents must be filed and stored – in this way the owner/manager can stay out of trouble.
- Effective management will facilitate decision-making with respect to administrative management – what can be done to improve the paperwork?
- In the case of enquiries, it is easy to find supporting documents.

CREATE A CONTENT WORKPLACE

MANY BUSINESS OWNER'S/MANAGERS WILL EMPHASISE WITH ENTHUSIASM THAT THEIR WORKFORCE IS THEIR MOST IMPORTANT RESOURCE. THIS IMMEDIATELY RAISES THE QUESTION – WHY ARE HUMAN BEINGS CLASSIFIED AS A RESOURCE, SUCH AS LAND, WATER, BUILDINGS, MACHINERY, ETC?

Marius Greyling, Pula Imvula contributor. Send an email to mariusg@mcgacc.co.za

Surely, the workforce is much more than just a resource. Employees are required to utilise all the physical resources under the guidance of a manager in such a way that the business is profitable and sustainable. Happy, motivated employees are usually efficient employees who contribute to a business's profitability and sustainability.

In view of this, it is a major responsibility of a manager to guide his/her workforce in such a way that they are satisfied and motivated employees. Such employees will normally be productive and strive to do their work to the best of their abilities. In view of ever-increasing costs productivity will be an extremely important aspect to attend to. Higher cost could affect the profitability of a business negatively.

> *Workplace communication is tremendously important to organisations because it increases productivity and efficiency.*

We as human beings are complicated creatures and there are no hard and fast rules to manage employees. We differ and what motivates one person will not necessarily motivate the other. There are several factors that act as motivators of employees. A proper wage is naturally a reasonable motivator, but other factors also play a role. Security in the workplace, to be treated fairly, responsibility, recognition and praise are some of the other factors that influence the attitude of an employee towards his/her work.

1

2

Photo 1 and 2: We cannot work alone therefore it is important to look after those who assist us.

Managers should therefore attend to these other aspects also to establish a satisfied workforce which is motivated and disciplined. Therefore, certain guidelines are to be followed.

HAPPIER, HEALTHIER WORKPLACE

A general area to commence with to ensure a positive attitude amongst employees is to create a content and productive workplace.

A content workplace will be a workplace where an employee is happy or satisfied and at ease and feels safe and secure.

How do I go about to this? Create a secure workplace by implementing clear rules and guidelines about the workplace and work to ensure that friction and misunderstandings are kept to a minimum. And, apply these rules and guidelines fairly to everybody.

Rules will for instance be regarding working hours, leave, wages, smoking, sexual abuse at the workplace, being under the influence of some substance, occupational health and safety, etc. The employer should then also follow the correct procedures regarding all labour matters, particularly dismissal, retrenchment, discipline, grievances, and general discipline.

Compliance with labour legislation is a major business risk for employers because of the influence on the attitude of employees. In South Africa the labour environment is closely regulated by a wide spectrum of legislation with which employers must comply. The positive of complying with all legislation and your own workplace rules and regulations, is that it assists in creating a secure workplace where everybody knows exactly what is expected from him/her. A safe workplace is established when the Occupational Health and Safety Act is adhered to in detail. Be lacklustre in complying with all legislation and applying all rules and regulations and be ensured of a dissatisfied workforce.

It is important that a job is done using the correct and suitable resources to ensure productivity.

COMMUNICATION

Next, pay attention to communicating. Communicate clearly and often with your staff in order to create a working environment that promotes productivity. Consult regularly with employees and keep record of all consultations. Effective workplace communication ensures that all the organisational objectives are achieved. Workplace communication is tremendously important to organisations because it increases productivity and efficiency.

Tips for effective communication

Be clear and precise, understand your employees, use different channels, match actions with words, communicate regularly, ask for feedback and re-act on feedback, do not over-communicate, avoid disturbances that could breakdown communication such as noise and very important listen, really listen to what the other person is saying.

When you communicate properly with your employees you build good relationships with them, and when you do that, you improve employee morale, employee productivity, employee loyalty, and reduce mistakes.

The management style you apply will also affect the workplace environment either negatively or positively. To affect the workplace environment positively you must lead your employees from the front and not force with threats. Then you are just a boss and not a leader. A true leader is enthusiastic, has a capacity for hard work, portrays a high sense of integrity, has a feel for human relations, portrays responsibility, has confidence and can communicate and listen properly.

It is also important to consider the tools, equipment, machinery, facilities, and so forth needed to do a job. It is important that a job is done using the correct and suitable resources to ensure productivity. Furthermore, all resources must be in a good state of repair and maintained as such to get the job done properly in good time. Nothing is more frustrating than attempting to do a specific job without the correct tools.

Do you want a satisfied, happy, productive workforce – create a secure, safe and productive workplace. ■

SUNFLOWERS and its stages of development

IT HAS BEEN ANOTHER ABNORMAL SEASON IN THE SUMMER CROPPING REGIONS OF THE COUNTRY. THE LATE RAINS SAW MANY FARMERS ONLY PLANTING THEIR SUNFLOWER CROPS LATE IN JANUARY AND EVEN INTO EARLY FEBRUARY.

Jenny Mathews, Pula Imvula contributor. Send an email to jenjonmat@gmail.com

While the sunflower plant can be very forgiving in that it is quite hardy to those early light frosts, this season will see many farmers holding their breath and hoping for maximum potential yields before the cold weather sets in!

The total amount of time necessary for a sunflower plant to grow to maturity is dependent on both its genetic make-up and the environment it is growing in. A sunflower's leaves are **phototropic** which means they follow the sun and it is believed this increases the plants use of light for photosynthesis.

Sunflowers are known as **composite flowers**. Although the large flower head at the top of the plant is often thought to be the flower, it is in fact hundreds of small flowers. The **male (stamen)** and **female (stigma)** are both present in disk flowers. The stamen is composed of filament and pollen-producing **anthers**. The stigma houses the style, which receives the pollen and allows it to travel down to the ovary, where the unfertilised seeds, i.e. the ovules, are located. This process of pollination enables the flowers to produce seeds.

The yellow petals on the outer circle of the sunflower head are in fact not petals but each is an individual '*ray flower*'. **Ray flowers** serve to attract pollinators to the '*disk flowers*'. The disk flowers are those tiny buds in the middle of the sunflower head (**Figure 1**).

Broadly speaking a sunflower requires about eleven days from planting to emergence; then 33 days from emergence to formation of the 'sunflower head'. 27 days later the first **anther** will appear, and the last anther will form about eight days later. It will take about another 30 days from the appearance of the last anther to maturity. (The **anther** is the pollen producing part of the sunflower).

It is helpful for farmers to understand the growth stages of the plant and its needs at different stages. Every cultivar in the market has an indication of the number of days to maturity. In a late season like this one, many farmers would have selected a shorter growing cultivar

CONCLUSION

Understanding the different stages of development is important. It is the farmer's responsibility to monitor his fields throughout the growing season to ensure that every plant is given the opportunity to develop to its full potential. Some factors like absence of rain cannot be controlled but the addition of nutrients into the soil and the control of pests and diseases are aspects that can be managed. The moment a plant is setback by any problem, the leaves will wither prematurely, and yields will be negatively impacted.

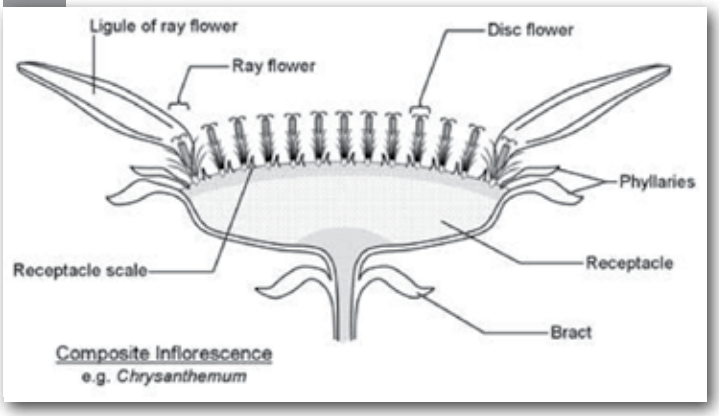
REFERENCES

Schneiter, A.A., and J.F. Miller. 1981. Description of Sunflower Growth Stages. Crop Sci. 21:901-903. Reviewed and reprinted May 2013. Available online: https://www.ag.ndsu.edu/publications/crops/stages-of-sunflower-development

Sunflower growth stages Available online: https://cereals.ahdb.org.uk/media/184824/sf2_growth_stages.pdf

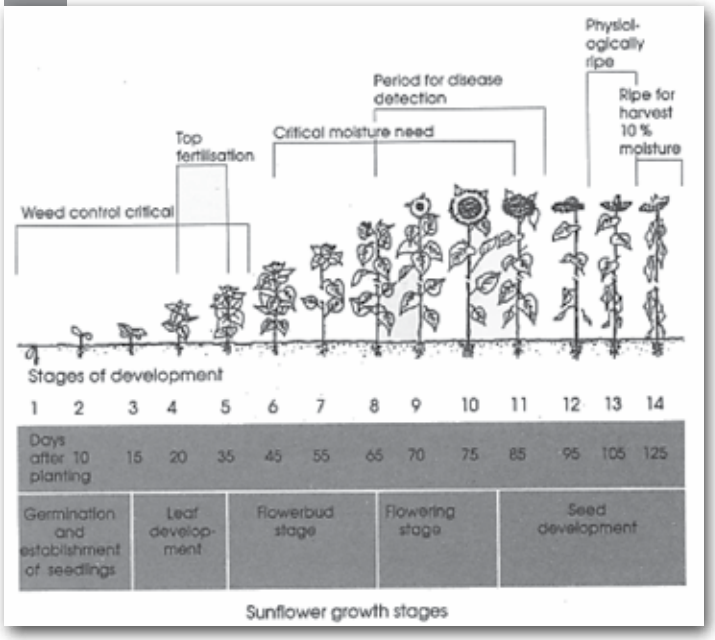
Sunflower production – A Concise Guide. Available online: https://www.kzndard.gov.za/images/Documents/RESOURCE_CENTRE/GUIDELINE_DOCUMENTS/PRODUCTION_GUIDELINES/Look-n-Do/Sunflower%20Production.pdf

1 ***The sunflower head.***



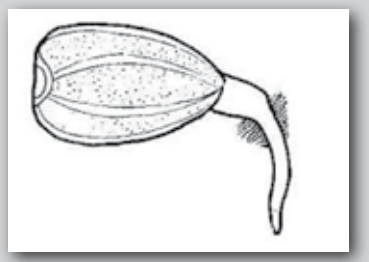
Source: http://cronodon.com/BioTech/asteraceae.html

2 ***The stages of development and the plants needs during each stage.***



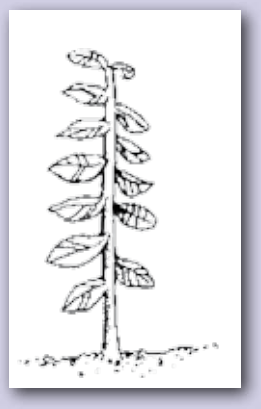
Source: Sunflower Production – A Concise Guide (www.kzndrad.gov.za)

0 GERMINATION



Germination of the seed.

1 VEGETATIVE EMERGENCE (VE)



The seedling has emerged. **Cotyledons** are the first leaves produced by plants post emergence. Cotyledons are not considered to be true leaves because they are actually a part of the seed or embryo of the plant. So VE is the growth phase where the first leaf beyond the cotyledons is less than 4 cm.

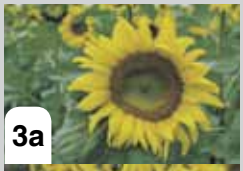
2 VEGETATIVE STAGES

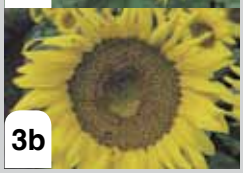
V1, V2, V3 etc. to the last leaf e.g. V12. Count the number of true leaves which are at least 4 cm long. We also count the scars where a leaf once was – even if it has withered due to the process of leaf senescence (**Photo 1**). **Senescence** is the term used to describe the process of deterioration due to the aging of the plant.

3 REPRODUCTIVE STAGES – GROWTH OF THE FLOWER BUDS

1. The flower bud forms a small floral head in the middle of a rosette of leaves with the immature bracts forming a star-like appearance (**Photo 2a**).
2. The bud lengthens to between 0,5 cm and 2 cm above the nearest leaf on the stem (not counting the leaves on the back of the bud).
3. The immature bud grows fatter and longer to more than 2 cm above the nearest and final leaf.
4. The inflorescence begins to open, and the immature yellow rays of florets are now visible although still pale in colour (**Photo 2b**).

4 REPRODUCTIVE STAGES – FLOWERING, POLLINATION AND SEED PRODUCTION





1. This stage is the beginning of flowering. The ray florets are unfolding and the neck or top of the flower stalk begins to tilt at an angle (**Photo 3a**).
2. The flower head expands until the ray florets are fully spread and the outermost rings of the disk florets start to release pollen (**Photo 3b**).
3. The three outermost rings of the disk florets now become fully female at the emergence of the receptive stigmata. More pollen is released by the anthers of the next three rings of disk florets.
4. Seed production is now occurring in the three outermost rings of the florets while stigmata are visible in the next three rings moving inwards. The mature seeds are light grey and still quite soft.
5. Flowering is complete. The last of the disk florets are active and the ray florets are wilting and fading. The seeds in the outermost circle have become darker and their skins harder.

5 SEED MATURATION

1. The sunflower plant's ray florets have been shed, but the back of the disk (the sunflower head) is still green (**Photo 4a**).
2. The back of the head (disk) begins to turn a pale yellow, but the **bracts** still remain green. (The **bract** is that green pointed leaf-like part that surrounds and protects the disk and ray flowers at back.) Seed moisture drops to 50% (**Photo 4b**).
3. The bracts become yellow and brown. At this stage the sunflower plant is considered to have reached physiological maturity. The disk has begun to dry out and moisture content is 80% less with seed moisture about 30% (**Photo 4c**).
4. The back of the disk is now marbled with brown, the stem tissues are drying out. Seed moisture is around 15% (**Photo 4d**). ■

Keep your face to the sunshine and you cannot see the shadow. It is what sunflowers do.
– Helen Keller

Crop management
on soybeans for April and May

FARMERS HAVE EXPERIENCED VERY VARIABLE AND ABNORMAL RAINFALL PATTERNS DURING THE 2018/2019 PRODUCTION SEASON. CLIMATE CHANGE HAS REALLY BECOME A HUGE FACTOR IN ALL DRYLAND CROP PRODUCTION WITH A SMALLER IMPACT ON IRRIGATION FARMERS. EVEN THE CLIMATOLOGISTS AND WEATHER FORECASTERS WERE UNSURE IN THEIR PREDICTIONS OF EXPECTED RAINFALL PATTERNS.

Some areas may have been able to plant at the optimum planting time for dryland production. Other farmers would have been able to plant part of the crop and then been able to continue planting after intermittent thunderstorms. They would have a spread of soybeans at various phases depending on the rainfall patterns experienced in their province or farming district.

Irrigation farmers should have been able to plant at the optimum time as planned. Just about all production areas experienced very high or even abnormal heat units during the production cycle.

Most soybean lands planted in the optimum planting window between the beginning of October to the end of November 2018 will have been harvested during March and April of 2019.

HOW DO YOUR RESULTS COMPARE?

Depending on your actual planting date and if your farm is in a cool, moderate or warm production area, the average days of all cultivars could cover a range of values or benchmarks for various crop physiological growth stages and yields as shown in **Table 1**.

The National average yield per hectare for the 2017/2018 production season can be calculated from the Crop Estimates Committee (CEC) final report at 1,97 t/ha, corrected to about 2,00 t/ha, from a total crop of 1 550 800 tons from a planted are of 787,000 ha's.

These results indicate that using cultivar trial yield results as a guideline for cultivar choice on your farm are very useful but that the actual average yields harvested fall quite short of the yields possible.

Article submitted by a retired farmer

You will have determined what soybean yields from the various cultivars used that were realised on your farm by now. These can be compared to those of other soybean farmers in your district and then to the cultivar trial yield ranges that were planted near you and then the national average.

It will be the ideal time to determine which ones performed the best on your farm with a view to being able to order the right cultivars for the coming 2019/2020 season. It is always best to have a range of suitable cultivars to plant within the planting windows allowed by the variable rainfall patterns that might also be experienced in future.

Depending on your actual planting date and if your farm is in a cool, moderate or warm production area, the average days of all cultivars could cover a range of values or benchmarks for various crop physiological growth stages and yields.

CONSIDERATIONS FOR CULTIVAR AND GROWTH PARAMETERS

Soybean production areas in South Africa are determined by the altitude or location of a farm or district above sea level. The cooler production areas are located in the eastern, higher-lying characterised by a shorter production season with moderate summer days and relatively higher rainfall.

The moderate production area generally has a longer production season with warmer days and average rainfall. In effect, more heat

1 ***Physiological growth stages and yields.***

Production area	Days to 50% flowering	Days to physiological maturity	Days from planting to harvest	Average yields of all cultivars tested kg/ha	Range of yields kg/ha
Cool	71	137	159	2 600	2 199 - 2 967
Moderate	57	120	136	2 489	1 930 - 2 903
Warm	48	122	138	2 465	1 819 - 2 998

Extracted from the national soybean trial results for the 2015 - 2016 production season

A brief look at oilseed markets

IN THIS ARTICLE WE TAKE A LOOK AT WHAT IS HAPPENING IN THE OILSEED MARKETS AND ESPECIALLY FOCUS ON SOYBEANS IN TERMS OF SUPPLY AND DEMAND.

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

GLOBAL SOYBEAN MARKETS

The global soybean outlook for 2018/2019 marketing year, forecasts that there will be lower production, exports, crush and ending stocks. Global production is estimated to be 361 million tons compared to 369 million tons from prior estimates, mainly due a lower crop in Brazil, Argentina, Paraguay, Uruguay and South Africa.

Global soybean exports are reduced by 1,7 million tons to 154,4 million tons. Lower exports for Brazil, Uruguay and Paraguay are partly offset by higher exports for Argentina. Global imports are also reduced mainly on a 2 million-ton reduction for China due to lower crush demand. Global ending stocks are estimated to be lower due to crop related changes as well as historical stock revisions in Brazil and Argentina.

USA OILSEED MARKET

USA oilseed production has been revised down for 2018/2019, with an estimated 134 million tons compared to 135,5 million tons for the previous estimate. The lower estimate is due to smaller soybean, canola, peanut and cotton seed.

USA soybean production is estimated at 123 million tons, down from 123 million tons from the previous estimate, with a harvested area of about 35 million hectares. USA soybean crushing is forecasted to increase while soy meal production will remain unchanged. A reduction in exports is expected due to lower supplies and increased crushing, while ending stocks are projected to be lower than the previous estimate.

LOCAL SOYBEAN MARKET

Dry conditions have disrupted the soybean planting period, which led to smaller hectares planted than what the Crop Estimates Committee (CEC) has initially estimated (851 800 hectares compared to 743 600 hectares).

Total supply of soybean in South Africa is projected at 1,8 million tons for the 2018/2019 marketing season; including opening stocks (at 1 March 2018) of 330 535 tons, local commercial deliveries of 1,5 million tons, soybean import of 6 700 tons for South Africa and a surplus of 11 000 tons.

Total demand for South Africa, including domestic and exports for soybeans is projected at 1,3 million tons; including 25 000 tons for human consumption, 210 000 tons for animal consumption, 1 million tons for crush (oil and oilcake) and the rest of the balance constitutes, amounts withdrawn by producers and released to end consumers, seed etc. Exports are projected to reach about 33 000 tons for 2018/2019. Ending stocks for the 28 February 2019 are projected to be about 500 000 tons. ■

units for growth than the cooler areas. The warm production areas have a longer growing season, with warmer days (more heat units) and little rainfall which is more suited to production under irrigation.

A basic rule of thumb is that the more heat units available, in a particular production environment during the growing season, the later you can plant. In moderate and cooler areas, the crop should be planted to obtain best results. (Please refer to the excellent and informative article: '*When to plant soybeans*' by Nico Barnard, Research Agronomist, Pannar Seed, which was published in the November 2015 *Pula Imvula* for a detailed discussion on the above).

> *It is always best to have a range of suitable cultivars to plant within the planting windows allowed by the variable rainfall patterns that might also be experienced in future.*

GROWTH CLASSES

Growth class choice is based on the dark hours required for the control of the vegetative and onset of flowering phases and differs for each main cultivar choice made and will be a factor to consider within the deliberations to find the right cultivar for your farm conditions. In general growth class 4,5 to 6,5 are used in the cool area's and 5 to 7 in the moderate to warm areas. If you are not familiar with these concepts, please ask your seed supplier or consultant for more information on this aspect of choosing the correct cultivars for your circumstances.

OTHER MANAGEMENT FACTORS

Cultivar choice was highlighted above as one of the primary factors contributing to maximising yields. Other factors to analyse in depth for success are the efficiency and extent of nodulation, soil fertility and fertilisation, and weed control.

Did you plant on time and achieve the planned plant population and emergence planned? If the results for each land were recorded and your crop scouting was thorough you will be aware of what factors were most important and could have been managed or implemented in a better way.

Most important: Did you harvest quality seed and sell your crop well to realise the maximum price possible?

CONCLUSION

Use the results of a difficult season in order to make the best plan for the next. ■

Global maize market prospects

WHAT CAN ONE EXPECT FROM THE SUPPLY AND DEMAND FOR THE GLOBAL AND LOCAL MAIZE MARKETS FOR THE 2018/2019 MARKETING YEAR? THIS ARTICLE ELABORATES ON THE PROSPECTS.

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

Global maize production is forecasted higher due to increased production and consumption and marginally lower trade. Argentina, China and Ukraine have increased production to a point that more than offsets reduction for South Africa and Mexico.

Argentina's increase in production is mainly based on higher expected area and yield due to an abundance of rainfall and conducive temperatures over December and January, boosting yield prospects. China and Ukraine are higher based on the latest official statistics.

Global trade for 2018/2019 include increased maize exports for Argentina and Ukraine, while imports are raised for South Africa and Chile, but lowered for Venezuela. Global maize ending-stocks are higher, mostly reflecting increases for Argentina and China.

LOCAL MAIZE MARKET

South Africa's maize production estimates have been revised down due to heat and dryness during the month of January, particularly in the western producing areas, reducing yield prospects. For the 2018/2019 marketing year total maize supply is projected at 16,5 million tons, which includes opening stocks of 3,6 million tons (as at 1 May 2018), local commercial deliveries of 12,3 million tons, whole maize imports of 150 000 tons and early deliveries of about 260 000 tons.

1 ***Global maize supply and demand.***

	2017/2018	2018/2019	
	Estimate (million tons)	6 Dec 2018 (million tons)	7 Dec 2019 (million tons)
Production	1 094,2	1 068,4	1 080,5
Supply	1 394,2	1 379,5	1 393,3
Utilisation	1 071,4	1 107,9	1 114,0
Trade	152,7	157,2	158,9
Ending stocks	312,8	267,5	274,7

Source: AMIS

Total demand, including exports is projected at 12,9 million tons; with total domestic demand at 10,7 million tons, 5,1 million tons for human consumption and 5,3 million tons for animal feed and industrial consumption and the rest for gritting, withdrawn by producers etc.

Projected export quality maize is estimated at 208 000 tons of processed products and 200 000 tons of whole maize. Projected closing stocks as at 30 April 2019, is estimated at 3,5 million tons. ■

WORDS OF WISDOM

We will naturally pursue our goals on the strength of our own resources, skills and enterprise. But, we know that we will be more successful when we do this in partnership with the world.

~ NARENDRA MODI

Animal diseases that affect humans – Zoonotic listeriosis or mononeucleosis

LISTERIOSIS IS CAUSED BY THE BACTERIUM *LISTERIA MONOCYTOGENES*. IT IS A ZOONOTIC DISEASE (A DISEASE THAT NORMALLY OCCURS IN ANIMALS AND CAN INFECT HUMANS) THAT IS ASSOCIATED WITH FOOD, WATER AND MILK. MOST PEOPLE ARE RESISTANT TO LISTERIOSIS.

Dr Jan du Preez, veterinary specialist, Public Health. First published in SA Graan/Grain May 2018. Send an email to info@zoonoses.co.za

Listeria infection are cattle, goats, sheep and poultry. The bacteria are also found in dogs, cats, rabbits, fish, game and birds, as well as in milk, animal dung, soil, rotting plants, mud, slime, sewage, leafy vegetables, pigs, silage and fruit.

Listeriosis occurs worldwide, but mostly in areas where the temperature is moderate and cold, like in Europe, North America and New Zealand. Although the germ prefers colder temperatures, it also occurs in warmer regions like southern Africa and many other countries. The *Listeria* germ has so far been isolated in 40 domesticated and wild species of mammals. The germ can grow relatively well in temperatures varying between 4°C and 44°C.

People are usually infected by consuming contaminated raw vegetables that were contaminated by the dung of infected animals, contaminated processed meat, soft cheese, unpasteurised milk products and raw milk. Contaminated smoked meat and fish products can also play a major role in infecting people who eat the products. The germs also live in food processing plants and can contaminate meat and fish products that are processed. It is possible that infection can occur by inhaling the germ.

A large number of farm animals like sheep, goats and cattle are silent (subclinical) carriers of *Listeria* germs and excrete the germs in their dung and milk when they become stressed. These animals are not ill, but can also become ill due to listeriosis. The animals can abort (placenta can fail to be expelled), and develop mastitis, blood poisoning and meningitis and encephalitis. Symptoms that the animals display are fever, depression, lack of co-ordination, paralysis of the face, with relaxing of the lips, ears and eyelids on one side.

Certain people run a greater risk of developing listeriosis: Babies (< 30 days) and children younger than five, pregnant women, persons using antacids, people whose immunity is suppressed and persons older than 65 run a bigger risk of becoming ill. Persons with diabetes, liver disease, kidney diseases and alcoholics also run the risk of getting listeriosis.

In pregnant women, the foetus can also be affected, leading to abortions. A newborn baby who was infected before birth can develop meningitis and encephalitis and die. Pregnant women are 20 times more susceptible to contracting listeriosis than the average healthy adult woman. Persons with HIV/AIDS are 300 times more susceptible to listeriosis infection than people with a normal immune system.

The germs penetrating the body prefer to lodge in the brain, intestinal walls and placenta. The *Listeria* germ lives in body cells and has the ability to spread from cell to cell and therefore also to penetrate the blood brain barrier and the intestinal and placental barrier and cause infection. Symptoms in people with listeriosis can include fever, aching muscles, nausea, diarrhoea, headache, stiff neck, loss of balance, muscle spasms and disorientation. Sometimes people think they are displaying flu symptoms, but they could actually have listeriosis. Listeriosis occurs sporadically across the world, but a major outbreak can be very harmful.

A large percentage of these healthy goats and sheep are subclinical (silent) carriers of zoonotic food-associated germs (*Salmonella, Campylobacter and Listeria*). If these animals experience stress, they can excrete germs in their dung.

The *Listeria* germ can survive and multiply in a fridge (2°C to 6°C). The germ can also survive freezing (-9°C to 18°C). In the food chain, infection can occur from the farm to the plate of food. Recontamination of food is a major hazard if food is not handled hygienically. At present no suitable preventive *Listeria* vaccine is available.

PREVENTION AND CONTROL OF LISTERIOSIS

- Wash hands in clean running water – preferably with a disinfectant – before handling food. Not all disinfectants kill germs during the short washing cycle.
- Do not eat half-cooked or raw meat or meat products. Ensure that vegetables and fruit eaten raw are washed thoroughly with clean water.
- Store food at below 4°C from the start. The danger zones for food poisoning from food are between 4°C and 60°C.
- Serve hot food immediately and keep it heated at more than 60°C.
- Prevent contamination of all food.
- Cooked and raw food should be stored separately.
- Make sure that only heat-treated milk or milk products (pasteurised, UHT or boiled) are used.
- Smoked and processed meat and fish products must carry a guarantee that the food is uncontaminated and was handled hygienically.
- Listeriosis can be prevented, controlled and treated effectively with the necessary timeous information, knowledge and training.
- In certain countries where the temperature is relatively moderate or cold, listeriosis cases in humans are estimated to amount to twelve cases per annum in a population of a million people. ■

Sclerotinia head rot of sunflower: A CONTINUING THREAT

SCLEROTINIA SCLEROTIORUM IS A FUNGAL PATHOGEN, WHICH INFECTS SUNFLOWERS, CAUSING SCLEROTINIA HEAD OR STEM ROT DISEASES. THIS FUNGUS ATTACKS A WIDE RANGE OF FIELD CROPS INCLUDING SOYBEANS, BEANS, CANOLA AND LUPINS AS WELL AS VARIOUS VEGETABLE CROPS.

Dr Bradley Flett, ARC-Grain Crops, Potchefstroom. First published in SA Graan/Grain March 2018. Send an email to FlettB@arc.agric.za

Sclerotinia stem rot of sunflowers is not a direct major threat to sunflower production with isolated plants in a field being infected. However, Sclerotinia head rot of sunflowers can cause major damage – particularly in late-planted crops that ripen in cool, wet conditions.

Recently this disease has spread in the local sunflower production areas with high incidences, up to 90%, being recorded in fields in the North West Province and northern Free State provinces of South Africa. This last season severe damage was recorded in the primary sunflower production areas, which implies that there are high levels of inoculum on these fields that may cause challenges this coming season should late rains be experienced.

The continued spread of this disease is a major threat for sunflower production in South Africa. Increased disease pressure will also impose an increased threat on production of other susceptible crops, particularly soybeans.

The wide host range infected by the disease and increased disease pressure will indirectly impact on maize production by reducing much needed crop rotation options, particularly where conservation tillage practices are on the increase. A lack of alternate crops in crop rotation systems will force producers to plant maize under monoculture, which, particularly under conservation tillage systems, brings a different set of disease problems.

SYMPTOMS OF THE DISEASE

Head rot

The fungus infects the back of the head and the tissue becomes soft, light brown and spongy. This infection extends into the developing head (**Photo 1**) and down the stalk and eventually only the fibrous strands at the back of the head and upper stalk remain.

The infected seed at the front of the head eventually falls out of the head due to sheer weight of the infected seed. Large, black sclerotia develop below the seed layer and around the seeds (**Photo 2**).

BIOLOGY OF THE DISEASE

Head rot

During periods of high rainfall and cool temperatures during head fill, the disease is most prominent. Saturated soil results in production of apothecia

1

Fibrous strands at upper end of stalk and head as a result of Sclerotinia head rot damage. *Photo: Dr André Nel, ARC-Grain Crops*

from germinating sclerotia. These apothecia are small mushroom-like fruiting bodies and look like a golf tee.

Apothecia form and release spores into the air, which are windborne and infect the sunflower head during wet weather. The spores use dead flower parts as a food source as they cannot infect healthy tissue.

Once the fungus becomes established, it produces oxalic acid, which kills tissues, as well as extracellular enzymes, which digest tissues, and enable rapid ramification of the fungus throughout the head. Wounds on the back of the sunflower heads may become infection sources and initiate head rot.

CONTROL

Management

Outbreaks of sunflower head rot may result in infestation of lands previously free or with low levels of Sclerotinia. These infestations restrict the producers' options in terms of alternate crops to be used in rotation systems with maize, due to the wide host range infected by Sclerotinia.

The infested fields are a threat to sunflower, which may be planted again after a season's maize, since Sclerotinia stem rot may occur irrespective of weather conditions. The suggested norm is to avoid planting sunflowers on infested fields for five to eight years.

Under local production conditions this may entail planting maize under monoculture for at least five seasons. Rotation will reduce stem rot more significantly than head rot. Head rot can still develop from windborne spores blown in from surrounding areas.

Deep burial of sclerotia prevents them from producing apothecia. One must avoid bringing these buried sclerotia to the surface in following seasons. Once they return to the soil surface and are still viable they can again cause disease. Deep burial and planting of other carefully selected non-host crops in rotation with maize will reduce inoculum.

Resistance

Tolerance to stem and head rot does occur. In the USA (North Dakota) genotypes are screened annually. Genotypes may be tolerant to head rot and not stem rot and vice versa.

No genotype is resistant. Tolerance is influenced by weather conditions. Locally, genotypes need to be screened and mechanisms of tolerance need to be determined for significant progress to be made for use in local management systems.

Chemical control

Desiccants that result in early dry down may be sprayed on the crop after physiological maturity to reduce the impact of further development of Sclerotinia head rot and sclerotial development.

Ensuing weather conditions may influence the efficacy of desiccants as wet weather may favour head rot after the plants have dried due to their affinity for dead tissue. Future weather conditions need to be forecasted prior to a decision regarding use of desiccants can be made.

Benomyl as a seed treatment is the only currently registered fungicide on sunflowers in South Africa. Procymidone is registered on soybeans as a spray, but timing of the spray is critical and for sunflowers there are serious economic implications should it ever be registered. This aspect needs to be thoroughly researched before being included in management systems.

Biological control

Bayer has a biocontrol product on the market called Contans, which is a fungus, *Coniothyrium minitans*. Contans is made up of spores of this biocontrol fungus that attacks the sclerotia whilst still in the ground prior to them developing apothecia.

The earlier the product can be applied to fields known to have previous Sclerotinia head rot outbreaks the more efficient it becomes.

Broadleaf weed and volunteer sunflower control

Control of broadleaf weeds and volunteer sunflowers reduces possible inoculum increase by reducing possible alternate hosts of Sclerotinia.

2

Large black sclerotia develop below the seed layer and around the seeds. *Photo: Dr André Nel, ARC-Grain Crops*

Planting

Plant sunflowers early to avoid wet, cool conditions during flowering to reduce head rot infections. Avoid planting sunflowers next to infested fields that could be a source of spores. Plant clean sunflower seeds as infected seed may be a primary source of inoculum in uninfected fields.

SUMMARY

Sclerotinia head and stem rot are a significant threat to the local sunflower industry – particularly in wet seasons. Recent surveys done by the ARC have shown that epidemics are sporadic over seasons and localities. Although a lot of research has been done on this disease, very few management solutions have been developed.

Research on tolerance, mechanisms of tolerance, chemical control and timing thereof with use of prediction models need to be researched. It is critical to reduce the threat of Sclerotinia in local crop production due to its wide host range and ability to survive.

Increased occurrence and incidence of this pathogen on susceptible hosts will also impact on the maize industry in reducing options for maize crop rotation systems as well as impact on the maize price should large areas of arable land be planted to monoculture maize. ■

FINANCIAL CRISES – be prepared and manage them yourself

CROP FAILURES ARE NOT UNCOMMON TO SOUTH AFRICAN GRAIN PRODUCERS. PAYING TAXES IS ALSO A REALITY, BUT IT IS A PRIVILEGE TO BE ABLE TO PAY TAX – PROVIDED ALL TAX REBATES HAVE BEEN TAKEN INTO ACCOUNT.

Pietman Botha, Pula Imvula contributor. First published in SA Graan/Grain May 2018. Send an email to pietmanbotha@gmail.com

If tax has to be paid and all the tax deductions have not been utilised, you are wasting money. And simply planning not to pay tax is definitely the start of big problems. Everything centres around long-term profitability and the choice to maintain the profitability of the business.

Finances can lead to severe stress. When things are going well, the tax bug must be managed. When things are not going well, the challenges ahead must be managed. Regardless of what you do, you must pay attention to your finances. It is critical to manage and plan your finances with the future in mind. Without analyses and planning it is virtually impossible to prevent challenges.

Crop failures usually create more pressure and stress for the producer, but so does paying taxes. Stress and pressure can easily lead to the wrong decisions, and that is why it is important for producers to find solutions to their challenges by means of a structured method. If this method is sustained, it can lead to the implementation of the right strategy to ensure the survival of the farm.

A way to prevent this unnecessary stress is to analyse your finances regularly, upgrade your planning and thus identify the challenges timeously. Simply being aware of challenges ahead does not contribute at all. React to the challenges and make plans to manage them.

It is considerably better to manage the challenges yourself than to be managed by the challenges. Make time to analyse the farm properly, or have it analysed. Take particular note of solvability, liquidity and profitability, and remember to take the future cash flow and objectives into account.

SOLVABILITY

Solvability gives an indication of how solvent the business is. If the farm is still solvent, there is always a chance that the farm can continue – provided the planned, calculated solvability remains within the benchmarks.

Usually we refer to the farm's debt burden when solvability is analysed. These ratios are mainly calculated with information from the balance sheet. Make sure that the balance sheet is compiled properly and timeously.

LIQUIDITY

Liquidity is an indication of how easily short-term debt can be settled with short-term assets. This is usually where the challenges to the farm lie. Unplanned taxes to be paid at a time when most farms do not expect an income can place enormous additional pressure on the cash flow.

Because of the cost of plant and machinery, medium-term assets are usually bought on credit, and after a poor year, instalments can be challenging. Make sure that the business can weather the risk of a poor year.

PROFITABILITY

A further analysis to be made, is to examine the future profitability of the business. This refers to the profit made over the past year, how much profit can be made in a normal year, and what combination of crops has to be planted.

Making these analyses requires a producer to compile a complete balance sheet, future income and expenditure statement, and future balance sheet. With these calculations you definitely need temporary cash flow. With the aid of the statements a producer or consultant can determine accurately how big the challenge is and suggest possible solutions.

LONG-TERM PLANNING

Unfortunately, the effect of crop failures and low product prices does not pose a problem for only one year, but also for coming years. A full, detailed long-term plan and cash flow are required so that you can get a complete, timeous overview. The cash flow will give an indication of when income and expenditure can be expected.

Possible challenges with respect to the payment of obligations must be addressed immediately: do not wait until the last moment – go and see the creditors or the accountant and start planning to address and resolve the challenge. If a tax challenge is envisioned, producers can also make plans to make tax purchases with increased overdraft facilities in good time.

ANALYSE THE DEVIATIONS AND THE CAUSES

Any action has a reaction, and this applies to the finances of the business too. If the deviations have been identified, the cause of the problem must be found and corrected. If the profitability of the business has been under pressure for some time, the unit could have become too small to service the fixed costs, or there may be a production problem.

Physical resources can also be a problem. Perhaps the potential to cultivate the crops profitably is just not there? Analyse the profitability of the different commodity branches, including fixed costs, and compare this with that of other role-players in the industry. This analysis will also indicate what is possible for the particular farm and how much debt can be paid.

DEBT BURDEN RATIOS

Directly after the harvest there are already benchmarks to be complied with. One of the first indicators of problems is the debt burden ratios. **Table 1** gives an indication of what the maximum debt burden of different types of farms should be. However, these are only benchmarks, and should always be assessed together with profitability, liquidity and the ability to repay.

1 ***Maximum debt burden ratio benchmarks.***

Type of farming	Post-harvest	Pre-harvest
Irrigation	45% - 50%	55% - 60%
Mixed farming	30% - 35%	45%
Dryland seed (medium potential)	25% - 30%	43% - 50%
Dryland seed (high potential)	30% - 35%	60%

If a detailed budget is compiled annually, try and establish why the deviations occurred. Determine why production does not correspond with soil potential – what is the reason for this, and how can it be rectified?

An over-optimistic budget can also be a problem. Also note whether there is not perhaps a marketing challenge. There can be many reasons why a farm is in a financial crisis. Factors like a once-off drought, a sudden drop in commodity prices or the outbreak of a disease can cause the expected income to decline drastically.

This reduced income can lead to carry-over debt and leave other obligations unpaid, which can affect the financing for the next production season. Financiers are usually prepared to assist producers under these circumstances – within limits – provided they can indicate what will be done to ensure sustainability.

If the reason for the crisis is more of a long-term nature, for example a long-term drought, a long period of lower prices or the wrong financial decisions made in the past, a different approach like the selling of assets may be required. The producer will have to assess and re-plan the farm anew.

PLAN STRATEGICALLY

It is important for everyone in the business to know where it is going. Management must indicate the strategic direction and objectives within which most of the decisions must be made. Try to get help to do this strategic planning. Involve the entire family and inform the essential labourers as well. Involving an independent person or institution like an agricultural management services division will add further value to such planning.

Remember to link time and objectives to the plan and to check these. This will contribute towards testing the direction of the business and implementing the right farm branches. Make your creditors part of your strategic plan too and keep them updated on your strategy and progress.

OPTIMISE YOUR FARM

Every business has areas where the effectiveness and efficiency can be increased. If you know that the farm has limitations, they can be managed. If the finances are a limitation, the profitability of each component must be calculated.

The component with the highest profitability must be developed until other limitations stop the production or until funds dry up. If your farm is limited by the area, the component with the highest gross margin per hectare must be cultivated until all the fields have been planted or until other limitations cause production to cease. Also remember to take the risk of each component into account.

The tillage system itself should also be optimised. Make sure that your practices are optimal to increase profits. Investigate the effect of technology in increasing profit and reducing risk. Precision farming is a well-known method to increase profit, as costs are employed in the right places and the potential of the resource is unlocked. Sometimes it is important for the resources to be thoroughly examined. Try to have the fields mapped, eliminate the sections with a lower potential and implement other practices.

MARKETING

Using the futures market makes it possible to manage prices better and increase income – just be aware that it will require time. Expert staff must become part of your team to market products better.

Hedging your risks can also make a large contribution. Input insurance and hail insurance should be considered to hedge the capital in the farm.

A CLOSER LOOK AT GIBBERELLA ROOT, CROWN AND STALK ROTS

GIBBERELLA ROOT, CROWN AND STALK ROT IS CAUSED BY THE FUNGAL SPECIES IN THE *GIBBERELLA ZEAE* (*FUSARIUM GRAMINEARUM* SPECIES COMPLEX) WITH THE PRIMARY HOSTS OTHER THAN MAIZE BEING OATS, BARLEY, RYE, SORGHUM AND WHEAT.

Dr Bradley Flett, and Dr Belinda Janse van Rensburg, ARC-Grain Crops, Potchefstroom. First published in SA Graan/Grain May 2018. Send an email to BelindaJ@arc.agric.za

Of the 16 species belonging to the *Fusarium graminearum* species complex worldwide, only three are found on maize in South Africa. These rots are widespread throughout the South African maize production area, but are particularly common in irrigated maize fields. Maize grown in monoculture or in rotation with other graminaceous host crops can increase disease levels.

ECONOMIC IMPORTANCE

Gibberella root, crown and stalk rot is a common problem in maize production areas worldwide and also in South Africa particularly where wet, warm favourable conditions persist. It can cause extensive economic losses due to premature plant death and interference with translocation of water and nutrients during grain fill, resulting in lodging of plants due to weakened stems (**Photo 1**).

Yield loss depends on a number of factors including genotype, prevailing climatic conditions, fertilisation rates, crop density and cultural practices. Although it is difficult to estimate precise yield loss due to Gibberella root, crown and stalk rot during favourable environmental conditions, extensive damage (lodging) is known to occur.

Lodging complicates mechanical operations, necessitating the picking up of plants and hand harvesting, which increase time, labour and financial constraints.

1

Lodging of maize plants caused by Gibberella root, crown and stalk rot.

SYMPTOMS

Symptoms of Gibberella root, crown and stalk rot are similar to those of other root and stalk rots, but it is the pink/red discolouration that is diagnostic (**Photo 2**). Affected plants wilt, the leaves change from light to dull green and the lower stalks become straw coloured.

Unfortunately, symptoms only become obvious once the damage has been done. To confirm the disease, it is suggested that producers remove an infected plant and cut it lengthwise down the stalk to the root ends.

Maize grown in monoculture or in rotation with other graminaceous host crops can increase disease levels.

The tissue should have a red discolouration to it. The internal pith disintegrates, leaving only the vascular bundles intact. The disintegration of stem tissue causes stem lodging and rotting of the root system which leads to root lodging. Small, round, black fruiting bodies (perithecia) may be produced superficially on the stalks, often at the internode.

EPIDEMIOLOGY

Under warm, wet conditions, the perithecia produce ascospores that are disseminated by wind and may infect maize plants. Inoculum may also be produced as conidia during the summer. Stalk infections usually occur shortly after pollination, developing at the origin of the leaf sheaths or around the brace roots. The fungus may also enter through the roots, crowns and grow up into the lower stem.

CONTROL

Crop rotation

Crop rotation with legume crops or sunflowers will allow stubble to break down, without providing a host on which to survive, thereby reducing inoculum. Although recent studies have shown the ability of a number of the *Fusarium graminearum* complex species to survive on plant organic matter in or on the soil,

Typical symptoms of Gibberella root, crown and stalk rot.

it is still important to rotate with crops that are non-hosts and break down quickly in the field.

Resistance

Although a lot of effort has been made to select hybrids with root, crown and stalk rot resistance, the main consideration is still yield. Genotypes with higher yields tend to have bigger ears, which act as large sinks for carbohydrates in the plants.

The larger ears result in reduced carbohydrate levels in the lower stem, predisposing the plant to these rots. Therefore, the balance between breeding for resistance to these rots and breeding for high yield is a delicate one.

Nutrients and stress reduction

Cultural practices that reduce plant stress also reduce incidence of stalk rot. Common stress conditions include: High nitrogen, low potassium fertility, high soil moistures in the mid to late season after a dry season, moisture stress early in the season and during grain fill as well as high incidence of leaf diseases.

Yield loss depends on a number of factors including genotype, prevailing climatic conditions, fertilisation rates, crop density and cultural practices.

Physical damage that creates wounds (insects, nematodes, hail) allowing the pathogen to enter the maize plant may also predispose the plant to root, crown and stalk rot. Reducing plant densities will also alleviate plant stress.

Chemical control

There are no fungicides available for the control of Gibberella stalk rot. However, fungicide applications for the control of leaf diseases, may be beneficial in reducing stress on the plant, thus reducing stalk rot severity and ultimately lodging. ■

Financial crises – be prepared...

REDUCE EXPENSES

The expenses incurred must lead to increased production, effectiveness and efficiency. Think twice before you incur expenses. Buying cheaply usually turns out to be more expensive. Make sure that the inputs that are employed can complete the task in the first round. Remember: When something has to be re-done, higher costs are involved and income is reduced.

Expenditure is necessary to generate income. Establish what will happen to the profits if the expenses are reduced: If the profits increase, the costs reduce, and if the profits do not increase, the costs should not reduce.

Sometimes producers plan to stretch the available credit in order to be able to plant more. Be careful – this is usually not a good plan. Fixed costs and overheads should be managed carefully. Determine what is really necessary and cut the other costs drastically. Insurance should also be thoroughly investigated and re-planned. Establish how the same benefits can be obtained more cheaply.

It is not a disgrace to ask for help. Approach financiers, extension officers and consultants for advice and support so that you can address the problem concerned.

These outsiders may see opportunities and threats in your business that you keep on missing. They may also have a model with which you can do your calculations in detail and that can make a significant contribution. ■

GLYPHOSATE TOLERANCE SIMPLIFIES WEED CONTROL

WEED CONTROL IS ESSENTIAL FOR A SUCCESSFUL MAIZE CROP AND ESPECIALLY DURING THE FIRST SIX WEEKS OF THE CROP'S DEVELOPMENT. THE MOST IMPORTANT ELEMENT OF SUCCESSFUL CROP CULTIVATION IS TO GET THE BASICS RIGHT FROM THE BEGINNING.

Christin Hunter, Marketing Communications Manager, PANNAR Seed. Send an email to christin.hunter@pannar.co.za

Stress or damage caused by weed pressure, hail, wind, waterlogging and leaf-feeding insects can lead to high yield losses. It is very important to avoid stress due to weed competition. Mechanical weed control too deep or too close to the plant can damage roots. Root damage can lead to stem and root rot, followed by lodging of plants later in the season.

Maize hybrids with the glyphosate tolerance trait(s) are ideal to advance your yield potential. These hybrids have attractive benefits:

- Broad-spectrum weed control.
- Control of difficult weeds.
- Excellent crop safety that reduces crop damage when herbicides are sprayed.
- The advantage of conservation cultivating practices.
- Flexibility in terms of herbicide application timing.
- The crop is easy to manage, and the glyphosate has no residual effect in the soil and is environmentally friendly.
- Helps farmers save labour and fuel.

Although glyphosate tolerant hybrids are more expensive than the normal conventional hybrids the price difference is offset by the advantage of increasing your efficiency and productivity. The proof is in the pudding when you realise a bigger yield.

> *We are passionate agriculturalists who take a personal interest in the success of your farm, use our service and expertise to optimise your crop production.*

To make the most of the glyphosate tolerance technology you need to familiarise yourself with the best practices for management of a glyphosate herbicide tolerant crop, these include reading the chemical label before planting, learning how to avoid the build-up of potential weed resistance to glyphosate and how to manage volunteer glyphosate tolerant maize plants in the following crop the next season. Contact your PANNAR representative or agronomist or consult the PANNAR website (*www.pannar.com*) to help you optimise your crop production.

Although PANNAR markets a comprehensive range of glyphosate tolerant maize hybrids the following two are singled out for their exceptional performance:

WHITE MAIZE

PAN 5R-591R

This medium early hybrid is highly prolific and produces a seedling with strong vigour that is conducive to establishing a good plant population. This will form the foundation of your successful maize crop. PAN 5R-591R is well adapted to all the production regions and has a good performance record over the past few seasons. Owing to its strong prolificacy and robust plant type, it is well adapted to regions that experience drought stress or dry spells from time to time. However, PAN 5R-591R has the advantage that it can compensate under good production conditions by producing a second ear and a higher yield. It produces good quality grain and is an all-round winner.

YELLOW MAIZE

PAN 6R-680R

This hybrid with a medium growing season displays exceptionally stable performance over various seasons and is well adapted to all production regions. It is a good choice where high weed pressures are a concern. It also fits in well where only a single crop of maize is grown under irrigation or supplementary irrigation. PAN 6R-680R has good resistance to cob rot, good standability and drought tolerance. For best results, plant the hybrid early in the planting window of your specific region. It is suitable for grain production or stack in sheaves and left on the land to feed animals at a later stage or to make silage.

We are passionate agriculturalists who take a personal interest in the success of your farm, use our service and expertise to optimise your crop production. ■

THE CORNER POST

FANIE DU PLESSIS

Sharing knowledge means gaining worth

ANYONE WHO IS NEARING RETIREMENT AGE OR HAS PASSED IT, KNOWS THAT AT SOME STAGE YOU WRESTLE WITH THE QUESTION OF WHAT GIVES LIFE MEANING. WHEN FANIE DU PLESSIS WAS CONFRONTED WITH THIS QUESTION AFTER SELLING HIS OWN FARMING ENTERPRISE, HE DECIDED TO EMPLOY HIS KNOWLEDGE TO HELP OTHERS. HE HAS SINCE DISCOVERED THAT HE IS BENEFITING FROM THE MENTORSHIP PROGRAMME AS MUCH AS THE MENTEES.

ADDING MEANING TO LIFE

Fanie, who is a mentor in the Bizana region in the Eastern Cape grew up in Brits in the North West Province. He was a vegetable farmer in the same area for many years before selling his farm when the platinum mines developed and moved to the Eastern Cape where he farmed with maize and cattle in the Swartberg mountain area. Four years ago, he made the decision to not continue with his farming operation and sold his farm.

It was at about this time that Ian Household, previous Grain SA provincial co-ordinator of the Eastern Cape who has since relocated to New Zealand, approached Fanie about joining the Grain SA Farmer Development Programme. 'I jumped at the opportunity as I have enough knowledge about farming practices and was not busy with anything else at that stage,' Fanie says. Although he is not fluent in any of the African languages, his knowledge of Tswana, Xhosa and IsiZulu is enough to understand others and make himself understood.

USING COLLECTED KNOWLEDGE TO HELP OTHERS

Fanie, assisted by junior mentor Phumza Mtukashe, is guiding about 230 developing farmers who have been divided into six study groups. Phumza is currently taking the lead in two of these groups and according to Fanie is already making a big impact in the community.

They are on the road daily and in this extremely rural area, getting to most of the study groups and plots is no small task as the roads are in a particularly poor condition. The planned Mtentu mega bridge would have made travelling in this area much easier, but unfortunately the building of this bridge has been cancelled. He jokingly adds it would perhaps be easier to reach them on horse-back than by vehicle.

However, nothing deters Fanie to get to his farmers on a daily basis. His bakkie manages going up and down the lush green hills of the area, avoiding the many less friendly parts of the road to which he has become accustomed.

Although the groups have up to now consisted mainly of enthusiastic older farmers – 75% female farmers – the latest entrants who have signed up for the programme are younger men. Fanie attributes this to the success of farmers in the area. 'When the programme was launched in this area, farmers were harvesting 10 to 20 bags on a hectare. Now the farmers are harvesting anything between 4 t/ha and 7 t/ha and this is inspiring others.'

According to Fanie, the Bizana area is probably the finest agricultural area in the whole of South Africa. Very good rainfall ensures enough water for the crops and the steady climate conditions makes it the perfect place to own land.

Louise Kunz, Pula Imvula contributor. Send an email to louise@infoworks.biz

UPS AND DOWNS

Fanie feels privileged to be part of the success of the Farmer Development Programme and to develop the farming knowledge of the Bizana community. 'The people here are hungry for knowledge and keen to implement better agricultural practices as they are a nature conscious community.' It excites him to see that they listen to the information shared by their mentors and implement what they have learned.

To share in their excitement of improved yields remains a seasonal highlight for Fanie but other highlights include the successful farmers who have been nominees in Grain SA's Subsistence Farmer of the Year competition.

The Bizana farmers are performing well and taking care of their crops. 'The better the yield, the more attention they give.' Their plant population has improved, the fields are cultivated with more care and weed control is exercised to ensure cleaner fields.

'What has really made a tremendous difference is the lime they have received from Grain SA for the past three years to ensure improved soil health. It has really enhanced the soil and the increased yields prove this. They are also grateful to the government, who in co-operation with Grain SA have implemented a mechanisation programme to assist them with preplant preparations.'

As a result of the increased yield, a market had to be found where maize could be traded. 'Some of them had 100 bags of surplus that had to be converted into cash. 'We started looking for available markets in the area and sold to a small co-op in Kokstad and to farmers in the area who were looking for maize.'

A NEW LEASE ON LIFE

For Fanie, being a mentor has added meaning to his life and given him a new-found purpose. He thoroughly enjoys time spent with the developing farmers and it has made him intensely aware of how privileged he has been. 'When one sees people living and working in circumstances vastly different to your own, you realise how much you have to be thankful for and this changes your outlook on life.'

American communications consultant and blogger, Whitney Fleming, said to her daughter: 'Life is about the impact you have on others. So, work on building your brain and growing your heart, and the rest will fall into place.' Being a mentor is not only keeping Fanie busy and his brain active, the impact he is having on the mentees is 'growing his heart' too and making everything fall into place. ■

IN THE FIGHT FOR HEALTHIER, BETTER PERFORMING CROPS, WE'RE ON YOUR SIDE

PANACEA® is PANNAR's well established yield protection package of seed treatments and YIELDBOOST® fungicide and insecticide spray programmes, providing all the expertise and resources you need to fully unlock the genetic potential of our products and win in the marketplace.

OUR SMART FARMING FORMULA

DIVERSE PRODUCTS + AGRONOMY SERVICES + RISK MANAGEMENT = SUCCESS AND PROSPERITY

PANNAR®

Together we farm for the future™

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

2019/CORP/E/012PANAC