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PULA IMVULA

GROWING FOOD • PEOPLE • PROSPERITY

GRAIN SA MAGAZINE FOR DEVELOPING FARMERS

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Editorial team

GRAIN SA: PRETORIA
PO Box 74087
Lynnwood Ridge
0040
■ 08600 47246
■ www.grainsa.co.za

MANAGING EDITOR
Sandile Ngcamphalala
■ 082 862 1991 ■ Office: 012 943 8296
■ sandile@grainsa.co.za

EDITOR AND DISTRIBUTION
Liana Stroebel
■ 084 264 1422 ■ Office: 012 943 8285
■ liana@grainsa.co.za

PUBLISHING PARTNER
INFOWORKS MEDIA PUBLISHING
Assistant editor – Louise Kunz
■ louise@infoworks.biz
Team leader – Johan Smit
■ 082 553 7806 ■ Office: 018 468 2716
■ johan@infoworks.biz
Publishing – Elizma Myburgh, Joritha Hechter

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Grain SA Farmer Development Programme

DEVELOPMENT CO-ORDINATORS
Johan Kriel
Free State (Ladybrand)
■ 079 497 4294 ■ johank@grainsa.co.za
Jerry Mthombothi
Mpumalanga (Nelspruit)
■ 084 604 0549 ■ jerry@grainsa.co.za
■ Office: 012 943 8289 ■ Smangaliso Zimbili
Jurie Mentz
Mpumalanga/KwaZulu-Natal (Louwsburg)
■ 082 354 5749 ■ jurie@grainsa.co.za
■ Office: 012 943 8218
Graeme Engelbrecht
KwaZulu-Natal (Dundee)
■ 082 650 9315 ■ graeme@grainsa.co.za
■ Office: 012 943 8287 ■ Nkosinathi Mazibuko
Luke Collier
Eastern Cape (Kokstad)
■ 083 730 9408 ■ luke@grainsa.co.za
■ Office: 012 943 8280 ■ Luthando Diko
Liana Stroebel
Western Cape (Paarl)
■ 084 264 1422 ■ liana@grainsa.co.za
■ Office: 012 943 8285 ■ Hailey Ehrenreich
Du Toit van der Westhuizen
North West (Lichtenburg)
■ 082 877 6749 ■ dutoit@grainsa.co.za
■ Office: 012 943 8290 ■ Lebo Mogatlanyane
Cwayita Mpotyi
Mthatha
■ 078 187 2752 ■ umthata@grainsa.co.za
■ Office: 012 943 8277

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Cover photo: Pietman Botha

A WORD FROM...

Graeme Engelbrecht

FROM EVERYTHING WE DO AND EXPERIENCE, WE MUST LEARN SOMETHING TO BE ABLE TO IMPROVE GOING FORWARD – TO DO BETTER THE NEXT TIME! IF WE DON'T, THAT EXPERIENCE WILL HAVE BEEN WASTED.

This summer was a sight to behold with water everywhere! It was an answer to so many prayers, but was it really?

We are always told to prepare for the drought years as South Africa is drought prone. Excessive water can however be just as damaging. Fortunately these disaster 'wet years' are far fewer than the drought years.

We now have a rare opportunity to see what these problems are and prepare for problem areas which are not commonly visible. The water channels should be repaired or lands prepared to avoid flow. Contours must be corrected or added and waterlog spots be drained. Now is a good time to do these corrections. Even in a more normal rainfall year these issues will lead to crop reduction.

It is only now in the view of extreme excess highly noticeable, but if not remedied you will also be experiencing a crop reduction from these areas in the more normal years ahead. Even more important, you have now been shown which of your lands or areas are able to cope with these excesses.

For those to whom this rain has been a blessing and resulted in a bumper crop, now is the time to try to use that surplus – try to grow and improve. We should have started marketing or getting ready for it with expectation!

Growth in a business is never reflected by the assets you buy; no matter how shiny the paintwork on a new tractor or implement looks, no matter how much the family begs for a new SUV.

Growth should be measured in increased profit. Even increased turnover and increased area planted have to reflect increased profit, otherwise is it actually growth? If you have been fortunate to experience a good crop, don't waste the opportunity to just look good, we all know that looking good is temporary.

Are we as farmers show ponies or carthorses? Carthorses get the work done!

Make the choice:
No-till or a conventional tillage system?

PROFITABILITY IS ONE OF THE MOST IMPORTANT CRITERIA THAT SHOULD BE USED TO COMPARE DIFFERENT TILLAGE SYSTEMS WITH EACH OTHER. HOWEVER, SEVERAL OTHER ASPECTS MUST ALSO BE CONSIDERED WHEN DECIDING TO CHANGE FROM A CONVENTIONAL TO A NO-TILL SYSTEM.

The ARC Small Grain Institute (ARC SGI) in Bethlehem ran a demonstration trial from the 2001/2002 to the 2006/2007 production season in which maize and wheat were planted as rotation crops in both no-till and conventional systems.

The rotation of summer and winter crops implies long fellow periods of ten to twelve months between crops. This article focusses on the cultivation of maize when it succeeds wheat after a long fallow period.

DEMONSTRATION TRIAL AT BETHLEHEM

The demonstration trial was planted on a relatively homogeneous Avalon soil with a depth that varies from 500 mm to 600 mm. The soil pH was initially corrected by applying the necessary lime. The practices performed on the various systems, after the wheat was harvested in November-December, are shown in **Table 1**.

Table 1 shows that the no-till system relies exclusively on chemical control of weeds while the conventional tillage system uses mechanical and chemical control methods to control weeds. To eliminate the effect of different planting dates, both systems were planted on the same day in each season. However, planting dates of the different seasons varied according to the availability of rain.

The difference between inputs and cost per hectare of the two systems is compared in **Table 2**. To calculate the cost of the systems, the current list prices of the input providers were used. Cultivation practices have remained constant over time and therefore it can be assumed that the production cost of the respective systems have also remained constant over time if the prices of inputs are kept constant.

According to Table 2, the no-till system uses significantly less tractor hours per hectare and therefore fewer tractors and labour per hectare are required, which will result in some of the overhead costs being saved with this system. Because tractors work less in the no-till system, the diesel and repair bill is 54,4%/ha lower than with the conventional system.

However, the no-till system's direct herbicide cost is 110%/ha more than the conventional system. Table 2 shows that the directly allocable variable cost of the no-till system is 4% less than the conventional system.

1 ***General practices as applied to the no-till and conventional systems at Bethlehem.***

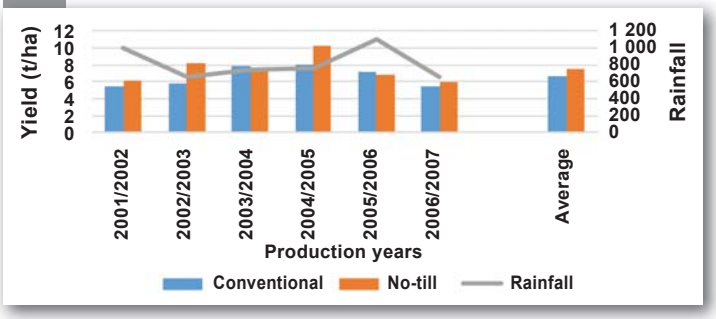
Month	No-till system	Conventional system
December	Spray glyphosate	Shallow disc of fields
January		Plow the fields deep
February	Spray glyphosate	Cultivate the fields shallow
April		Cultivate the fields shallow
May	Spray glyphosate	Spray glyphosate
October	Spray glyphosate	Cultivate the fields shallow
November	Plant maize (30 000 plants ha^{-1}) 80 kg N ha^{-1} and 27 kg P ha^{-1} are applied	Plant maize (30 000 plants ha^{-1}) 80 kg N ha^{-1} and 27 kg P ha^{-1} are applied
November	Spray fields with acetochlor/atrazine/terbuthylazine	Spray fields with acetochlor/atrazine/terbuthylazine
June	Harvest	Harvest

2 ***The difference in inputs and costs per hectare of the no-till and conventional systems in the demonstration trial at Bethlehem.***

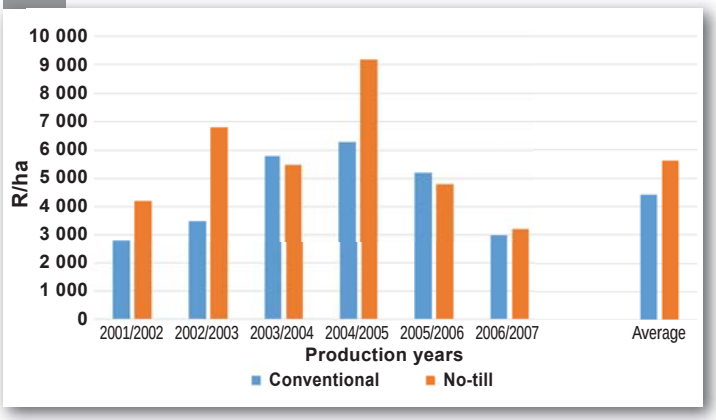
	No-till system	Conventional system
Tractor hours until after planting	0,92 h/ha	2,41 h/ha
Litre diesel used	35,05 litres	74,45 litres
Fuel cost %	47%	100%
Repair cost %	61%	100%
Herbicide cost	210%	100%
Total directly allocatable variable costs %	**96%**	**100%**

Photo: Pietman Botha

1 *The yields and total rainfall for the demonstration trials from the 2001/2002 to the 2006/2007 season.*



2 *The profitability of the no-till and conventional tillage systems.*



YIELDS OF THE DIFFERENT SYSTEMS

Graph 1 shows the rainfall figures as well as the yields of the no-till and conventional systems on the demonstration trials for the 2001/2002 to 2006/2007 production seasons.

It shows that there was no fixed pattern in yield differences between the systems. In 2003/2004 and 2005/2006 better yields were obtained with the conventional system, but in the other seasons, the no-till system performed similarly or better than the conventional system. Considering the average yield, the no-till system has performed better over time.

PROFITABILITY

The profitability of the two systems is shown in **Graph 2**. The gross production value, directly attributable variable costs, as well as the gross margins, which form the basis of profitability, are hereby indicated.

The **gross production value** is the yield multiplied by the price of the crop. To calculate the gross margin, the directly allocable variable costs are deducted from the gross production value. The **gross margin** is therefore the profit before fixed costs are deducted.

Graph 2 shows that the profitability of the different systems differed over time. Out of the six years under consideration, the no-till system yielded the best gross margin on four occasions. Looking at the average gross margin, the gross margin of the no-till system beat the conventional system by R1 180/ha.

CONCLUSION

This information indicates that although no major short-term savings on input costs can be expected when switching from a conventional to a no-till system, it can increase the profitability of maize production.

In these figures the fixed cost is not included. As less machinery is needed with a no-till system, the depreciation is dramatically less than the conventional system.

With each system there will be problems. With a no-till system farmers must remember that their management skills must be better. Mistakes can't be corrected with implements and timing is of utmost important. If you spray herbicide too late, you will pay the price.

Before entering a no-till system, make sure you understand it and can manage it. ■

PIETMAN BOTHA,
INDEPENDENT
AGRICULTURAL CONSULTANT

2020's HIGHS and LOWS featured at Congress

GRAIN SA'S ANNUAL CONGRESS TOOK PLACE VIRTUALLY ON 3 AND 4 MARCH AND EXPLORED THE THEME 'CREDIBILITY OF GRAIN MARKETS'. DELEGATES FROM ALL AROUND THE COUNTRY WERE ABLE TO PARTICIPATE AND EVEN VOTE ONLINE.

CONGRESS EVENTS

A key purpose of Congress is to review the activities of the organisation in the past year and appoint new leadership. Here are some of the reviewed activities:

The past year

Although it was a year of good harvests, it was one of major uncertainty. We learned the importance of having an organisation that will champion the farmers. This was evident when Grain SA jumped to the task of organising permits for farmers to continue harvesting and delivering their crop to silos when lockdown was implemented.

Grain SA was included in the minister's COVID advisory team and could keep its finger on the pulse all the time. The organisation was determined to continue to attend to problems and try to be proactive for farmer issues towards effective, sustainable and profitable farming. How can we improve productivity? How can we improve profitability? These are goals that Grain SA consistently pursues.

Chairman Derek Mathews feels strongly that we have to pursue profitability for farming operations. We cannot encourage a farmer to enter the industry when we are effectively encouraging him into a debt trap.

Market mechanisms and transparency in the marketplace were under the microscope this past year. The location differential has been a long term headache and Grain SA is now actively seeking a new system together with the University of the Free State.

Financial management is important in an organisation like Grain SA. CEO, Jannie de Villiers, was pleased to report that Grain SA has once again been given a clean audit reaffirming that it is a responsible custodian of the funds it manages.

The annual review reassured members that the Grain SA team is highly skilled and able to steer through the sometimes challenging and muddy waters of the broader agricultural economy. Our business is safe in this team's hands while we get on with the business of farming at grass roots!

Leadership appointments

Chairman Derek Mathews, a farmer in the Lichtenburg district, was re-elected unopposed for the new term of office. He restated his belief that *'Farmers have to have a voice and they have to have a voice that is effective and that can be heard!'* He also said, *'We have come to a time where what is good for the commercial farmer is also good for the smallholder farmer. We must find ways to provide solutions to all farmers – big or small.'*

Vice-chairman Richard Kriel who farms near Caledon and is involved on many organised agriculture trusts, was also re-elected for a new term of office.

Vice-chairman Ramodisa Monaisa, a farmer from Radithuso, North West, was re-elected for the new term. He is the chairperson of the Farmer Development Working Group and *Phahama Grain Phakama*.

Although the virtual congress was not as special as meeting face to face, shaking hands and having a chat, it was nonetheless an amazing achievement on the part of the Grain SA team to coordinate this event that virtually enabled business as usual.

Keynote speakers

The guest experts addressed important issues that influence market information and price drivers.

Guest speaker, Dr Justin Choe, is a research economist and an expert on trade policy. Dr Choe gave an overview of world agricultural production and how the USDA aims to gather information to inform decisions and provide reliable, objective and unbiased information to the agriculture sector.

Professor Johan Willemse, agricultural economist, discussed the credibility of the grain markets. His many years of experience in the local grain economy including monitoring the shift from the single channel marketing systems to the free market we know today, make his insights worth listening to. He says the most important thing is farmers must have accurate market information at all times. The other critical element is there has to be 'rules of the game' monitoring the conduct of role-players in place. We also need to guard against state interference which may attempt to control the markets. Willemse highlighted the invaluable role of the SAGIS and the Crop Estimates Committee in providing unbiased, reliable information on the crops.

Newsworthy

- Jannie de Villiers informed Congress that a new non-profit company, *Phahama Grain Phakama,* has been formed for the Farmer Development Programme. The intention is to ensure that the organisation is BEE compliant and to create channels for funding that will benefit donors in the future.
- This was CEO Jannie de Villiers's last Congress as he retires at the end of August 2021. He reflected on his ten years of service to Grain SA saying despite many challenges inside and outside the organisation, he feels he has been able to live out a call 'to serve' and 'to encourage' others. Derek thanked Jannie for his commitment to grain farmers and for building a team that serves Grain SA well. ■

JENNY MATHEWS,
MANAGEMENT AND DEVELOPMENT SPECIALIST AND EDUCATOR

Part 4 How the MAIZE MARKET functions

THIS MARKS THE FINAL ARTICLE OF A FOUR-PART SERIES THAT ATTEMPTS TO EXPLORE THE FUNDAMENTAL FACTORS THAT HAVE AN IMPACT ON THE MAIZE MARKET. IN THIS ARTICLE THE VARIOUS PARTICIPANTS AND THEIR ROLES AS WELL AS THE IMPORTANCE OF INFORMATION ON THE MARKET WILL BE DISCUSSED.

HEDGERS AND SPECULATORS

In a derivatives market, there are various participants, namely hedgers (those wishing to manage price risk) and speculators (those prepared to take on risk to make a profit).

Speculators are necessary to the efficient functioning of a market in that they provide added liquidity to the market and added opportunity for hedgers to lay off risk. Trading liquidity is very important to ensure that a futures market can perform its functions of price risk management and transfer. Liquid contracts (high volumes traded on the contract) ensure that the price truly reflects the consensus of a large number of buyers and sellers. It also allows market participants to easily enter into or close a derivatives position.

The essential characteristic of a liquid market is that there are ready and willing buyers and sellers at all times. However, there is no assurance that a liquid market may exist for offsetting a commodity contract at all times. Some futures contracts and specific delivery months tend to have increasingly more trading activity and have higher liquidity than others.

Speculators are key contributors to the liquidity of a market or asset. They are individuals or institutions that seek to profit from anticipated increases or decreases in a particular market price. By doing this, they provide the capital needed to facilitate liquidity.

PRICE DETERMINATION

As we have established in this series, prices on a commodity derivatives market are determined by the interpretation of the information available to the market at any given point in time, based on the principle of willing buyer, willing seller.

Futures prices are discovered through a continuous worldwide flow of information that influences both the current and future supply and demand expectations of the buyer and seller. Adequate market information is one of the key contributing factors to reduce uncertainty and creates transparency for a favourable environment to operate.

Traders and speculators are sensitive towards the release of new information; this includes both national and international reports, like the Crop Estimates Committee report and the World Agricultural Supply and Demand report, which plays an important role in trader decision making in the South African maize futures market.

The impact can be observed by the significant volatility changes in the futures market before the report dates for the respective local and international reports. The price of grain, particularly that of white maize, on the South African commodity derivatives market is determined by the interpretation of the information related to the following factors:

- Expected rainfall.
- Domestic supply and demand situation.
- Regional supply and demand situation.
- International supply and demand situation and international prices.
- The exchange rate.

In conclusion, having speculators on the market creates liquidity and the availability of information allows the playing field to be level for all role-players and reduces opportunities for manipulating prices. The availability of information aids producers in decision-making – that is what to plant or marketing strategy. It helps one understand or even pre-empt volatility on the market. ■

IKAGENG MALULEKE,
AGRICULTURAL ECONOMIST
AT GRAIN SA

WORDS OF WISDOM

Life on a farm is a school of patience; you can't hurry the crops or make an ox in two days.

~ HENRI ALAIN LIOGIER

Employment contracts:
Be wary of these potholes

TO ENSURE THE PROFITABILITY AND SUSTAINABILITY OF A BUSINESS, EMPLOYERS FACE MANY BUSINESS RISKS. THE EMPLOYER-EMPLOYEE RELATIONSHIP IS ONE OF THESE RISKS AND MUST BE MANAGED ACCORDING TO ALL THE LABOUR LAWS. ADHERENCE TO THESE LAWS IS NON-NEGOTIABLE AND NON-PERFORMANCE CREATES A BUSINESS RISK FOR EMPLOYEES.

In South Africa, the employer-employee relationship is highly regulated by a number of labour laws and is applicable regardless the number of employees or whether employees are permanent or temporary.

KNOW YOUR CONTRACT

To enable proper management of the employee-employer relationship, a proper employment contract is an essential document. It is a contract between an employer and employee through which an employee provides his/her services for a period, against remuneration, and under the authority of the employer.

First pothole – labour laws

All conditions of employment must be in line with the all the labour laws whereas the laws set the minimum conditions. For instance, the Basic Conditions of Employment Act (BCEA) makes provision for a minimum of 15 working days annual leave, thus the employer may not only provide ten days.

Although it is not strictly speaking required by law that an employment contract should be in writing, a written contract is highly advisable. It is also just practical to set up the contract in writing because Article 29 of the Basic conditions of Employment Act requires certain particulars of employment (name, salary, working hours, etc) to be supplied to an employee in writing when he/she commences employment.

It is also advisable to include aspects referring to an individual's undertaking to abide to the employer's rules and regulations, disciplinary and grievance procedures and health and safety measures.

For an employment contract to be valid both the parties must reach agreement on the services to be provided by the employee and the remuneration which the employer will pay him. Agreement must be reached in good faith without any misrepresentation, intimidation, or improper influence. Every time an employee is employed be it in permanent or temporary status, an employment contract needs to be drawn up.

Both parties must have the necessary ability to enter into a contract:

- When an employee is younger than 21 years of age, his parent or guardian must assist him at contract conclusion.
- Persons under the influence of alcohol or any other addictive drug do not have contractual ability.
- The employee must be able to deliver the services as agreed on. And the employment contract may not be in conflict with any principle of any law and must not be in conflict with any norms or customs of the public order.

Second pothole – verbal contracts

Regulate the employer-employee relationship by a written contract to prevent any uncertainties, disputes, or conflict. A written contract creates clarity by confirming the terms and conditions of employment and protects both parties.

Third pothole – signing the contract

The Act does not require the written agreement to be signed by both parties. It is however to the benefit of the employer and employee to sign the agreement because by this action the agreement can be enforced legally.

Fourth pothole – copies

The employee must be provided with a copy of the signed contract and the original should be filed in his/her personal file. Should you receive a visit from labour inspectors from the Department of Employment and Labour, employment contracts will be one of the first documents they will want to inspect.

Fifth pothole – amendments

An employer may never alter or change an employment contract unilaterally, thus without the consent of the employee. Any change to an employment contract necessitated by a business-related reason must be agreed upon and confirmed in writing. When a change of an employment contract is necessitated the written particulars must be revisited by either revising the original contract or by adding an addendum to the contract. Especially important to again provide the employee with a copy of the revised contract or the addendum.

SUMMARY

Employees who do not act within the guidelines set by the labour legislation could face hefty fines, business closure or even jail time. If this is your motivation to implement service contracts, it is a negative approach, and the implementation becomes an administrative burden. Making a mind shift regarding employment contracts from an 'administrative burden' to a 'risk mitigating too'l can save an employer a great deal of time and money in the long run.

A basic principle should always be, for the purpose of proper and sound management, to portray a positive and respected image of yourself as employer and reflect a high standard of administration.

Address the labour risks pro-actively by adhering to all legal requirements. By this approach you will contribute greatly towards your farm's sustainability and profitability and ensure a working environment with reduced conflict and misunderstanding. This in turn creates a structured environment receptive to growth. ■

MARIUS GREYLING,
INDEPENDENT AGRICULTURAL MANAGEMENT CONSULTANT

Part 3

How to enhance broiler production

THE PREVIOUS TWO ARTICLES COVERED GENERAL ASPECTS OF BROILER PRODUCTION AND SOME OF THE IMPORTANT MANAGEMENT POINTS FOR A GOOD START AFTER PLACEMENT OF DAY OLD CHICKS. THIS ARTICLE TAKES A LOOK AT PERFORMANCE OBJECTIVES AND OTHER PARAMETERS.

It is assumed that the initial phase of production and further growth after the starter rations, grower and finisher under your conditions has been followed and growth targets realised.

Starter feed will be given for one to ten or even 14 days. Grower rations from eleven to 25 days and finisher from 26 to 42 days. Some producers might also use an additional ration formulated for use after 42 days. This might be appropriate if a larger slaughter size is required or for a live market.

PERFORMANCE OBJECTIVES

Keep manual as well as digital records as the poultry industry is very well suited to keeping detailed daily production records.

Enough data must be kept so that any differences to the performance standards as provided by Ross, Cob or Arbor-Acres can be explained. Placements and batches will always differ in performance. Any mortalities above 5% should be fully explained as any more can have a great impact on profitability. It is possible with good management to keep mortalities below 3% and Culls between 1% and 2%.

Water usage and feed should be monitored and recorded daily to see if the birds are drinking enough for the feed consumed. Birds must be weighed weekly (at the minimum) by catching random samples to the scale at the end of each week.

The total feed used in a house will be divided by the numbers harvested (**Table 1**). These can then be compared to the performance standards of the specific breed used on your farm.

The feed conversion ratio will then be 4 475 g divided by 2 340 g which is 1,91. This means that 1.91 kgs of feed produced 1 kg of live bird. It is an important benchmark to quickly see if the enterprise is economically viable. A ratio of 1,85 is very good.

Other factors to be recorded are age in days and weeks, mortality (deaths) and culls, total of deaths and culls to the standard mortality, weekly actual body mass to standard body mass and difference.

Be aware of the performance efficiency factor (PEF) which most flock managers use to assess the overall results from a batch or house. This is calculated using liveweights, liveability (% birds that have survived), age at depletion in days or harvesting and the feed conversion ratio. Work this out after understanding the formula used. Compare your number to rate the overall performance to other producers.

CONCLUSION

Use the data recorded and results achieved as well as the accurate record of costs to work out the margin over direct costs. This must be positive. Your fixed costs to run the operation can then be subtracted to show you the net profit generated. ■

1 *Total feed consumption.*

Age in weeks	Weight of broiler (g/bird)	Total feed consumption (kg/300 birds)	Feed consumption per week (g/broiler)
0	42		
1	120	42	140
2	361	123	410
3	795	231	770
4	1 327	294	980
5	1 723	303	1 010
6	2 340	349,5	1 165
Total	**2 340**	**1 342,5**	**4 475**

RICHARD MCPHERSON, AGRIBUSINESS AND PROJECT MANAGEMENT CONSULTANT

Less SOIL LOSS with these designs

THE PURPOSE OF AGRICULTURAL DRAINAGE IS TO REMOVE EXCESS WATER FROM THE SOIL IN ORDER TO ENHANCE CROP PRODUCTION. IN SOME SOILS, THE NATURAL DRAINAGE PROCESSES ARE SUFFICIENT FOR THE GROWTH AND PRODUCTION OF AGRICULTURAL CROPS, BUT IN MANY OTHER SOILS, ARTIFICIAL DRAINAGE IS NEEDED FOR EFFICIENT AGRICULTURAL PRODUCTION.

Drainage is regulated by the Conservation of Agricultural Resources Act (CARA) No. 43 of 1983 and it states: 'To provide for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.' Article 6 of CARA (Control measures) states *inter alia*:

i. In order to achieve the objects of this Act the Minister may prescribe control measures which shall be complied with by land users to whom they apply.
ii. Such control measures may relate to the:
   a. cultivation of virgin soil;
   b. utilisation and protection of land which is cultivated;
   c. irrigation of land;
   d. prevention or control of waterlogging or salination of land;
   e. utilisation and protection of vleis, marshes, water sponges, water courses and water sources;
   f. regulating of the flow pattern of runoff water;
   g. utilisation and protection of the vegetation;
   h. grazing capacity of veld, expressed as an area of veld per large stock unit; and
   i. maximum number and kind of animals which may be kept on veld.

It is important to distinguish between surface and subsurface drainage, since the causes are usually very different and require different approaches to solve them.

This article will concentrate on surface drainage and the principles that apply to it.

SURFACE DRAINAGE

Surface drainage is the removal of water that collects on the land surface. Many fields have low spots or depressions where water ponds. Surface drainage applies primarily on flat land where in combination with factors such as slow infiltration, low permeability, restricting layers in the soil profile or shallow soil covering rock or deep clays, it prevents the ready percolation of rainfall, runoff, seepage from uplands, or overflow from streams through the soil to deep stratum.

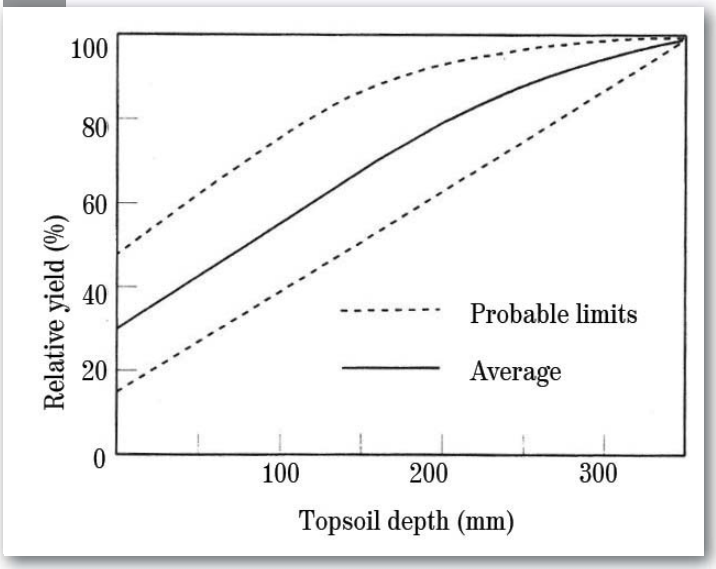
A surface drainage system needs to be designed to remove excess water at a rate which will prevent long periods of standing water so that crops will have optimum conditions for growth. It should minimise the risk of flooding without excessive soil erosion. Surface drainage techniques such as land levelling, constructing surface inlets to subsurface drains, and the construction of shallow ditches or waterways, can allow the water to leave the field rather than causing prolonged wet areas. The design capacity of drainage systems therefore depends on several interrelated factors, including rainfall patterns, soil characteristics and the type of crop grown.

The effect of soil loss on crop yield is illustrated in **Figure 1**. In order to sustain crop yields from cultivated lands, it is necessary to limit soil erosion to sustainable rates as the consequence of not doing so will result in reduced crop yields. In most situations the erosion of soil by runoff exceeds soil lost by wind erosion. The objectives of surface runoff management are to:

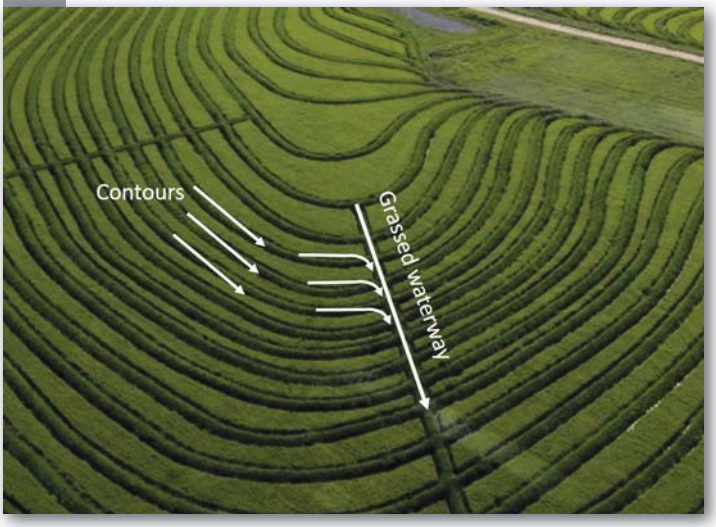
- reduce soil erosion to sustainable amounts;
- improve the quality of runoff water from a field; and
- utilise rainfall effectively in order to provide for maximum retention of moisture for crop use.

As shown in **Figure 2**, soil management, agronomic and mechanical approaches can be used to manage runoff from cultivated lands. It is recommended that all the approaches are used concurrently to limit runoff and soil erosion.

1 ***Impact of soil on crop yield.***



2 ***Management of runoff from cultivated lands.***



The design and the spacing between contours are of great importance to safely discharge the runoff and to limit soil erosion.

PRINCIPLES THAT APPLY WITH RUNOFF CONTROL IN SURFACE DRAINAGE

Proper runoff control planning has many benefits, including the following:

- Less soil erosion, which also means fewer nutrient losses.
- The delay in runoff means that more water enters the soil.
- If the soil profile is saturated, the contours will safely drain away the excess water.
- Flood water can be handled better and cause less damage to the lands.
- As a result, crop yields increase.
- The watercourses can be cut and baled and thus become a good source of winter feed.

Planning and fieldwork investigations

Runoff control planning (RCP) must be applied mainly to areas which are cultivated intensively. It involves the disposal of runoff water from where the runoff starts forming to where it discharges safely into a river or higher order watercourse, without causing erosion on its way. The physiography of an area plays the principal part in this planning. Although secondary, the utilisation of the soil also plays a part. RCP can encompass a farm, part of a farm, or an area comprising of a number of farms – provided the relevant pieces of land are bounded by watershed boundaries.

RCP involves the drawing up of a plan for the safe discharge of surplus (surface runoff) water from an area. This plan must be in accordance with the natural drainage pattern and could include artificial measures which might have to be used to protect the soil.

It embraces the planning of all areas, farms or localities where runoff water can cause erosion.

The scope of RCP includes the following:

- The identification of all natural watercourses and siting of suitable artificial waterways.
- Identifying erosion risks, the choice of conservation systems and the norms according to which these should be designed.
- The identification of man-made structures and the preservation/improvement of these.

Application

Applications of RCP are necessary in the following instances:

- In the event that runoff water in concentrated form causes erosion and/or waterlogging.
- Where runoff water causes boundary water disputes between producers on intensively cultivated land.
- In cases where runoff water (flood water) from roads, railways, townships etc. has to be matched with the natural drainage pattern.
- Where runoff water causes waterlogging or brackish soil.

Framework for RCP

The accepted principle is that runoff from higher lying land should not reach lower lying land (for instance in the case of a farm boundary) along unnatural drainage lines or in more concentrated form.

Act No. 43 of 1983 requires that every landowner has to ensure that soil on his land is not subject to unsustainable erosion and that neglect or indifference does not lead to the withdrawal of land from production.

Important rules for RCP

The following rules are important for RCP:

- Natural watersheds must be respected and only under very special circumstances may runoff water be transferred between watersheds.
- The natural watercourse areas (stream lines) must also be respected. Where watercourses had been ploughed, they must be reconstituted by constructing a grassed (or other type of) waterway on the streamline. Exceptions may only be made in areas with large natural stream densities and where all natural watercourses are not necessarily turned into waterways.

3 *Elements of a contour bank system.*

- An investigation into water runoff planning usually starts in the upper reaches of a catchment area and then continues downhill or downstream to where a higher order drainage component such as a marsh, tributary or river is reached.
- A runoff control plan is usually executed by starting at the downstream point of a watercourse, working upstream from there. Under certain circumstances it is expedient to execute a project over its total length simultaneously.

Contour lines

Contour lines indicate points of the same elevation on a map. In other words, a contour line is a level line. Runoff water will – because of gravitation – always choose the direction of the steepest slope. A drop of water starting to move, will move perpendicularly to the contour lines. This action will continue as the water volume grows through stages of dispersed surface runoff and concentrated surface stream flow up to the stage of canal flow – the natural flood conditions found in a tributary or river.

GUIDELINES AND TECHNICAL SPECIFICATIONS FOR SURFACE DRAINAGE

When soils on sloping terrain are cultivated and subjected to erosive rainfall, it is usually necessary to supplement the agronomic and soil management measures with other practices in order to delay the runoff and reduce the transported sediments. These practices, generally referred to as mechanical measures, consist of waterways and contour banks or terraces that drain into stable waterways, as shown in **Figure 3**. A contour bank can potentially reduce soil loss per unit surface by 50%. There are also reductions in soil losses as a result of the tillage which takes place next to the contour bank.

The aim of contour banks is to limit soil erosion to an acceptable rate. This is achieved by limiting the length of flow down a slope, controlling runoff and directing the runoff into a channel, referred to as a waterway. Thus, the most important aspect of contour bank systems is the spacing of the contour banks. If the 'correct' spacing or slope length is known, then the design of a contour bank is a simple operation. Unfortunately, the spacing of contour banks cannot be precisely determined and it is frequently not possible to determine a method for spacing that will be applicable in all situations. In addition to limiting the slope length of runoff, contour banks also have to safely discharge the runoff – they must have adequate discharge capacity. The design of contours to adequately discharge the required capacity and the spacing between contours to limit soil erosion are of great importance. The following should be considered in this regard:

- The estimation of design floods for the design of hydraulic structures and thus to quantify and limit the risk of failure of the structures.
- A contour bank design that includes both the design of the vertical and horizontal spacing between contour banks and the design of the contour to safely discharge the runoff.

SPACING

The spacing of contour banks is fairly specialised and can be determined with several methods. The Universal Soil Loss Equation (USLE) is the preferred approach and incorporates soils, slopes, rainfall and cropping systems in the design of contour spacing.

The following criteria should be adhered to in all contour bank designs:

- Contour bank spacing must not be narrower than 20 m and not wider than 60 m.
- On the steeper slopes, contour banks must be specifically designed and, where necessary, supportive biological measures must be included in the design specifications to keep soil losses within the permissible range.
- A cross-sectional shape should be selected to fit the slope, crop and machinery used and the embankment should have a minimum width of 0,9 m.
- The spacing of contour banks should be integer multiples of the effective implement working width. For example, if a 4-row machine with rows of 900 mm wide is used, then the spacing should be multiples of 3,6 m.
- Contour bank spacing can be increased by up to 10% to improve alignment, avoid obstacles, accommodate machinery or to reach a satisfactory outlet.
- It is recommended that contour banks have long, smooth, gentle curves with radii > 30 m.

CONCLUSION

The purpose of agricultural drainage is to remove excess water from the soil in order to enhance crop production. One of the techniques is to do proper runoff control planning that includes designed waterways and contours. Contouring is a practice of tilling sloped land along lines of consistent elevation in order to conserve rainwater and to reduce soil losses from surface erosion. These objectives are achieved by means of furrows, crop rows and wheel tracks across slopes – all of which act as reservoirs to catch and retain rainwater, thus permitting increased infiltration and more uniform distribution of the water. ■

FELIX REINDERS, ARC-INSTITUTE FOR AGRICULTURAL ENGINEERING. FIRST PUBLISHED IN SA GRAAN/GRAIN JULY 2020

SA Graan Grain

The scourge of wildlife poisoning

FEW COUNTRIES IN THE WORLD CAN COMPETE WITH SOUTH AFRICA'S WILDLIFE WEALTH: WE HAVE AROUND 24 000 INDIGENOUS HIGHER ORDER PLANT SPECIES, OVER 900 BIRD SPECIES, MORE THAN 400 MAMMALS AS WELL AS A RICH DIVERSITY OF FROGS, FISH AND REPTILES.

Conservation of our natural resources is enshrined in the Constitution of 1994, so it is our obligation as citizens, the state and government to take care of the biodiversity.

THE IMPACT OF POISONING

Wildlife poisoning is one of the most serious impacts that animals and plants are facing. Most people do not understand that plant ecology is probably more important for biodiversity than the animal ecology, hence very little attention is paid to the impact of herbicide misuse on plants. Poisoning can literally wipe a species off the face of the earth; the wanton use of diclofenac drove most of the vulture species in India to the verge of extinction in a decade.

Evil habits or simple mishaps?

Wildlife poisoning can be attributed to two possible scenarios: Either deliberate and unlawful poisoning or deliberate misuse of pesticides, even though the intention is not to poison wildlife. The latter is very often overlooked because the effects are not as devastating as a deliberate poisoning.

A good example is when bromacil (herbicide) is applied against label instructions in sensitive habitats. When the rains come the herbicide migrates rapidly away from the point of application to kill even the hardiest of trees at distances of up to 300 meters.

Another example is where rodenticides are used without bait stations to control gerbils. Other animals like antelope eat it and become poisoned. Even though the impact is often overlooked, it is still an impact on the ecosystem that may be very difficult to restore.

The worst form of wildlife poisoning is when someone targets an organism in a highly irresponsible manner with a pesticide. A landowner close to Aliwal North poisoned a calf carcass with a pesticide and the next morning a leopard was found dead next to it. According to the family they never even knew about the existence of leopards in the area. In 2013 65 Cape griffon vultures were found dead on a farm close to Molteno. They succumbed to carbofuran that was put into sheep carcasses to kill jackals and stray dogs. The same happened a year later when Cape griffon vultures were poisoned in the Swartberg area of KwaZulu-Natal. Producers called from far and wide to express their absolute dismay at the loss of over 60 vultures.

SOLVING THE PROBLEM

It is undisputed that predation is a serious issue for small stock, cattle and wildlife producers, but to take to poisoning is no longer acceptable. There are many management tools available to combat predation and most producers manage predation in an environmentally sound fashion. It is a punishable offense in terms of several acts to poison wildlife, but it is also a crime against the earth to deliberately poison wildlife.

The most commonly used poisons in wildlife poisoning incidents are agricultural remedies, notably the older carbamates and organophosphates, most of which are used in crop production today. Certain pesticides are also smuggled in from Zimbabwe by crime syndicates who target valuable wildlife. Aldicarb has already been banned in South Africa – even the possession thereof will land one in jail.

The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) is very lenient on who may acquire a pesticide. It only demands that whoever buys a pesticide and uses it, does so in accordance with label instructions. It does not prohibit anyone from buying a pesticide and that is perhaps an issue that needs to be reviewed. A person should not be able to be in possession of a pesticide for which he cannot provide substantial evidence for an immediate need thereof.

Preventing wildlife poisoning is a mammoth task. Here's how South African producers can help:

- Stick to label instructions which include following the warnings and precautions.
- Lock pesticides away when not in use.
- Train farm workers on the safe handling and use of pesticides.
- Warn them about crime syndicates who may target them to unlawfully get their hands on these products. ■

GERHARD VERDOORN, OPERATIONS AND STEWARDSHIP MANAGER, CROPLIFE SA. FIRST PUBLISHED IN SA GRAAN/GRAIN MAY 2020

SA Graan Grain

Nitrogen can MAKE OR BREAK maize

MY MAIZE IS YELLOW! WHAT CAN THE ISSUE BE? THE EASY ANSWER IS THAT THE SOIL IS WET AND THAT THE NITROGEN HAS LEACHED.

The truth is that the nitrogen was able to leach. However, leaching is not the only problem that occurs when soil is cold and wet. Perhaps it is necessary to take out the magnifying glass and determine what the problem actually is – without making assumptions.

Ammonium and nitrite are some of the intermediate products that can build up to toxic levels in the soil under certain environmental conditions (a shortage of oxygen or saturated soils).

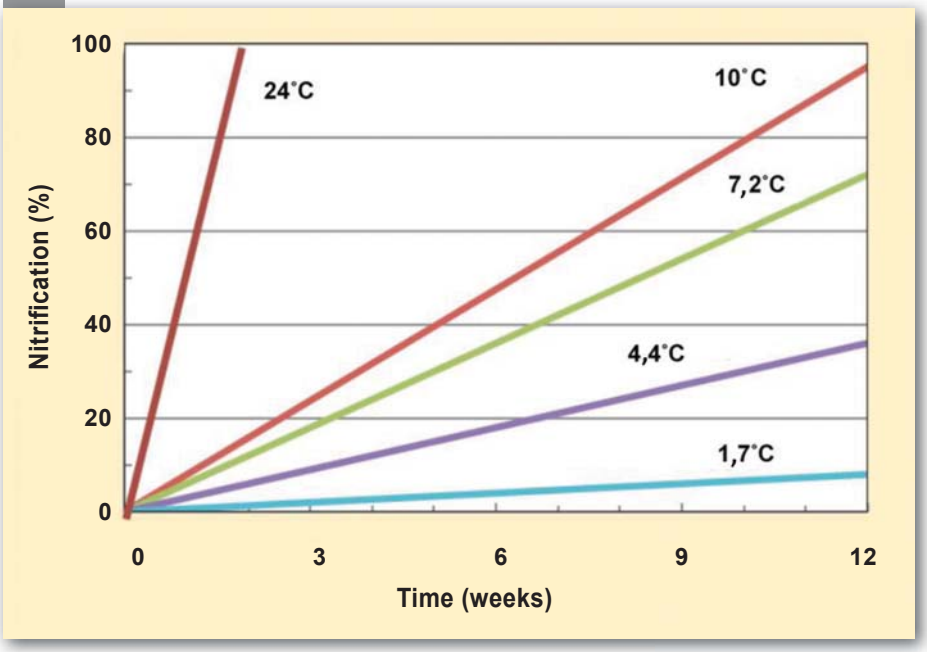
The toxic effect increases drastically in the absence of nitrate nitrogen (NO_{3-}). Ammonium toxicity will restrict root development and also root absorption of cations like calcium (Ca), magnesium (Mg), potassium (K) and also micro-elements like zinc (Zn), iron (Fe), manganese (Mn) and copper (Cu). Water-saturated soil will furthermore lead to poor root development, as plant roots require oxygen and warm soil (20 °C and higher) for optimum growth and development.

Complex processes take place in the soil to convert plant residues and applied fertiliser to the form that is suitable for plant absorption. Nitrogen is particularly dynamic in the soil and can change rapidly due to environmental conditions. It is important to understand what happens to nitrogen in the soil before it can be absorbed by the plant.

Nitrification is the process that occurs when ammonium (NH_{4+}) from rotting plant residues or fertilisers is converted to nitrate (NO_{3-}). Like with any biological system, external factors play an important role in the rate of nitrification.

The rate of nitrification is limited drastically by the following environmental conditions:

1 ***The effect of soil temperature on nitrification.***



Source: Adapted from IPNI, Nitrogen Notes, Number 4

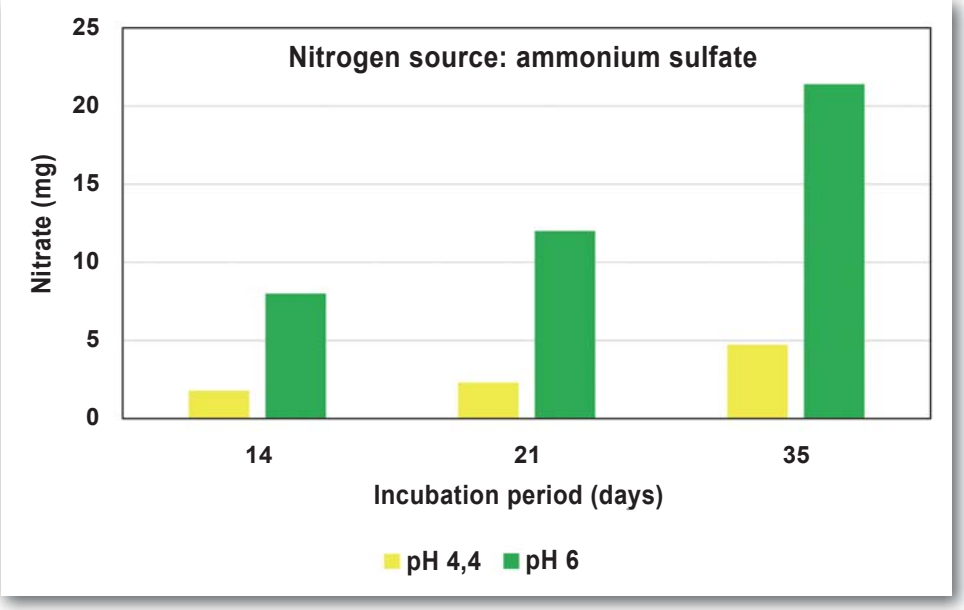
SOIL TEMPERATURE

At low soil temperatures the nitrification process is delayed drastically (**Figure 1**). The delay can be seasonal (for example in winter), or it can occur in the normal growing season (for example summer) because of changes in the weather (a lot of rain) that can cause the soil (particularly sandy soils) to cool down drastically. Soil microbes and enzymes (urease enzymes) are particularly sensitive to soil temperatures and will not function optimally under these conditions.

In a study by Dr Koos Bornman, Venessa Moodley and colleagues at Omnia Fertiliser in which the urease enzyme activity of 220 sandy soils was studied it was noticeable that the urease activity at a soil temperature of 20 °C dropped to more than half the optimum. The conversion of urea to ammonium will occur very slowly or not at all under these conditions.

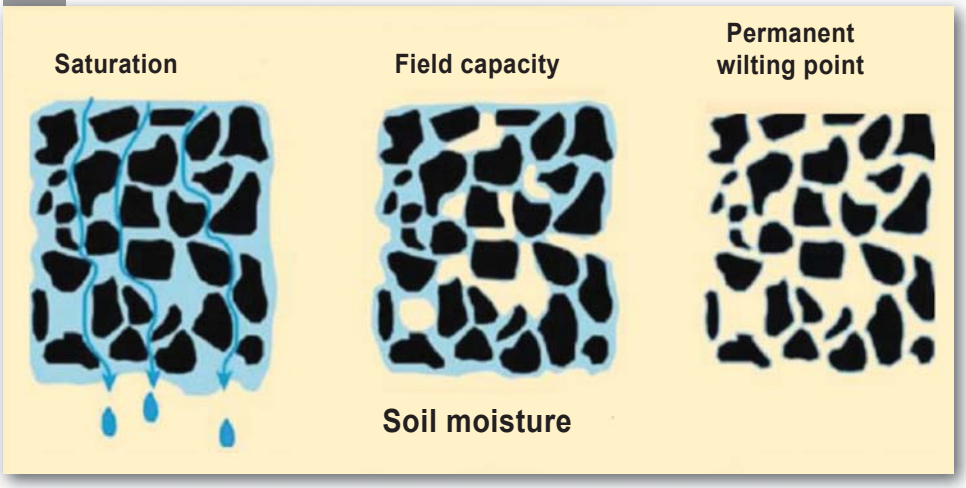
Nitrification will be optimal in most soils at between 25°C and 30°C. Soil temperatures can also vary enormously between different soil depths.

2 ***The effect of soil acidity (pH) on the nitrification of 20 mg nitrogen (N) applied as ammonium sulphate.***



Source: Adapted from Mengel et al*., 2001*

3 ***Schematic presentation of soil moisture status.***



Source: Adapted from IPNI, Nitrogen Notes, Number 4

Topsoil temperatures are mostly considerably higher than subsoil temperatures, while subsoil temperatures are more stable – particularly early in the season (spring). Large variations between day and night temperatures can occur in the topsoil of sandy soils.

SOIL PH

Nitrification is restricted drastically by a low soil pH (acid soil). The group of bacteria (nitro bacteria) responsible for converting ammonium to nitrate are particularly sensitive to acid soil. Nitro bacteria also require sufficient calcium and micro elements for optimum operation. The amount of nitrate that can convert from ammonium during the nitrification process is shown in **Figure 2**.

It is clear that not only the quantities of nitrate that are converted are affected, but also the rate at which the conversion occurs. In this specific case, 20 mg nitrogen (everything in the form of ammonium [NH_{4+}]) was applied as ammonium sulphate under optimum soil temperature and soil moisture conditions.

According to the data in Figure 3 it can take between 21 and 35 days for ammonium to convert to nitrate under ideal soil moisture, soil temperature and soil pH conditions. Plant absorption of ammonium will further acidify the root zone, while the absorption of nitrate will increase the pH.

The data again confirms the importance of sufficient quantities of nitrate in a planter mixture and even in pre-plant fertiliser. The combination of ammonium and sufficient nitrate in the fertiliser will undoubtedly produce the best result.

SOIL MOISTURE

Soil water content plays an important role during the nitrification process. When the soil profile is temporarily saturated, the delay in the nitrification process should be brief. However, if the soil profile in the subsoil where fertiliser was applied earlier is saturated for longer periods, the nitrification process will be curtailed drastically or will not occur at all.

As no or a very limited amount of oxygen is present under water saturation (**Figure 3**), the ammonium concentrations can build up, which can have very negative consequences.

Dr Bornman describes ammonium toxicity in young maize seedlings and even older maize plants, particularly in acid subsoils, as a serious yield-limiting factor. The yield losses can vary between 15% and 60%.

Ammonium toxicity is particularly prominent when fertiliser contains no or very little nitrate nitrogen (**Photo 1** and **Photo 2** on page 16). Nitrification will still occur even under considerably drier soil conditions (up to just before permanent wilting point). The optimal soil moisture conditions for nitrification are at field water capacity where the soil is wet and warm, but sufficient oxygen is present to allow the process to take place.

All nitrogen in the soil will eventually take on the nitrate form (NO_{3-}). Denitrification of nitrate can occur when soils are saturated and no oxygen is available. This process is caused by soil microbes that are not dependent on oxygen. Nitrogen then escapes into the atmosphere as nitrogen gas (N_2O and N_2).

Nitrogen sources applied as fertiliser or that mineralise from rotting plant residues will all go through the same process of nitrification. Keeping the nitrification process and all the possible risks of environmental conditions in mind, it makes sense to look carefully again at the processes to which different nitrogen sources are exposed.

Nitrogen can make or...

1

The green maize was planted with sufficient ammonium nitrate in the planter mixture, while the yellow maize had no ammonium nitrate in the planter mixture.

2

Typical symptoms that can occur under cold, wet conditions.

1 *Information on the common nitrogen sources in fertiliser.*

Sources of nitrogen	Nitrogen available to plants	Conversion	Sensitive to
Ammonium nitrate	Yes, nitrate is available immediately	Nitrification of ammonium	Nitrate can leach, ammonium can bind with the clay in the soil. Nitrate can denitrify.
Ammonia gas	Yes, ammonium quickly converts to nitrate under favourable conditions	Nitrification of ammonium	Dry soil
Urea	No	Urease enzymes and then nitrification. Urease activity is very low in cold, wet soil	Urea can leach before it has started to convert. Sensitive to cold, wet soil. Ammonium toxicity
Ammonium sulphate	Yes, ammonium	Nitrification	Ammonium can bind with the clay in the soil. Sensitive to cold, wet soil. Ammonium toxicity
MAP (33)	Yes, ammonium	Nitrification	Ammonium can bind with the clay in the soil. Sensitive to cold, wet soil. Ammonium toxicity

Each of the nitrogen sources has advantages and disadvantages (**Table 1**). Make sure that the source that has to make the difference on the farm has more advantages than disadvantages.

Crops do not turn yellow just because of a nitrogen deficiency. Herbicide damage, genetic differences and sulphur (S), magnesium (Mg), zinc (Zn), iron (Fe) and manganese (Mn) deficiencies can also lead to the yellowing of plants. High nematode pressure can lead to poor absorption of nutrients and can also cause plants to yellow. A combination of the above can also be responsible for the yellowing. Remember, a lot of nitrogen in a harmful form like urea or ammonium (NH_{4+}), is worth a lot less than a little nitrogen in the right form (ammonium [NH_{4+}] and nitrate [NO_{3-}]) that can be absorbed by the plants. The producer should discuss his choice with an experienced Omnia agriculturist and should ensure that every kilogram of nitrogen on the farm is used effectively and productively. ■

KOBUS VAN ZYL, SENIOR AGRICULTURIST, OMNIA FERTILISER. FIRST PUBLISHED IN SA GRAAN/GRAIN JULY 2020

SA Graan Grain

THE CORNER POST

SANDILE NGCAMPHALALA

If we work together, we can make a difference

SANDILE NGCAMPHALALA (40) JOINED THE GRAIN SA TEAM ON 1 MARCH. AS MANAGER OF GRAIN SA'S FARMER DEVELOPMENT PROGRAMME, HE WILL PROVIDE STRATEGIC DIRECTION FOR THE PROGRAMME AS A WHOLE. THIS INCLUDES FUNDING AND DONOR LIAISON AS WELL AS CONTINUED DEVELOPMENT OF THE SCHOOL AND MENTORING PROGRAMME. HE WILL ALSO SERVE AS THE MANAGING EDITOR OF *PULA//IMVULA* MAGAZINE.

Sandile believes in building bridges. He would like to see connections created between the various industries' players so that support for farmers can be increased. He shares his vision for the programme: 'The more we collaborate, the more we network, the more we coordinate and bring different partners together, the more we can achieve for the farmer development programme.'

AN AGRICULTURIST AT HEART

Growing up in Swaziland, with a father who worked for a sugarcane enterprise, is where his life connected with agriculture. With agronomists all around him, it was actually the only career he knew existed.

When his school career ended, he looked at careers in the agricultural sector and initially obtained a B.Tech. degree in agriculture crop production at the Tshwane University of Technology. Later he furthered his education and with several qualifications in this field, he is well equipped for the task ahead. Currently he is busy with his PhD in environmental science, with a focus on water and climate change, at the University of Cape Town.

The agricultural industry has been his working environment for the past 20 years, with the Agricultural Research Council playing a big part in his development. As a young graduate, he worked in Potchefstroom as a plant breeding technician for grain crops. Later he rejoined the company where he was the manager of advisory services before joining Grain SA.

He has been privileged to be part of some of the most innovative developments and projects in the agricultural industry. 'Connecting with and collaborating with a great network of professionals and farmers who are really committed to finding and implementing innovative solutions, makes this journey worthwhile,' he says.

He values the many opportunities that he has been afforded over the years to contribute to the development of sustainable livelihoods and to ensure income, food and nutrition security for several households in the country.

'The challenges remain, but I believe that if we work together – not just within organised agriculture but also across the different sector stakeholders in the country – we have the means and capacity to achieve greater success and a bigger social impact.'

When asked what impresses him most about farmers, he says: 'I can definitely learn adaptability from farmers. To me the most wonderful thing about farmers is their resilience and robustness. Many of our farmers are struggling. However, it is amazing to see the energy they put into surviving. They do not just pack up and leave when the going gets tough; they stay because they want to make it work.'

NEW OPPORTUNITY, NEW CHALLENGES

Sandile is a 'people's person' who believes in building relationships. 'Together with the individuals who are already invested in this amazing programme, I believe that we will be a team who accomplishes big things.'

Although he has a lot of knowledge and experience, he realises that he also has a lot to learn. 'For any programme there are things that work well; those that work, but are not sustainable; and then things that do not work.

'The challenge is to learn and improve our understanding about the performance dynamics of the programme to help identify the areas we can capitalise on, the aspects where corrective action would be justified and perhaps areas where new and greater innovation could be helpful. I am confident that my networking skills will support me in reaching these goals at Grain SA.'

He trusts that the programme's emphasis will remain the daily support of farmers and hopes that he will be able to raise finances to ensure that many of the barriers they face, can be reduced.

'I realise that access to secured land rights, production finance and skills remain some of the major challenges for farmers. To achieve a greater social impact, we have to ensure growth that has greater prospects for sustainable jobs and an increased income for farmers,' he shared in an interview for the *SA Graan/Grain* magazine.

'Ultimately, we have to identify the resources and establish the partnerships that could help archive a high impact and sustainable outcomes – not just at farm level, but across the nation,' he added.

ON A PERSONAL NOTE

Sandile has been married to Caroline for 14 years and they have been blessed with two sons, Thorisho (7) and Ndalo (3). He is a sports enthusiast who is passionate about football and golf. During the lockdown he also took up cycling, which he can enjoy with his two sons. ■

LOUISE KUNZ,
PULA IMVULA CONTRIBUTOR

A programme that is changing lives

Telling OUR OWN STORY first-hand

GRAIN SA HAS LONG HELD THAT ITS MISSION IS TO ENSURE THAT NO FARMER IS LEFT BEHIND. THIS IS VERY MUCH IN LINE WITH THE 2021 GLOBAL FOCUS AS WE PREPARE FOR THE FOOD SYSTEMS SUMMIT IN SEPTEMBER: WE BELIEVE IN A WORLD WHERE HEALTHY, SUSTAINABLE AND INCLUSIVE FOOD SYSTEMS, ALLOW PEOPLE AND PLANET TO THRIVE. IT IS A WORLD WITHOUT POVERTY OR HUNGER, A WORLD OF INCLUSIVE GROWTH, ENVIRONMENTAL SUSTAINABILITY, AND SOCIAL JUSTICE. IT IS A RESILIENT WORLD WHERE NO ONE IS LEFT BEHIND (AGNES KALIBATA, SPECIAL ENVOY FOR THE 2021 FOOD SYSTEMS SUMMIT).

The *Pula/Imvula* magazine articles is prepared well in advance so they can be sent to the translators and then on to the publishing house for print. That is why we are reporting on March activities in your June magazine. If you are reading this magazine and have found it particularly helpful or interesting, please take a moment and let us what inspires you. Drop a note to: *jennymathews@grainsa.co.za*. We always love to hear from you!

Luke Collier, development coordinator in Kokstad, leading a study group meeting at Msikaba in the Eastern Cape with the Grain SA tent in the background.

MEETING FARMERS ON DIFFERENT PLATFORMS

During March our team was really busy in the field doing crop progress assessments. We visited many fields and advised farmers on issues that needed attention, as well as on how to best prepare for the harvest time ahead.

- We have a rewarding programme for more advanced farmers. These farmers receive individualised support and mentoring. During March our team paid 61 farm visits to these farmers.
- The team held 132 Study Group meetings.
- Our Schools Programme has had to take a back seat during lockdown, but we are happy to report that, thanks to dedicated funding from the Maize Trust, we have paid ten visits to schools in the Mpumalanga region. These visits introduce learners to the important role of agriculture in our world and opens eyes to agriculture as a career option.
- The regular schedule of training courses has been severely impacted by the COVID-19 pandemic as trainers and course attendees alike were practising great caution. During March we managed to roll out eight courses that were sponsored by the Maize Trust. 164 learners attended courses on subjects like:
  - Farming for profits
  - Introduction to maize production
  - Workshop skills (welding)
  - Tractor and farm implement maintenance
  - Basic engine repair

AT GRASS ROOTS

Anderson Cetywayo Magidela is chairperson of the Khanyayo Study Group. The crops in the area are looking good and the farmers are very proud. They are happy they could plant their crops early so the livestock are less likely to damage their crops. They are looking forward to a fruitful harvest time.

Samuel Moloi is a member of the Fouriesburg Study Group. He is a New Era commercial farmer and member of the 100 Ton Club. His lands are a sight to behold. Samuel is mentored by Jacob Matthee.

One of the members of the Paul Roux Study Group is farmer Joseph Khahleli Hlalele, a potential commercial farmer who is supported by Johan Kriel.

Let's take a look at activities in the Eastern Cape region

OUR primary development office in the Eastern Cape is in Kokstad. The regional office is managed by development co-ordinator, Luke Collier, who is supported by administrative assistant, Luthando Diko. This office services an extensive area from Queenstown to Ixopo and Umzimkulu in KwaZulu-Natal.

Agriculture is an important economic activity in these regions and it impacts the livelihoods and household food security of millions of rural dwellers. The scale of farming activities here is diverse and the Kokstad office primarily mentors subsistence and smallholder farmers.

Conditions are well suited to the cultivation of maize, sunflower, soybeans and dry beans and whilst many farmers are achieving pleasing yields, there is still much work to be done as in general yields achieved are well below regional potential. We love to meet new farmers and assist them in getting their farming enterprises onto solid footing. We travel vast distances and sometimes feel the challenge as we just don't have the human capacity to meet all the farmers' needs.

There a number of projects that farmers are participating in in the region such as the Beyond Abundance project which follows on from the very successful *'From Subsistence to Abundance'* project that was rolled out with support from the Jobs Fund. That project had a dedicated team of mentors, but unfortunately we have not been able to source funding for mentorship again for the Beyond Abundance project, and the absence of adequate mentorship support is evident in slow progress at grass roots level. Too many policy makers underestimate the significant role that good mentorship relationships make on sustainable farming enterprises. When mentors are covering a lot of ground they quickly notice trouble spots and can advise farmers to remedy the problems. Weed control is one such issue. If such problems are quickly attended to with the correct actions, a great percentage of the crop can be saved.

Crop reports from Luke are encouraging this year. Farmers are looking forward to good harvests. In some areas there was too much rain and those crops are slightly damaged.

Luke is excited about two new projects in his region:

- One is in the Cofimvaba area with farmers growing maize. They had good rains and yields look amazing.
- The other project is with eight farmers (food gardners) on 8 ha at Msikaba near Lusikisiki where he had a very rewarding mentoring experience. A study group meeting was followed by practical demonstrations.

These farmers have received valued support in various forms from agri business like Kokstad Milling (inputs), Kynoch (fertilisers), Bayer (seed), UAP Crop Care (chemicals) and Farm-Ag (chemicals). We so appreciate partners who share our vision to change lives.

Fertilising using a small hand-held in-row fertiliser spreader.

Neatly planted field.

LUKE MENTORING FARMERS AT MSIKABA NEAR LUSIKISIKI.

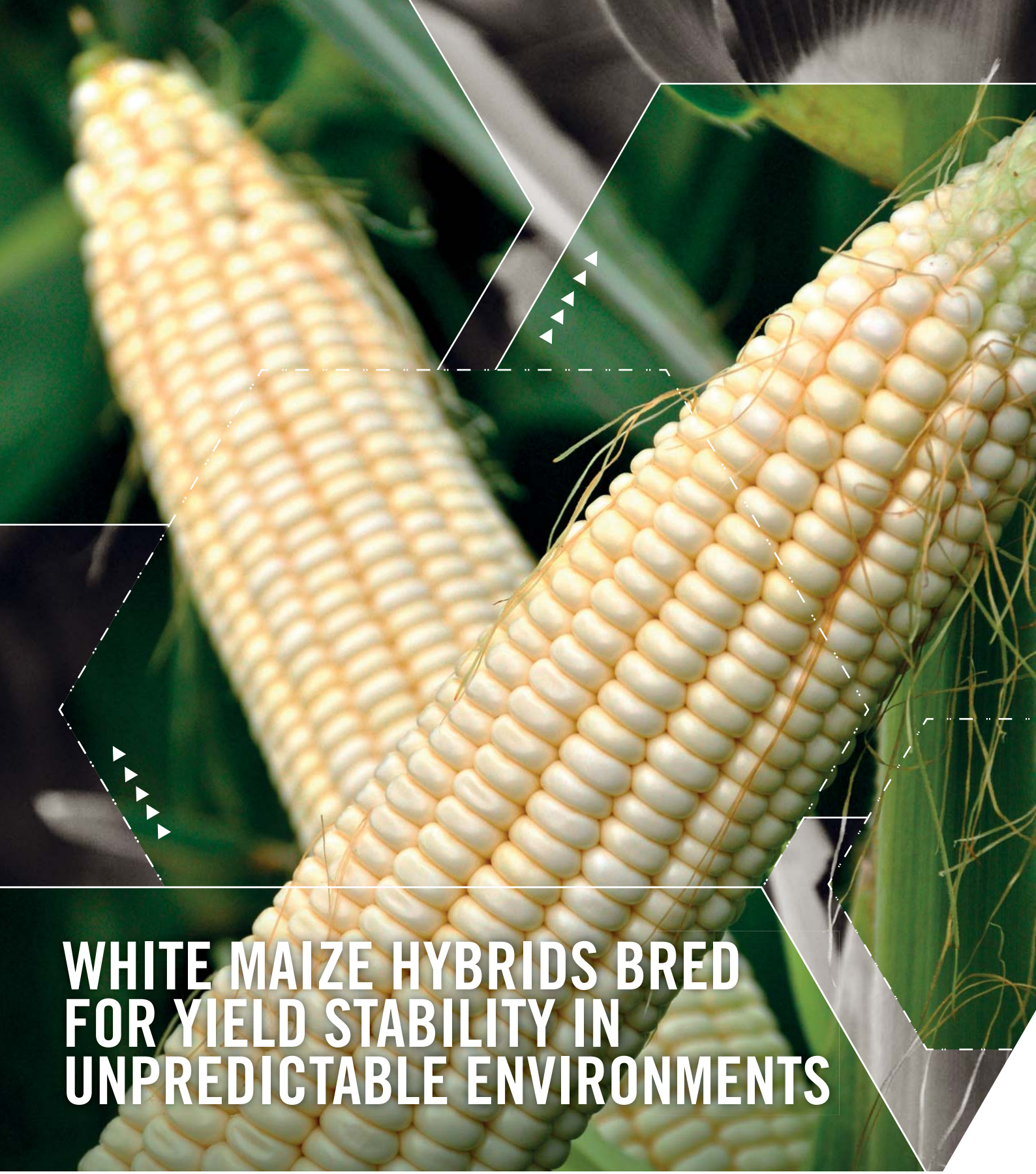
Digging soil profile holes.

Planting seed by hand.

The IMPORTANCE of collaboration

THE Maize Trust has been a significant and steadfast partner contributing towards the promotion and development of the maize sector in South Africa, through consistent donor funding support to the Grain SA Farmer Development Programme. This partnership continues to make a difference in contributing towards knowledge transfer and skills development in the face of many challenges within the agricultural sector. We appreciate the collaboration and shared vision and strive for integrity and accountability in the way we honour the mission of the Maize Trust and distribute the funds to effective transfer of knowledge about maize production and the broader maize industry.

In future editions we will highlight our collaboration with the Oil and Protein Development Trust and the Winter Cereals Trust as well as other key collaborators.



WHITE MAIZE HYBRIDS BRED FOR YIELD STABILITY IN UNPREDICTABLE ENVIRONMENTS

Pannar's white maize package of leading, stable performers demonstrates strong seedling vigour and early plant establishment. These hybrids are widely adapted, agronomically strong and renowned for grain and milling quality. The solid performance of our white hybrids will go a long way towards reducing variability in productivity and profitability, for effective risk management. Add to this the professional advice provided by our sales and agronomy teams and you can plant with confidence, knowing that you will reap the maximum return on every bag.

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Together we farm for the future™