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PROUD TO BE  
A PART OF  
**YOUR  
STORY**

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PRODUCT  
CATALOGUE  
**2024**



**PANNAR®**

*Together we farm  
for your future™*

For more than 60 years **Pannar** has been a trusted supporter of South African farmers.

Through our highly localised product recommendations, agronomic support, services and expertise, we have earned a valued place in our local communities.

We believe it's because we listen to you, the farmer, first then draw on our extensive local understanding to provide you with what you need to succeed...

**On your farm.**

**In your business.**

**With your hopes, dreams, goals and ambitions.**

**It's about your success.**

**And this is your story.**

**PROUD TO BE  
A PART OF  
YOUR  
STORY**



FARMER: Jacques Botha  
AREA: Potchefstroom, North West



FARMER: Meyer Leeb  
AREA: Sasolburg, Free State



FARMERS: Cloete and Johan Wessels  
AREA: Potchefstroom, North West



FARMER: Zuko Qokela (Brookside Farming, Harry Gwala Agri)  
AREA: Kokstad, KwaZulu-Natal



**Dear Pannar Customer**

Our parent company, Corteva Agriscience, aspires to be the leader of innovative, sustainable solutions for farmers worldwide. To this end, Corteva conducted an extensive global review of its portfolio, and determined that in South Africa, concentrating on its core portfolio seeds business is the best way to hone our focus on industry-leading innovation, high-touch customer engagement, and disciplined operational execution – ensuring long-term value for farmers, employees and shareholders.

We have optimised our seeds portfolio to help us streamline and accelerate our efforts to deliver excellence to you, our valued Pannar customer. You will continue to receive the profitability and performance that you expect from our product line-up, delivered with the personal Pannar touch that enables you to feel secure in your decision to make us a part of your farming story. Your story of navigating challenges, adapting to changing circumstances and continuing to provide for us all is a testament to your resilience and the essential role you play in the fabric of our society.

On behalf of everyone at Pannar, I want to extend our heartfelt wishes for a new year filled with happiness, health and the bountiful harvests that your hard work so richly deserves!

Thank you for your continued support.

**John Odendaal**  
Pannar Seed Business Manager

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FRONT COVER  
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Farming Entity: MAC Oosthuizen Boerdery  
Area: Koppies, Free State  
Pannar Representative: Nelia Louw

"The thing I love most about farming, is the family life."



# PROUD TO BE A PART OF YOUR STORY

The thing I love most about farming, is the family life. To have grown up on a farm and experienced farm life from an early age, and to see my family flourishing since being back on the farm, has been wonderful and rewarding. My dad was born on this farm and has used Pannar his whole life. When I began farming here, we started using different Pannar varieties according to soil types and their yield potential – with precision farming in mind. On the business side of things, it's been my mission to 'perfect' our operations, and I'm happy to share that we have had a good year with maize.

**FARMERS:** Pieter (*father*) and Dawie (*son*) Brits with grandsons Pieter Jnr and David Jnr

**FARMING ENTITY:** Modderbult Boerdery

**AREA:** Balfour, Gauteng

<b>CROP:</b> White Maize	<b>PANNAR HYBRID USED:</b> PAN 3R-573R ( <i>White Maize</i> )
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**PANNAR REPRESENTATIVE:**  
Francois Hamman  
071 410 7110  
Heidelberg/Balfour



## PANAGRI™ – SECURE IN YOUR DECISION TO MAKE US A PART OF YOUR SUCCESS STORY

At Pannar our journey with you doesn't end at planting. We want to see you achieve the full profitability and performance potential benefits of our products. To do so, we need to provide accurate placement recommendations and farm management guidelines based on long-term, multi-regional agronomic trials. This work is undertaken in our Panagri™ programme.

In this programme we do the groundwork to investigate the relationship between crop yields, management practices, input application rates, soil characteristics and weather variables. The advent of precision agriculture technology has made information provided by agronomic trials even more valuable than ever before. The application of sound economic theory to our Panagri™ findings is how we will enrich the lives of farmers and together explore the frontiers of farming and science.

**While we don't have all the answers today, we have a strong foundation of agronomic expertise to build on, and the analytical skills, courage and curiosity to push our understanding of best agronomic practices forward. We'd like to invite you on this journey with us to see where we're headed, what our team is actively working on and what we learn along the way,"** says Pannar Lead Agronomist, Grant Pringle.



<b>PANAGRI® Practical Farming Research:</b> Research for progressive crop production.
<b>GUIDANCE</b>
Production management guidelines specific to each production region.
Precision placement of cultivars. Relationship between crop yields, management practices, input application rates, soil characteristics and weather variables.

### What sort of groundwork?

One of our key Panagri™ research projects is the "West Water Table Trial".

In the North West Province and North Western Free State there is a high potential "maize quadrangle" where soils have an impervious layer that limits the fast drainage of soil water. Pannar has partnered with **Omnia Nutriology**, and together are conducting a Panagri™ trial at strategic locations to evaluate cultivar performance at varying plant populations and variable fertiliser application rates. The trial plots are large enough to replicate farmer production conditions and management practices. Preliminary findings indicate that our organization has achieved a tremendous breakthrough in our white hybrid range.

To find out more, attend our **Kroonstad Pannar Extravaganza on 6 and 7 March 2024**, to hear our local agronomist, Charl van der Merwe, discuss his findings.

An ongoing trial series and cornerstone of our product advancement process under the umbrella of the Panagri™ programme, are the annual on-farm **P3 trials**.

These statistical strip trials are used to test new pipeline products at field scale under the normal management practices of our co-operating farmers and the prevailing environmental conditions on their farms. The performance of these products is then compared to the performance of Pannar's current commercial and opposition products. In this way the P3 trial results function as a final 'acid test' before wide-scale launch of the new products, ensuring their success.



# PANACEA® ULTIMATE SEED AND CROP HEALTH SOLUTION – PLANT OUR SEEDS OF SUCCESS ON YOUR FARM AND KEEP THEM PROTECTED

Panacea® seed and crop protection is the label under which Pannar develops seed treatment programmes for optimal germination, plant population and seedling protection as well as first-class advice for the identification and control of diseases and pests that occur on farmers' crops from time-to-time. This includes fungicide and insecticide spray programmes, which offer guidelines for the control of such outbreaks (including chemical control of stalk borer on conventional and glyphosate tolerant hybrids).

## Panacea® seed treatment – a mark of assurance in seed treatments

High yield potentials start with a uniform and healthy plant population. The Panacea® seed treatment package protects your seed and seedlings from a variety of early-season insects, soil- and seed-borne diseases for a great head start. Panacea® seed treatments are designed, verified and proven to work with Pannar® brand genetics, giving farmers a higher level of confidence in their seed treatment options.

## Designed for our genetics

You've invested in outstanding Pannar® brand genetics for your field. We've invested in protecting their performance potential.

### Panacea® seed treatments address:

- Plantability;
- Cold tolerance;
- Stand establishment;
- Singulation; and
- Early vigour.

We evaluate hundreds of product concept combinations to develop the right seed treatment formulations for our genetic line-up. Each year, we validate those combinations in labs, greenhouses and on farmers' fields. Our seed treatment development process relies on 30 000 research plot evaluations annually.

## Verified on our genetics

Panacea® seed treatments capitalise on over 100 years of crop protection know-how and an understanding of what farmers need and how they farm. Our seed treatment combinations are carefully evaluated at the Corteva Agriscience Centre of Seed Applied Technologies (C-SAT) - an all-in-one facility that's part laboratory, testing centre and seed treatment plant. Here, seed treatments are reviewed using our exclusive six-step **PASSER process**:

- P Plantability:** Maximising seed flow and planting precision
- A Application:** Refining processes to work across seed properties (size, shape, hybrid/cultivar) and environmental conditions
- S Seed safety:** Ensuring treatments don't adversely affect seed germination
- S Stewardship:** Minimising potential adverse effects on people and the environment
- E Efficacy:** Evaluating protection and vigour, to confirm the seed treatment performs as expected, even in challenging environments
- R Regulatory:** Meeting regulations and guidelines

Only seed treatments that excel in this rigorous **PASSER process** earn the Panacea® mark of assurance.

## Proven in the field with our genetics

Through our **Field Test Network**, our treated seed is evaluated by farmers. It goes into the ground using real planters, under real conditions.

On-farm testing is combined with our large-scale **IMPACT™** testing programme, where we conduct more than 60 000 plot evaluations each year. This testing helps ensure Panacea® seed treatments work no matter which Pannar® brand hybrids or cultivars you plant.

Our extensive evaluation process also means seed treatments that earn the Panacea® mark of assurance fit with responsible farming practices, minimising exposure to off-target species and the environment and helping farmers reduce the amount of active ingredient they need to apply to their fields.

To learn more about Panacea® seed treatments and options available to protect your seed this season, speak to your Pannar sales representative.



Panacea® Seed and Crop Protection: Innovative crop pre-plant care and crop protection offers a complete risk management package.		
GUIDANCE	SEED TREATMENT	FUNGICIDE AND INSECTICIDE SPRAY PROGRAMMES
Astute application of knowledge.	<b>Precautionary crop protection</b> (seed treatment presentations: fungicide, insecticide and polymers).	<b>Fungicide</b> spray programme.
<b>Crop protection:</b> disease diagnosis, advice and guidance.		<b>Insecticide</b> spray programme.

## Panacea® advice – fungicide and insecticide spray programmes

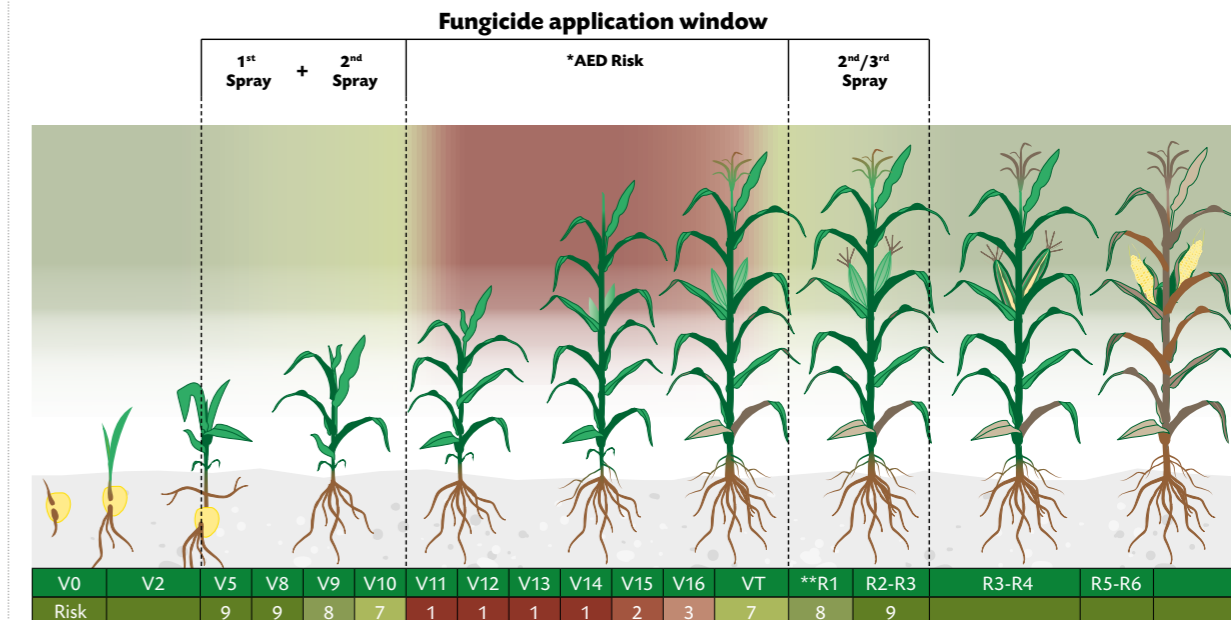
Under the auspices of the Panacea® programme, Pannar recommends fungicide and insecticide spray programmes that enable the farmer to benefit from the results of Pannar's on-farm P3 trials, to ultimately protect crop yield potential and/or quality.

Certain hybrids have demonstrated significant yield improvement when treated with an appropriate fungicide spray programme, particularly in high disease pressure situations. Depending on the hybrid selected, the season and environment, spray programmes comprising one, two, or more fungicide applications can deliver economic yield benefits and improved agronomic performance. Speak to your Pannar sales representative to learn about which hybrid and environment combinations are likely to show a strong reaction to the application of fungicides.

With regards to insect control, Pannar recommends the implementation of an **Integrated Pest Management (IPM)** strategy. These practices include elements such as crop rotation, cultural and biological control tactics (including Bt-protected maize traits), pest scouting and the use of appropriate pest thresholds when implementing insecticide application.



## Fungicide Spray Programme



\*AED risk especially high if stress factors occur ±V10-VT, including the use of additional surfactants or mixtures.  
(9 = Low Risk, 1 = High Risk). \*\*R1 (pollination period) – it is critical to avoid any form of stress.

Time of Application (Timing is very important)	Two (2) Spray Programme (Medium risk areas and hybrids)	Three (3) Spray Programme (High risk areas and hybrids)
<b>FIRST APPLICATION</b> Spray 5-8 leaf stage (Preferably with a self-propelled or tractor rig for good coverage)	Strobilurin/ Triazole Combination Fungicide <sup>1</sup>	Strobilurin/ Triazole Combination Fungicide <sup>1</sup>
<b>SECOND APPLICATION</b> 21-28 days later <sup>3</sup> (Ground or aerial application)	Triazole or Triazole/ Carbendazim Fungicide <sup>2</sup>	Triazole or Triazole/ Carbendazim Fungicide <sup>2</sup> <b>OR</b> Strobilurin/Triazole Combination Fungicide <sup>1</sup>
<b>THIRD APPLICATION IF REQUIRED</b> Shortly after flowering (Ground or aerial application)		Triazole or Triazole/ Carbendazim Fungicide <sup>2</sup>

<sup>1</sup> Examples of products in this group include Acanto® Plus (Corteva Agriscience), Amistar Top® (Syngenta), Abacus® or Abacus® Advance (BASF), Nativo® (Bayer).

<sup>2</sup> Examples of products in this group include Artea® (Syngenta), Duett® or Duett® Ultra (BASF), Zantara® (Bayer), Miravis Neo (Syngenta).

<sup>3</sup> Try to avoid spraying during the V10-VT growth stages, which are high risk for \*Arrested Ear Development (AED) as well as flowering (pollination problems).








**Important:** Refer to the label for rates and instructions. Use only as indicated on the label.

**NOTE:** Important to rotate products as per spray programme and not to continue using the same product throughout the season. This is to prevent the build-up of resistance in the pathogen to a fungicide. (FRAC = Fungicide Resistance Action Committee. The purpose of FRAC is to provide fungicide resistance management guidelines to prolong the effectiveness of "at risk" fungicides and to limit crop losses should resistance occur).

# MAIZE HYBRID SELECTION

One of the most important and difficult management decisions that farmers make every year is the selection of a package of hybrids to plant. When selecting a suitable hybrid package, **yield performance** and **hedging of risk** are both important considerations. This is complemented by the hybrid's agronomic characteristics and disease tolerance attributes.

The criteria that a farmer sets for a hybrid will vary from farm to farm. Certain hybrid characteristics are important, regardless of where those hybrids are planted. The following characteristics, not necessarily in order of importance, are key considerations in the decision-making process

 Yield performance, stability and compensation ability	 Hybrid package
 Growing season length	 Prolificacy – multi-eared or single-eared
 Standability	 Germination and vigour
 Disease, insect tolerance and weed control	

The most desirable characteristics are discussed in short below:

**Yield Performance, Stability and Compensation Ability:**  
Reliability of yield expectation from season to season is probably the most important aspect of hybrid choice. Success depends on risk hedging and is determined by how accurately a hybrid's yield prediction can be made. The chance of success improves significantly if hybrid choice is based on multi-season results across multiple locations.

Adaptability and stability are extremely important when choosing any hybrid. A hybrid that can deliver above-average returns under both favourable as well as adverse climate conditions will spread your risk. Choose hybrids that are stable over various environments and seasons, as it is difficult to predict the growing conditions of a coming season.

**Hybrid Package:**  
Despite the best efforts on the part of maize breeders, there is no one ideal hybrid. Therefore, a package of hybrids is recommended to spread the risk and increase the potential for the best yield under the prevailing circumstances. A hybrid package is constructed from various hybrids (different genetics, resistance properties, disease tolerances, etc.) and preferably with varying growing season lengths.

The yield and adaptability of a hybrid is the result of the interaction between a hybrid's genetics, the environmental factors, and the management practices that are applied, for example:

- Planting date;
- Rainfall distribution;
- Stress factors e.g. drought stress, damage due to diseases, insects or hail;
- Crop rotation programme;
- Fertilisation, soil fertility and soil type;
- Cultivation practices; and
- Weed control.

**Growing Season Length:**  
To ensure the best average yield, consider planting hybrids of varying maturity. This reduces the probability that the entire crop will experience hot and dry conditions during the critical pollination period. This will be an advantage if planting is completed over a short period to fit in with the optimum planting window. If planting takes place over a long period, hybrids with different maturity groups is less important.

Under dryland conditions, hybrids in the earlier growth classes are generally better adapted in the cooler and temperate regions with limited heat units and higher plant populations. In the warmer, drier production regions, a combination of hybrids from medium to medium early growing season are better adapted. A package also offers the advantage that everything is not combine-ready at the same time. Early maturity hybrids also provide the opportunity to bank your money earlier. Under high input irrigation and double-cropping systems (high yield targets, water application and management input), the ultra early hybrids are the best adapted.

**Prolificacy – Multi-eared and Single-eared hybrids:**  
Optimal plant population for various hybrids depends on several factors; environmental potential, type of ear, and possible stress factors that may occur during the critical growth stages of the plant's development. In general, hybrids that have ears which get smaller when the plant population is increased and larger if the population is reduced are referred to as "flex-ear" hybrids. Certain hybrids exhibit the ability to produce a constant ear size regardless of the plant population and are referred to as "fixed-ear" hybrids.

**Multi-eared Hybrids:**  
Hybrids that are well-adapted to low plant populations generally have a robust plant type, sturdy stalks and big, hanging leaves. Commonly, these hybrids correspondingly have a larger root mass. When these attributes are coupled with strong prolificacy, one would expect that this type of hybrid would be better adapted to varying climatic conditions such as those experienced in the western part of the maize production area. These hybrids generally perform better under drought stress situations since lower plant populations enable some buffering of water use during dry spells. They can, however, compensate under good production conditions by producing a second ear.



**Single-eared Hybrids:**  
Single-eared hybrids with a fixed or semi-flex ear usually have more upright leaves allowing better light penetration, reduced root mass and thinner more woody stalks. Hybrids exhibiting these characteristics can generally be employed at high plant populations and can deliver excellent yields under high potential conditions. These hybrids are generally better adapted to environments where water application or rainfall is more reliable.



**Standability:**  
Good standability facilitates effective combine harvesting. The primary causes of reduced standability are root and stem rot. If root and stem rot is noticed, it is advisable to combine infected fields early to limit losses by lodging of the plants, if drying facilities are available.

**Germination and Vigour:**  
Rapid germination and a strong seedling lays the foundation for a successful crop. Early vigour is particularly important on sandy soils where wind damage to seedlings may occur. There are marked differences between hybrids with respect to early vigour.

**Disease, Insect Tolerance and Weed Control:**  
By maintaining healthy leaves, the plant's factory can function more effectively, increasing the chance of good results. The risk profile of hybrids to important diseases is evaluated and plays an important role in area adaptability. Leaf diseases caused by fungal infections are usually more prevalent in the high rainfall production regions; a fungicide spray programme may play an important role in protecting the yield potential. Bacterial diseases and vector-transmitted viral infections must be managed in other innovative and preventive ways.

The weed spectrum determines which herbicides should be applied as well as the hybrids that can be planted. Hybrids with glyphosate tolerance provide broad spectrum weed control. Keep in mind that tolerance to the harder herbicides (such as Sulfonylurea) differs between hybrids. Read and adhere to herbicide prescriptions and check the tolerance of the hybrid against the planned herbicide programme.

- In summary, some basic guidelines:**
- Select hybrids that are proven performers based on multi-season data from multiple trials across a large, homogeneous area, and which take yield performance, stability and adaptability into account;
  - New hybrids should be phased in gradually;
  - Select a package of hybrids with a variety of maturity or growth classes to spread the risk;
  - Include early growing season hybrids in your package if early harvesting is important;
  - Consider Bt-hybrids if plantings are going to be late in the season;
  - Prolific hybrids should be considered in the dryland areas with a variable or challenging climate and will generally deliver stable yields; and
  - Single-eared hybrids are better adapted to high plant populations and higher potential conditions.

## MAIZE HYBRID PACKAGE

Pannar's maize package comprises various growth classes and includes conventional, stalk borer resistant, glyphosate tolerant and stacked gene hybrids. These hybrids are recommended for grain and silage production, as well as for maize foggage.



PICTURED  
Farmers: Corné and Neill Oosthuizen  
Farming Entity: MAC Oosthuizen Boerdery  
Area: Koppies, Free State  
Pannar Representative: Nelia Louw

Estimated Relative Maturity (Days)	Yellow Hybrid Package	White Hybrid Package
113	PAN 3A-124 PAN 3R-524R PAN 3P-924PW PAN 3P-912PW (NEW)	
114	PAN 4A-128 PAN 4R-528R PAN 4P-928PW	PAN 3A-173 PAN 3R-573R PAN 3P-973PW
116	PAN 4A-132 PAN 4R-838BR	
118	PAN 4A-156	
119	PAN 5P-902PW PAN 5A-190 PAN 5R-590R PAN 5P-990PW	
124		PAN 4A-111 PAN 4R-511R PAN 4R-811BR PAN 5A-163 PAN 5R-563R
125	PAN 5A-166 PAN 5P-966PW (NEW)	PAN 5285 PAN 5R-785BR PAN 5P-985PW
126	PAN 5A-182 PAN 5R-582R PAN 5A-144 (NEW) PAN 5R-544R (NEW)	PAN 5R-591R PAN 5R-891BR PAN 5P-991PW PAN 5R-555R PAN 5P-955PW (NEW)
127		PAN 5P-947PW (NEW) PAN 6R-879BR
128		PAN 5R-539R (NEW)
129		PAN 5R-523R (NEW)



"We grew up with Pannar.  
It's a great brand...  
consistently good products!"

## MAKE OUR YELLOW MAIZE A PART OF YOUR SUCCESS STORY

Pannar's yellow maize package delivers top-end yield performance across a range of yield potential levels, production areas and seasons. Consistently stable, widely adapted and agronomically well-balanced, this package has been designed to reduce risk and deliver a successful yield. Just ask Corné and Neill Oosthuizen, who plant our yellow maize on their farm Soetvlei: "We have tried other seed companies before, but we find Pannar's yields and genetics are consistently better."

FARMERS: Corné and Neill Oosthuizen

FARMING ENTITY: MAC Oosthuizen Boerdery

AREA: Koppies, Free State

CROP:  
Yellow Maize

PANNAR HYBRID USED:  
PAN 4R-838BR (Yellow Maize)

PANNAR REPRESENTATIVE:  
Nelia Louw  
083 455 6909  
Parys/Sasolburg



## YELLOW MAIZE HYBRIDS - AGRONOMIC CHARACTERISTICS

Hybrid Platform	Estimated Relative Maturity (Days)	Available Versions	Technology	Key Strengths
PAN 3A-124	113	Base PAN 3A-124 R PAN 3R-524R PW PAN 3P-924PW	ROUNDUP READY* MAIZE 2 POWERCORE™	This platform is the quickest in the Pannar ultra early range and produces an attractive grain type that dries down rapidly. It has maintained excellent high yield potential and stability over seasons, making it the market-leading irrigation platform. It is also suitable for high potential dryland production. Typical ultra early hybrids with an upright leaf growth habit that can be planted at higher plant populations, maintaining excellent standability. The platform features a semi-flex ear type, which is advantageous under high potential conditions. In higher disease pressure environments a preventative fungicide programme is recommended. PAN 3P-924PW with PowerCore™ technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 3P-912PW	113	PW PAN 3P-912PW (NEW)	POWERCORE™	This new hybrid is an excellent stablemate for the PAN 3A-124 platform. It has demonstrated excellent yield potential in advancement trials. PAN 3P-912PW shows strong tolerance to Northern Corn Leaf Blight (NCLB), which should aid performance in high NCLB pressure environments. The PowerCore™ technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 4A-128	114	Base PAN 4A-128 R PAN 4R-528R PW PAN 4P-928PW	ROUNDUP READY* MAIZE 2 POWERCORE™	These early growth class hybrids have excellent top-end yield potential. They should be considered for high potential lands where they will be afforded the opportunity to reach their full potential. Particularly well suited to the eastern production areas, this agronomically well-balanced platform has good standability and will handle higher plant populations very comfortably. Under irrigation, the PAN 4A-128 series complements the ultra early PAN 3A-124 platform very well and is a good choice for earlier planting dates to broaden the hybrid package under irrigation. In higher disease pressure environments a preventative fungicide programme is recommended. PAN 4P-928PW with PowerCore™ technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 4A-132	116	Base PAN 4A-132		This recently developed hybrid with a robust disease profile and strong yield stability across different yield potentials, has performed with distinction in product testing trials. PAN 4A-132 has also brought strong prolificacy back to the early growth class. Indications point to this product becoming a major hybrid in the market!
PAN 4R-838BR	116	BR PAN 4R-838BR	ROUNDUP READY* MAIZE 2 YIELDGARD® MAIZE 2	Although initially ear-marked for the eastern market, this hybrid has also shown significant adaption to the western regions. It has performed well under a wide range of plant populations and yield potentials. Strong emergence and seedling vigour gives this hybrid an early advantage. In environments where Common Rust is prevalent, a preventative fungicide spray is advised for this otherwise well-balanced hybrid.
PAN 4A-156	118	Base PAN 4A-156		PAN 4A-156 has good general disease tolerance and is a top performer in KwaZulu-Natal and in the moist high potential environments of the east. With its larger plant type and strong stay-green leaves, it makes an excellent quick silage hybrid.
PAN 5P-902PW	119	BR PAN 5P-902PW	POWERCORE™	A hybrid in the medium early growth class with PowerCore™ technology that provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control. This hybrid has low ear insertion and good stalk strength and performs well in the eastern Highveld. It has excellent grain quality with good hectolitre mass.
PAN 5R-590R	119	Base PAN 5A-190 R PAN 5R-590R PW PAN 5P-990PW	ROUNDUP READY* MAIZE 2 POWERCORE™	These hybrids are widely adapted with stable performance across all production areas. A very good choice for silage in the eastern production areas. These hybrids have excellent early vigour, and have good standability. A very healthy plant with good general disease tolerance especially to Diplodia and Common Rust. They show reasonable prolificacy at low plant populations. PAN 5P-990PW with PowerCore™ technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 5A-166	125	Base PAN 5A-166 PW PAN 5P-966PW (NEW)	POWERCORE™	A hybrid platform in the medium early season growth class with well-balanced agronomics that has consistently delivered strong performance over years of testing. Good overall leaf disease tolerance and prolificacy afford these hybrids wide adaptability. The platform has also shown an impressive top-end yield in high potential conditions. PAN 5P-966PW with PowerCore™ technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 5A-182	126	Base PAN 5A-182 R PAN 5R-582R	ROUNDUP READY* MAIZE 2	These reliable hybrids maintain good performance and stability at all yield potential levels and have excellent leaf disease tolerance. Widely adapted for all production areas, and proven yield leaders in the eastern Highveld. This platform produces excellent quality flinty grain with good hectolitre mass and a golden yellow colour, very popular with merchants.
PAN 5A-144	126	Base PAN 5A-144 (NEW) R PAN 5R-544R (NEW)		A new medium season platform with a robust plant-type. Good general leaf disease tolerance and wide adaption make these hybrids a valuable addition to the range. This platform is characterised by girthy ears with large blocky kernels.

Drying Rate, Prolificacy, Standability and Emergence			Tillering and Disease Risk				Management Recommendations		
Good	Average	Weak	Low	Average	High	Unknown	✗ No	✓ Yes	◆ Unknown

Growing Season Class		General Characteristics							Disease Risk					Management Recommendations				
Days to 50% Tassel	Days to Physiological Maturity	Ear Type	Drying Rate	Tillering	Prolificacy	Standability	Seedling Vigour	Northern Corn Leaf Blight (NCLB)	Grey Leaf Spot (GLS)	Common Rust	Phaeosphaeria Leaf Spot	Diplodia Ear Rot	Cob and Tassel Smut	Suitable for Full Irrigation	Suitable for Supplementary Irrigation	Suitable for High Population Pressure	Irrigation Plant Population per hectare ('000)	Dryland Plant Population per hectare ('000)
53-75	104-143	Semi-flex	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✓	✓	✓	80-100	40-70
53-75	104-143	Semi-flex	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✓	✓	✓	80-100	40-70
57-78	110-150	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✓	✓	✓	65-80	40-70
60-79	108-150	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	◆	◆	✓	65-80	40-70
60-79	108-150	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✗	✓	✗	65	30-65
60-79	110-150	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✗	✓	✓	50-70	40-70
61-80	115-155	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✗	✓	✓	55-80	35-60
61-80	115-155	Fixed	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✗	✓	✗	50-65	25-50
63-81	120-160	Semi-flex	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✗	✓	✗	50-55	25-45
63-81	120-160	Semi-flex	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✓	✓	✗	50-55	25-45
63-81	120-160	Semi-flex	Good	Average	Weak	Good	Good	High	Average	Low	Average	High	Unknown	✓	✓	✗	50-55	25-45

### Hybrid Package Composition

The formidable yellow maize package of ultra early, early, medium early and medium hybrids offers a good long-term risk-mitigating strategy.

Pannar introduced its first two maize hybrids with PowerCore® trait technology in 2022. Over the past two seasons, South Africa's maize farmers have experienced long-lasting control of targeted above-ground insects. PowerCore® trait technology also confers tolerance to glyphosate herbicides. This season, Pannar's yellow maize hybrid package boasts six hybrids with PowerCore® trait technology.

PAN 3P-912PW is an entirely new platform. This hybrid with PowerCore® trait technology has demonstrated excellent yield potential in advancement trials. PAN 3P-912PW shows strong tolerance to Northern Corn Leaf Blight (NCLB), which should aid performance in high NCLB pressure environments.

PAN 5P-966PW is the PowerCore® introduction on the PAN 5A-166 platform. The medium early hybrid platform has consistently delivered strong performance over years of testing and shown an impressive top-end yield in high potential conditions. Good overall leaf disease tolerance and prolificacy afford these hybrids wide adaptability.

The season's new introductions are concluded with PAN 5A-144 and PAN 5R-544R, a new medium season platform with a robust plant-type. Good general leaf disease tolerance and wide adaption make these hybrids a valuable addition to the range. This platform is characterised by girthy ears with large, blocky kernels.

**NB! The management of possible insect resistance to the Bt-gene is legally binding. The planting of a refuge according to regulations is required where any Bt-hybrids are used (B, BR or PW). Refer to the schematic guidelines on page 20.**



# MAIZE AND SUNFLOWER SEED SPACING GUIDE

Row Width (cm)	45 cm		76 cm		91 cm		120 cm	
	Plant population per ha	Seeds per metre	Distance between Seeds (cm)	Seeds per metre	Distance between Seeds (cm)	Seeds per metre	Distance between Seeds (cm)	Seeds per metre
90 000	4.1	24.7	6.8	14.7	8.2	12.2	10.8	9.3
80 000	3.6	27.8	6.1	16.4	7.3	13.7	9.6	10.4
70 000	3.2	31.7	5.3	18.8	6.4	15.7	8.4	11.9
60 000	2.7	37.0	4.6	21.9	5.5	18.3	7.2	13.9
50 000	2.3	44.4	3.8	26.3	4.6	22.0	6.0	16.7
45 000	2.0	49.4	3.4	29.2	4.1	24.2	5.4	18.5
40 000	1.8	55.6	3.0	32.9	3.6	27.5	4.8	20.8
35 000	1.6	63.5	2.7	37.6	3.2	31.4	4.2	23.8
30 000	1.4	74.1	2.3	43.9	2.7	36.6	3.6	27.8
27 500	1.2	80.8	2.1	47.8	2.5	40.0	3.3	30.3
25 000	1.1	88.9	1.9	52.6	2.3	44.0	3.0	33.3
22 500	1.0	98.8	1.7	58.5	2.0	48.8	2.7	37.0
20 000			1.5	65.8	1.8	54.9	2.4	41.7
18 000			1.4	73.1	1.6	61.1	2.2	46.3
15 000			1.1	87.7	1.4	73.3	1.8	55.6
12 000					1.1	91.6	1.4	69.4
10 000							1.2	83.3

Row Width (cm)	152 cm or 90 x 213 cm		180 cm		210 cm		230 cm	
	Plant population per ha	Seeds per metre	Distance between Seeds (cm)	Seeds per metre	Distance between Seeds (cm)	Seeds per metre	Distance between Seeds (cm)	Seeds per metre
90 000	13.7	7.3	16.2	6.2	18.9	5.3	20.7	4.8
80 000	12.2	8.2	14.4	6.9	16.8	6.0	18.4	5.4
70 000	10.6	9.4	12.6	7.9	14.7	6.8	16.1	6.2
60 000	9.1	11.0	10.8	9.3	12.6	7.9	13.8	7.2
50 000	7.6	13.2	9.0	11.1	10.5	9.5	11.5	8.7
45 000	6.8	14.6	8.1	12.3	9.5	10.6	10.4	9.7
40 000	6.1	16.4	7.2	13.9	8.4	11.9	9.2	10.9
35 000	5.3	18.8	6.3	15.9	7.4	13.6	8.1	12.4
30 000	4.6	21.9	5.4	18.5	6.3	15.9	6.9	14.5
27 500	4.2	23.9	5.0	20.2	5.8	17.3	6.3	15.8
25 000	3.8	26.3	4.5	22.2	5.3	19.0	5.8	17.4
22 500	3.4	29.2	4.1	24.7	4.7	21.2	5.2	19.3
20 000	3.0	32.9	3.6	27.8	4.2	23.8	4.6	21.7
18 000	2.7	36.5	3.2	30.9	3.8	26.5	4.1	24.2
15 000	2.3	43.9	2.7	37.0	3.2	31.7	3.5	29.0
12 000	1.8	54.8	2.2	46.3	2.5	39.7	2.8	36.2
10 000	1.5	65.8	1.8	55.6	2.1	47.6	2.3	43.5



## MAKE OUR WHITE MAIZE A PART OF YOUR SUCCESS STORY

When it comes to widely adapted, agronomically well-balanced white maize, Pannar's market-leading package offers stable performance, strong seedling vigour, early plant establishment and respected grain and milling quality. Speak to our skilled team about how you can reduce variability in productivity and increase profitability on your farm, and find out from like-minded farmers such as Johan and Cloete Wessels what our white maize has done for them: **"We are really happy with PAN 6R-879BR. It produces a big, full maize cob. This hybrid handled last season's extreme conditions well."**

**FARMERS:** Cloete en Johan Wessels

**FARMING ENTITY:** Wesco Boerdery

**AREA:** Vredefort, Free State

<b>CROP:</b> White Maize	<b>PANNAR HYBRIDS USED:</b> PAN 6R-879BR (White Maize) PAN 4R-811BR (White Maize)
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**PANNAR REPRESENTATIVE:**

Nelia Louw  
083 455 6909  
Parys/Sasolburg





# WHITE MAIZE HYBRIDS - AGRONOMIC CHARACTERISTICS

Hybrid Platform	Estimated Relative Maturity (Days)	Available Versions	Technology	Key Strengths
PAN 3A-173	114	Base PAN 3A-173 R PAN 3R-573R PW PAN 3P-973PW	ROUNDUP READY* MAIZE 2 POWERCORE™	This platform has a typical ultra early plant-type with upright leaves and good standability. Well suited to both irrigation and high potential dryland. Under lower plant populations these hybrids tend to be mildly prolific. The plants produce a high ratio of grain to stover. They are well-adapted to high plant populations and have good general disease tolerance and grain quality. PAN 3P-973PW with <b>PowerCore™</b> technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 4A-111	124	Base PAN 4A-111 R PAN 4R-511R BR PAN 4R-811BR	ROUNDUP READY* MAIZE 2 YIELDGARD® MAIZE 2 ROUNDUP READY* MAIZE 2	This mature platform has a rock-solid track record of yield performance. In the eastern production areas it is the go-to platform under high potential conditions. It handles various plant populations well. These hybrids are characterised by good general disease tolerance, standability, hectolitre mass, grain and milling quality. Performance can be more variable under hot, dry conditions.
PAN 5A-163	124	Base PAN 5A-163 R PAN 5R-563R	ROUNDUP READY* MAIZE 2	This hybrid platform is a great stable-mate for the PAN 4A-111 platform. It has good overall leaf disease tolerance and improved yield stability, particularly on moderate potential fields. It has good grain quality and will show prolificacy at lower plant populations.
PAN 5285	125	Base PAN 5285 BR PAN 5R-785BR PW PAN 5P-985PW	ROUNDUP READY* MAIZE 2 YIELDGARD® MAIZE 2 POWERCORE™	Maintains consistently good performance in the Agricultural Research Council (ARC) national trials for the western production area. Stable performance over seasons. Widely adapted and has good yield potential especially on soils with a clay content of >10% in the topsoil. These hybrids have an attractive plant type, are agronomically well-balanced and show good tolerance to Cob and Tassel Smut and Northern Corn Leaf Blight (NCLB). PAN 5P-985PW with <b>PowerCore™</b> technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 5R-591R	126	R PAN 5R-591R BR PAN 5R-891BR PW PAN 5P-991PW	ROUNDUP READY* MAIZE 2 YIELDGARD® MAIZE 2 POWERCORE™	This platform is highly prolific and exhibits strong seedling vigour and early plant establishment. Widely adapted and maintains good stable performance at different yield potential levels. Very good performance on high potential soils in the western production areas with a clay content of <10% in the topsoil. PAN 5R-891BR has the additional advantage of second-generation stalk borer protection. PAN 5P-991PW with <b>PowerCore™</b> technology provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 5R-555R	126	R PAN 5R-555R PW PAN 5P-955PW (NEW)	ROUNDUP READY* MAIZE 2 POWERCORE™	An exciting new hybrid platform for the western production areas. This hybrid has good standability and an excellent prolificacy index, yet tends not to produce too many tillers. Good germination with strong seedling vigour makes it the best choice on the sandy soils of the north western Free State. It also has good overall leaf disease tolerance. PAN 5P-955PW, a new introduction with <b>PowerCore™</b> technology, provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 5P-947PW	127	PW PAN 5P-947PW (NEW)	POWERCORE™	This hybrid platform falls into the medium early growth class and has very good stability. It is well-adapted to the sandy soils of the north western Free State and the western regions. This is a platform with exceptional yield potential. The hybrids have a tendency to tiller, but not excessively so. PAN 5P-947PW, a new introduction with <b>PowerCore™</b> technology, provides broad spectrum protection against above-ground lepidopteran pests, stacked with glyphosate herbicide-tolerant technology for premium insect and weed control.
PAN 6R-879BR	127	BR PAN 6R-879BR	ROUNDUP READY* MAIZE 2 YIELDGARD® MAIZE 2	A stable performer well-adapted to the high potential soils of the western region. Due to moderate prolificacy, plant at a plant population 10-20% higher than normal. It has a flex ear type meaning that it has the ability to increase its ear size under optimal growing conditions. This hybrid has upright leaves and excellent standability. Exhibits good tolerance to NCLB.
PAN 5R-539R	128	R PAN 5R-539R (NEW)	ROUNDUP READY* MAIZE 2	The next frontier of genetic gain in maize production. This hybrid has an attractive plant type with few tillers. It performs very well on the sandy soils of the western production areas. Double cobbing with a flex-ear type that can compensate for optimum production conditions. This hybrid also has excellent standability. Fairly tolerant to the most common leaf and ear diseases. Highly recommended as part of your white maize package in the western production areas.
PAN 5R-523R	129	R PAN 5R-523R (NEW)	ROUNDUP READY* MAIZE 2	New generation genetics with an upright plant type allowing for improved harvestability. High yield potential on the water table soils of the north western Free State and is also well adapted to the North West. This hybrid has good standability and an excellent prolificacy index and high test weight that contributes to its yield potential.

DRYING RATE, PROLIFICACY, STANDABILITY AND EMERGENCE			TILLERING AND DISEASE RISK			
Good	Average	Weak	Low	Average	High	Unknown

✘ No    ✓ Yes    ◆ Unknown

Growing Season Class		General Characteristics							Disease Risk					Management Recommendations				
Days to 50% Tassel	Days to Physiological Maturity	Ear Type	Drying Rate	Tillering	Prolificacy	Standability	Seedling Vigour	Northern Corn Leaf Blight (NCLB)	Grey Leaf Spot (GLS)	Common Rust	Phaeosphaeria Leaf Spot	Diplodia Ear Rot	Cob and Tassel Smut	Suitable for Full Irrigation	Suitable for Supplementary Irrigation	Suitable for High Population Pressure	Irrigation Plant Population per hectare ('000)	Dryland Plant Population per hectare ('000)
56-76	105-145	Fixed	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✓	✓	✓	80-100	45-70
58-79	115-148	Semi-flex	Good	Good	Average	Good	Good	Good	Good	Good	Good	Good	Good	✓	✓	✘	55	35-55
58-79	115-148	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✘	✓	✘	50	25-45
60-80	116-150	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✘	✓	✘	55	16-45
63-81	120-160	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✘	✓	✘	55	16-45
61-80	116-150	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✘	✓	✘	55	16-45
61-80	116-150	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✓	✓	✘	55	16-45
60-80	120-160	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	✘	✓	✘	55	18-45
61-80	116-150	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	◆	✓	✓	35	16-45
63-81	120-160	Semi-flex	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	◆	✓	✓	35	16-45

## Hybrid Package Composition

The Pannar white maize hybrid package is distinguished by its exceptional performance, adaptability and stability for good risk management.

This season, Pannar's range of white maize hybrids with **PowerCore®** trait technology expands to five, with the introduction of PAN 5P-947PW. This medium early platform with exceptional yield potential and very good stability is well-adapted to the sandy soils of the north western Free State and the North West regions.

PAN 5R-539R is an entirely new platform and a harbinger of the next frontier of genetic gain in maize production. This hybrid is double cobbing with a flex-ear type that can compensate for optimum production conditions. It also has excellent standability. PAN 5R-539R performs very well on the sandy soils of the western production areas.

PAN 5R-523R is another entirely new platform revealing new generation genetics with an upright plant type allowing for improved harvestability. This hybrid has good standability and an excellent prolificacy index as well as a high test weight that contributes to its yield potential. In testing, PAN 5R-523R has exhibited exceptional yield performance in the water table soils of the north western Free State. It is also well adapted to the North West.

**NB!** The management of possible insect resistance to the *Bt-gene* is legally binding. The planting of a refuge according to regulations is required where any *Bt-hybrids* are used (B, BR or PW). Refer to the schematic guidelines on page 20.



# MANAGEMENT OF GENETICALLY MODIFIED MAIZE HYBRIDS

Insect and weed control are two critical aspects in crop production. Biotech crops with insect protection against stalk borers and tolerance against specific herbicide applications (including glyphosate), offer great benefits to farmers.



PICTURED  
Farmer: Jan Frederick Cronje (left)  
Farming Entity: JW Cronje Landgoed  
EDMS BPK Boerdery  
Area: Heidelberg, Gauteng  
Pannar Representative: Francois Hamman (right)

Grain producers may only cultivate hybrids containing any of the Genetically Modified (GM) traits if they have signed a valid Technology Use Agreement (TUA) and Product Stewardship Agreement, thereby accepting the strict conditions and responsibilities regarding the planting and cultivation of Bt-seed. Farmers are required to acquaint themselves with the GMO user guidelines as outlined in the agreement and are expected to adhere to the requirements regarding the planting of suitable refuge areas in the case of Bt-hybrids as well as the prescribed herbicide dosage and time of application for glyphosate tolerant hybrids, as it is mandatory.

For decades, multiple agricultural systems have co-existed successfully around the world, from production through to supply chains. Over time, best practices to facilitate these different agricultural systems have been developed and continually improved upon to ensure that high-purity and high-quality seed and grain are available to support trade from various agricultural systems. One example of such co-existence is the production of similar commodities in close proximity such as maize, sweetcorn and popcorn. Co-existence strategies should meet market requirements using science-based industry standards and management practices and should be flexible to facilitate options and choices for growers and the food and feed supply chain. This flexibility should also include the ability for co-existence strategies to be modified as changes in products, markets or practices occur.

The ongoing success of co-existence strategies is dependent upon co-operation, communication, flexibility, and mutual respect for each cropping system, and among growers using these various systems. Over the years, growers have adapted to changes and innovations in agriculture by using new farm management practices, new technologies, and other appropriate practices. It is incumbent upon a grower who is cultivating a crop to satisfy a particular market, to implement best practices to satisfy those marketing standards. By seeking to satisfy that market, the grower inherently agrees to use the

appropriate practices to ensure the integrity and marketability of their crop in the market in which they seek to sell it. This is true, regardless of the particular market being served, whether it is maize, sweetcorn, organically produced maize, or conventionally produced maize. In each of these cases, the grower is producing a crop supported by a special market price and therefore assumes responsibility for meeting any applicable market specifications to receive the applicable premium price from that market. Even though the responsibility rests with the grower producing the crop for a particular market, it is each grower's responsibility to communicate with, and be aware of the planting intentions of their neighbours to gauge the need for any appropriate best management practices.

## Glyphosate Tolerant Hybrids

Pannar® brand hybrids with glyphosate tolerance are designated by the letters R, BR or PW in the seed product code.

### Best Practices for Managing Herbicide Tolerant Crops:

**IMPORTANT – READ BEFORE PLANTING**  
*If you have any questions after reviewing this information, please contact your authorised Pannar sales representative or agronomist.*

### What Is Herbicide Tolerant Seed Technology?

Crops with traits for herbicide tolerance allow farmers to apply herbicides to their crops that they would otherwise be unable to utilise without causing death or unacceptable injury to that crop. For example, glyphosate herbicide tolerant maize crops can tolerate glyphosate herbicide application when applied at recommended rates. However, glyphosate application will kill non-glyphosate herbicide tolerant Pannar® brand maize or varieties.

### Importance of Managing Herbicide Tolerant Crops and Weed Resistance to Herbicides

Properly managing herbicide tolerant crop technology is important to preserve the effectiveness and value of the tolerant crop seed and its corresponding herbicides in the future. Growers utilising herbicide programmes that include herbicide tolerant crops can do so on an annual basis provided the technology is managed effectively.

### Best Practices:

- The use of herbicide tolerant crops does not limit the grower to the use of a single herbicide mode-of-action. Conventional herbicides can and should still be part of the grower's overall weed management system.
- Limit the number of applications of a single herbicide or herbicides from the same mode-of-action family within a single growing season.
- Apply herbicides at product recommended rates and at the recommended stage of weed growth, as stated on the product label(s).
- For problematic or resistant weeds, use mixtures or sequential treatments as per product label(s) for an effective, alternative control of target weeds.
- Use alternative weed management practices such as crop rotation, mechanical cultivation, delayed planting, and weed-free crop seed.
- Clean equipment before moving between fields to minimise the dispersion of weed seed.
- Scout fields after herbicide application to detect weed escapes or shifts. If a potentially resistant weed or weed population has been detected, use available control methods to avoid seed dispersion in the field.

### Management of Volunteer Herbicide Tolerant Crops

The seed of some crops can escape harvest, germinate the following year, and become "volunteer" weeds in a rotational crop. This can happen regardless of whether the crop seed was herbicide tolerant or not. Many tools are available for managing herbicide tolerant volunteers, but advanced planning is advised to provide the greatest flexibility and success.

The best strategies for managing herbicide tolerant volunteers are crop rotation and rotation of herbicides. The proper adjustment of harvesting equipment, cultivation and tillage management will also help to reduce volunteer plants from previous crops. Plan at least a year ahead when planting a herbicide tolerant crop, to make sure you have a weed management plan in place that will control any herbicide tolerant volunteers, using alternative herbicide mode-of-action families and/or tillage for the next crop.





**Hybrids with glyphosate tolerance offer the following benefits:**

- Broad spectrum weed control;
- Excellent crop safety;
- Conservation cultivating practices;
- Herbicide application flexibility; and
- Ease of management, as glyphosate has no residual effect on the soil and is environmentally friendly.

Pannar markets maize hybrids with the glyphosate tolerance gene under licence from Bayer (Monsanto) (maize with the **Roundup Ready®** Maize 2 trait). Only **Roundup PowerMAX®** (L7769) herbicide is recommended by the registration holder for post-emergence use on maize with the **Roundup Ready®** Maize 2 trait.

Glyphosate herbicide may be applied in combination with certain residual pre-emergence and post-emergence herbicides, independently or as tank mixtures. This provides additional flexibility and better weed control. Please consult your Pannar or chemical representative for guidelines regarding the safe and optimal use of the glyphosate tolerant cultivars.

**Management Guidelines:**

- Broadcast (over the top) glyphosate herbicide application should only take place from the GROUND CRACKING STAGE UP TO THE V8 STAGE of the maize plant (as recommended on the pesticide label). The V8 stage is reached when the first plants in the field have eight leaves with closed collars around the main stem. The actual number of visible leaves may be more. Do not make broadcast applications if mechanical crop damage will occur due to the passage of the spray rig.
- BROADCAST APPLICATION AFTER THE V8 STAGE MAY RESULT IN YIELD LOSS OR DELAYED MATURITY. For best results, use flat fan or twin jet nozzles that are suitable for low water volume deliveries.
- Where sequential applications are necessary to control specific weed species (e.g. *Cyperus esculentus*), the second application should not occur within 10 days of the first application. If by this time the maize is beyond the V8 stage, a post directed application will be necessary.

- Directed glyphosate applications between the rows can be made after the V8 stage where row spacing permits the passage of the application equipment without causing mechanical damage to the maize crop.

**IMPORTANCE OF MANAGING HERBICIDE TOLERANT CROPS AND WEED RESISTANCE TO HERBICIDES**

Proper management of herbicide tolerant crop technology is important to preserve the effectiveness and value of the tolerant crop seed and its corresponding herbicides for future use. If you have any questions regarding the stewardship of glyphosate herbicide use and possible weed resistance, please contact your Pannar sales representative or agronomist.

*Roundup Ready® and Roundup PowerMAX® are registered trademarks used under licence from Monsanto Company. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate.*

**ALWAYS USE ACCORDING TO LABEL RECOMMENDATIONS.**

- **Roundup PowerMAX®** contains Glyphosate (Caution)
- Reg. No. L7769
- Act No. 36 of 1947

**Stalk Borer Insect Protection Hybrids**

**Pannar® brand hybrids with stalk borer insect protection traits are designated by the letters B, BR or PW in the seed product code.**

The stalk borer insect protection traits in the Pannar biotech hybrids offer protection against first and second instar stalk borers, thus affording the crop the opportunity to develop to its full potential. The insect protection traits (Bt-genes) will only control small, immature larvae and not late stage larvae.

**Insect Resistance Management (IRM) Strategy**

**The purpose of the IRM strategy is the protection of the Bt-technology so as to extend its shelf-life and ensure its long-term usability. The IRM strategy comprises the following elements and is legally binding:**

- There are always some individual stalk borers that are naturally tolerant or may become resistant to the Bt-proteins. Producers must follow a strict IRM strategy to ensure that these insects remain sporadic in the population.
- The best way to prevent the tolerant or resistant individuals from increasing in numbers is to combine effective control with Bt-maize in maize fields, with a surrounding or nearby “refuge” area.
- A “refuge” is an area planted with non-Bt-maize and where non-Bt-based insecticides are used. In this area, maize stalk borers that are susceptible to the Bt-protein can feed and breed freely. These susceptible stalk borers can in turn breed with any of the few naturally tolerant stalk borer individuals, which would survive.
- If a susceptible stalk borer breeds with a tolerant individual, the offspring thereof will be controlled by the Bt-technology. This prevents the genes conferring Bt-resistance from being passed to the next generation of the pest species. In this way, producers can preserve the efficacy of the Bt-technology.
- Maize refuge options include hybrids without the stalk borer insect trait (non-Bt-technology), Pannar® brand hybrids with **Roundup Ready® Maize 2** technology (herbicide tolerant only plants), and conventional maize plants.

The refuge is also important if farmers encounter problems of any sort with Bt-plantings. Continuous monitoring of maize plantings and stalk borer populations is important. Regular inspection will enable farmers to intervene and apply insecticides timeously if it appears that the stalk borer population is not being controlled by the Bt-technology.

**Options for the Refuge**

The farmer may select one of the following options to plant a refuge:

**Option A:** 5% non-Bt-maize refuge that may not be treated with an insecticide. In practice, this means that for every 95 hectares of stalk borer resistant maize, the farmer must plant five hectares of non-Bt-maize (i.e. maize without any Bt-genes). This non-Bt-maize may not be treated with any insecticide registered for control of maize stalk borers.

**Option B:** 20% non-Bt-maize refuge that may be sprayed (if economic thresholds are met) with a non-Bt-protein-containing insecticide/biopesticide. In practice, this means that for every 80 hectares of stalk borer resistant maize, the farmer must plant 20 hectares of non-Bt-maize (i.e. maize without any Bt-genes).

In addition to selecting either an Option A or B refuge, the grower must also adhere to certain important requirements when planting the refuge.

**Refuge of non-Bt-maize (refer page 20):**

- The non-Bt-maize (i.e. refuge) must –
  - have a similar maturity to the Bt-maize;
  - be planted within seven days of planting the Bt-maize;
  - be planted on the same farm as the Bt-maize (not more than 400 m away); and
  - be planted under the same cultivation techniques and growing conditions (e.g. under irrigation) as the Bt-maize.
- Every farmer must plant their own maize refuge (i.e. neighbouring farmers’ non-Bt-maize lands will not serve as refuge).
- Refuge “strip” areas must be at least six rows wide with no crossover of Bt- and non-Bt rows.
- Refuge areas must be positioned in such a manner that some refuge is planted on the outside borders of the Bt-maize.
- Mixing of Bt-maize seed and non-Bt-maize (refuge-in-a-bag) seed is not permissible at any given point.
- Refuge maize must be planted in such a manner that no Bt-plant is more than 400 m away from a refuge maize plant.

- Farmers must regularly monitor and inspect their MON89034 and **PowerCore®** Bt-crops for insect damage and immediately contact their seed representative or agent if stalk borer infestation is observed.

**Compliance with the IRM strategy and particularly with the refuge requirements will be monitored as follows:**

- On-farm compliance monitoring by either an independent third party or Pannar contractor; and
- General compliance monitoring at individual seed company level during farmer visits.

The representative is required to advise the farmer to ensure on-farm compliance with the refuge planting provisions. It is expected that a farmer must clearly mark the Bt-maize and non-Bt-maize so it is easy to identify the area planted. It is of utmost importance that the necessary technology stewardship requirements are observed. In instances where farmers do not comply with these requirements, it will be viewed in a very serious light.

*Detailed guidelines for Bt-maize production are available from your Pannar representative.*

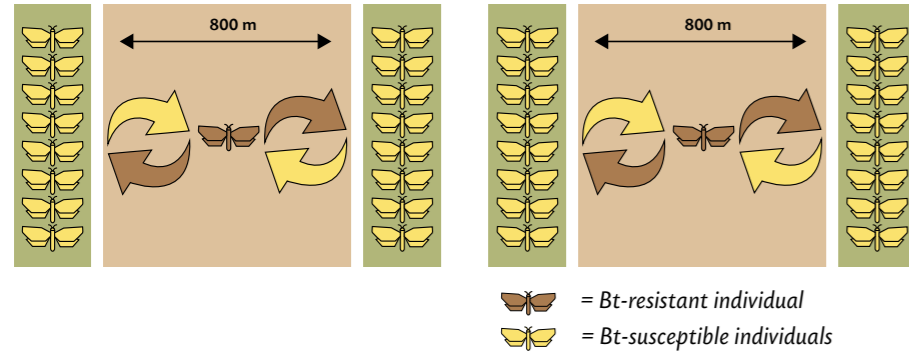


## PLANT THE CORRECT REFUGE AREA FOR BT-MAIZE

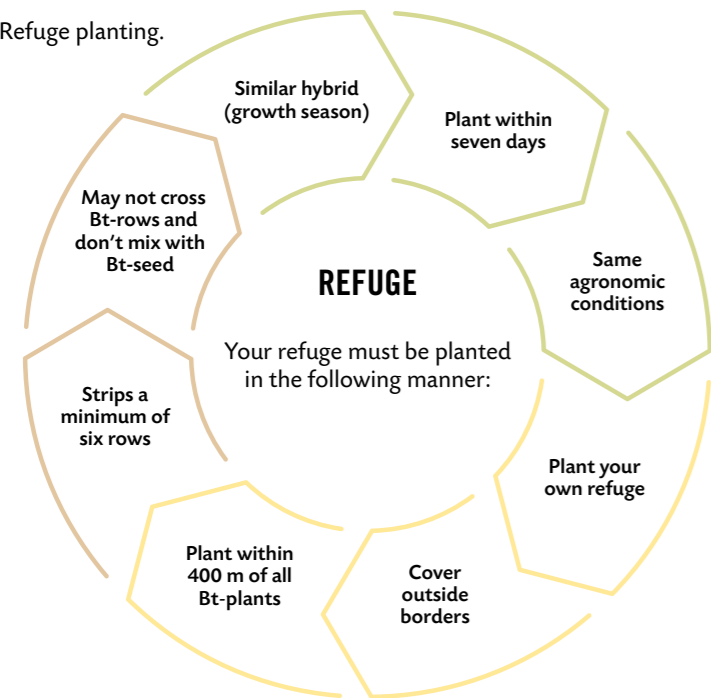
STEP 1: Choose the best option for your farm.

**OPTION A:** 5% non-Bt-maize refuge that may not be treated with an insecticide.

**OPTION B:** 20% non-Bt-maize refuge that may be sprayed (if economic thresholds are met) with a non-Bt-protein-containing insecticide/biopesticide.

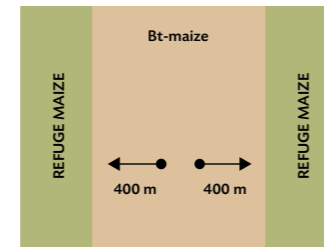


STEP 2: Refuge planting.



## CORRECT LAYOUT OF THE REFUGE AREA

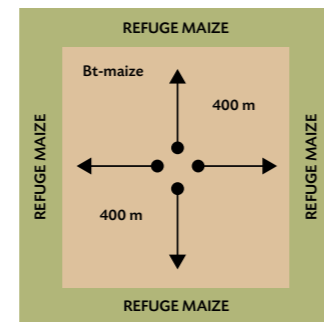
BLOCK POSITIONING



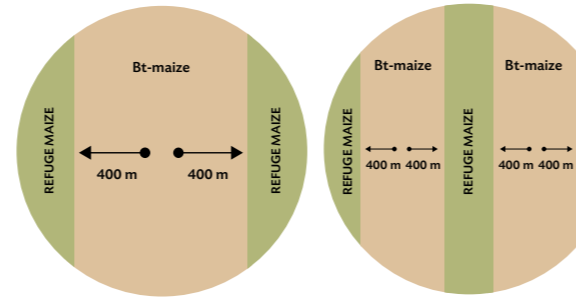
STRIP POSITIONING



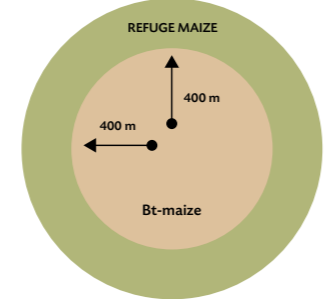
PERIMETER POSITIONING



PIVOT POSITIONING



BORDERING OF PIVOT



Pivot Size	Radius (m)	ha	Minimum number of rows required per row width in m (5% refuge)					
			0.60 m	0.75 m	0.91 m	1.00 m	1.20 m	1.50 m
	178	10	8	6	6	6	6	6
	252	20	11	9	7	6	6	6
	309	30	13	10	9	8	7	6
	357	40	15	12	10	9	8	6
	*399	50	17	13	11	10	8	7
	*437	60	18	15	12	11	9	7
	*472	70	20	16	13	12	10	8
	*505	80	21	17	14	13	11	9
	*535	90	23	18	15	14	11	9
	*564	100	24	19	16	14	12	10
	*592	110	25	20	16	15	12	10
	*618	120	26	21	17	16	13	10

\* User must also plant at least six rows in the centre of the pivot, in addition to the rows on the outside.

"We plant Pannar because it is an established company that has stood the test of time."



## MAKE OUR SUNFLOWER A PART OF YOUR SUCCESS STORY

Plant the top-performing, market-leading sunflower stable in each year's ARC national trials, to suit your preferred production system – from conventional to Pannar® brand sunflower hybrids with the Clearfield® Plus technology. Our hybrids are widely adapted, maintain excellent yield potential and offer exceptional stability under varying conditions. Thea Malan, who plants our sunflower seeds on her family's farm in Potchefstroom, had this to say: "Being able to farm is a privilege, not a right. My father always says you should leave the land in better condition than you find it. Pannar's genetics are the best. That's why we choose Pannar."

FARMER: Thea Malan

FARMING ENTITY: Palmietfontein

AREA: Potchefstroom, North West

CROP: Sunflower

PANNAR HYBRID USED: PAN 7160CLP (Sunflower)

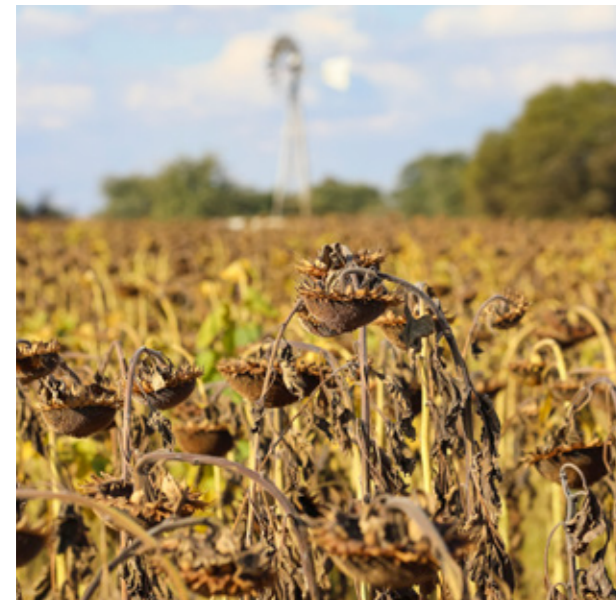
PANNAR REPRESENTATIVE:

Stephan le Roux  
078 612 4065

Potchefstroom/Vereeniging



The Pannar® brand sunflower hybrid package performs well in all sunflower production regions of South Africa. Planting a hybrid package is recommended to strategically manage disease and drought stress. The Pannar package offers options that help you manage the risk of Sclerotinia infection. It is also recommended that farmers stagger their planting dates for enhanced risk management.



### Clearfield® Plus Production System

Pannar markets a range of Pannar® brand sunflowers with the **Clearfield® Plus** technology that compete head-to-head with the conventional hybrids, providing an alternative for weed control and crop rotation. The **Euro-Lightning® Plus** herbicide provides effective post-emergence control of a variety of broadleaf weeds and grasses. Pannar® brand hybrids with the **Clearfield® Plus** technology (suffix CLP) are only registered for the use of **Euro-Lightning® Plus** herbicide (Reg. No. L10316)! Pannar does not support the use of any other post-emergent herbicide on our CLP hybrids that has not been tested or proven in official qualification trials. The inherent herbicide resistance is a natural mutation; the hybrids are not genetically modified, and all sunflower hybrids are GMO-free.



### Clearfield® Plus Stewardship Guidelines

- Always grow Pannar® brand sunflowers with the **Clearfield® Plus** technology in a three-year rotation with other crops (i.e. non-**Clearfield® Plus** wheat/maize/sunflowers):
  - Breaks the cycle of continuous sunflower production and allows use of alternate mode-of-action herbicides and tillage; and
  - Promotes good agronomics by reducing disease and insect pressure in sunflowers.
- Use alternate (non-ALS) mode-of-action herbicides with activity on sunflowers in the rotational crop (i.e. growth regulator or photosynthesis inhibitor):
  - Reduces the selection pressure from continuous dependence on the ALS-inhibiting acetolactate synthase herbicide; and
  - Provides alternate mode-of-action to control volunteer sunflowers with the **Clearfield® Plus** technology and other ALS resistant weeds present.

- Limit the sole reliance on ALS herbicides to no more than two out of four years in the same field:
  - Where applicable, use sequential or tank mix partner herbicides with multiple modes-of-action on target weed species in the sunflower crop and in rotational crops.
- Do not plant sunflowers with the **Clearfield® Plus** technology on fields with a history of heavy wild sunflower infestation:
  - Reduces the threat of outcrossing of sunflowers with the **Clearfield® Plus** technology with wild sunflowers.
- Control wild sunflowers in areas adjacent to sunflower fields with the **Clearfield® Plus** technology (road ditches, field borders and fence rows) through the use of non-ALS herbicides and/or mowing prior to seed set:
  - Minimises the potential of cross-pollination of wild-type sunflowers with sunflowers with the **Clearfield® Plus** technology; and
  - Promotes good sanitation practices by eliminating vectors for insects and disease.

- Control emerged wild sunflowers prior to planting sunflowers with the **Clearfield® Plus** technology with non-ALS burndown herbicides (no-till/min-till) or tillage (conventional-till):
  - Reduces reliance on ALS herbicides for controlling the spread of wild sunflowers; and
  - Eliminates any emerged, naturally occurring biotype that may be resistant to ALS-inhibiting herbicides.

*Clearfield® Plus and Euro-Lightning® Plus are registered trademarks of BASF.*

*Always follow grain marketing, stewardship practices and herbicide label directions. Clearfield® Plus sunflower hybrids are tolerant to Euro-Lightning® Plus herbicide and this is indicated by the letters "CLP" in the seed product code. Other crops, including conventional sunflower hybrids that do not contain the Clearfield® Plus technology or have confirmed imazapyr tolerance will be severely damaged if unregistered imazapyr-based herbicides are applied.*

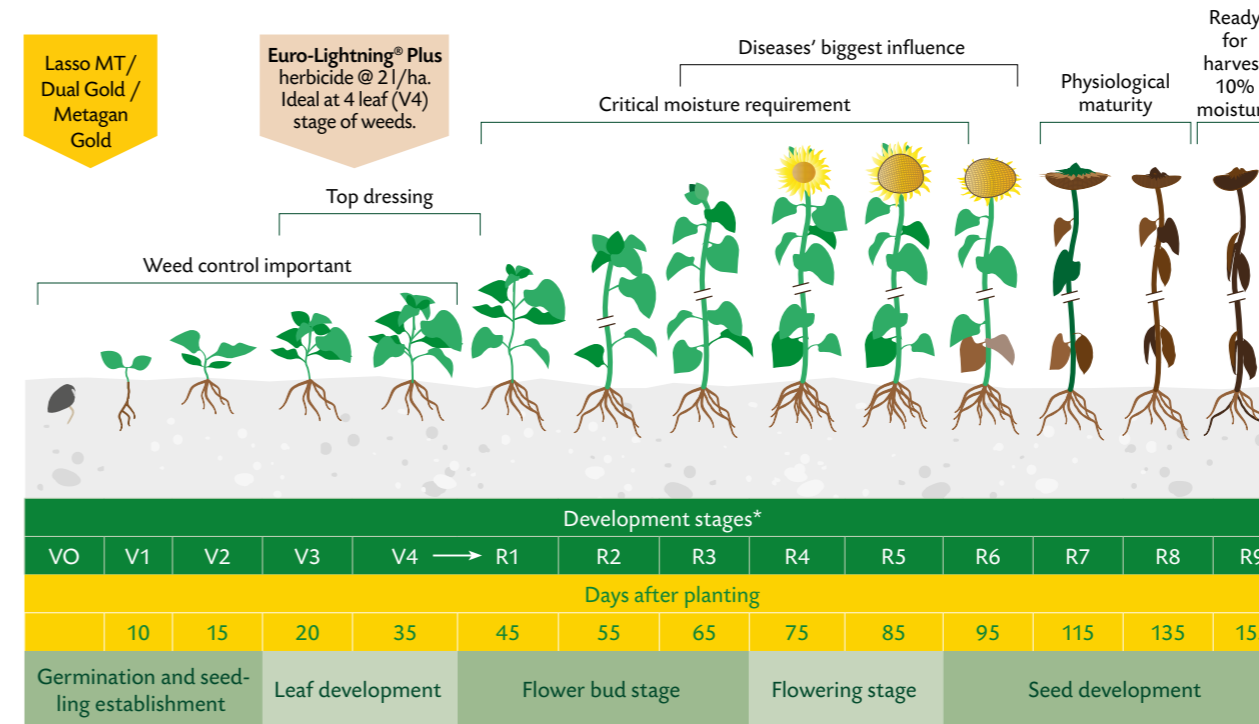
### Clearfield® Plus Herbicide Programme

- For successful control, apply at the two to six leaf stage of weeds.
- Prior to the use of **Euro-Lightning® Plus**, spray tanks, booms and nozzles must be thoroughly cleaned and decontaminated of all previous spray residues.
- Poor water quality: Use only high-quality ammonium sulphate registered for use with herbicides, that does not contain any other components such as added acidifiers or acidifying systems, humic or fulvic acids, additional adjuvants, wetters, stickers, spreaders or conditioning agents, etc.
- Soil application: 150-250 litres (l) water/hectare (ha).

### Euro-Lightning® Plus Herbicide at 2 l/ha

Subsequent Crops	Waiting Period
Pannar® brand sunflowers with the <b>Clearfield® Plus</b> technology	NONE
Wheat	4 months
Maize (all maize-producing areas including irrigation), dry beans and soybeans	9 months
All other crops	20 months

*Valid only if the correct amount of Euro-Lightning® Plus herbicide is applied and a minimum of 350 mm rain falls.*



\* Planting date/climate may influence development.

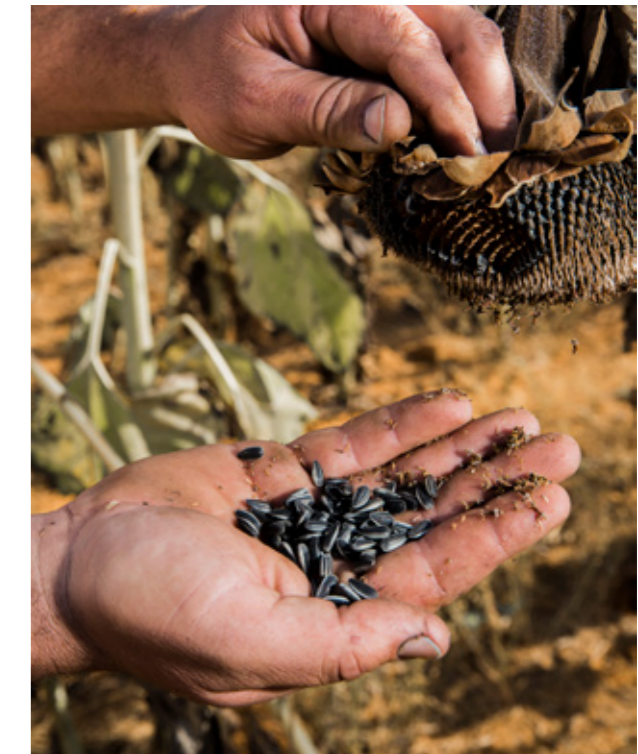
### DIRECTIONS FOR USE: USE ONLY AS DIRECTED General Information:

- Clearfield® Plus** is an internationally registered trademark belonging to BASF and appears in a registered logo including the words "**Clearfield® Plus Production System**".
- The "**Clearfield® Plus Production System**" is a combination of agronomically advanced seeds (natural selection) and custom designed herbicides. The **Clearfield® Plus** name and logo link the seed and herbicide together. These plants are not GMOs.
- The mode of action of **Euro-Lightning® Plus** involves the uptake by the plant foliage, which is followed by translocation to the growth points. After **Euro-Lightning® Plus** application, susceptible weeds may show yellowing and weed growth will stop. Susceptible weeds stop growing and either die or are not competitive with the crop.
- Euro-Lightning® Plus** must only be applied to **Clearfield® Plus** sunflower hybrids after the 2-leaf stage of the crop (ideally at 4 leaves). However, do not apply when the leaf canopy of the crop is too large as this could intercept the spray and prevent the herbicide from reaching the targeted weeds.
- Application should be completed by 32 days after planting.
- The weeds must be between the 2- and 6-leaf stage at application and must be actively growing. They should not be under stress (e.g. drought, waterlogged or nutrient imbalances) during application, as this can limit the uptake and translocation of the product, resulting in poor weed control.
- Adequate soil moisture is important for optimum **Euro-Lightning® Plus** activity.
- In regions where water quality is known to be poor, a flowable (50%) high quality ammonium sulphate, at a 2% dilution can be used to ameliorate the water before adding **Euro-Lightning® Plus**.
- Ensure thorough coverage and wetting of the weeds.
- If needed, a suitable, registered pre- or post-emergent graminicide can be applied prior to, or following the application of **Euro-Lightning® Plus**. **Euro-Lightning® Plus** should never be applied in a tank mix with any other herbicide. Always refer to the applicable product label and apply in the directed manner.

# SUNFLOWER HYBRIDS - AGRONOMIC CHARACTERISTICS

Hybrid	Technology	Relative Maturity*						Key Strengths	General Characteristics						
		Growing Season	Days to 50% Flowering*	HU to 50% Flowering*	Days to Physiological Maturity*	HU to Physiological Maturity*	Days to Harvest*		Yield Probability			Emergence	Drydown	Average Oil Content	Self Fertility
									1.5 t/ha Yield Potential	2.5 t/ha Yield Potential	3.5 t/ha Yield Potential				
PAN 7100	Conventional	Medium Late	66	780	114	1 180	150-155	Maintains top performance in the ARC national trials. A full season three-way cross with good stability and adaptability. Good yield potential and excellent oil content. Recommended as part of the main planting for all sunflower production regions.	5	6	7	8	7	41%	9
PAN 7090	Conventional	Medium Late	67	790	115	1 190	150-155	This three-way cross conventional hybrid has consistently delivered top performance in Pannar P3 trials, demonstrating good yield potential, oil content, stability and adaptability. Recommended as part of the main planting for all sunflower production regions.	8	7	6	8	7	42%	9
PAN 7102CLP	Clearfield® Plus	Medium	64	760	112	1 160	145-150	This single cross hybrid contains the Clearfield® Plus technology, providing an alternative for weed control and crop rotation. In terms of yield potential and stability, it competes on an equal footing with the conventional hybrids. This hybrid is based on PAN 7049 genetics. PAN 7102CLP is slightly quicker than the other medium late hybrids. When planted in a package with other hybrids, its earlier flowering date helps manage the risk of Sclerotinia infection.	4	6	8	9	9	42%	9
PAN 7160CLP	Clearfield® Plus	Medium Late	69	800	116	1 200	150-155	This three-way cross has consistently delivered top performance in the ARC national trials since its introduction to the market. It has extremely good yield potential and reliability at all yield levels. It is renowned for performance and stability. It contains the Clearfield® Plus technology, providing an alternative for weed control and crop rotation. Based on PAN 7100 genetics, it has the same yield potential and stability as the conventional hybrids.	8	8	7	6	7	40%	9
PAN 7180CLP	Clearfield® Plus	Medium Late	70	810	118	1 210	150-155	Based on the genetics of the well-known PAN 7080, but with the benefit of an alternative for weed control and crop rotation provided by the Clearfield® Plus technology. It has excellent yield potential, has maintained a phenomenal performance record, and is well-adapted to all production regions with exceptional stability under varying conditions.	7	7	8	8	9	39%	9

General Characteristics										Disease Risk							Management Recommendations		
Plant Height	Stem Curvature	Neck Strength	Stalk Strength	Root Strength	Stability	Uniformity	Test Weight	Rust Tolerance	Alternaria	Charcoal Rot	Root Sclerotinia	Head Sclerotinia	Phomopsis	Midge Score#	Downy Mildew †	Supplementary Irrigation	Supplementary Irrigation Plant Population per ha ('000)	Dryland Plant Population per ha ('000)	
7	6	7	8	8	8	7	7	5	5	5	5	5	5	5	9	60	35-55		
7	6	7	8	8	8	7	7	5	5	5	5	5	5	5	9	60	35-55		
5	7	8	8	8	8	9	8	5	5	5	5	5	5	5	9	60	35-55		
5	6	7	8	8	8	7	7	5	5	5	5	5	5	5	9	60	35-55		
5	7	8	8	8	8	9	8	5	7	5	5	5	5	5	7	60	35-55		



\*RELATIVE MATURITY  
Varies according to planting date and temperatures during the growing season.

YIELD, CHARACTERISTICS AND MANAGEMENT RATINGS		
9 = Excellent	1 = Poor	◆ = Not Recommended

DISEASE RISK RATINGS	
9-8 = Highly Tolerant	7-6 = Tolerant
5-4 = Moderately Tolerant	3-1 = Susceptible

PLANT HEIGHT		
Short stature is desirable	9 = Short (150 cm)	1 = Tall (210 cm)

STEM CURVATURE		
9 = Erect	8 = Semi-erect (preferred)	7 = Semi-pendulous (preferred)
6 = Pendulous	5 = Fully Pendulous	

#MIDGE SCORE  
To our knowledge, there are no fully tolerant hybrids in this industry. However, differences exist in the ability to tolerate insect pressure. These scores reflect those differences. Heavy midge pressure can cause extensive damage to any hybrid.

†DOWNY MILDEW RACE TOLERANT  
Indicates Downy Mildew tolerance to the races identified.

# MAKE OUR SOYBEANS A PART OF YOUR SUCCESS STORY

Offering a profitable combination of yield potential and exceptional agronomic characteristics, Pannar's soybean cultivars demonstrate stability over different yield potentials, production areas and seasons. We provide a full range of maturity classes covering almost all planting dates and densities. Jacques Botha from Castello Boerdery attests that "PAN 1521R provides the highest yield stability on our farm. It is a top performer in our own trials season after season."

**FARMER:** Jacques Botha  
**FARMING ENTITY:** Syferfontein  
**AREA:** Potchefstroom, North West  
**CROP:** Soybeans  
**PANNAR CULTIVAR USED:** PAN 1521R (Soybean)  
**PANNAR REPRESENTATIVE:** Stephan le Roux  
 078 612 4065  
 Potchefstroom/Vereeniging



"Pannar is a company that looks after the farmers and the quality of seed is consistent."

Farming for the future means building your farming operation on a long-term vision and objectives that will keep you in business for generations. The versatile Pannar® brand soybean package has unparalleled stability at different yield potential levels and over different production regions. It is a proven and safe choice.

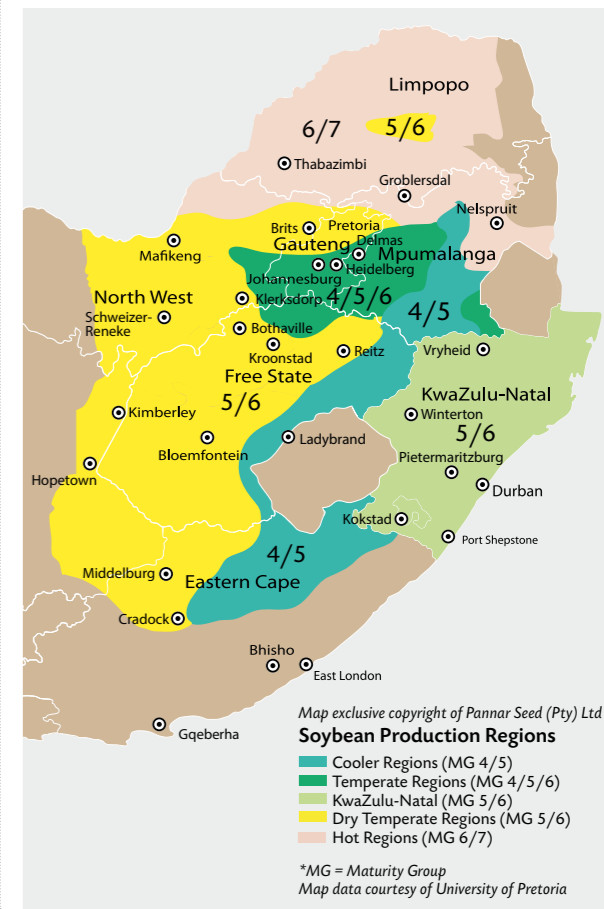
A good rotation programme in your cropping system is one of the practices that will sustain your farming business for the future. Soybeans offer many advantages as a rotation crop, particularly in combination with maize in the medium and high potential areas. Pannar's soybean package is versatile and should give you the best chance to succeed.

Pannar has access to the very best commercial soybean cultivars, either locally bred or accessed from around the world. Pannar's policy is to release the best varieties possible into the South African market, regardless of where they originate. You can always be certain that if a cultivar appears in our range, it has already been thoroughly tested by the most comprehensive evaluation programme in the country.

Pannar has managed to contain the cultivar package to six exceptional products, offering a full range of maturity classes that will cover almost all planting date/production area combinations.

All Pannar cultivars are compatible with Rhizobial Strain Groups A, B, C and D. All yield data is generated using Group A Strain WB74, which means that if a farmer chooses to use a different strain of rhizobium, the yield information and cultivar recommendations provided may vary.

*Always follow grain marketing, stewardship practices and pesticide label directions. Varieties that are glyphosate tolerant (including those designated by the letter "R" in the product code) contain genes that confer tolerance to glyphosate herbicides. Glyphosate herbicides will kill crops that are not tolerant to glyphosate.*



# Glyphosate

Tolerant

## SOYBEAN CULTIVARS - AGRONOMIC CHARACTERISTICS

Cultivar	Technology	Maturity Group (MG)		Relative Number of Days to 50% Flowering*	Relative Number of Days to Harvest Maturity*	Key Strengths	Plant and Seed Characteristics						Recommended Plant Population		
		Early	Late				Standability	Shattering Resistance	Compatibility with Rhizobial Strain Groups#	Growth Type	Pubescence	Flower Colour	Hilum	Early Planting ('000)	Late Planting Date or Narrow Row Widths ('000)
		Early: MG 4.5-5.4 Medium: MG 5.5-6.4 Late: MG 6.5-7.4		Temperate Areas Mid-November Planting Date	Temperate Areas Mid-November Planting Date										
PAN 151R (NEW)	Glyphosate Tolerant	Early	5.0	57	126	This variety hits the maturity sweet-spot. It is quick enough to fit into the early maturity category, but late enough to produce a decent yield. This versatile cultivar will cater for all your early maturity variety needs, be that for the main planting in the cool production areas, or delayed planting after wheat in the temperate production areas.	8	8	A; B; C; D#	Indeterminate	Light Tawny	Purple	Brown	300	450
PAN 1532R	Glyphosate Tolerant	Early	5.3	60	132	Very good, stable performance across all production areas. An excellent irrigation cultivar. First choice for wheat/soybean rotation. Upright plant type, well-adapted to high plant populations and narrow inter-row spacing. Very good standability and harvests easily.	9	9	A; B; C; D#	Indeterminate	Grey	Purple	Buff	350	550
PAN 1521R	Glyphosate Tolerant	Medium	5.7	61	137	If we need to single out a cultivar for preferential planting it is PAN 1521R. Unmatched yield potential and stability (yield probability) over different yield potentials, production areas and seasons. Equally well-suited to cool, temperate and hot regions. This cultivar has a characteristically strong and deeply developed root system, which comes into its own in the water table soils of the western production regions. A winning combination of yield and agronomic characteristics.	9	9	A; B; C; D#	Indeterminate	Grey	Purple	Imperfect Black	300	450
PAN 1555R	Glyphosate Tolerant	Medium	5.7	63	138	A cultivar with high yield potential and good stability across all production areas and seasons. An excellent teammate for PAN 1521R. This variety can withstand sub-optimal conditions better than most, and should be part of your cultivar package particularly where you expect tough soil or climate conditions.	8	9	A; B; C; D#	Indeterminate	Tawny	Purple	Brown	300	450
PAN 1588R	Glyphosate Tolerant	Medium	5.9	64	139	PAN 1588R is a medium maturity cultivar that fits in well with PAN 1521R and PAN 1555R. It is indeterminate with a high yield potential and produces similar results to PAN 1521R. It demonstrates good stability at different yield potential levels, production areas and over different seasons. PAN 1588R can be planted with peace of mind and performs well in dry, hot years. It is an excellent choice for all soybean production areas.	8	9	A; B; C; D#	Indeterminate	Grey	Purple	Imperfect Black	300	450
PAN 1644R	Glyphosate Tolerant	Late	6.7	63	142	The yield leader. It is a good choice for all the temperate production areas (including the North West and north western Free State) and for cultivation under irrigation. The cultivar's strong root system makes it very suitable for the water table soils in the western production areas.	7	8	A; B; C; D#	Indeterminate	Grey	Purple	Imperfect Black	300	380

\* Varies according to planting date and temperatures during the growing season.

RATINGS		DISEASE RATINGS			
9 = Excellent	1 = Poor	9-8 = Highly Tolerant	7-6 = Tolerant	5-4 = Moderately Tolerant	3-1 = Susceptible

RHIZOBIAL STRAIN GROUPS#	
<b>Group A:</b> (Strain WB74) NFX/MicroN/GraphEx(Microbika); Nitro-Liq/RhizoLiq/Signum (MBFI); SoyCap (Soygro); Rhizomax (Intelligro); Stimuplant	<b>Group B:</b> (Strain 532C) HiStick/Rhizoflo (BASF) <b>Group C:</b> (Strain 5080) Biocult Maximise (Nulandis/N Lab) <b>Group D:</b> (Strains USDA 110 and 442) Induct/Induct Pro (MBFI) <b>Group E:</b> (Strain 5079) Elite (MBFI) not tested



"PAN 3497 has proven to be our reliable go to variety. Our wheat quality and yield was superb this past year."

## MAKE OUR WHEAT A PART OF YOUR SUCCESS STORY

Pannar's unbeatable package of high yield potential and widely adapted wheat cultivars will give you the performance you need on your farm. With their strong seedling vigour and good straw strength, standability, stooling capacity and grading characteristics, you can rely on their success. "I started farming in Winterton in 2002 and have been with Pannar from Day 1. Our 21 year relationship is a testimony in itself," says Roland Driemeyer from Rangeland Farming.

**FARMER:** Roland Driemeyer  
**FARMING ENTITY:** Rangeland Farming  
**AREA:** Winterton, KwaZulu-Natal  
**CROP:** Wheat  
**PANNAR CULTIVAR USED:** PAN 3497 (Wheat)  
**PANNAR REPRESENTATIVE:** Dawid le Roux  
 066 394 1737  
 Winterton





The Pannar® brand wheat package has made a major contribution to local wheat production. The breeding programme focuses on improving the yield potential of wheat production in South Africa, as well as the development of cultivars with new sources of tolerance to Russian Wheat Aphid and Rust.

Our options for dryland and irrigation will meet your preferred planting dates and seeding rates. Pannar's dryland package consists of true winter and intermediate wheat cultivars, while the irrigation package boasts PAN 3497, a high potential spring type irrigation cultivar in the medium late growing period class.

Wheat cultivars classified as tolerant to Rust and Russian Wheat Aphid must, as with susceptible cultivars, still be monitored for the occurrence of these pests, since new races/biotypes that have the ability to overcome the tolerance may develop. Factors such as disease pressure, appearance of symptoms at the seedling stage and prevailing climatic conditions may also affect the effectiveness or expression of tolerance.



PICTURED  
Roland Driemeyer  
with his son Jonathan



PICTURED  
Sensele Mbele



## WHEAT CULTIVARS – OPTIMUM PLANTING DATE AND SEEDING RATE RECOMMENDATIONS

### DRYLAND

#### Region 10a North Western Free State

Cultivar	Planting Date	Seeding Rate kg/ha
PAN 3111	21/4 – 20/5	15-20
PAN 3161	7/5 – 10/6	15-20
PAN 3373	15/5 – 20/6	15-20

#### Region 10b South Western Free State

Cultivar	Planting Date	Seeding Rate kg/ha
PAN 3111	21/4 – 15/5	15-20
PAN 3161	7/5 – 31/5	15-20
PAN 3373	15/5 – 10/6	15-20

#### Region 11 Central Free State

Cultivar	Planting Date	Seeding Rate kg/ha
PAN 3111	24/4 – 31/5	15-20
PAN 3161	1/5 – 15/6	15-20
PAN 3373	20/5 – 30/6	15-20

#### Region 12 Eastern Free State

Cultivar	Planting Date	Seeding Rate kg/ha
PAN 3111	1/6 – 30/6	15-30
PAN 3161	1/6 – 20/7	15-30
PAN 3373	20/6 – 15/8	15-30

### IRRIGATION\*

#### Cooler Central Irrigation Areas (Lower Vaal and Orange River Areas)

Cultivar	Planting Date	Seeding Rate kg/ha	Plants/m <sup>2</sup>
PAN 3497	1/6 – 20/7	60-90	120-210

#### Warmer Irrigation Areas (Limpopo)

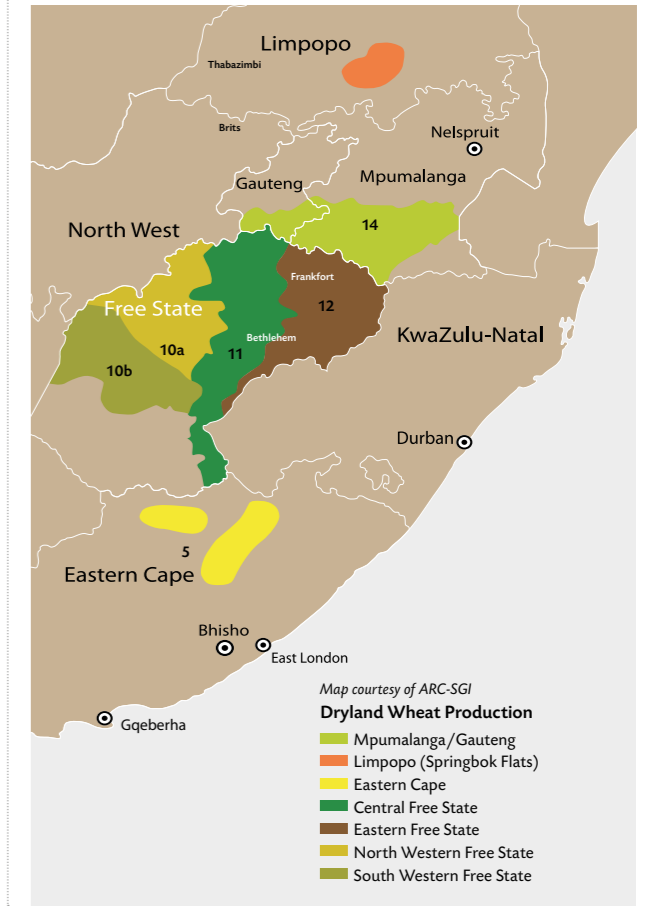
Cultivar	Planting Date	Seeding Rate kg/ha	Plants/m <sup>2</sup>
PAN 3497	25/4 – 25/6	65-90	130-210

#### Eastern Highveld

Cultivar	Planting Date	Seeding Rate kg/ha	Plants/m <sup>2</sup>
PAN 3497	25/6 – 25/7	60-90	120-210

#### KwaZulu-Natal

Cultivar	Planting Date	Seeding Rate kg/ha	Plants/m <sup>2</sup>
PAN 3497	1/6 – 30/6	65-90	130-210



\*More accurate planting date recommendations are provided in the ARC-SGI (Small Grain Institute) Wheat Production Guide. The information provided here only outlines broad guidelines.

# WHEAT CULTIVARS - AGRONOMIC CHARACTERISTICS

\*Planting date/climate may influence data. †Suited to supplementary irrigation.  
 \*\*Data obtained from ARC-Small Grains Institute. #Biotype info: PAN 3161 is resistant against RWASA 1 and 2.  
 \*\*\*Screened for reaction to prevailing pathotypes.

Cultivar	Cold Requirement Classification	Adaptation	Relative Maturity	Days to 50% Flowering*		Days to Physiological Maturity*		Days to Harvest* (<15% moisture)		Key Strengths
				Warmer	Cooler	Warmer	Cooler	Warmer	Cooler	
PAN 3111	True Winter Type	Dryland Free State	Late	152	140	189	176	199	186	Exceptionally wide area adaptability with top performance in the ARC national trials. High yield potential, good aluminium tolerance and excellent standability provided by its shorter straw length. It has a high cold requirement and is more suited to early plantings.
PAN 3161#	True Winter Type	Dryland Free State	Medium Late	149	135	186	173	196	183	Good yield potential and wide area adaptability, exceptionally strong seedling vigour and shorter straw length providing excellent standability. Russian Wheat Aphid tolerance and good aluminium tolerance.
PAN 3373	Intermediate Type	Dryland Free State	Early	138	128	180	170	190	175	PAN 3373 is suited for production in the western and eastern Free State dryland production areas. PAN 3373 replaces PAN 3368 as the flagship intermediate type. This cultivar is ideal for use in supplementary irrigation practices due to its shorter growth period and excellent standability combined with robustness and class-leading tillering capability.
PAN 3497	Spring Type	Irrigation	Medium Late	101	111	151	161	161	171	The medium late grower PAN 3497 is the number one choice for early plantings. It has an excellent yield potential at early plantings and achieves top performance over multiple seasons nationally. It has good tillering capacity, grading characteristics and tolerance to Stripe Rust. The cultivar is susceptible to Leaf Rust.

◆ Insufficient Data    NA: Not applicable

YIELD, CHARACTERISTICS AND MANAGEMENT RATINGS  
 9 = Excellent    1 = Poor

PEST AND DISEASE TOLERANCE RATINGS  
 9-8 = Highly Tolerant    7-6 = Tolerant    5-4 = Moderately Tolerant    3-1 = Susceptible

Yield Potential and Adaptability						Plant Characteristics										Pest and Disease Tolerance					Management Recommendations
Western Cape	Eastern Free State	Central Free State	North Western Free State	South Western Free State	Irrigation	Standability	Hectolitre Mass	Pre-harvest Sprouting Tolerance**	Aluminium Tolerance**	Coleoptile Length	Plant Height	Tillering	Straw Yield	Fusarium Head Blight	Russian Wheat Aphid Tolerance#	Leaf Rust***	Stem Rust***	Yellow Rust***	Suitable for Double Cropping Under Irrigation		
1	8	8	8	8	5†	8	8	5	9	6	5	9	7	1	1	4	8	7	1		
1	8	8	8	8	5†	8	6	3	9	5	4	9	6	1	9	5	8	7	1		
1	8	8	8	8	6†	8	8	3	◆	5	4	9	6	1	◆	8	8	8	5†		
1	1	1	1	1	9	7	7	6	2	2	7	6	5	3	1	3	5	8	9		

MAKE OUR  
GRAIN SORGHUM  
A PART OF  
**YOUR**  
SUCCESS  
STORY

Pannar's sorghum hybrids offer excellent yield potential, wide area adaptability and environmental stability. The agronomically-balanced package offers sweet and bitter grain types, with good malt quality. Here's what Dawie Smallberger has to say about it: "Pannar has good hybrids with consistently stable yields. We know our Pannar sales representatives, and they do the very best for us. If we have a problem on the farm, they come to us. They give us good service."

**FARMER:** Dawie Smallberger

**FARMING ENTITY:** Allendale

**AREA:** Koppies, Free State

**CROP:** Grain Sorghum  
**PANNAR HYBRID USED:** PAN 8625 (Grain Sorghum)

**PANNAR REPRESENTATIVE:**  
Nelie Louw  
083 455 6909  
Parys/Sasolburg



"I have always farmed sorghum. Pannar has good hybrids and is always consistent."

Pannar® brand hybrids are the backbone of grain sorghum production in South Africa. The sorghum breeding programme has been running since 1978 and is one of the oldest in the world. We source our germplasm from a broad pool of diverse genetics and then test it rigorously in our local evaluation programme to ensure it suits local growing conditions.



GRAIN SORGHUM HYBRIDS - AGRONOMIC CHARACTERISTICS

Ratings  
9 = Excellent 1 = Poor

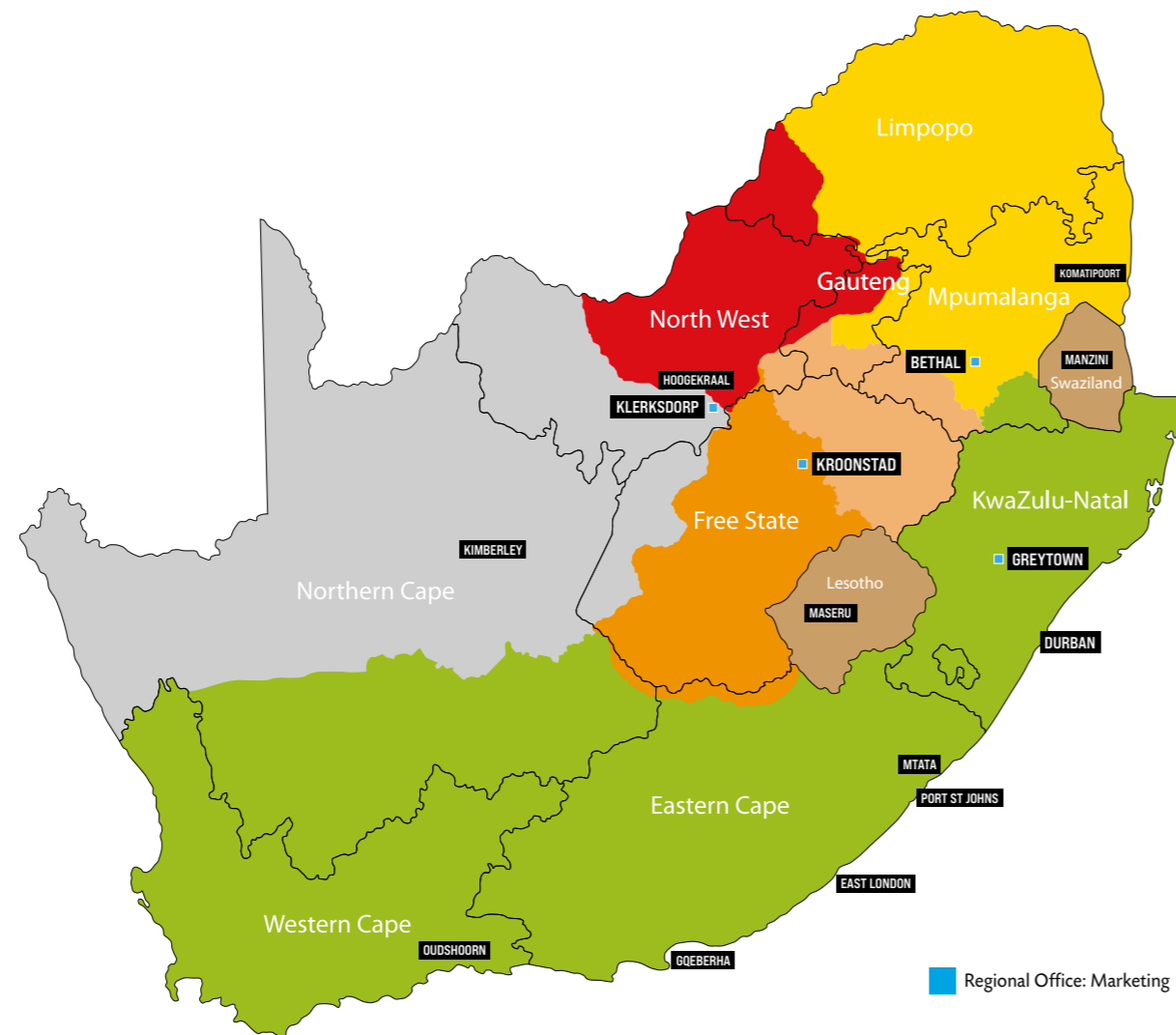
Hybrid	Growing Season Class		Key Strengths	Plant Characteristics									Positioning and Adaptability			Seed Size (seeds/kg)	
	Days to 50% Flowering*	Days to Harvest*		Seedling Vigour	Standability	Head Exertion	Plant Height (cm)	Uniformity	Threshability	Grain Colour	Grading	Head Smut	Heavy Clay Soils	Irrigation	Dryland	Class 1	Class 2
PAN 8816	76-79	135-142	Excellent yield potential and stability. Very uniform growth habit and good standability. Attractive plant type. Large-seeded grain, high bushel weight and good threshability. Classified GM; good malt quality. Good general leaf disease tolerance. Good Head Smut tolerance. Plant where Head Smut problems have occurred in the past. Open head (panicle) facilitates spraying.	Good	8	Good	112-117	8	8	Red	GM	8	✓	✓	✓	25 500	34 000
PAN 8625	79-82	140-145	Outstanding yield performance and agronomic characteristics. Widely adapted. Bitter grain type; classified GH. Good malt quality. Medium plant height with good standability. Good tolerance to Head Smut.	Good	8	Intermediate	120-130	7	6	Brown	GH	7	✓	✓	✓	26 500	33 600

\*Varies according to planting date and temperatures during the growing season. † May change as more data becomes available.























# CONTACT THE PANNAR TEAM























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PRODUCT AGRONOMIST WESTERN PRODUCTION REGION	
	AK Geldenhuys Cell no: 082 496 6058
PRODUCT AGRONOMIST EASTERN PRODUCTION REGION	
	Bruce Paterson Cell no: 060 970 0717

# RSA REGIONAL MAP



# RSA REGIONAL OFFICES







KWAZULU-NATAL AND CAPE					
PO Box 19, Greytown 3250		GPS: S29.082276° E30.601199°		Tel: (033) 413 9500	
AREA MANAGER:	AGRONOMIST:	CISKEI/ EASTERN CAPE	EAST LONDON	KWAZULU-NATAL MIDLANDS	NORTH-EASTERN CAPE
					
Phillip Hollenbach 082 822 6438	Kerry Rowlands 067 415 9533	Phelisa Ndayi 064 850 8097	Duwal Edwards 083 228 5951	Gavin Thomson 076 489 8343	Eugène Marais 083 777 7091
SOUTHERN KWAZULU-NATAL	SWELLENAM	VRYHEID	WINTERTON	ZULULAND	CSR
					
Andrew du Plessis 082 332 4870	Jannie de Bruyn 082 457 2245	Willem Janse van Rensburg 082 973 6671	Dawid le Roux 066 394 1737	Welcome Zulu 082 973 6604	Sabitha Munsami 066 089 6825
GAUTENG, SOUTHERN MPUMALANGA AND EASTERN FREE STATE					
PO Box 426, Kroonstad 9500		GPS: S27.66734° E27.21321°		Tel: 063 711 1513	
AREA MANAGER:	AGRONOMIST:	FRANKFORT/ VILLIERS/HEILBRON	HARRISMITH/ WARDEN/BETHLEHEM	HEIDELBERG/ BALFOUR	PARYS/ SASOLBURG
					
Carl Otto 079 523 9980	Nico Barnard 082 850 1503	Gerrit Nel 073 246 9416	Mechiel Groenewald 066 475 6178	Francois Hamman 071 410 7110	Nelja Louw 083 455 6909
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Stephan le Roux 078 612 4065	Ras Meintjes 066 440 6185	Johan Hamman 083 526 4123	Merylin Solomons 066 474 2609		

EASTERN HIGHVELD AND LIMPOPO					
2nd Street, Bethal 2309		GPS: S26.437613° E29.474836°		Tel: 063 711 1513	
AREA MANAGER:	AGRONOMIST:	MOKOPANE	BETHAL	BRITS/PRETORIA/ THABAZIMBI	CAROLINA
					
Joe Payne 082 456 8120	Gerhard Engelbrecht 082 322 5134	Deon van Heerden 083 283 4251	Willem du Plessis 071 676 2296	Paul Minnaar 083 996 0284	Fanie Roux 082 928 7378
DELMAS/ BRONKHORSTSPRUIT	ERMELO	LYDENBURG	MIDDELBURG	CSR	
					
Bennie de Villiers 076 510 6150	Anina Snyman 082 454 5543	Dawie Jacobs 083 455 7969	Franna Joubert 083 388 2617	Jane Potgieter 083 644 9087	
WESTERN FREE STATE					
PO Box 426, Kroonstad 9500		GPS: S27.66734° E27.21321°		Tel: (056) 216 3013	
AREA MANAGER:	AGRONOMIST:	BLOEMFONTEIN	BOTHAVILLE/ VILJOENSKROON	BOTHAVILLE/ VILJOENSKROON	HOOPSTAD
					
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KROONSTAD/ VILJOENSKROON	SENEKAL/ FICKSBURG	WELKOM	WESSELSBRON	CSR	
					
Piet Delport 082 448 5704	Francis Grimbeek 083 501 4010	Le Roux (Botter) Breytenbach 084 451 9050	Martin Maartens 082 377 3618	Michelle Botha 066 089 8009	







## RSA REGIONAL OFFICES CONTINUED

## NOTES

## NORTH WEST

AREA MANAGER:	AGRONOMIST:	COLIGNY	DELAREYVILLE	KOSTER	LICHTENBURG
					
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Tel: 066 474 2585

MAFIKENG	SANNIESHOF	SCHWEIZER-RENEKE/VRYBURG	VENTERSDORP	WOLMARANSSTAD	CSR
					
Hendrik Mokoto 082 767 7333	Pokkenos Otto 071 552 5511	Jan Erasmus 066 474 2619	Pieter Geldenhuys 082 929 0570	Francois Mellett 082 613 3436	Verusha Naicker 063 711 1513

## NORTHERN CAPE

AGRI-BUSINESS MANAGER:	AGRONOMIST:	HARTSWATER/JAN KEMPDORP	HOPETOWN/DOUGLAS	JACOBSDAL	PRIESKA/UPINGTON
					
Flip Botha 082 650 4525	Klaas van Wyk 072 665 6488	Charlie de Beer 082 856 5430	Riaan Janse van Vuuren 082 782 1287	Fanie Schoeman 083 650 7299	Johannes Fourie 083 260 4182

Tel: 066 474 2585

VANDERKLOOF	CSR
	
Henri Griesel 082 921 5245	Amanda Pullen 066 474 2585



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Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate.

RR2 - Contains the Roundup Ready® Corn 2 trait that provides crop safety for over-the-top applications of labelled glyphosate herbicides when applied according to label directions.

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Soybeans

Glyphosate Tolerant

Always follow grain marketing, stewardship practices and pesticide label directions. Varieties that are glyphosate tolerant (including those designated by the letter "R" in the product code) contain genes that confer tolerance to glyphosate herbicides. Glyphosate herbicides will kill crops that are not tolerant to glyphosate.



Think Before You Farm-Save Seed

Seed is acquired under an agreement that includes the following terms:

Please note that the seeds (i.e. Pannar® brand seed), traits, and technology contained within, as well as the parental lines and progeny, are covered by intellectual property protection, which may include plant variety certificates, plant breeders' rights, confidential information, trade secrets and patents which may include, but are not limited to, patented germplasm, transgenic traits, native traits, transformation technologies, methods of use and breeding methods. The purchase of Pannar® brand seed includes a limited license to produce a single commercial crop in South Africa. This license does not extend to the use of seed of such crop or the progeny thereof for propagation or seed multiplication. Furthermore, the use of such seed or the progeny thereof for propagation or seed multiplication or for production or development of a hybrid or different variety of seed is strictly prohibited.

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BACK COVER PHOTO  
Farmer: Jacques Botha  
Farming Entity: Syferfontein  
Area: Potchefstroom, North West  
Pannar Representative: Stephan le Roux

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Share Your Farming Success Story with Us!

Here's to a year of abundant harvests, prosperous partnerships and flourishing fields. We look forward to being a part of your farming story in 2024 and would love to feature it on our social media channels.

Make sure you include the following tags on your social media posts:  
#TogetherWeFarm #ForYourFuture

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FARMER: Pieter (father) and Dawie (son) Brits  
AREA: Balfour, Gauteng



FARMER: Dawie Smallberger  
AREA: Koppies, Free State



FARMERS: Roland Driemeyer  
AREA: Winterton, KwaZulu-Natal



FARMER: Thea Malan  
AREA: Potchefstroom, North West

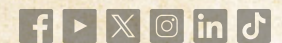


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STORY**

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