

OPV MAIZE

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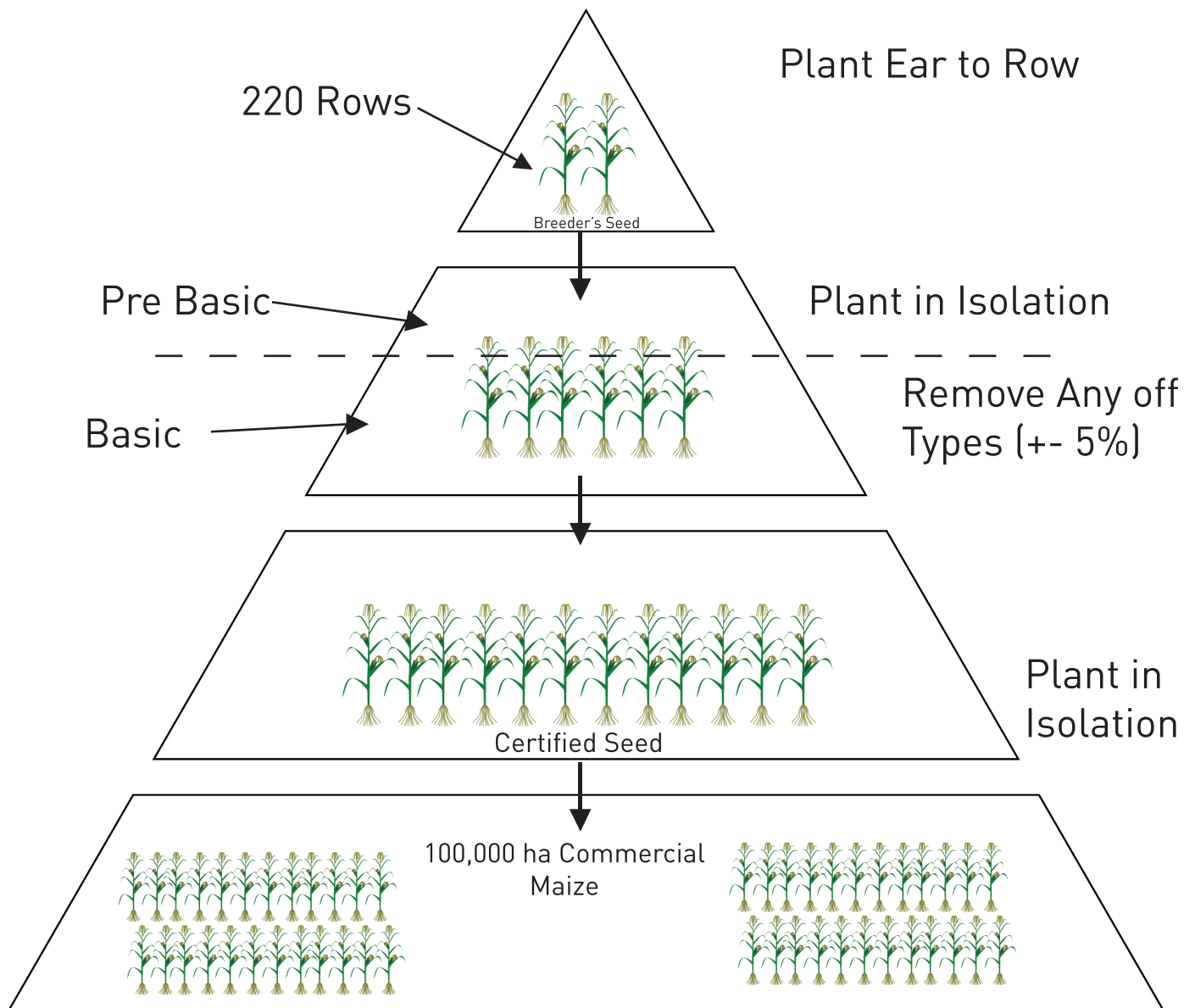
Definition of Synthetic Variety

A Variety which is produced by crossing in all combination a number of inbred lines that combine well with each other. Once synthesized, a synthetic is maintained by open-pollination in isolation is referred as synthetic variety.

Hayas and Garber suggested the commercial utilization of synthetic varieties in Maize in 1919. Synthetic varieties have been of great value in the breeding for those cross – pollinated crop, where pollination control is difficult. E .g Alfalfa, cloves, forage crop species etc. Even in maize improvement synthetic varieties are becoming increasingly important.

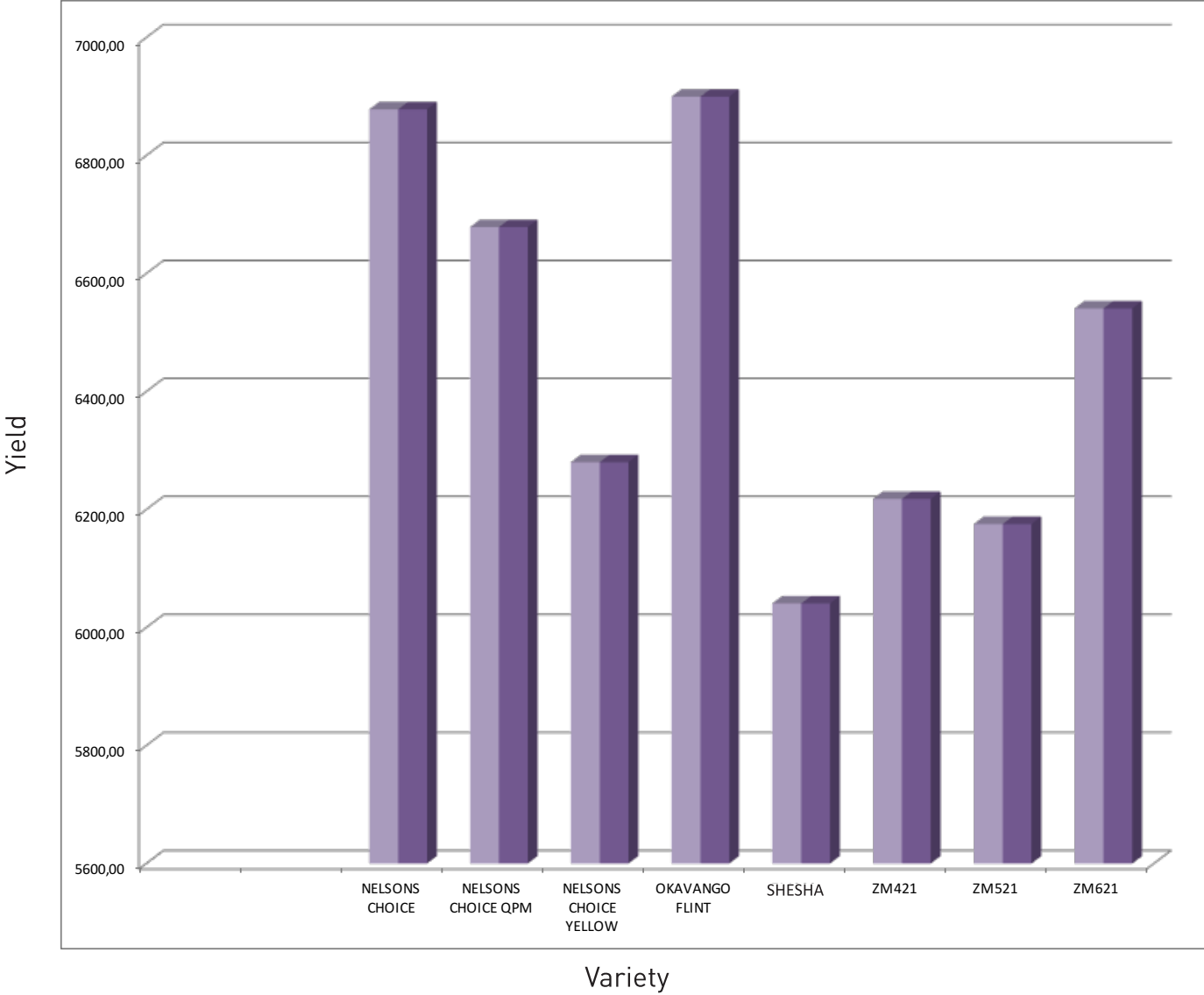
A synthetic variety can be developed from inbreds, clones, and open pollinated varieties. The end products of recurrent selection, which are already tested for GCA are generally, used to constitute synthetic varieties. Generally 5-8 good general combining inbreds are used to constitute a synthetic variety. Synthetic variety consists of several heterozygous initially. Since subsequently the variety is maintained by open pollination, some degree of selfing occurs resulting in fixation of some genes. A result in later generation synthetic variety consists of several heterozygotes. Thus a synthetic variety has a heterogeneous population.

Maintenance of OPV's and Seed Production



OPV YIELD DATA

Clarens (7/4/2012 - 7/6/2013)



YELLOW OPEN POLLINATED MAIZE

OKAVANGO DENT

EARLY

MEDIUM

LATE

It is a Medium maturity yellow Synthetic Open Pollinated Variety (SOPV) with good standability. It has excellent tolerance to Grey leaf spot (GLS), a good tolerance to Leaf blight and Rust, as well as a moderate resistance to Maize streak virus. It is well synchronized for silk emergence and pollen shedding, resulting in a very stable and consistent yield performance.

Grain type is hard and yellow and it has a high yield potential. The variety will yield large cobs and will perform very well under optimal fertilizer and and moisture conditions. Plant populations of 45 000 plants per ha are recommended in high potential areas and 30 000 plants per ha in the marginal regions. This variety has a large plant structure with grain yields of above 8mt/ha possible under non stress conditions.

Recommended for regions:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region
- 4 - KwaZulu Natal Region

- A synthetic open pollinated variety (SOPV)
- Excellent tolerance to Grey Leaf Spot (GLS)
- Medium maturity
- Good resistance to Leaf Blight and Rust



YELLOW OPEN POLLINATED MAIZE

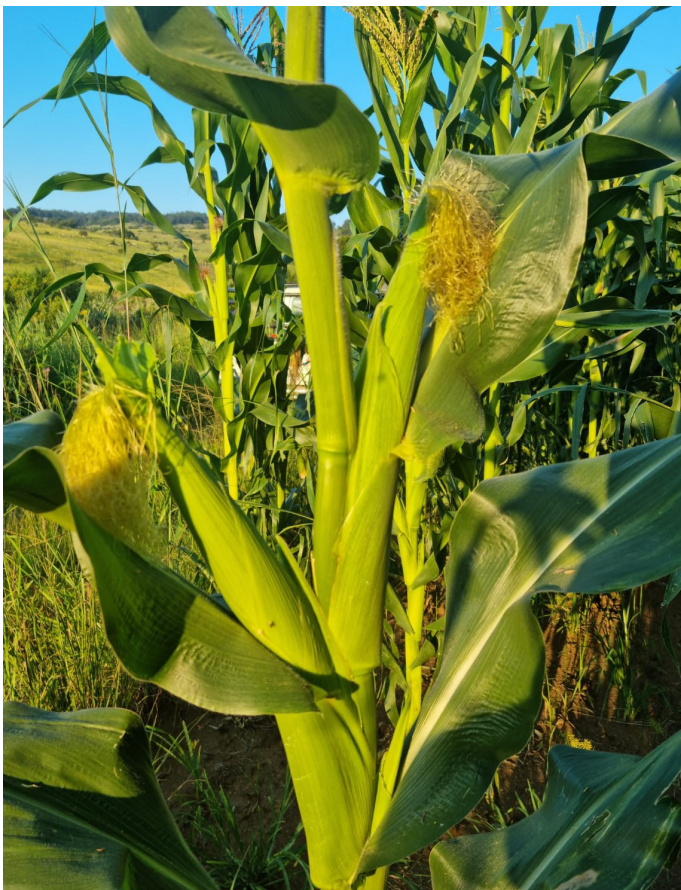
SAHARA

OVERVIEW

Sahara is a very tall plant up to 2.6m that is susceptible to lodging in windy conditions. Very leafy with large cobs exceeding 300 to 350mm in length, well covered by plant material, with red/white silks that emerge around day 70. Very hardy and drought resistant and very high disease tolerance.

Milling quality is average. It grows on most soil types, although sandy soils do lead to increased lodging. Long season maturity at 135-140 days and does have a longer dry down period. Yield potential depends on weather conditions, but a dryland yield of 5 mt is achievable. Yields of up to 8 mt have been achieved in Limpopo under ideal conditions.

- Good tolerance of low fertilizer applications.
- Big kernels (size 5 to 7 is common) with 12-16 rows
- Ready to harvest around 135 days.
- Very hardy



A close-up photograph of a corn cob, showing the green husks and the yellow silk. The image is slightly blurred, focusing on the texture of the plant. The background is a soft, out-of-focus brownish-purple.

BREEDING FOR
CLIMATE CHANGE,
THE ENVIRONMENT
AND THE FARMER



WHITE OPEN POLLINATED MAIZE

SHESHA (SOUTH AFRICA) | **ZM 309** (INTERNATIONALLY)

EARLY

MEDIUM

LATE

SHESHA is a white semi-flint, early maturing OPV with high yield potential in drought prone areas. The OPV has good tolerance to Maize steak virus, Grey leaf spot and Rust. It also has tolerance to drought and low-N stress. SHESHA is recommended for lowland, particularly where drought is a common occurrence. This variety matures earlier than ZM421 and is likely to replace it because of its yield and earliness, advantages to Leaf Blight (Ht), Rust and most common diseases.

It is not recommended in areas with a high incidence of GLS unless a strict preventative spray program is adhered to.

- 110-120 days to mature at mid-altitudes
- 90-110 days in hot, lowlands
- Good tolerance to: MSV, GLS, PLS, Rust and Cercosporazeae-maydis
- Drought Tolerant
- Low-fertility Tolerant



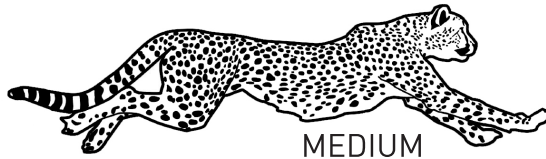
Recommended for regions:

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- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region
- 4 - KwaZulu Natal Region



WHITE OPEN POLLINATED MAIZE

ISILO



EARLY

MEDIUM

LATE

ISILO is a quick maturing, highly resilient variety. It is popular for its consistent yields and highly recommended in the pollination of most other short and medium season cultivars.

Planting may be early or late since drought and heat stress tolerance is high.

ISILO can be used as a green mealie (for domestic use only) or as a grain crop. ISILO is a very popular open pollinated white grain maize seed that has proved its self over many years.

DROUGHT TOLERANCE	EXCELLENT
DISEASE RESISTANCE	EXCELLENT
POTENTIAL YIELD	8t/ha
DAYS TO HARVEST	100 - 110 (Medium - Early)
DAYS TO FLOWER	60-70



MATUBA SELECT (PBR)

EARLY

MEDIUM

LATE

MATUBA SELECT is a quick flint variety that is suitable for coastal regions. It has good Downey mildew tolerance and good storability. It is not as susceptible to weevil damage because it is a flint grain.

- Hard, flint cobs
- Downey mildew tolerance
- Bred for the lowlands of Mozambique and Swaziland





WHITE OPEN POLLINATED MAIZE

ZM1523

EARLY MEDIUM LATE

ZM 523 has an average plant height of 180-185cm with intermediate maturity. It has white semi-dent grain with 14-16 kernel rows per ear. It has a high yield potential and was selected due to tolerance for drought, N stress and low soil pH.

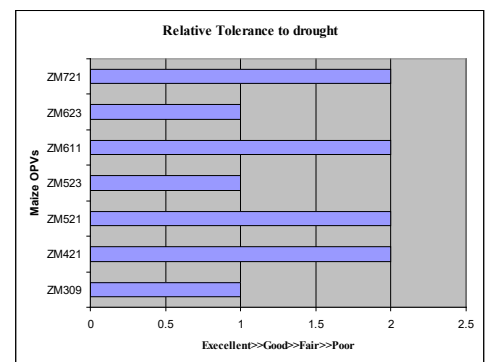
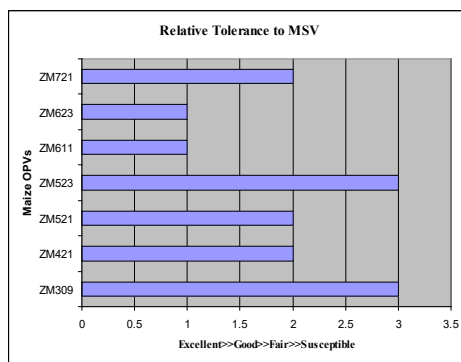
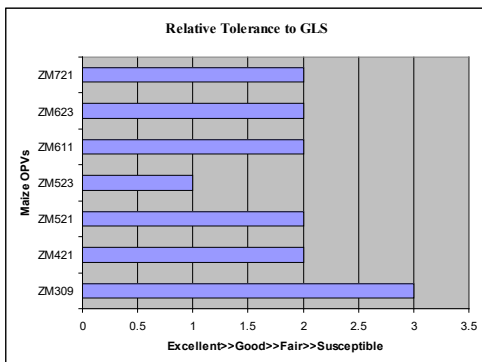
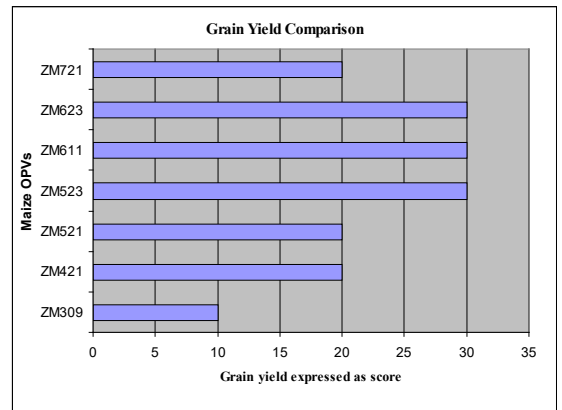
ZM 523 matures at approximately 120-130 days with a grain that is white, semi-flint/semi-dent. It primarily has 14 kernels rows per ear. It has a yeild potential of 6mt/ha which is high when compared to other OPV's of the same maturity.

Tolerant to biotic stresses: moderate to good levels of resistance to maize streak virus, gray leaf spot (*Cercospora zeae-maydis*), common rust (*Puccinia sorghi*) and northern leaf blight (*Exserohilum turcicum*).

Target environment: mid-altitudes and lowlands of eastern and southern Africa.

This variety is comparable to ZM521 but has a higher yield potential, slightly better rust (*P. sorghi*) and ear rot tolerance, and less lodging.

- White Semi-flint/semi-dent
- 120-130 days to maturity
- Good tolerance to MSV, GLS, Leaf Blight and Ear Rot
- Drought Tolerant





WHITE OPEN POLLINATED MAIZE

NELSON'S CHOICE (PBR)

EARLY

MEDIUM

LATE

Empowering the Emerging Farmer

NELSON'S CHOICE is a synthetic open pollinated variety (SOPV) with excellent tolerance to Grey Leaf Spot (GLS) and a medium maturity. Grain type is hard and pure white. It has good stand-ability and well synchronized for silk emergence and pollen shedding. This results in a very stable and consistent yield performance.

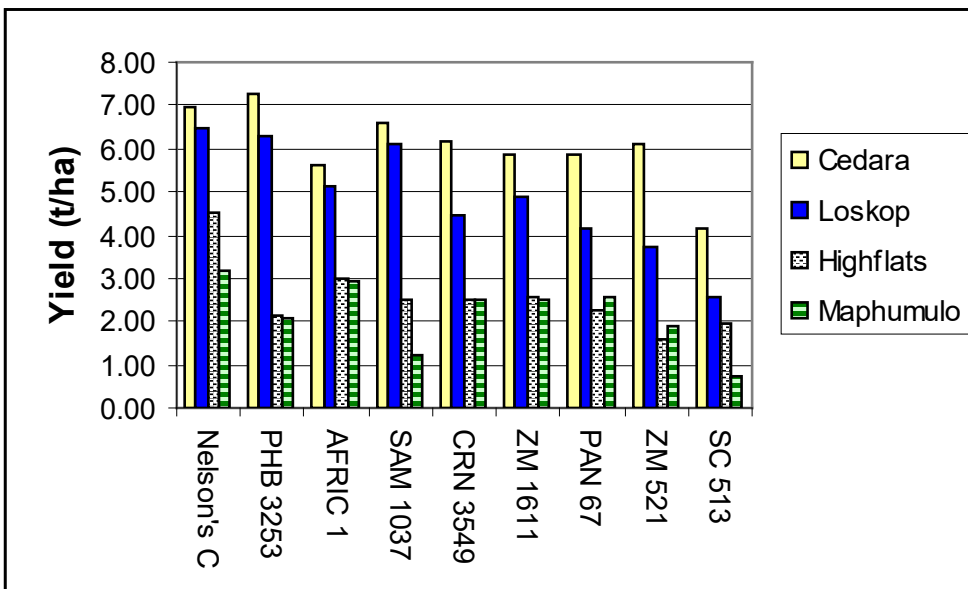
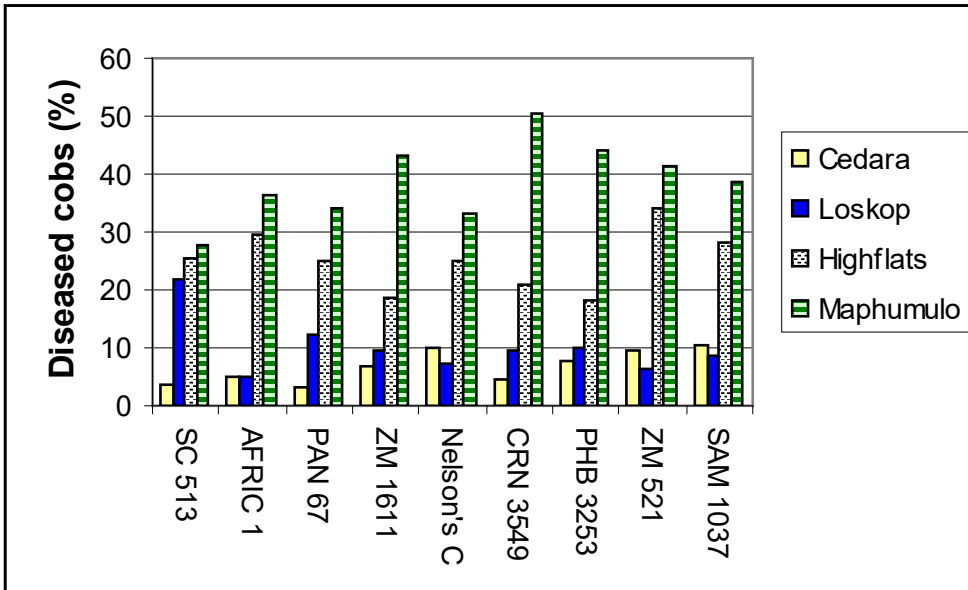
It has good tolerance to Leaf Blight and Rust and is moderately resistant to Maize Steak Virus. It is also known for being an excellent green mealie.

- A synthetic open pollinated variety (SOPV)
- Excellent tolerance to Grey Leaf Spot
- Medium maturity
- Grain type is hard and pure white
- Good stand-ability and well synchronized for silk emergence and pollen shedding. This results in a very stable and consistent yield performance.
- Good tolerance to Leaf Blight and Rust
- Moderate resistance to Maize Streak Virus
- Excellent Green Mielie



Recommended for regions:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region
- 4 - KwaZulu Natal Region





WHITE OPEN POLLINATED MAIZE

INKUNZI

EARLY

MEDIUM

LATE

OVERVIEW

INKUNZI is a high yielding conventional white open pollinated variety which performs well in various climatic conditions.

Days to anthesis: 65 – 80 days

Physiological Maturity 120 -130 days

Displays good tolerance to leaf and cob diseases.

INKUNZI can be used as a multipurpose mielie. It develops good grain and can be used for green mielies as well.

- Good drought tolerance
- Excellent standability
- Medium-Late maturity





WHITE OPEN POLLINATED MAIZE

KALAHARI EARLY PEARL SELECT

EARLY

MEDIUM

LATE



KALAHARI EARLY PEARL is a quick maturing, highly resilient variety. It is popular for its consistent yields and highly recommended in the pollination of most other short and medium season cultivars.

Planting may be early or late since drought and heat stress tolerance is high.

KALAHARI EARLY PEARL can be used as a green mealie (for domestic use only) or as a grain crop. KALAHARI EARLY PEARL is a very popular open pollinated white grain maize seed that has proved its self over many years.

DROUGHT TOLERANCE	EXCELLENT
DISEASE TOLERANCE	GOOD
POTENTIAL YIELD	8t/ha
DAYS TO HARVEST	100 - 110 (Medium - Early)
DAYS TO FLOWER	60-70



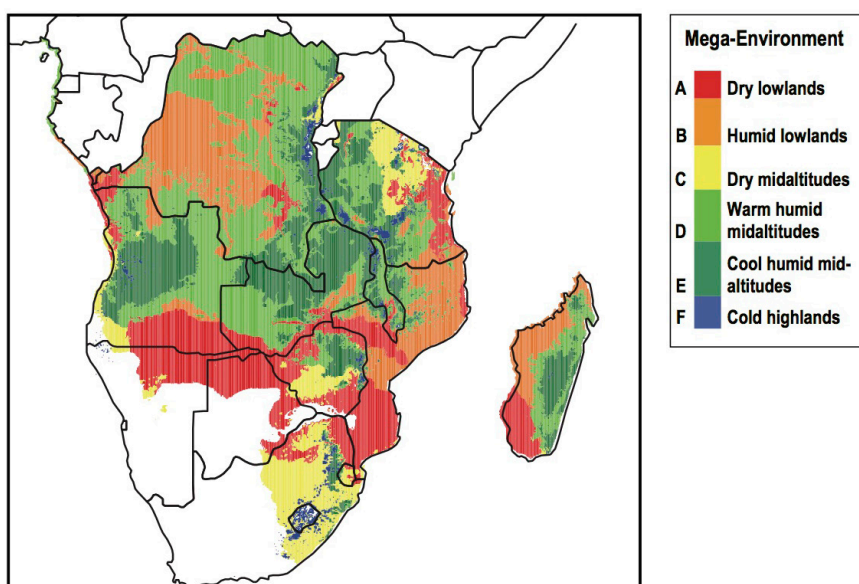
Choosing the right open-pollinated maize in Southern Africa

Maize is widely grown throughout eastern and southern Africa. However, growing conditions differ for rainfall, temperature, the length of the growing season and the occurrence of diseases and pests. As a consequence, different maize varieties are suitable in different parts of eastern and southern Africa

After testing maize varieties under diverse conditions, we developed a guide that should help you to find the right maize variety for your area. Just follow the steps.

Step 1

Determine your maize-mega-environment on the map



Step 2

Decide what maturity is suitable for your area.

Step 3

Decide what traits are important in your area.

- Is drought frequent?
- Are your soils infertile?
- Are your soils acid?
- Are there many leaf diseases?
- Is there a lot of ear rot?
- Do you want the ears to be well covered by the husks?
- Are there problems with lodged plants?

If you answer "yes" to any of these questions, you may want to look for varieties that are tolerant or resistant to these problems.

Step 4

Look at the characteristics of the different varieties.

The colours and numbers mean

1	Very good for this trait
2	Good for this trait
3	Average for this trait
4	Poor for this trait
5	Very poor for this trait

Grain texture has a special legend

Flint	Flint = hard and shiny kernels
S Flint	Semi-flint
SF/SD	Semi-flint/Semi-dent
S Dent	Semi-dent
Dent	Dent = soft kernels

Step 5

Choose varieties with the right maturity and characteristics

Suitability	Maturity	Variety
Suitable for mega-environment A,B and for December/January plantings	Extra early variety: These varieties do not need entire season to mature. Athesis date between 60-63 days and maturity in less than 120 days	KATUMANI S
		MMV400
		POOL 16 SR
		ZM303
		ZM305
Suitable for mega-environment B,C, D and for December plantings	Early to intermediate varieties: These varieties do not need the entire season but will mature within 2 weeks before the rainy season stops. Athesis date between 63-66 days and maturity less between 121-132 days	ZM307
		ZM309
		GRACE
		KITO ST
		MATINDIRI
		MATUBA
		ZM401
		ZM421
		ZM423
		ZM501
ZM521		
ZM523		
ZM525		
Suitable for mega environment C, D, E Requires timely planting because of late maturity	Intermediate to late: These varieties need the entire season. Athesis date is between 66-68 days and maturity between 133- 143 days	CHITIBU
		KEP
		MASIKA
		POP 10
		S01SIWQ
		SUNDWE
		TMV-1 SR
		ZM611
ZM621		
Suitable for mega environment D, E Requires early planting because of late maturity	Very late: These varieties need to be planted very early with the first rains so that they mature within rainy season. Athesis date is above 74 days and maturity above 155 days	KAKHOMER
		KILIMA SR
		MCHOSANJA
		OBATANPA
		POP 25
		STAHA SR
		ZM623
		ZM625
ZM627		
ZM721		
ZM725		
		Variety
		Mozambique
		S
		ZM421
		ZM423
		ZM521
		ZM523
		ZM611
		ZM621
		ZM623
		Obatampa
		Djandza
		Chinaca
		Tsangano
		Sussuma

Origin	Grain yield	Tolerant to			Resistant to				
		Drought	Low soil fertility	Acid soils	Maize streak virus	Gray leaf spot	Leaf blight	Rust	Ear rot
TANZANIA	3	3	5	4	3	3	3	3	2
ZAMBIA	5	5	5		3	3	4	2	1
ZAMBIA	4	5	3	4	2	3	5	4	3
CIMMYT	2	3	3	4	2	2	4	2	3
CIMMYT	2	1	3	3	2	3	3	3	3
CIMMYT	3	1	3	3	2	3	3	3	3
CIMMYT	3	1	2	3	3	3	3	2	2
ECOLINK	3	2	5			3	3	5	4
TANZANIA	4	5	5		3	3	5	4	2
MALAWI	4	4	3		4	2	3	2	4
SEMOC	4	5	3	3	1	4	3	3	2
CIMMYT	3	2	2	3	2	2	3	2	3
CIMMYT	2	2	3	2	2	2	2	3	2
CIMMYT	1	1	2	2	2	2	2	2	3
CIMMYT	3	2	3	4	2	2	3	2	3
CIMMYT	2	2	2	2	2	2	2	2	2
CIMMYT	1	1	2	1	3	1	1	1	3
CIMMYT	1	1	2	2	2	2	3	2	2
MALAWI	3	4	3		3	3	2	3	4
BOTSWANA	4	4	4	2	5	3	2	3	5
MALAWI	3	2	3	3	3	3	3	3	3
ZAMBIA	4	4	4	1	2	3	2	4	3
CIMMYT	4	3	5	3	5	4	4	2	4
MALAWI	4	5	4		2	3	2	3	4
TANZANIA	3	4	4	1	1	5	3	5	3
CIMMYT	1	2	2	1	1	2	1	2	3
CIMMYT	2	2	2	2	3	2	3	2	2
MALAWI	4	4	4		4	2	2	2	4
TANZANIA	3	5	4	3	3	3	3	2	2
MALAWI	5	5	5			5	1	2	3
GHANA	5	4	5	3	3	3	5	4	3
ZAMBIA	5	4	5	3	4	3	4	3	3
TANZANIA	4	5	5	3	1	3	3	4	4
CIMMYT	1	1	1	1	1	2	2	2	3
CIMMYT	2	2	2	2	2	2	2	2	2
CIMMYT	2	2	2	2	3	2	3	2	2
CIMMYT	2	2	2	1	2	2	2	2	1
CIMMYT	1	2	1	2	2	3	2	1	2

South Africa	Tanzania	Zimbabwe
	Situka-1	
ZM1423		
ZM1521	Situka-2	
ZM1523		Chitima
ZM1611		
ZM1623	Vumilia K1	Chariot



WHITE OPV MAIZE TABLE

Cultivar	General characteristics							Disease tolerance	
	Days to 50% tassel	Days to physiological maturity	Growth season	Tillering	Prolificacy	Drydown period	Standability	Cobrot	
Shesha	51 - 60	112 - 135	Short	5	3	Very rapid	2	3	
ZM 421	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
ZM 521	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
ZM 523	65-74	121-135	Medium	3	2	Medium	2	2	
ISILO	63-74	115-125	Early-medium	2	2	Rapid	2	2	
Matuba Select	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
Nelson's Choice	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
Nelson's Choice QPM	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	



YELLOW OPV MAIZE TABLE

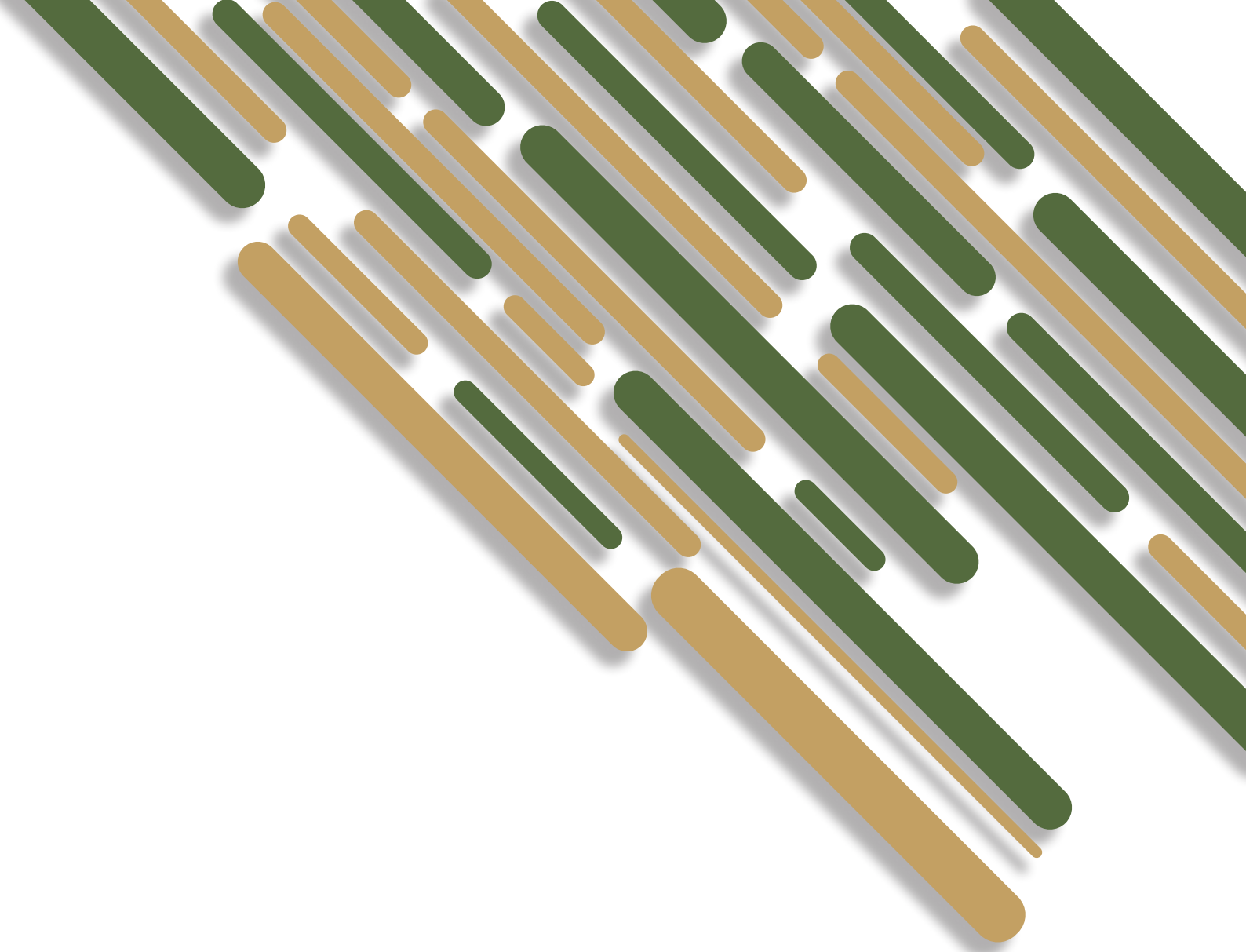
Cultivar	General characteristics							Disease tolerance	
	Days to 50% tassel	Days to physiological maturity	Growth season	Tillering	Prolificacy	Drydown period	Standability	Cobrot	
Okavango	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
Okavango Flint	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	

Recommended for regions:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region
- 4 - KwaZulu Natal Region

					Plant population by region - refer to map of production areas (per 1000 pph)				
	Northern leaf blight	Brown rust	Maize streak virus	Gray leaf spot	Region 1 West	Region 2 Temperate East	Region 3 Cold East	Region 4 KZN	Region 5 Irrigation
	3	2	1	2	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60
	2	3	2	3	18-30	30-40	30-40	30-40	50-60
	2	2	1	3	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60

					Plant population by region - refer to map of production areas (per 1000 pph)				
	Northern leaf blight	Brown rust	Maize streak virus	Gray leaf spot	Region 1 West	Region 2 Temperate East	Region 3 Cold East	Region 4 KZN	Region 5 Irrigation
	2	3	1	1	18-30	30-40	30-40	30-40	50-60
	2	3	1	1	18-30	30-40	30-40	30-40	50-60



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