

OPV MAIZE

2019

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Definition of Synthetic Variety

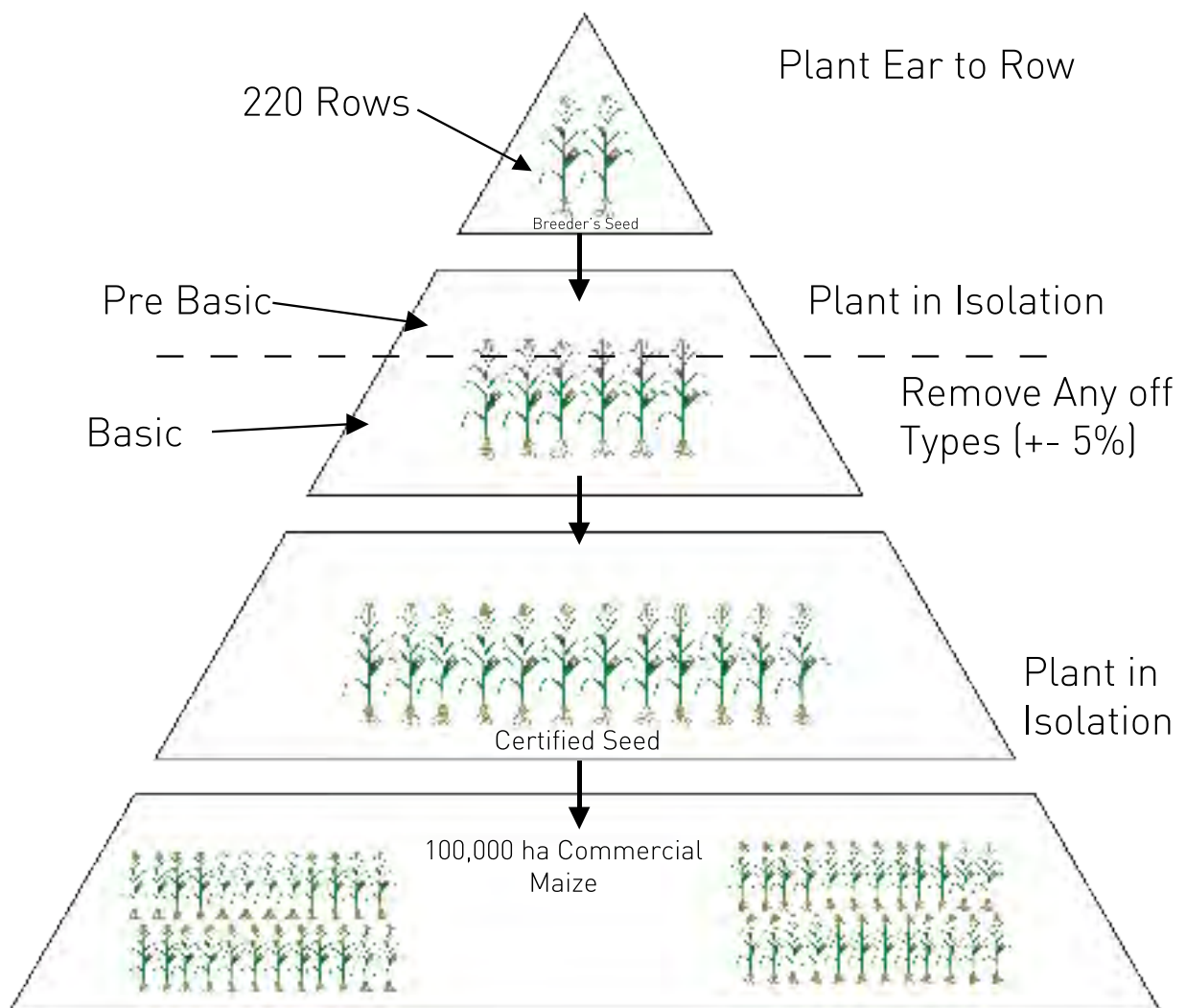
A Variety which is produced by crossing in all combination a number of inbred lines that combine well with each other. Once synthesized, a synthetic is maintained by open-pollination in isolation is referred as synthetic variety.

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.

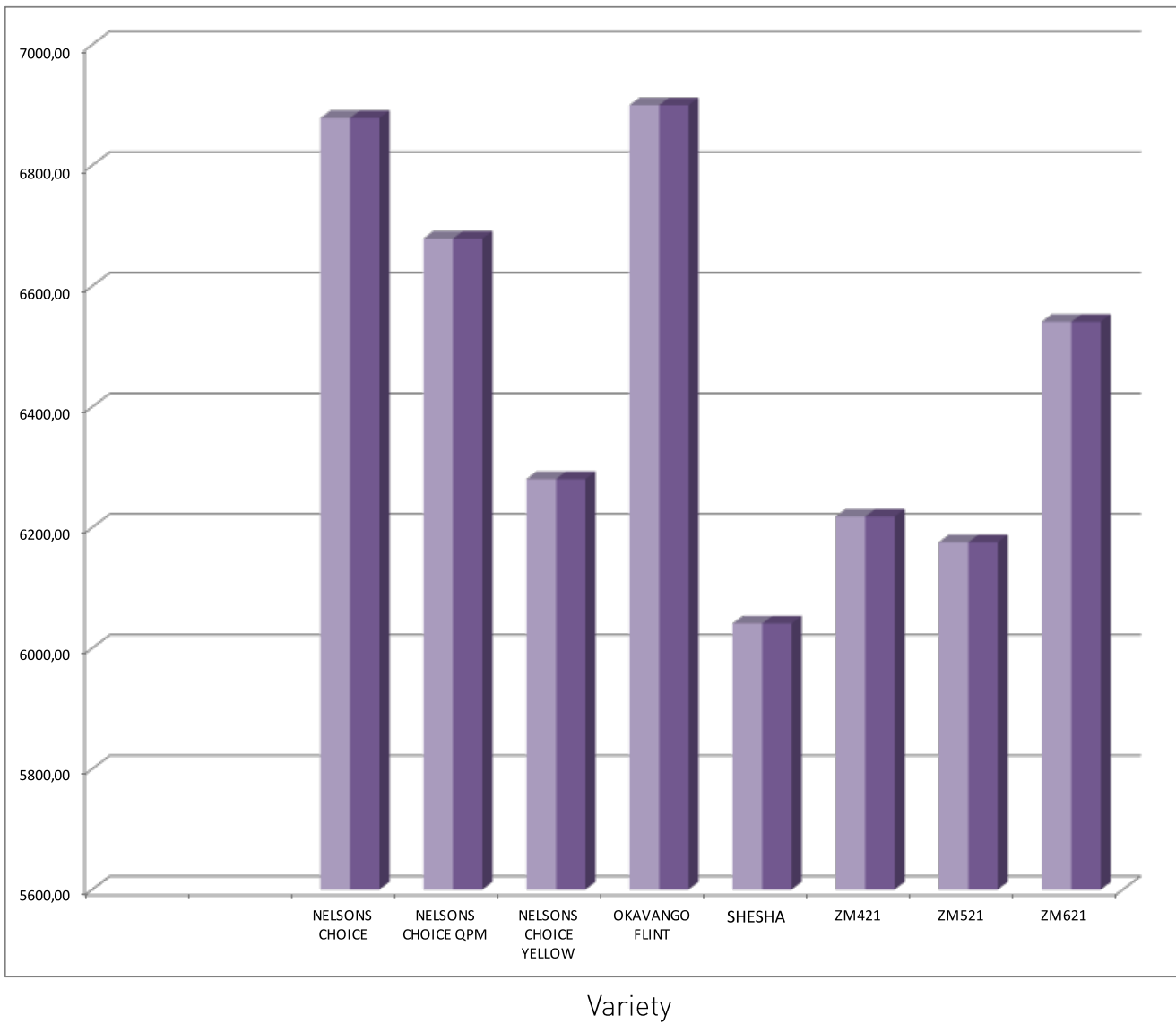


Maintenance of OPV's and Seed Production



OPV YIELD DATA

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



YELLOW OPEN POLLINATED MAIZE

OKAVANGO FLINT (PBR)

EARLY

MEDIUM

LATE

Empowering Emerging Farmers

OKAVANGO FLINT, a medium season yellow cultivar, is popular as a poultry and livestock feed, as well as for commercial production. It is moderately tolerant to Diplodia with large kernels that are dent to flint. OKAVANGO FLINT is suitable for silage maize production: it is very adaptable and well suited to marginal and high production areas and produces large cobs on a tall plant.

- Yellow Maize
- Large Cobs
- Tall and Strong
- Drought Tolerant



Recommended for regions:

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

Table 3:2 Grain yield (t/ha at 12.5 % moisture content) of 68 maize hybrids 2010 - 2011

Site	ART1	ART2	Enterprise	Mvurwi	Mhangura	Mutepatepa	Arcturus	Marondera	Masvingo	Headlands	Beatrice	Chinhoyi	Lion's Den	Raffin-gora	Selous
Altitude (m)	1480	1 480	1 300	1477	1098	1200	1300	1500	1108	1500	1328	1200	1098	1150	1278
Variety															
NELSON CHOICE	9,11	6,96	9,22	10,68	9,16	10,01	10,97	8,08	6,14	9,99	6,67	11,33	12,52	9,37	7,94
CAP9315 OPV	9,62	5,76	8,28	9,93	7,60	10,03	11,10	8,33	4,48	11,01	6,67	11,55	10,69	8,58	8,29
OKAVANGO (Y)	9,45	6,14	7,94	9,34	7,24	9,33	10,49	7,20	5,98	10,03	7,17	11,37	10,26	7,82	9,18
CAP341 NG	10,03	5,84	9	11,80	8,76	10,33	10,76	8,08	5,71	10,94	8,22	11,16	11,55	9,88	8,75
CAP9001	11,99	7,32	9,5	11,94	10,11	12,39	12,55	8,74	5,97	11,54	6,21	12,94	12,45	9,94	9,52
CAP9421	9,26	4,70	7,9	11,61	8,49	9,90	10,38	6,99	6,68	10,32	7,19	12,18	11,59	8,45	8,27
CAP9013	11,60	7,41	10,33	11,32	9,86	12,30	13,16	8,31	5,29	12,60	7,31	12,46	12,29	9,24	10,67
CAP766NG (Y)	11,97	4,22	7,28	11,00	9,64	11,53	10,76	5,76	4,03	10,45	6,64	12,10	10,15	8,24	9,62
CAP9004 (Y)	10,88	7,51	9,1	11,23	8,01	10,52	11,33	6,93	6,41	11,23	8,39	12,77	11,45	8,86	9,72
Trial Mean	11,66	7,66	9,91	12,16	9,63	11,56	12,68	7,82	5,87	12,96	7,37	13,33	13,05	9,94	10,05
STD ERR	0,31	0,45	0,47	0,67	0,40	1,00	0,60	0,54	0,57	0,68	0,53	0,54	0,54	0,60	0,51
Significance	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
5% LSD	0,86	1,27	1,3	1,88	1,16	1,53	1,69	1,52	1,58	1,90	1,48	1,51	1,51	1,67	1,42
C.V (%)	5	10	8	10	7	8	8	12	17	9	12	7	7	10	9

Site	Days to mid-silking				Days to mid-pollen shed				Days to physiological maturity		
	ART1	ART2	Arc-turus	Enter-prise	ART1	ART2	Arc-turus	Enter-prise	ART1	ART2	Enterprise
Altitude (m)	1 480	1 480	1300	1300	1480	1480	1300	1300	1480	1480	1300
Variety											
NELSON CHOICE	71	73	73	71	71	72	72	70	145	134	155
CAP9315 OPV	68	70	69	65	69	71	69	65	134	130	145
OKAVANGO (Y)	71	71	70	70	71	72	70	70	136	131	152
CAP341 NG	68	72	70	69	67	71	70	66	132	126	140
CAP9001	74	73	74	70	75	74	74	70	144	132	148
CAP9421	67	68	70	68	68	70	70	67	134	127	139
CAP9013	71	73	72	70	72	73	72	70	142	132	150
CAP766NG (Y)	71	73	73	71	71	73	73	71	137	129	133
CAP9004 (Y)	67	69	70	66	68	70	70	67	133	130	146
Trial Mean	74	74	74	71	74	74	73	70	145	134	149
STD ERR	0,8	1	1	1	0,8	1	1	1	2	5	3
Significance	***	***	***	***	***	***	***	***	***	*	***
5% LSD	2,25	2	3	3	2,25	2	2	3	6	13	9
C.V (%)	2	2	2	2	2	2	2	2	3	6	4

Chegutu (S)	Chegutu (C)	Conces-sion	Mutare	Kadoma	Mean
1200	1 200	1150	1138	1149	
8,34	8,33	7,22	10,59	5,74	8,92
7,38	7,93	6,85	9,43	7,85	8,57
7,94	6,34	8,23	8,67	6,61	8,34
9,21	8,74	6,76	10,67	6,16	9,12
7,34	10,29	8,40	10,61	7,07	9,84
8,76	7,58	5,56	10,13	6,46	8,62
10,59	7,32	8,45	11,24	7,49	9,96
6,30	6,10	5,49	12,35	7,56	8,56
7,50	6,36	9,08	10,06	7,56	9,25
9,21	8,30	8,61	11,19	7,23	
0,26	0,52	0,57	0,00	0,00	
***	***	***	***	***	
0,74	1,46	1,59	1,00	1,00	
0	11	11	6	10	



YELLOW OPEN POLLINATED MAIZE

NELSON'S CHOICE YELLOW (PBR)

EARLY

MEDIUM

LATE

This variety is produced and marketed exclusively by Capstone Seeds and is protected by Plant Breeders' Rights.

It is a Medium maturity yellow Synthetic Open Pollinated Variety (SOPV) with good standability. It has excellent resistance to Grey leaf spot (GLS), a good resistance 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 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. Nelson's choice yellow would be ideal as a feed for livestock.

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



Recommended for regions:

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



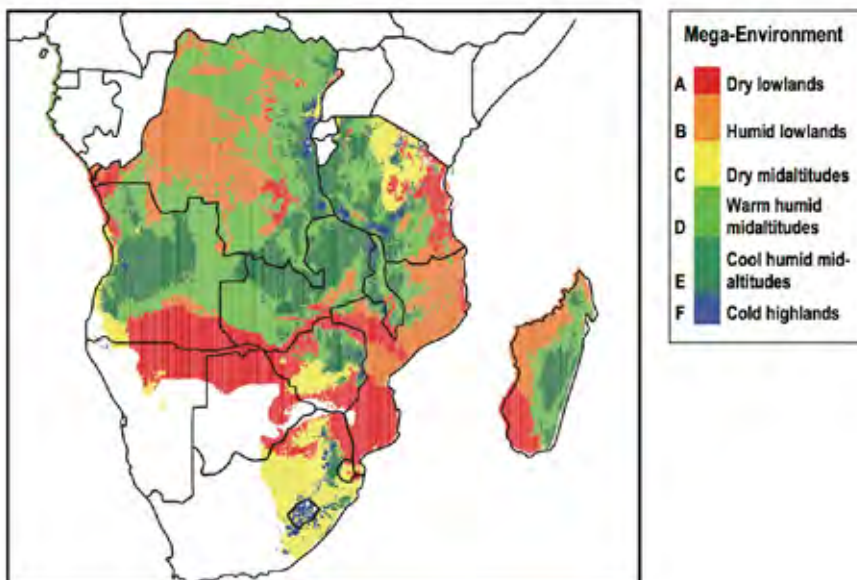
Choosing the right open-pollinated maize in Southern Africa

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. Anthesis 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. Anthesis 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. Anthesis 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. Anthesis date is above 74 days and maturity above 155 days	KAKHOMERA
		KILIMA SR
		MCHOSANJA
		OBATANPA
		POP 25
		STAHA SR
		ZM623
ZM625		
ZM627		
ZM721		
ZM725		
		Variety
		Mozambique
ZM421	Djandza	
ZM423		
ZM521	Chinaca	
ZM523		
ZM611		
ZM621	Tsangano	
ZM623		
Obatampa	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 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 resistance 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 resistance to: MSV, GLS, PLS, Rust and Cercosporazeae-maydis
- Drought Tolerant
- Low-fertility Tolerant



Recommended for regions:

1 Western Region

2 Temperate Eastern Region

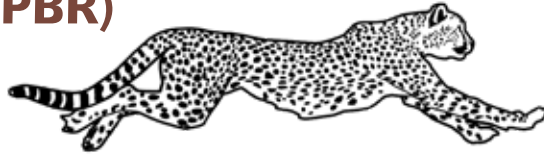
3 Cold Eastern Region

4 KwaZulu-Natal Region



WHITE OPEN POLLINATED MAIZE

ISILO (PBR)



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 or as a grain crop. ISILO is a very popular open pollinated white grain maize seed that has proved its self over many years.

- Has good grain quality for milling
- More flint than dent, good husk cover and tip fill
- Excellent leaf disease tolerance
- Plant height is average with a good cob height in the center of the plant .



MATUBA SELECT (PBR)

EARLY

MEDIUM

LATE

MATUBA SELECT is a quick flint variety that is suitable for coastal regions. It has good Downey mildew resistance 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

ZM 421

ZM 421 is a white semi-flint/semi-dent early maturing variety. It has a good grain yield and drought tolerance. It also has good tolerance to low soil fertility and acid soils.

It has a very good resistance to MSV and a good resistance to GLS, Leaf Blight, Rust and Ear Rot.



- White Semi-flint/semi-dent
- Early maturing
- Good resistance to MSV, GLS, Leaf Blight and Ear Rot
- Drought Tolerant

ZM 521

ZM 521 is a white semi-flint grain maize with excellent GLS resistance and was bred by CIMMYT for Sub-Saharan Africa. It has an intermediate maturity.

ZM 521 yields 30 – 50% more than traditional varieties under drought and low soil fertility. These are two problems that commonly keep smallholder farmers in a cycle of poverty.

The economic return of these improved varieties over seasons, particularly when grown in harsh environments may therefore match that of expensive hybrid seed.

Many varieties were evaluated using “Mother-



Baby Trials” followed by a large number of demonstration plots. Mother-Baby Trials very effectively assess the performance and acceptance of new varieties under smallholder farmers’ conditions.

ZM 521 excelled particularly under drought and low fertility conditions. The grain is more flinty than grain of commercial hybrids. Farmers perceive that flint grain dries more quickly and stores better than dent grain. Women farmers like the amount of flour produced when this flint grain is milled and the good stamp or mealie meal they get when it is pounded

ZM 523

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.

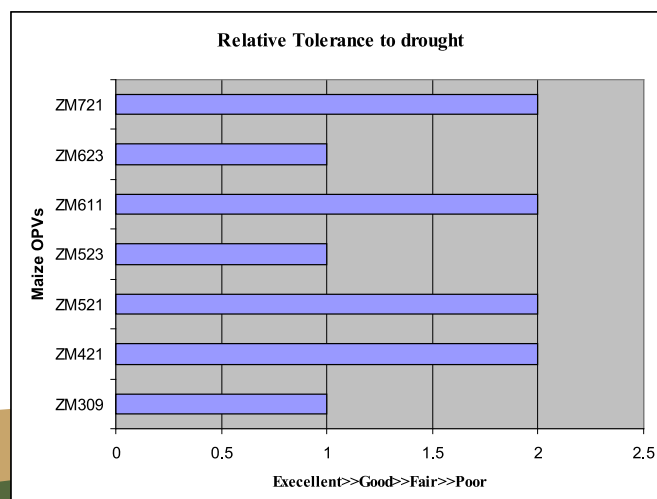
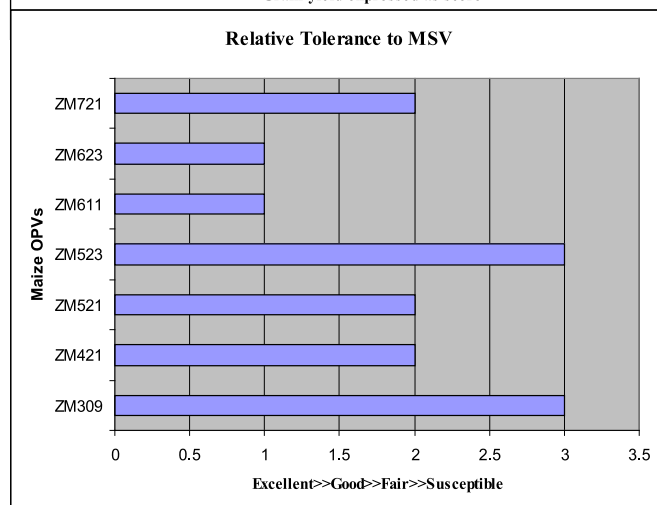
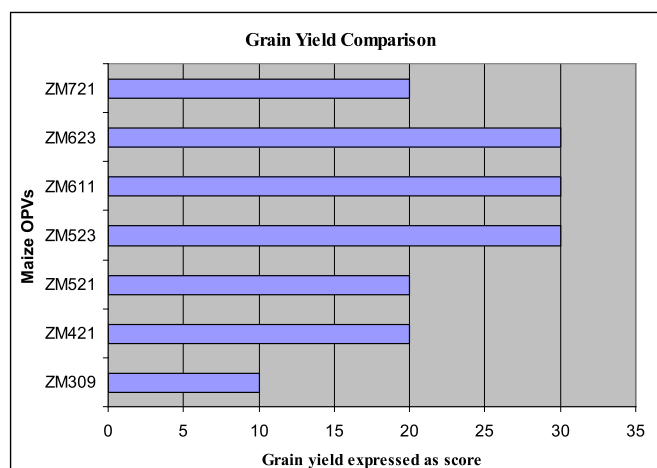
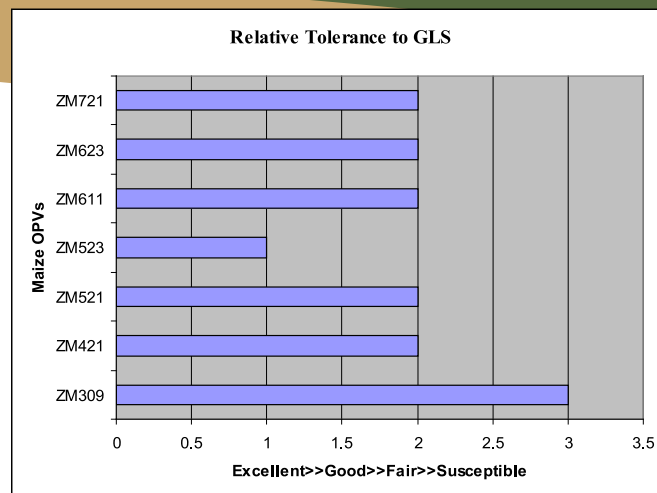
ZM 523 matures at approximately 120-130 days with a grain that is white, semi-flint/semi-dent.



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.

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

Recommended for regions:



- Intermediate maturity: 60 - 65 days to flowering
120 - 130 days to maturity
- White semi-flint grain with a modest frequency of semi-dent kernels
- High yield even under drought and low soil fertility conditions
- Moderate levels of resistance to maize streak virus, grey leaf spot, common rust and northern leaf blight



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

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 resistance, and less lodging.

WHITE OPEN POLLINATED MAIZE

NELSON'S CHOICE (PBR)

EARLY

MEDIUM

LATE

Empowering the Emerging Farmer

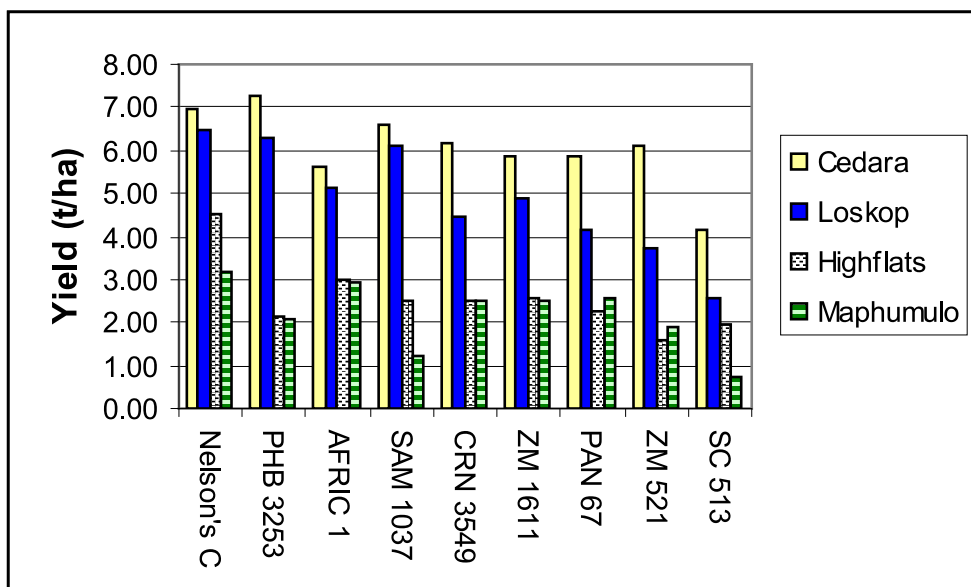
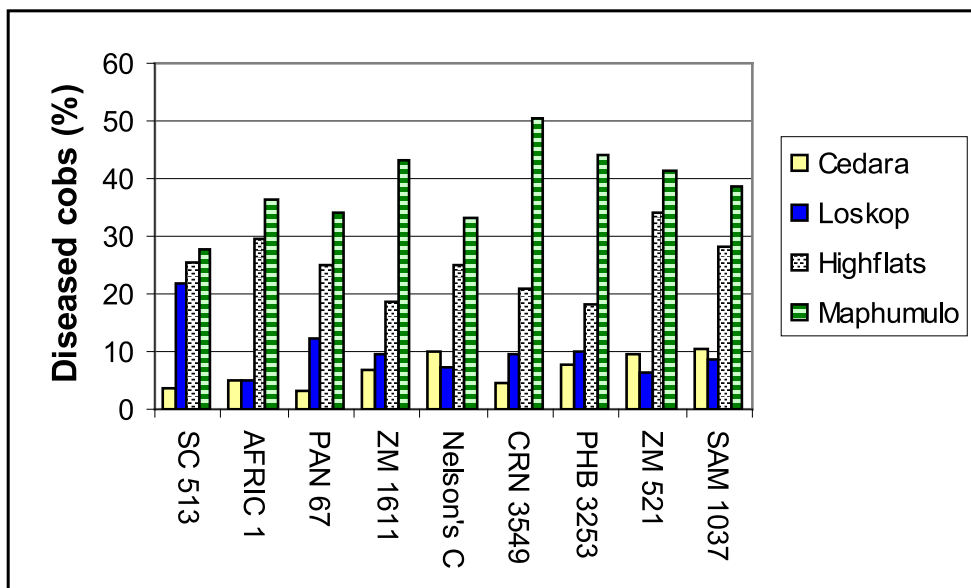
NELSON'S CHOICE is a synthetic open pollinated variety (SOPV) with excellent resistance to Grey Leaf Spot (GLS) and a medium maturity. Grain type is hard and pure white. It has good stand-ability and well synchronized for silk emergence and pollen shedding. This results in a very stable and consistent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

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

- A synthetic open pollinated variety (SOPV)
- Excellent resistance 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 resistance to Leaf Blight and Rust
- Moderate resistance to Maize Streak Virus
- Excellent Green Mielie



Recommended for regions:



WHITE OPEN POLLINATED MAIZE

NELSON'S CHOICE QPM (PBR)

EARLY

MEDIUM

LATE

Quality Protein Maize

This variety has higher yields and up to twice as much usable protein. Consumption of QPM maize can lower risk for malnutrition disorders such as Kwashiorkor.

Quality protein maize grain contains enhanced levels of essential amino acids lysine and tryptophan, along with other characteristics that make more of its protein useful to humans or farm animals.

It has 90% of the nutritive value of milk, and can stem or reverse protein malnutrition.

Resource-poor farmers who cannot afford supplements can use QPM in pig or poultry feeds to increase the animal's growth and productivity.

This QPM variety is indistinguishable from normal maize in appearance and mil and store just as well.

Cobs per plant and ranked yield for the different cultivars at both site

Cultivar	Cobs/plant			Yield		
	Kokstad Sprayed	Cedara Sprayed	Cedara Unsprayed	Kokstad Sprayed	Cedara Sprayed	Cedara Unsprayed
	(number)			(kg/ha)		
Nelsons Choice	1.06	1.05	1.05	9 002 [28]	8 262 [27]	8 543 [23]
Nelsons Choice QPM	1.26	1.06	1.01	9 326 [26]	8 155 [28]	7 839 [28]

Recommended for regions:



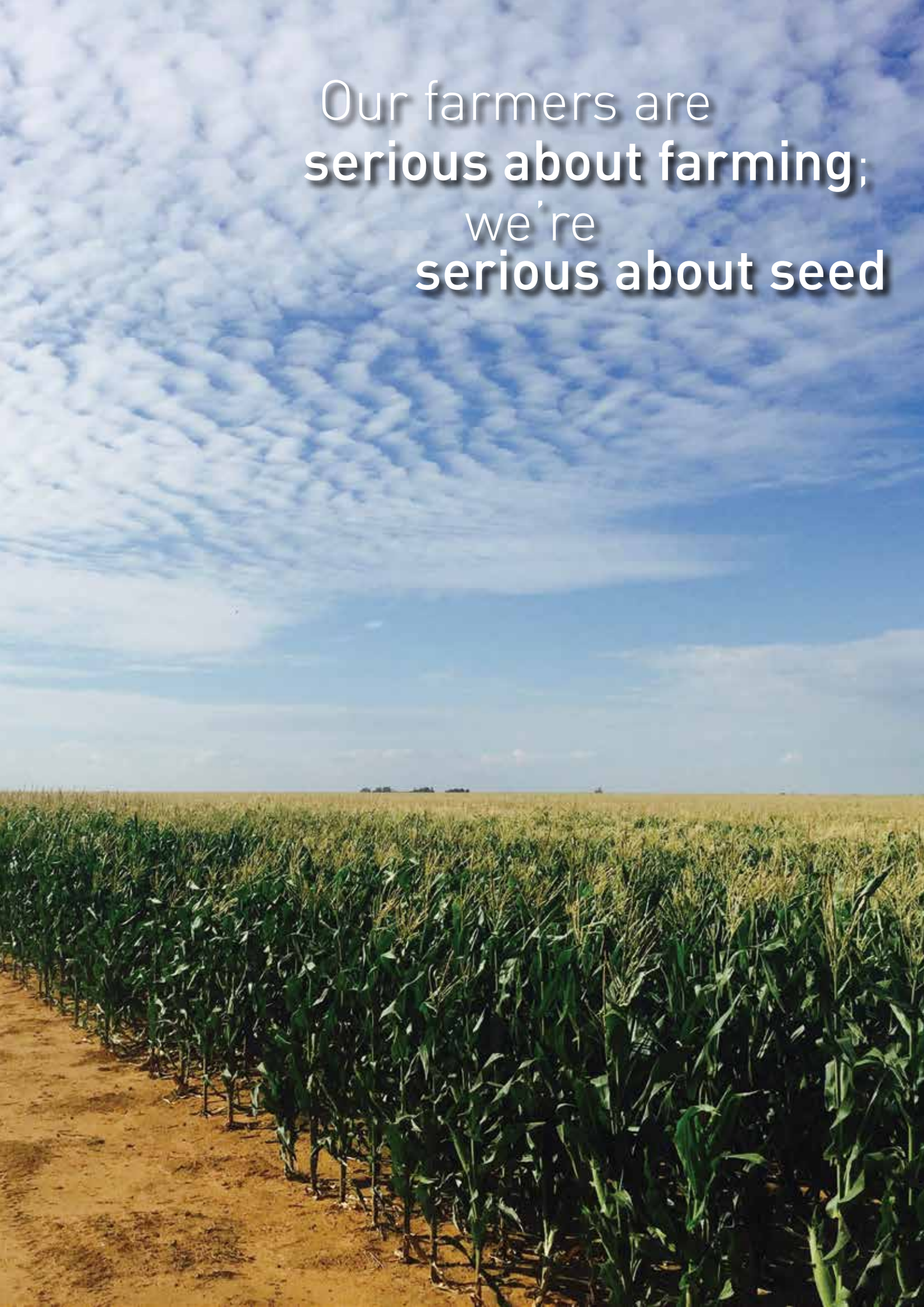
QPM - Quality Protein Maize

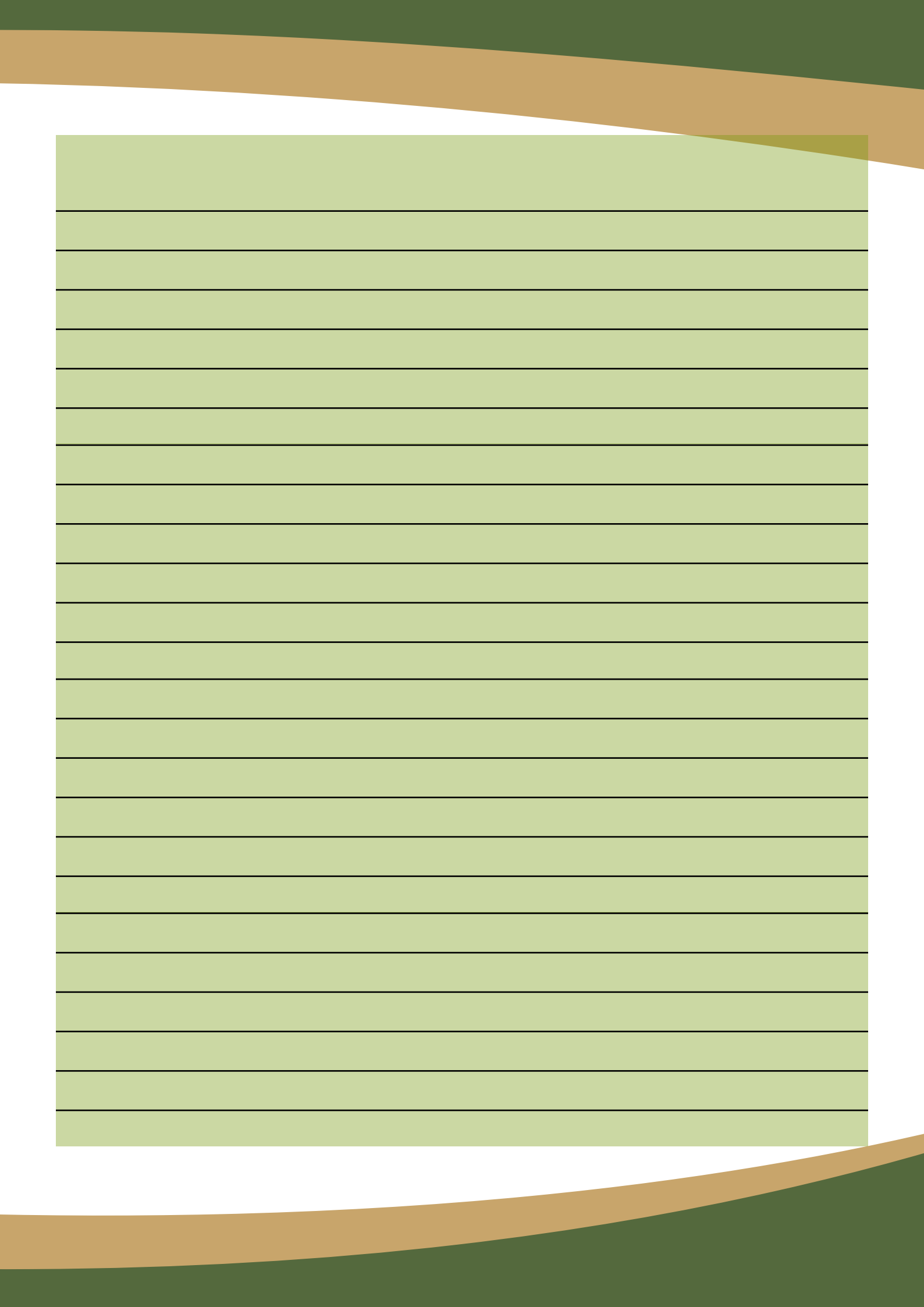
Maize comprises a significant proportion of diets amongst people in southern Africa. Annual consumption rates are in the order of 100 kg/person. Although maize is a good source of energy, it is deficient in two essential amino acids, lysine and tryptophan, and therefore has low quality protein. Thus, diets predominated by normal maize without supplementing with other protein sources may lead to protein malnutrition. Severe protein deficiency in children may cause kwashiorkor, a disease sometimes called "weaning disease" when infants are weaned onto maize-based diets without supplementation with high quality protein sources. Many rural and urban poor people cannot afford high quality protein diets and subsist mostly on maize and vegetables.

Quality Protein Maize (QPM), developed by normal maize breeding procedures, contains nearly twice the amount of lysine and tryptophan than normal maize. Therefore, QPM may help to reduce malnutrition, improve body immunity and overall health in people that are constrained by economic and environmental factors to access expensive sources of protein such as meat, fish, eggs, milk and legumes. QPM has nearly 90% the nutritional value of skim milk, and so the inclusion of QPM in daily food will contribute to improved health. It has been estimated by researchers that children consuming about 100 g of QPM per day would receive sufficient lysine for healthy growth.

Quality Protein Maize also has promise in monogastric animal diets. Numerous studies have shown that poultry and pigs had greater growth rates when fed QPM than normal maize. Consequently, it is expected that rural small-holder pig and poultry producers would significantly benefit from the use of QPM, especially where access to high quality protein supplements is lacking.

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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	
Kalahari Early Pearl Select	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	
Nelson's Choice Yellow	65 - 74	121 - 135	Medium	3	1	Very slow	3	2	
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	



1
Western Region



2
Temperate Eastern Region



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



1
Western Region



2
Temperate Eastern Region

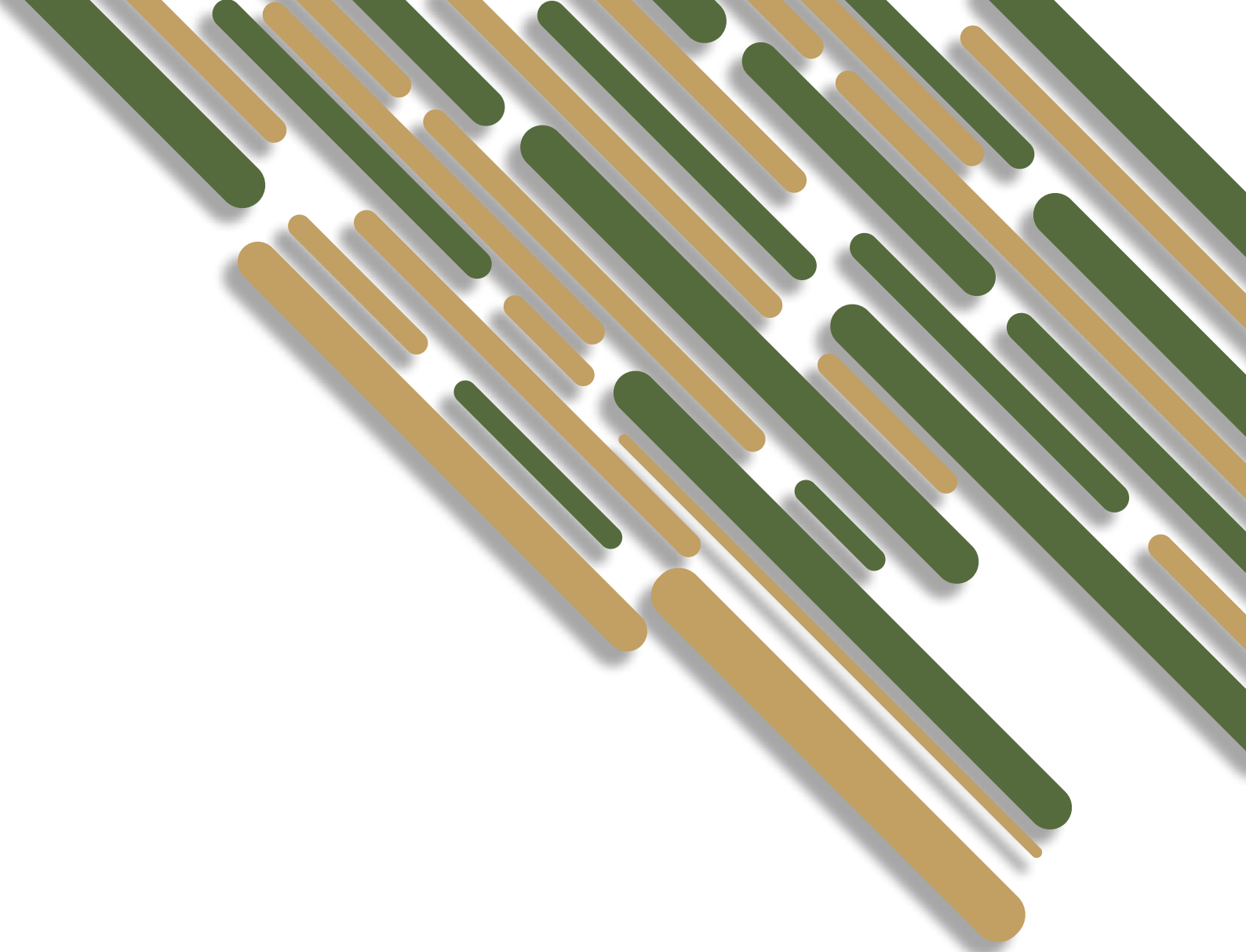


3
Cold Eastern Region



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
	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



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