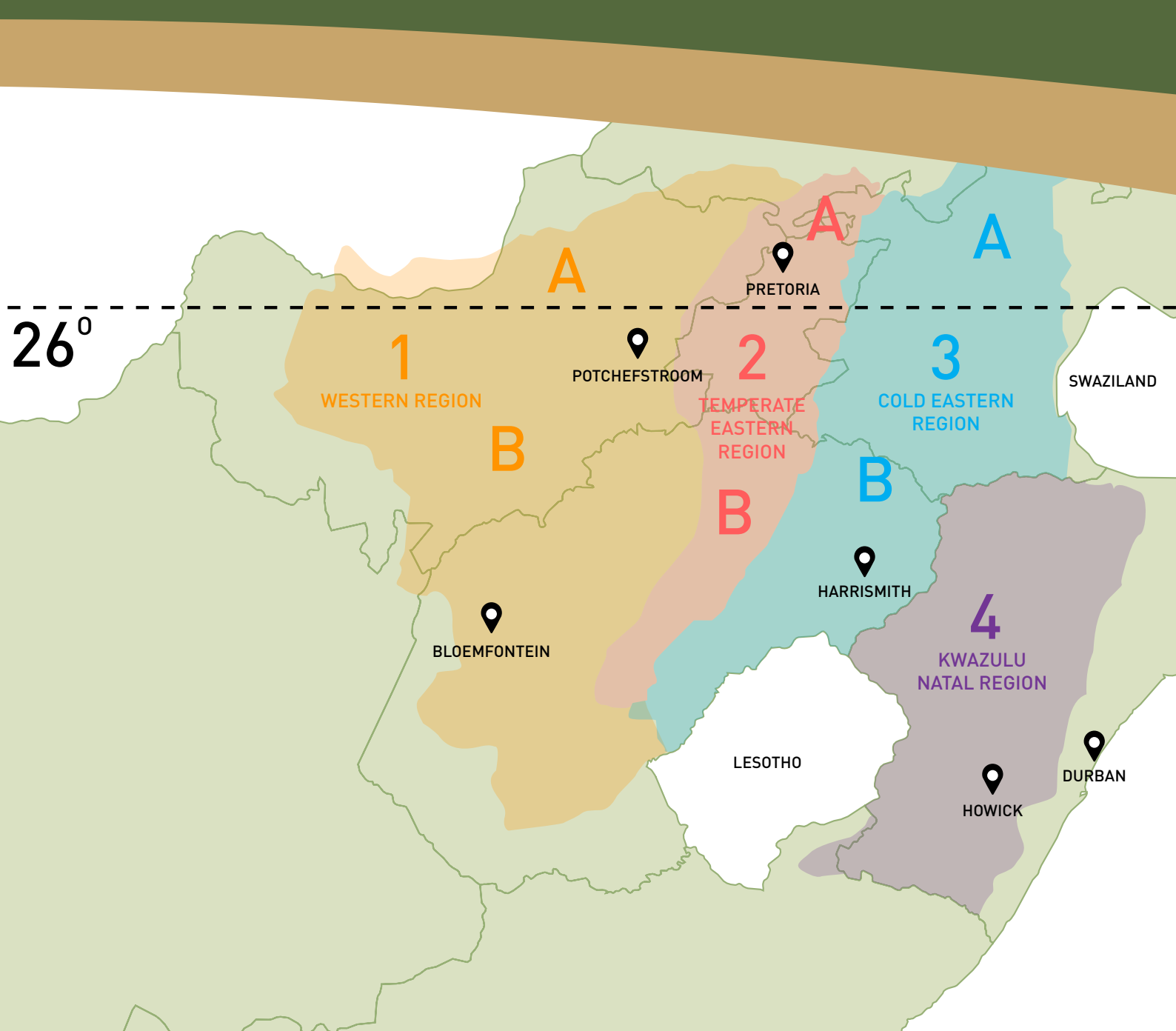


CAPSTONE
Seeds

HYBRID MAIZE

CONTENTS

YELLOW HYBRID MAIZE	4
CAP 122-60.....	
CAP 9444 NG	
CAP 9-522.....	
CAP 9-646.....	
CAP 9006 Q.....	
CAP 9-262 RRBT	
CAP 9-242 RRBT	
CAP 9-504 RRBT	
WHITE HYBRID MAIZE	16
CAP 9705	
CAP 9-619.....	
CAP 9021	
CAP 9001	
CAP 9503	
CAP 9-745.....	
CAP 341 NG.....	
CAP 9-569 RRBT	
SILAGE MAIZE	28
YELLOW HYBRID MAIZE TABLE	32
WHITE HYBRID MAIZE TABLE	34



MAIZE REGIONS - SOUTH AFRICA

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



YELLOW HYBRID MAIZE

CAP 122-60

EARLY

MEDIUM

LATE

Excellent silage or grain crop

CAP 122-60 is a medium maturity, highly prolific hybrid. This hybrid has long cylindrical cobs. It is a semi dent grain type. CAP 122-60 gives high grain yields of up to 15mt/ ha when planted under high population density of between 70 000 - 100 000 plants per hectare making a suitable variety in high potential areas under irrigation. It is also suitable for low potential areas under low plant populations due to its' prolificacy.

This hybrid should be sprayed for foliar diseases as it is susceptible. It responds well to fertilizer in high potential areas of the main farming regions of South Africa. CAP 122-60 has 120 -130 days to physiological maturity in warmer areas and 134 days in cooler regions.

CAP122-60 James Kean; Mearns Farm

- In the 2014/15 season at Mearns farm in Mooi River, yield estimates that were factored for moisture gave grain yield of 13.2MT/ha.
- The plants had two large cobs at a plant population of 55 000 plants per ha

CAP122-60 Jaco Brandt; Western Cape – Piketberg

- Jaco planted 80 000 plants per ha ,ended up with only about 70 000 due to water problems
- Piketburg is in a winter rainfall area so he to planted under pivot in Oct 2012
- A fungicide was sprayed on the crop
- Harvested at the beginning of May and got 12MT and was happy with the grain quality.
- Jaco felt that CAP 122-60 would have done better had it not been exposed to moisture.

- Responds well to fertilizers, irrigation and high pop. density
- Tolerant to Helminthosporium Blight
- Tolerant to Stalk Rot
- Susceptible to Grey leaf spot and rust
- Grain yield of 15 MT/ha has been achieved under pivot
- Silage yield potential of up to +75 MT/ha
- Good protein quality



2015 Kokstad silage trials

Cultivar	Plant population (number/ha)	Dry matter (%)	Dry matter yield
CAP 122-60	66 667	55.90	22 417
CAP 9001	64 444	48.72	18 372
CAP 9004	66 667	47.67	25 312
CAP 9021	66 111	47.75	24 474
Mean	65 833	55.41	22 833
LSD (P≤ 0.05)	3 211.2	6.9	4 965
CV (%)	3.0	7.6	13.2

Recommended for regions:

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



Location	Hybrid	Multiple Years Yield Data Combined	Head to Head DKC73-72	Head to Head CRN3505
Beinsvlei	CAP122-60	5041,5	107,3801917	130,5073777
Kroonstad	CAP122-60	6897,5	109,8677923	106,6816178
Kriel	CAP122-60	7576,67	99,20132676	
Delmas	CAP122-60	7867	94,63870399	
Clarens	CAP122-60	8316,75	99,29558547	
Middelburg	CAP122-60	6597	98,74270319	117,1758437
Winterton	CAP122-60	6876,67	99,51760733	102,2654043

SONOP BOERDERY - RIETZ 2013/14

Cultivars	Plant Population	Moisture (%)	Yield (kg)	Index
CAP122-60	28900	14.7	4757.90	128.71
PAN6Q308	28900	15	4702.62	127.21
P2432R	28900	14.8	4427.24	119.76
PAN4P228	28900	13.1	3807.50	103.00
P1973B	28900	13.9	3762.85	101.79
DKC73-74BR	28900	13.3	3731.59	100.95
LS8524R	28900	12.5	3520.47	95.23
US9610	28900	14.2	3370.55	91.18
LS8538R	28900	13.3	3278.18	88.68
DKC73-70B	28900	13.2	3059.64	82.77
US9690	28900	14.5	3035.77	82.12
KKS8410BR	28900	14	2960.41	80.08
US9620	28900	13	2875.44	77.79
KKS84412B	28900	13.9	2868.09	77.59
LS8532B	28900	12.5	2602.96	70.41
LS8536B	28900	13.5	2450.49	66.29
US9640	28900	12.9	2276.97	61.60
US9670	28900	14.6	2274.29	61.52
LS8518	28900	14.8	1988.61	53.80

YELLOW HYBRID MAIZE

CAP 9444 NG

EARLY

MEDIUM

LATE

Yellow semi flint hybrid

CAP 9444 NG medium maturing variety with approximately 120 - 135 days to maturity. It is moderately resistant to Leaf Blight (H.t), Rust and most common maize diseases. CAP 9444 NG is not recommended in areas with a high incidence of G.L.S., unless a strict preventative spray program is adhered to.

CAP 9444 NG will tolerate stressful drought conditions and has a yield potential of above 8 tons per hectare, out yielding major competitors in trials to date.

CAP 9444 NG can have up to 3 cobs per plant and produces good yields even under low plant populations. A cob can have 16 rows with 45 kernels per row (720 kernels per cob).

Trials yield per hectare:

- 8 tons of dry land with a 45 000 PS
- 11 tons of irrigation up to 80 000 PS

- Very good standability
- Very dense grain
- High shelling percentage
- Good husk cover
- Hard orange grain



Recommended for regions:

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

Silage Yeild from Midmar-KZN					
KULTIVAR	TON/HA	VOG %	% PROEF	% KONTROLE	RANK
DKC 64-78BR	63.86	54.71	115.40	125.01	1
CAP 9444	60.05	65.88	108.51	117.55	2
PAN 4P-116	59.76	61.54	108.00	116.99	3
PAN 4P-316B	58.36	64.90	105.48	114.26	4
LS 8524R	56.81	64.75	102.67	111.21	5
PAN 3P-502R	56.75	63.80	102.57	111.10	6
PHB 1615R	54.66	60.00	98.77	107.00	7
DKC 62-80BR	53.60	61.04	96.87	104.94	8
DKC 66-32B	51.39	55.92	92.87	100.60	9
LS 8527BR	49.21	61.07	88.93	96.33	10

NELSON'S GENETICS TRIALS, BETHLEHEM 2010					
PLOTSIZE:11.52M*M. POP:27 800 PL/HA. PLANT 19 NOVEMBER 2010					
YPERC=YIELD as % of (DKC80-10,PHB32W71 & KKS4410)/3					
Variety	Yield	Rank	YPERC	Moisture %	Tillers
DKC80-10	8.14	1	113	11.83	17
CAP9444	7.11	3	99	14.32	20
CAP122-60	7.05	4	98	13.94	8
PHB32W71	6.95	5	97	12.62	14
KKS4410	6.47	11	90	12.55	9
KKS4520	6.18	16	86	14.99	4
MEAN	6.35		100	14.68	14





YELLOW HYBRID MAIZE

CAP 9-522

EARLY

MEDIUM

LATE

Excellent silage or grain crop

CAP9-522 is a medium maturity, prolific hybrid. This hybrid has long cylindrical cobs with a semi dent grain. The hybrid has large plants.

CAP9-522 can give high grain yields of up to 15mt/ha when planted under high population density of between 60 000 - 70 000 plants per hectare making a suitable variety in higher potential areas under irrigation. It is also suitable for low potential areas under low plant populations due to its' prolificacy.

This hybrid has reasonably good tolerance to diseases. It responds well to fertilizer in high potential areas of the main farming regions of South Africa. CAP9-522 is also an excellent silage variety.

CAP 9-522 is 120 - 130 days until physiologically maturity in the warmer areas and 134 days in the cooler areas.

Trials yield per hectare:

- 7.5 tonnes of dry land with a 45 000 PS
- 11.5 tons of irrigation up to 80,000 PS

Recommended for regions:

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

- Responds well to fertilizers, irrigation and fairly high pop. density
- High disease resistance
- Tolerant to Stalk Rot and lodging
- Susceptible to Grey leaf spot, rust and H.T. Please follow a good spray program
- Yield potential of up to 12 MT/ha
- Good drought tolerance



YELLOW HYBRID MAIZE

CAP 9-646

EARLY

MEDIUM

LATE

Highly adaptable hybrid

Medium-late maturity. \pm 130 – 135 days.

Prolific. At least 2 cobs per plant.

Shelling percentage van 83%

Medium Sprouts

Good standability

Good resistance against Diplodia cob rot

Relatively good resistance against HT and GLS

Yield of 11.15 t/ha during 2015/16 season and 7% above average.

Yield of 12.96 t/ha @ 36 000 plants/ha in Delmas during 2016/17 season and 17% above average



Recommended for regions:

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



YELLOW HYBRID MAIZE

CAP 9006Q

EARLY

MEDIUM

LATE

Highly adaptable hybrid

CAP 9006Q is a quality protein, yellow maize hybrid. It is used primarily as a silage hybrid, with deep yellow kernels. It has excellent disease tolerance to both cob rot and various leaf diseases.

This variety has approximately 75 days till it is at 50% flower and approximately 130 days till maturity. The plant reaches a height of 150cm with excellent stand-ability. This will vary from area to area depending on heat units.

It has good tolerance to foliar diseases. This will be an ideal variety for poultry and pig farmers who would like to use the QPM as grain for animal feed.

Yields of 9mt are achievable in high potential regions.

- Very good standability
- Good adaptability
- Excellent resistance to leaf diseases
- Primarily a silage hybrid, unless specifically used for grain for pig and poultry



Site	Yield	RelGY	Prolificacy rating	Lodged plants	Shelling percentage
	t/ha	%	1-2	%	%
Baynesfield	9.6	123	2	0	84
Ukulinga (Pietermaritzburg)	8.5	122	1.9	0	83

Recommended for regions:

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

Suitable for pigeon feed

ASK
YOUR
REP

QPM - Quality Protein Maize

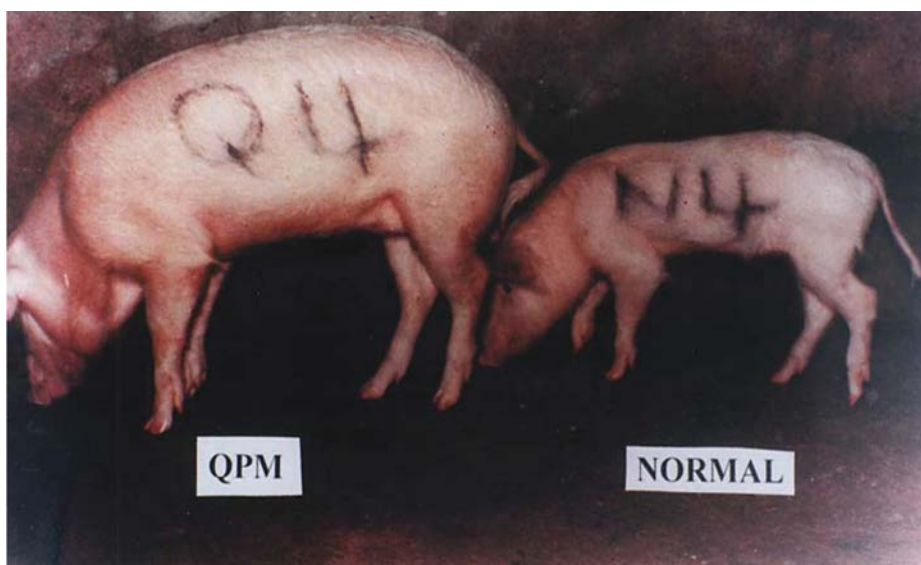
Maize comprises a significant proportion of diets amongst people in Southern Africa. Annual consumption rates are in the order of 100 kg/person. Although maize is a good source of energy, it is deficient in two essential amino acids, lysine and tryptophan, and therefore has low quality protein. Thus, 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.

Why QPM is the right choice for your farm?

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. Commercial farmers, find this extremely remunerative.

In El Salvador, a farmer reported that his 14 pigs fed on grain of Hybrid HQ-61 (a lysine/tryptophan maize) weighed 18 kg more than pids fed normal maize, after 60 days. In Guizou, one of Chin’s poorest provinces, farmers given credit to buy pigs and raise them on lysine/tryptophan maize earned enough to build houses and conduct community development activities.





YELLOW HYBRID MAIZE

CAP 9-262 RRBT / CAP 9-262 RR

EARLY

MEDIUM

LATE

Excellent Yield Potential

CAP9-262 BR/RR is an early maturity, highly prolific hybrid. This hybrid has good standability, very good grain quality and excellent genetics.

MANAGEMENT RECOMMENDATIONS

- Suitable for full irrigation
- Suitable for ultra short growth season
- Performs well under high plant populations.
- Recommended plant population 80,000 plants ha and higher
- Suitable for silage production under irrigation
- Susceptible to Diplodia ear rot
- Ideal for double cropping
- Can be harvested for Silage in under 3 months

CAP9-262 RRBT has 57-65 days to 50% tassel. 90-115 days to physiological maturity. 2 heads per plant. 16 rows with 45 kernels per row (720 kernels per head).

- Plant height: 265-275cm
- Ear height: 105-115cm
- Drying (Down): Rapidly
- Tillers: Few
- Ear tip cover: Slightly open
- Foliar disease tolerance: Average
- Ear rot tolerance: Good
- Stem rot tolerance: Average
- Suitable for full irrigation and dryland



Recommended for regions:

 5 - Warm Irrigation Region

YELLOW HYBRID MAIZE

CAP 9-242 RRBT

EARY

MEDIUM

LATE

Rapid growing hybrid

Plant population of 55,000 – 100,000

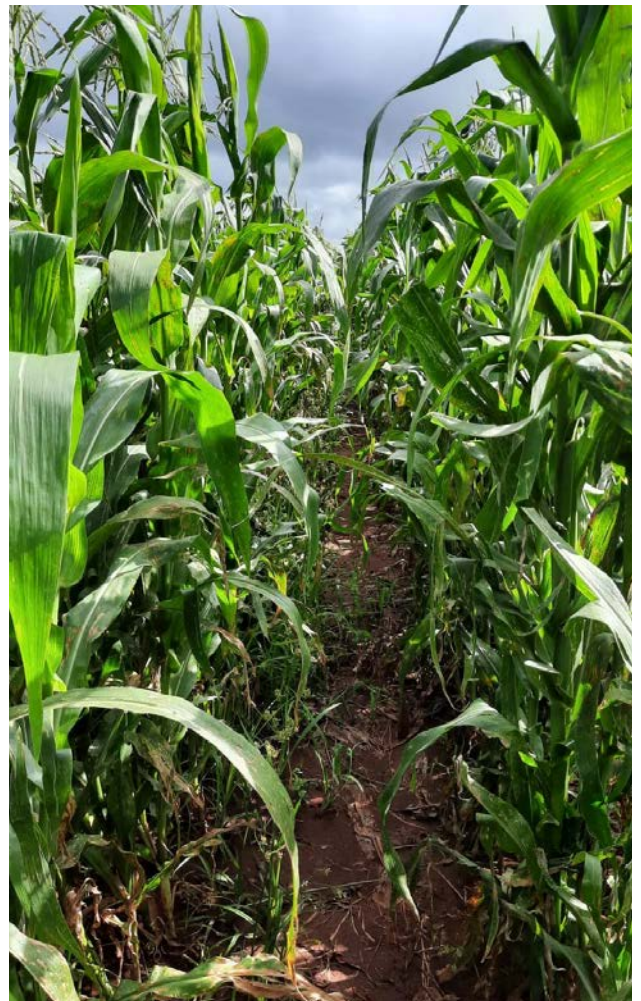
Suitable for irrigation

Days to 50% flowering: 57 - 65 days

Days to physiological maturity: 104 – 115 days

Yieldgard Maize 2 + RoudupReady Maize 2 Technology

Possible refuge hybrid: CAP9-262 RR



Recommended for regions:

 5 - Warm Irrigation Region

YieldGard[®]
MAIZE 2

Roundup
Ready[®]
MAIZE 2



YELLOW HYBRID MAIZE

CAP 9-504 RRBT

EARLY

MEDIUM

LATE

Medium growing hybrid

Plant population of 40,000 – 80,000

Suitable for dry land or irrigation

Day to 50% flowering: 70 - 80 days

Days to physiological maturity:: 120 -135 days

Yieldgard Maize 2 + RoundupReady Maize 2 Technology

Possible refuge hybrid: DKC68-56R



Recommended for regions:

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

YieldGard[®]
MAIZE 2

Roundup
Ready[®]
MAIZE 2



BREEDING FOR CLIMATE CHANGE, THE ENVIRONMENT AND THE FARMER



WHITE HYBRID MAIZE

CAP 9705

EARLY

MEDIUM

LATE



Highly prolific hybrid

CAP 9705 is a highly prolific hybrid with hard, white dent kernels. It has mainly flat white pips and good husk cover.

- Highly Prolific
- Hard dent, white kernels
- Mainly round flat pips

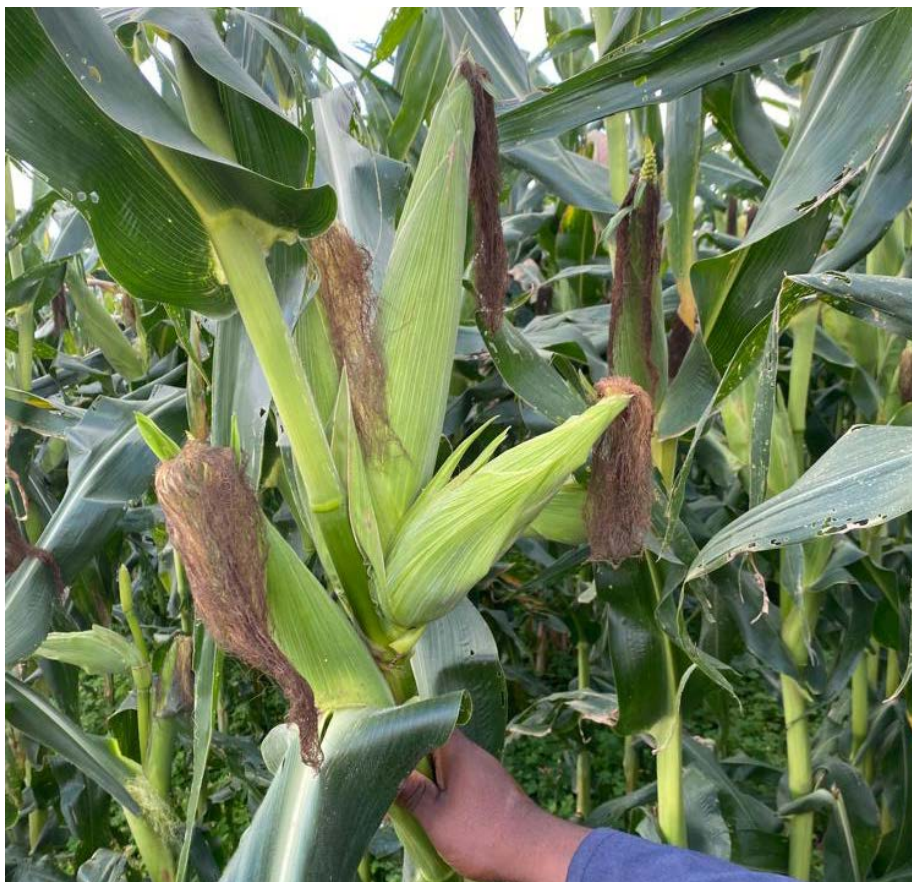
It is a medium maturing hybrid that is tolerant to most foliar diseases. It has good standability and is widely adaptable.

The hybrid does well under irrigation and also yields well under dryland conditions.

This hybrid was bred by Dr. Pip Nelson who has over 40 years experience in maize breeding.

Recommended for regions:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region





WHITE HYBRID MAIZE

CAP 9-619

EARLY

MEDIUM

LATE

High yielding, dual purposes white hybrid

CAP 9-619 is a high yielding white hybrid. This hybrid has a long pollination period increasing its ability to evade the effects of moisture stress during flowering. The plant structure and cobs are generally large

It is noted as being a medium maturing variety with semi-flint, large kernels. It is tall and leafy in plant structure with large cobs. Suitable as a green mealie.

It is resistant to most foliar diseases and yields approximately 10mt.



GRAIN | SILAGE

- Medium maturity: 120-130 days
- Semi-flint, large kernels
- Tall and leafy plant structure Resistant to most foliar diseases



Variety	Anthesis	Mid Altitude		N-Stree	Ear Position	Lodging		Husk Cover	Ear Rot	GLS	Common Rust	Northern Leaf Blight	Grain Texture	MSV	PLS
	dae	t/ha	t/ha		0-1	wortel %	stam %	%	%	1-5	1-5	1-5	1-5	1-5	1-5
CAP-619	65-85	6.5	7.1	3.9	0.5	12.2	9.1	8.2	1.4	1.5	2.0	2.0	3.0	2.0	1.5

Mid altitude dry – Average maximum temperature of between 24-33 degrees and season precipitation of less than 700mm

Mid altitude humid – Average maximum temperature between 25-28 degrees and season precipitation of more than 700mm

N stress – trials conducted under conditions with nitrogen stress

Husk cover – Percentage of plants with ears that are not completely covered by the husks

Ear rot – Percentage of cobs that are rotten

GLS- Score for the severity of gray leaf spot from 1 (clean, no infection) to 5 (severely diseased)

MSV- Score for the severity of maize streak virus from 1 (clean, no infection) to 5 (severely diseased)

Grain Texture- Rated on a scale from 1(flint) to 5 (Dent)

PLS- Score for the severity of Phaeosphaeria leaf spot symptoms rated on a scale from 1 (= clean, no infection) to 5 (= severely diseased).

***ELSEWHERE AS A GREEN MEALIE AND GRAIN UNDER HIGH STRESSED AREAS.**

Recommended for regions:

PLANT EARLY

- 1 - Western Regions
- 2 - Temperate Eastern Regions

■ 3 - Cold Eastern Region

RECOMENDED FOR SILAGE KZN

- 4 - KwaZulu Natal Region

WHITE HYBRID MAIZE

CAP 9021

EARLY

MEDIUM

LATE

All round performer

CAP 9021 is a high yielding hybrid which performs well in high potential regions. This hybrid has done well as a silage variety. It has been noted to have grain yields of over 10mt/ha as the norm. Silage yield potential of between 65-80mt/ha under ideal conditions.

It has flinty grain type with excellent milling quality too. It also has good resistance to Grey Leaf Spot, ear rot and rust. This variety is medium maturing North of 26 latitude and becomes late maturing to the South of that, where it is mainly used for silage. CAP 9021 has a tall plant structure and generally produces one large ear.

We recommended it for 1A, 2A, and 3A for grain and region 4 for silage.

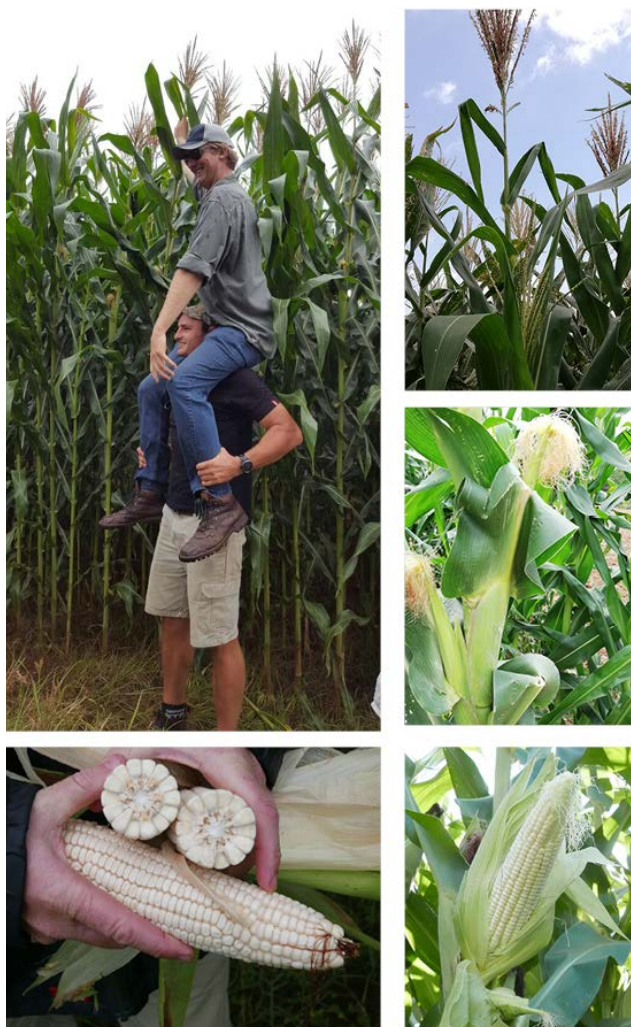
High Potential Dryland Conditions with >700mm Precipitation	CAP9021	SC633
Grain Yield (t/ha)	10.3	9.45
Anthesis (days)	83	77
Height (cm)	286	236
Ear position	0.5	0.52
Root lodging (%)	0	32
Stem lodging (%)	4	1
Husk cover (%)	4.2	8.3
Ear rot (%)	1.6	2.3
Gray leaf spot (1-5)	1	1.3
Common rust (1-5)	1	1
Northern corn leaf blight (1-5)	2	2.3
Grain texture (1-5)	4.5	4.5

*1=Bad | 5= Good

2015 Kokstad silage trials

Cultivar	Plant population (number/ha)	Dry matter (%)	Dry matter yield
CAP 122-60	66 667	55.90	22 417
CAP 9001	64 444	48.72	18 372
CAP 9004	66 667	47.67	25 312
CAP 9021	66 111	47.75	24 474
Mean	65 833	55.41	22 833
LSD (P≤ 0.05)	3 211.2	6.9	4 965
CV (%)	3.0	7.6	13.2

- Medium to late maturity- plant early: 120 - 135 days
- Semi-flint, large kernels
- Tall and leafy plant structure: 2.2 - 2.8m plant height
- Resistant to most foliar diseases
- Recommended plant population 48 000 plants/ha



Recommended for regions:

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

*SILAGE IN ALL REGIONS

*HIGHLY RECOMENDED FOR KZN

JAMES KEAN & JASON SHEWAN - MOOIRIVER (2016/2017)

Farmers all over the KwaZulu-Natal Midlands have been reporting outstanding results with Capstone Seeds' White Hybrid Maize variety CAP 9021. Jason Shewan from Grassy Park Dairy in Nottingham Road planted a few hectares of the cultivar in order to test it, he was happy to admit that it stood head-and-shoulders above the rest.

In the area that Jason is farming, there is severe pressure from diseases and CAP 9021 was hardly affected while the variety from another competitor - sitting just next to it in the field - was severely damaged by Grey Leaf Spot and more. Francis Yeatman predicted that Jason was going to be able to yield 65 - 70mt/ha of silage material.

James Kean was blown away with the way that CAP 9021 bounced back after heavy hail damage early on after planting. The hail caused the plant to lose about 40% of its leaf material and was still able to yield impressive silage results after he thought that he was going to have to plough it all in.



Competitor



CAP 9021



WHITE HYBRID MAIZE

CAP 9001

EARLY

MEDIUM

LATE

Widely adapted hybrid

CAP 9001 is widely adapted for all Southern African conditions. It is tolerant to most maize diseases in Southern and Eastern Africa.

It has a high potential of yielding over 14mt/ha in certain areas of Kwazulu-Natal, South Africa. It is also adapted to other areas with reasonable rainfall expectations.

It has excellent disease resistance making this hybrid suited to high disease pressure areas.

Capstone Seeds recommends that, in order to maximize the yield, one should plant early.

CAP 9001 is a tall late hybrid south of 26 latitude and medium maturing as you travel north of this. It has high yields under irrigation and good performance under dryland conditions. It is widely utilized for grain as well as for silage in certain areas, this is due to CAP 9001 being a tall leafy plant producing high amounts of dry matter and starch per hectare.



- Utilized for grain and silage
- Yield under Irrigation up to 15 tons per hectare
- Yield in dry land 9-11 tons per hectare
- Silage potential 65 - 70 tons per hectare.
- Medium maturing hybrid: 135-145 days
- Tall with white flint grain



Recommended for regions:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region

RECOMENDED FOR SILAGE KZN

- 4 - KwaZulu Natal Region

N stress – trials conducted under conditions with nitrogen stress

Husk cover – Percentage of plants with ears that are not completely covered by the husks

Ear rot – Percentage of cobs that are rotten

GLS- Score for the severity of gray leaf spot from 1 (clean, no infection) to 5 (severely diseased)

MSV- Score for the severity of maize streak virus from 1 (clean, no infection) to 5 (severely diseased)

Grain Text- Rated on a scale from 1(flint) to 5 (Dent)

Variety	Anthesis days	Mid Altitude		N-Stress t/ha	Ear position 0-1	Lodging		husk cover %	Ear rot %	GLS 1-5	Common rust 1-5	Northern leaf blight 1-5	Grain texture 1-5	MSV 1-5	PLS 1-5
		Dry t/ha	Humid warm t/ha			root %	stem %								
CAP9001	68	4.52	7.13	2.29	0.52	7.6	11.8	3.5	5.2	1.5	1.1	2.3	3.4	2	1.1
PAN63	68	4.39	6.98	1.43	0.49	9.5	10.4	5.8	4.7	1.9	1.3	2	2.9	1.9	1.3
PAN5M-35	68	4.69	7.54	3.22	0.47	5.4	7.9	3.9	4.6	1.9	1.1	1.5	2.5	1.5	1.3

Rating Scale: 1 - 9								
KARKLOOF. 50000pp	1st Disease Rating 3 March 2010	2nd Disease Rating 26 March 2010						
Hybrid	Puccinia sorghii Rust	Cercospora zeina GLS	Exserohilum turcicum NCLB	Phaeosphaeria maydis Phaeos- phaeria	Puccinia sorghi Rust	Cercospora zeina GLS	Exserohilum turcicum NCLB	Phaeosphaeria maydis Phaeos- phaeria
Phb 30D09BR	2	2	3	1	2	4	3	3
LS 8511	2	2	3	3	2	4	3	6
PAN 8M-91	1	1	2	1	1	3	3	2
AFG 4530	2	5	3	7	3	4	4	8
DKC 80- 40BR	2	3	3	5	2	4	3	6
CAP 9001	1	1	2	1	2	3	2	2
SC 709	1	1	2	2	1	2	2	2
LS 8512	1	3	2	5	1	3	2	5
DKC 73- 74BR	1	2	3	3	2	2	3	2
Phb 30Y79B	3	4	3	2	2	4	3	2

2015 Kokstad silage trials

Cultivar	Plant population (number/ha)	Dry matter (%)	Dry matter yield
CAP 122-60	66 667	55.90	22 417
CAP 9001	64 444	48.72	18 372
CAP 9004	66 667	47.67	25 312
CAP 9021	66 111	47.75	24 474
Mean	65 833	55.41	22 833
LSD (P≤ 0.05)	3 211.2	6.9	4 965
CV (%)	3.0	7.6	13.2

WHITE HYBRID MAIZE

CAP 9503

EARLY

MEDIUM

LATE

Widely adapted hybrid

CAP 9503 has been trialed and registered in the SADAC region.

- Medium to late maturing
- 68 days to anthesis
- Good husk cover
- White grain hybrid
- Drought tolerant
- Resistant to Grey leaf Spot





WHITE HYBRID MAIZE

CAP 9-745

EARLY

MEDIUM

LATE

Overview

Medium maturity. 125 – 130 days.

Prolificacy is 2.05 cobs per plant.

Shelling percentage of 87%

16% Tillers

Good standability

Good resistance against Diplodia cob rot

Good resistance against HT and GLS

Yield of 10.46 t/ha in Delmas during 2015/16 season and 11% above average.

Yield of 13.21 t/ha in Delmas during 2016/17 and 21% above average

Yield of 7.15 t/ha in Delmas during a very dry season and still 6% above average of the trial



Recommended for regions:

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





WHITE HYBRID MAIZE

CAP 341 NG

EARLY

MEDIUM

LATE

High Reliability

CAP 341 NG is a highly reliable short season hybrid, having good germination and seedling emergence properties, resulting in good plant stands. Good pollen to silk synchronization results in good pollination even under drought stress conditions.

CAP 341 NG is very suitable for home consumption, both as a green mealie and mealie meal for porridge due to its large kernel size.

It has white, large Dent Grain and is early to medium maturing. It has good germination and seedling emergence leading to good plant stands. It has good resistance to Leaf Blight (Ht) and Rust. It should not be grown in areas with heavy GLS infection. CAP 341 provides stable yields under drought stress conditions. It is a good all-round performer but is not recommended for Kalahari sand soil types.

Recommended for regions:

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

- Early - medium maturing
- Good Germination
- Stable Yields under Drought Stress Conditions
- Good resistance to Leaf Blight (Ht) and Rust



LOW INPUT (SMALL SCALE FARMER) MAIZE CULTIVAR EVALUATION
GRAIN YIELD (T/ha) AT 12.5% MOISTURE

CULTIVAR NAME	CEDARA GLS	KOKSTAD	DUNDEE	LOSKOP	HIGHFLATS	MAPUMULO	MEAN
CRN 4141	4.58	6.75	8.30	4.64	2.58	3.98	5.24
SNK 2021	5.11	7.85	10.22	5.87	3.22	3.86	6.10
SC 513	5.33	6.56	9.38	4.42	3.69	5.40	6.07
SC 627	6.49	6.56	9.35	4.95	1.98	6.48	6.17
RO 413	5.37	7.03	8.28	5.52	1.97	5.27	5.58
PAN 6549	4.72	8.46	10.57	5.63	4.15	4.75	6.53
NS 9100	5.57	8.87	10.73	5.12	2.48	5.72	6.67
GRACE	3.46	5.26	6.15	5.21	2.64	4.18	4.34
ZM 521	5.19	6.10	7.04	4.09	3.11	4.88	5.26
CAP 341NG	5.73	7.10	10.64	5.02	3.69	4.91	6.41
NS 5750	3.93	7.16	6.25	4.03	2.40	3.01	4.55
PHB 3253	5.16	7.39	9.21	4.38	2.78	5.17	5.94
PHB 30G97	6.03	7.32	7.92	6.22	4.11	5.76	6.23
PAN 67	5.98	5.96	10.33	4.85	4.61	4.94	6.36
CV%	10.3	13.6		26.2	26.8	13.4	
L.S.D	0.921	0.173	0.745	2.213	1.43	1.132	





WHITE HYBRID MAIZE

CAP9-569 RRBT

EARLY

MEDIUM

LATE



Medium growing hybrid

Plant population of 20,000 –55,000

Geskik vir droëland en aanvullende besproeiing

Days to 50% flowering: 70 - 80 days

Days to physiological maturity: 117 -145 days

Yieldgard Maize 2 + RoudupReady Maize 2 Technology

Possible refuge hybrid: DKC78-35R



Recommended for regions:

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



A close-up photograph of a yellow corn cob, partially husked, showing the kernels and the green husks and silks. The image is framed by a dark green border at the top and bottom, with a tan-colored curved shape at the top and bottom corners.

BREEDING FOR
CLIMATE CHANGE,
THE ENVIRONMENT
AND THE FARMER

SILAGE MAIZE

GROWING MAIZE FOR SILAGE

Growing a maize crop like the photo to the right does not just happen. But is achievable if key management principles are applied.

We need to get the basics [ABC's] right!

The ABC of a successful maize crop for silage:

A Establishment **B** Irrigation **C** Fertilisation



ESTABLISHMENT

- Selecting the right hybrid
- Soil preparation and sowing
- Density and row spacing
- Weed and insect control

Choice of hybrid depends on the intended use.

Hybrids for silage production need to be selected for:

- Continued growth during the season [maximum yield OM/ha].
- Retention of a high proportion of green leaf through to harvest.
- Good grain yields; which contains 70% more ME and greater carbohydrate levels than the green parts of the plant.
- Tolerance of relatively dense planting.
- High dry matter yields are as important as grain yield.

Capstone Seeds Hybrids of choice for Silage:

- CAP122-60 - up to 75 MT/ha
- CAP9006Q
- CAP9004 - up to 70 MT/ha [all regions]
- CAP9-522
- CAP9-619 [KZN]
- CAP9299
- CAP9009 [KZN]
- CAP9001 - up to 70MT/ha [KZN]
- CAP9021 - up to 80MT/ha [all regions]

Density and row spacing

Maize plant populations for silage production in irrigated crops should be 80,000 - 100,000 plants/ha but allow for -10% more seed for germination and seedling losses.

High plant densities are even more important if maize is sown early when cooler temperatures will slow growth. This is because higher densities can help to achieve canopy closure sooner, minimising opportunities for weed to establish and maximising radiation absorption.

Weed and insect control

Weeds compete strongly: for sunlight, moisture and nutrients, therefore reducing production and quality. Grass weeds are most competitive and must be controlled early. Shallow inter-row cultivation can destroy young weeds in the first 3-4 weeks after sowing. Once the maize crop reaches approximately 80cm the plants will restrict weed growth as it out competes them for sunlight.

Soil preparation and sowing

Maize can be direct drilled or sown into a cultivated soil bed. The advantages of cultivating are that it enables the soil to be deep ripped [clay soils may need this every 2 or 3 years] and the bulk of the fertiliser can be incorporated into the soil prior to sowing.

Direct drilling is only recommended with a 'true-direct-drilling machine, to ensure appropriate depth of the seed [2.5-4 cm], with fertiliser placed about 5 cm deeper and 5 cm to the side of the seed, and with an individual compacting wheel for each seed box.

IRRIGATION

- Requirements
- Critical period

Requirements

Maize has a high requirement for water due to its high yields [grain and total plant dry matter]. Because of these high yields it is one of the most efficient users of water per kg dry matter produced. It would require between 5 -7 megalitres [ML] [or approximately 550 - 650mm of water] depending on seasonal conditions, to grow a high yielding crop. The irrigation system must be able to put out approximately 25mm/week, and the soil profile field capacity.

Critical period

The maize crop uses the majority [70%] of its water requirement 3 weeks either side of tasselling. Therefore if irrigation is limited, it is absolutely crucial to irrigate during the critical period, from about 2-3 weeks before tasselling until 2- 4 weeks after tasselling.

FERTILISATION

- Nutritional requirements
- Fertiliser timing

Nutritional requirements

Maize prefers well drained soils with neutral to mildly acidic pH. Because of its high yields. Maize is a big user of nutrients. Soil type coupled with previous cropping and fertiliser history will have an impact on fertiliser requirements for maize crops. Soil tests should be done prior to planting and should be used in conjunction with the target yield to determine optimal fertilizer application.

For example, a maize silage crop yield of 25tDM/ha will remove approximately 300-320kg/ha Nitrogen; 250-270 kg/ha Potassium; and 70-80 kg/ha Phosphorus.

This roughly equates to the following kg of nutrient per tonne of crop grown:

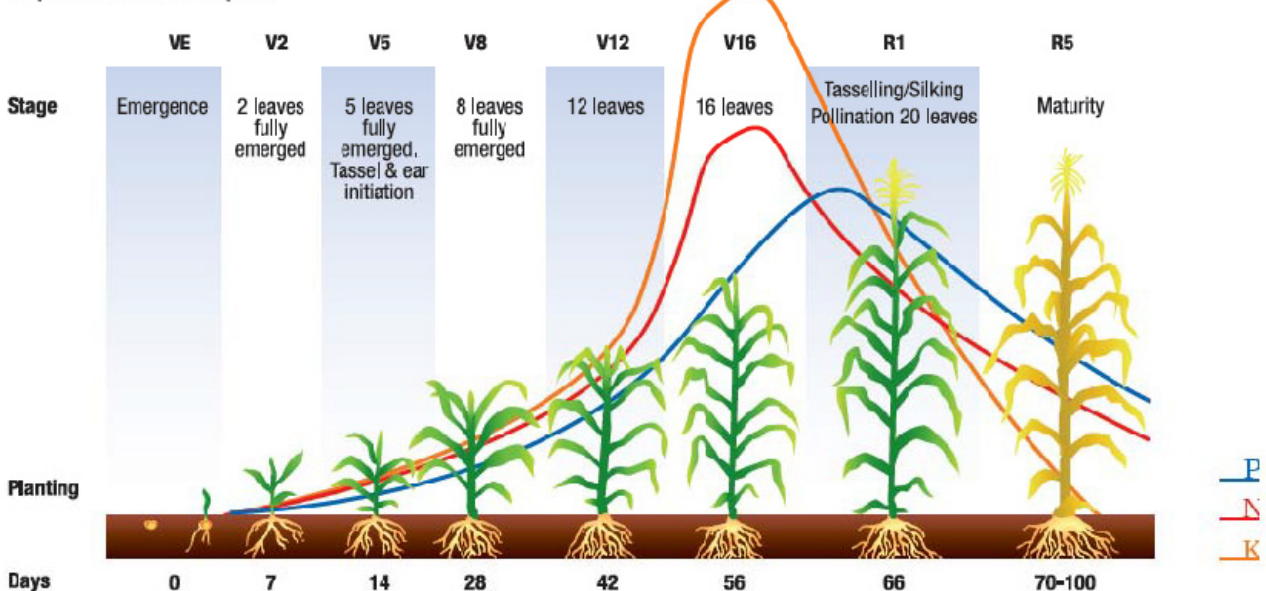
10-12 kg grown Nitrogen/t DM • 8-10 kg grown Potassium/t DM • 2-3 kg Phosphorus/t DM grown

As a rule of thumb, aim to apply at least 80% of these amounts as fertilizer.

Fertiliser timing

The maize plant utilises nutrients throughout its growing cycle with the greatest requirement when the plant is growing most rapidly, from about 45 cm high to grain fill [see diagram below]. To supply the crop requirements, it is best to apply at 4 stages and to check nutrient adequacy with plant tissue tests.

Crop Growth & Nutrient Uptake



General discussion on selection of maize varieties for silage

Good maize silage is an integral component of many livestock production systems in South Africa, including feedlots and dairies. The energy value of silage depends on the amount of grain it contains. The best grain-producing hybrids in a particular area are usually the best adapted to local growing conditions and are therefore also likely to be the best silage-producing hybrids.

The following aspects should be taken into consideration when selecting a hybrid:

Adaptability; Disease pressure; Targeted date for cutting; whether a Contractor will be hired to harvest the crop; as well as Yield and desired Quality. Each of these factors affects the ultimate yield and the quality of the silage obtained.

Medium season hybrids should make up the bulk of silage plantings, due to their consistent and reliable yield performance. Depending on heat units, medium season hybrids are ready for cutting after approximately 105 to 150 days. This growth class generally offers good disease resistance and an extended cutting window of 10 to 20 days. A plant population 20 to 40% higher than normal is recommended for silage production.

The following formulas may be used to calculate the approximate amount of silage that could be harvested per cutting per hectare. The formulas provide a reasonably good indication of the amount (Crafford&Nott).

a.

$$\frac{[\text{Rainfall (mm)} \times \text{Soil depth (cm)}] \times 1,09}{(88,90 \times 15,24)} = \text{Wet silage yield in t/ha}$$

b.

$$(\text{Grain yield} \times 1,14) + 1,97 = \text{DM silage yield in t/ha}$$

c.

$$\text{DM} \div 0,3 = \text{Wet silage}$$

Producing silage involves exactly the same input costs as maize for grain production. Silage production requires a higher plant population than grain production.

The objective is to make silage as cost effective as possible. Like any intensive grazing system, it is only recommended for high-producing animals. For best results, use the best lands for silage production, in order to keep to a minimum the area required to meet the silage needs. Wastage may be as much as 15% and must be brought into consideration when calculating the amount of silage that will be required to meet the animals' roughage needs. Supplementation systems encompass energy- and/or protein-rich licks or supplementary feeding.

Here is simple way is to calculate the feed needs in terms of livestock units per month.

Approximate feed requirements of livestock unit per month (LSU/M):

Sheep:

A fully-grown sheep requires 4,5 kg wet silage (1,5 kg dry material) per day.

A large sheep needs 1,7 kg of dry silage per day, meaning 0,62 tons of dry silage per year.

Cattle:

A fully-grown cow requires 30 kg of wet silage (10 kg dry material) per day. Fully-grown cow needs 3,65 to 4,7 tonnes of dry silage per year, depending on its frame size. High quality silage fed ad-lib may make animals over-fat.

What is the optimum cutting period?

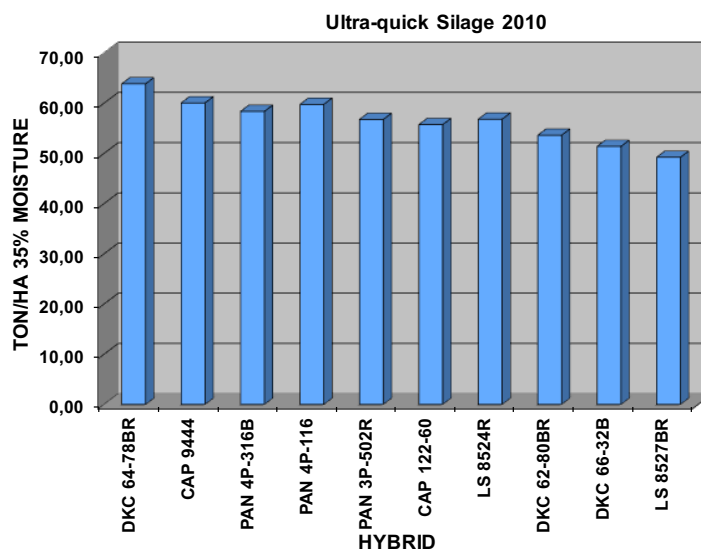
The optimum cutting period is a main consideration for silage making. Continuous monitoring of the moisture content or maturity of the maize is necessary from about four weeks after pollination. Moisture content at harvest should be between 65 and 70%.

Although there are sophisticated procedures available to determine the moisture content of maize, the milk line of the kernel provides a good indication of the maturity of the maize plants. The milk line is the border where the fluid and solid portions of the kernel meet.

To monitor the development of the milk line, break a cob in half. When the milk line is half to two-thirds of the way from the crown of the kernel, the maize is usually ready for cutting and ensiling. For good quality silage, it is advisable to complete the harvest before the moisture content of the maize falls below 63%.

The cutting period can be extended by spacing plantings five to seven days apart or by planting a package of different growth classes.

Moisture content will be about 65% at 50% milk line – this is the ideal time to cut your silage. Grain moisture will be around 37%. It is advisable to start cutting your silage at 40% milk line and to end off at 60% milk line. That means that the bulk of your silage will be at 50% milk line when you cut it. Best practice is to use a microwave oven test to determine the moisture content.



2015 Kokstad silage trials

Cultivar	Plant population (number/ha)	Dry matter (%)	Dry matter yield
CAP 122-60	66 667	55.90	22 417
CAP 9001	64 444	48.72	18 372
CAP 9004	66 667	47.67	25 312
CAP 9021	66 111	47.75	24 474
Mean	65 833	55.41	22 833
LSD (P≤ 0.05)	3 211.2	6.9	4 965
CV (%)	3.0	7.6	13.2



YELLOW HYBRID MAIZE TABLE

Cultivar	General characteristics							Disease toleran	
	Days to 50% tassel	Days to physiological maturity	Growth sea-son	Tillering	Prolificacy	Drydown period	Standability	Cobrot	
CAP122-60	65 - 80	120 - 130	Medium	2	1	Medium	1	2	
CAP444NG	65 - 80	120 - 135	Medium	5	1	Medium	1	2	
CAP9-522	75 - 85	130 - 140	Medium - Late	2	2	Medium - Late	1	2	
CAP9006Q	65 - 80	120 - 134	Medium	5	3	Medium	2	2	
CAP6-646	75 - 85	130 - 135	Early	5	3	Early	1	2	
CAP9-262 RRBT	57 - 65	90 - 115	Medium	3	2	Medium	1	2	
CAP9-242 RRBT	57 - 65	104 - 115	Vinnig	5	3	Vinnig	1	2	
CAP9-504 RRBT	70 - 80	120 - 135	Medium	3	2	Medium	1	2	

Key: 1: Excellent - 5: Poor

NOTES:

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

Disease					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	3	3	3	30 - 40	50 - 60	50 - 60	50 - 60	70 - 100
	2	1	1	3	18 - 30	30 - 40	30 - 40	30 - 40	50 - 60
	2	2	2	2	30 - 40	50 - 60	50 - 60	50 - 60	70 - 100
	2	2	1	1	18 - 30	40 - 50	30 - 40	30 - 40	50 - 60
	2	2	1	2	18 - 30	40 - 50	30 - 40	30 - 40	50 - 60
	3	3	1	3	-	45 - 55	-	40 - 50	80 - 100
	3	3	2	3	-	45 - 55	-	40 - 50	80 - 100
	2	2	1	2	18 - 30	45 - 55	30 - 40	40 - 50	50 - 60



WHITE HYBRID MAIZE TABLE

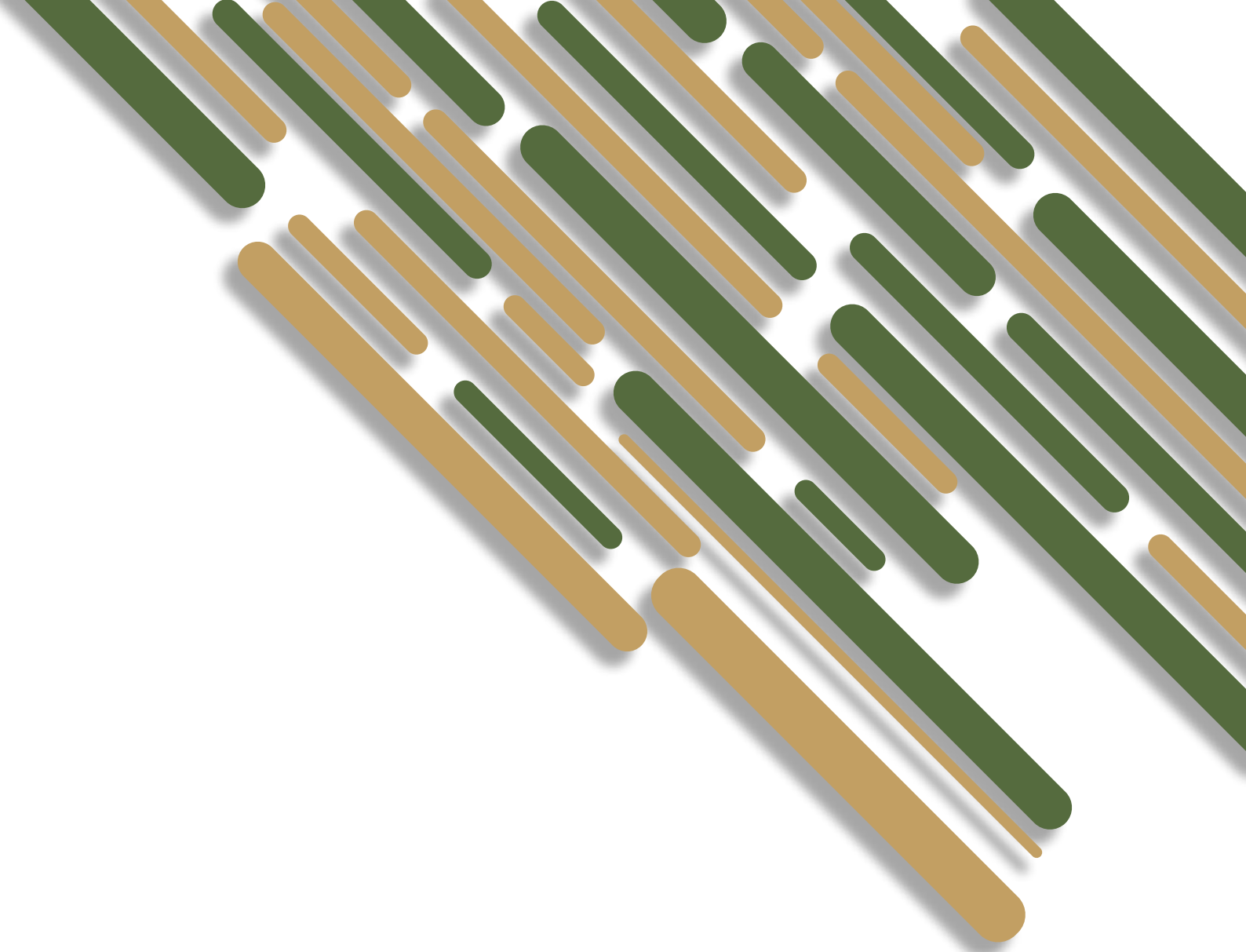
Cultivar	General characteristics							Disease tolerance	
	Days to 50% tassel	Days to physiological maturity	Growth season	Tillering	Prolificacy	Drydown period	Standability	Cob rot	
CAP9-569	70 - 80	117 - 145	Medium	3	2	Medium	1	2	
CAP9021	78 - 80	120 - 135	Medium - Late	2	3	Medium - Late	2	2	
CAP9705	78 - 80	122 - 134	Medium	2	1	Medium	3	2	
CAP9-619	65 - 80	120 - 130	Medium	2	2	Medium	2	2	
CAP9001	69 - 75	135 - 145	Medium	2	2	Medium	3	2	
CAP9503	75 - 85	130 - 140	Medium - Late	2	3	Medium - Late	2	2	
CAP9-745	70 - 85	125 - 130	Medium	3	2	Medium	2	2	
CAP341NG	65 - 75	125 - 134	Medium	5	3	Medium	2	3	

Key. 1: Excellent - 5: Poor

NOTES:

- 1 - Western Regions
- 2 - Temperate Eastern Regions
- 3 - Cold Eastern Region
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					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	1	2	2	18 - 30	45 - 55	30 - 40	40 - 50	50 - 60
	2	1	1	2	18-30	30-40	30-40	30-40	50 - 60
	3	2	1	2	18-30	30-40	30-40	-	50 - 60
	2	2	2	2	18 - 30	45 - 55	30 - 40	40 - 50	50 - 60
	3	2	1	2	18-30	30-40	30-40	30-40	50-60
	2	2	2	2	18 - 30	45 - 55	30 - 40	40 - 50	50 - 60
	2	2	2	2	18 - 30	45 - 55	30 - 40	40 - 50	50 - 60
	3	3	1	1	18-30	30-40	30-40	30-40	50-60



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