

THE MAIZE BOOK.

2018 EDITION

A guide to establishing, growing
and utilising maize crops in New Zealand.

New hybrids cropping up at Corson Maize...



VELOCITY DUAL PURPOSE

SILAGE CRM 95 / GRAIN CRM 98

- The first maize hybrid bred in Germany released in NZ by Corson Maize, gives further genetic diversity to our portfolio
- Fast growth through to tassel stage delivers quick canopy closure
- Excellent total energy maize derived from high silage yield



PAC 314 DUAL PURPOSE

SILAGE CRM 101 / GRAIN CRM 101

- Mid-full season dual purpose hybrid for all North Island regions
- Medium-tall, well-structured plant with plenty of eye-appeal
- AriDapt™ drought ready technology ensures reliable results across environments and seasons



PAC 344 DUAL PURPOSE

SILAGE CRM 102 / GRAIN CRM 102

- Mid-full season dual purpose hybrid for central and upper North Island regions
- Unique, medium-height, compact plant with thick stalks and very broad leaves
- Excellent stalks, ear-rot and Northern Leaf Blight profiles



Contact your rural retailer or a Corson Maize
Sales Agronomist on **0800 4 MAIZE (62493)**
or visit **www.corsonmaize.co.nz**



hybrids now available
through Corson Maize.



THE MAIZE BOOK.

2018 EDITION

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INTRODUCTION

Welcome to the 2018 Corson Maize Seed Book.

Change is constantly around us, from the volatile weather through to the highs and lows in farm returns. As farmers, the greatest challenge is to be able to manage the risk brought by all the change you experience.

At Corson Maize Seed, we are determined to provide you with a choice of hybrids that will offer you the ability to better manage the challenges you face every year. As part of this commitment, Corson Maize continues to develop and evolve. We are very excited that we now represent the Pacific Seeds range of products in New Zealand, and you will note that we have already been able to incorporate the Pacific Seeds range of hybrids into this edition. This significant development will ensure that Corson Maize will continue to provide New Zealand growers with ongoing access to high performing hybrids from a wide range of international genetic sources.

Having recently joined the Corson Maize team, I am delighted that the value of our hybrids has again been reflected by the results from the independently run national Maize Performance Trials, MPT (see page 47). Corson Maize and Pacific Seeds hybrids feature strongly

in the multi-year data results which can be viewed on the FAR website www.far.org.nz/resources/publications/maize_hybrid_evaluation_booklets.

Maize is an incredible product. It is a significant feed and forage crop at the forefront of environmental and economic sustainability, and we believe it will continue to make a large contribution to farming in New Zealand.

We are keen to talk to you about the performance of our hybrids and help identify the right one for your farming operation. For more information and to discuss your hybrid choice for the coming season please contact your rural retailer or call us on 0800 4 MAIZE (62493).

I wish you all well for a productive season ahead, and look forward to catching up with as many of you as possible as I travel around the country over the next year.

Best wishes.

Graeme Austin
National Sales Manager
Corson Maize Seed



Corson Maize Seed trial site, Waikato



"Triple A Rated"
hybrids with an
Adaptive-Aptitude
towards Arid-ability



Outperforms
other hybrids in hot,
dry conditions, with a
competitive edge in
optimal environments



Global Technology
developed in the hot,
dry, semi-arid regions
of southern Europe

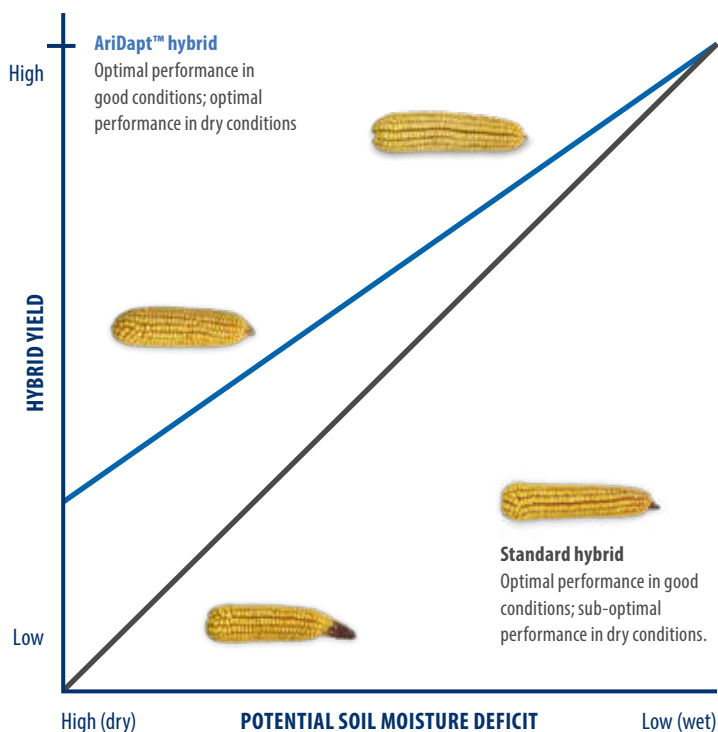


Build Resilience
into your system with
Corson Maize AriDapt™
maize hybrids

CHALLENGING THE UNCERTAINTY OF A CHANGING CLIMATE

With climate variability the new normal, farmers and growers are faced with the challenge of having to build resilience into their systems. There are only a few options for maize that achieve this resilience. The AriDapt™ range of hybrids from Corson Maize utilises existing technology developed in the semi-arid regions of southern Europe.

The technology was developed during the early-mid 2000's using advanced, conventional breeding methods from one of the world's largest maize germplasm bases. These elite drought-ready maize hybrids have been marketed globally under a number of brands including, HD (Head and Drought) and Optimeau.



Expected performance of AriDapt™ and standard maize hybrids in optimal and sub-optimal conditions (adapted from Annon <https://www.dekalb.fr/mais-grain/conseils-pour-planter-et-cultiver-le-mais/variete-de-mais-grain/semences-hybrides>). In dry conditions, overseas data indicates that the AriDapt™ range of hybrids from Corson Maize will out-yield standard hybrids by around 5% at 10 t/ha of grain. In terms of silage that would be 5% at 15 tDM/ha.

HOW DOES ARIDAPT WORK?

The AriDapt™ range of hybrids in the Corson Maize portfolio are the same hybrids that have proven themselves superior to other hybrids in the hot, dry, unirrigated fields of southern Europe, whilst remaining extremely competitive in higher rainfall areas and irrigated fields.

Developed during the early-mid 2000's following an amalgamation of two of the world's leading maize breeding companies Dekalb and Cargills. AriDapt™ maize hybrids are produced from elite, inbred lines that have been repeatedly crossed and inbred for specific characteristics that enable their offspring to perform exceptionally well in hot, dry conditions, namely:

- Strong deep roots with resistance to dry rot
- Early silking and extended flowering period
- Superior heat and drought tolerance in the form of kernel set and staygreen

Successive generations of inbred lines which have these and a number of other characteristics have produced a large number and ever-expanding portfolio of elite inbred lines that reliably produce hybrids with the following characteristics and capabilities:

- Strong deep roots that resist rot and premature plant death
- High water-use efficiency
- Well balanced canopies, not excessively leafy
- Strong thick stalks and low ear placement
- Early silking and extended flowering period
- Optimal husk length to ensure timely silk emergence
- Excellent green leaf-area retention (staygreen)
- High grain harvest-index and total biomass (dry matter yield)

This elite gene profile on its own isn't enough. Hybrids have to prove themselves statistically superior in hot, dry, arid conditions but also perform equally well in more optimal and irrigated conditions. Hybrids that have strong agronomy but do not show the required level of yield stability across environments are not branded AriDapt™.

BENEFITS

The AriDapt™ maize hybrids from Corson Maize will provide growers with higher and more consistent grain and dry matter yields in a wider range of conditions compared with other conventional hybrids. PAC 249, PAC 230 and PAC 314 are the three Corson Maize hybrids that have the AriDapt™ technology. All of these hybrids have demonstrated themselves to perform consistently well in some of the best and worst conditions across the length and width of the North Island.

Build resilience into your system by growing AriDapt™ maize hybrids from Corson Maize.



CORSON MAIZE HYBRID TRAITS

		NEW									
		Delitop	PAC 040	N23-K3	Comet	PAC 249	Velocity	C29-A1	PAC 230	N39-Q1	Afinity
CROP RELATIVE MATURITY	CRM SILAGE	78	80	87	92	95	95	96	96	97	97
	CRM GRAIN	88	94	NA	94	97	98	96	98	100	100
PLANT TRAITS	HUSK COVER	S	S	S	L	M	S	M	M	M	M
	EAR FLEX	SF	SF	SF	SF	F	SF	SF	F	F	SF
	EARLY GROWTH	★	★	★	★	★	★	★	★	★	★
	RELATIVE PLANT HEIGHT	M	T	T	M	MT	M	T	M	T	MT
	STAYGREEN	★	★	★	★	★	★	★	★	★	★
	ROOT STRENGTH	★	★	★	★	★	★	★	★	★	★
	STALK STRENGTH	★	★	★	★	★	★	★	★	★	★
	DROUGHT TOLERANCE	★	★	★	ID	★	ID	★	★	★	ID
DISEASE RESISTANCE	RUST	★	★	★	★	★	★	★	★	★	★
	NORTHERN LEAF BLIGHT	★	★	★	★	★	★	★	★	★	★
SILAGE QUALITY TRAITS	FORAGE PROTEIN	★	ID	★	★	ID	★	★	ID	★	★
	FORAGE STARCH	★	ID	★	★	ID	★	★	ID	★	★
	WHOLE PLANT DIGESTIBILITY	★	ID	★	★	ID	★	★	ID	★	★
	TOTAL ENERGY	★	ID	★	★	ID	★	★	ID	★	★
GRAIN CHARACTERISTICS	GRAIN PROTEIN	★	ID	NA	ID	ID	★	★	ID	★	★
	GRAIN HARDNESS	★	ID	NA	ID	ID	★	★	ID	★	★
	KERNEL DEPTH	M	D	M	D	D	D	D	D	M	D
	KERNEL TEXTURE	H	H	H	MS	M	MH	S	M	M	M
	GRAIN DRYDOWN	★	★	NA	★	★	★	★	★	★	★
	TEST WEIGHT	★	★	NA	★	★	★	★	★	★	★
PLANTING POPULATIONS (000/HA)	GRAIN	90-100	90-100	NA	90-100	90-100	85-95	90-100	90-100	85-95	85-95
	SILAGE	100-110	95-110	105-120	95-105	95-105	90-100	95-105	95-105	90-100	90-100

CORSON MAIZE HYBRID TRAITS

		NEW	NEW							
		PAC 314	PAC 344	G49-T9	N51-N4	C56-C4	Plenitude	PAC 456	Z71-F1	PAC 624
CROP RELATIVE MATURITY	CRM SILAGE	101	102	104	104	106	107	109	111	115
	CRM GRAIN	101	102	NA	104	102	107	109	NA	NA
PLANT TRAITS	HUSK COVER	M	M	S	L	M	M	M	S	L
	EAR FLEX	F	F	F	SF	SF	SF	F	F	F
	EARLY GROWTH	★3	★5	★4	★4	★4	★4	★3	★4	★3
	RELATIVE PLANT HEIGHT	MT	M	T	MT	T	T	T	T	T
	STAYGREEN	★4	★5	★4	★4	★4	★4	★4	★4	★4
	ROOT STRENGTH	★5	★4	★4	★5	★4	★4	★3	★4	★4
	STALK STRENGTH	★4	★5	★4	★4	★4	★4	★4	★4	★5
	DROUGHT TOLERANCE	★5	★4	★4	★5	★4	ID	★3	★4	★4
DISEASE RESISTANCE	RUST	★3	★4	★4	★4	★4	★4	★4	★4	★3
	NORTHERN LEAF BLIGHT	★4	★5	★3	★4	★3	★3	★4	★4	★4
SILAGE QUALITY TRAITS	FORAGE PROTEIN	ID	ID	★4	★4	★4	★4	ID	★4	ID
	FORAGE STARCH	ID	ID	★4	★4	★3	★4	ID	★4	ID
	WHOLE PLANT DIGESTIBILITY	ID	ID	★4	★4	★4	★5	ID	★4	ID
	TOTAL ENERGY	ID	ID	★4	★5	★4	★5	ID	★5	ID
GRAIN CHARACTERISTICS	GRAIN PROTEIN	ID	ID	NA	★4	★4	★4	ID	NA	ID
	GRAIN HARDNESS	ID	ID	NA	★3	★4	★3	ID	NA	ID
	KERNEL DEPTH	D	D	M	D	M	M	D	M	D
	KERNEL TEXTURE	M	MH	S	MS	M	MS	M	S	MS
	GRAIN DRYDOWN	★4	★4	NA	★4	★4	★4	★3	NA	NA
	TEST WEIGHT	★4	★4	NA	★4	★4	★4	★4	NA	NA
PLANTING POPULATIONS (000/HA)	GRAIN	90-100	90-100	NA	85-95	90-105	85-95	85-90	NA	NA
	SILAGE	95-105	95-105	80-95	95-105	95-110	90-100	85-100	80-95	80-90

TRAIT RATINGS

★1 Poor ★2 Below Average ★3 Good ★4 Very Good ★5 Excellent

NA - Not Applicable ID - Insufficient Data

All ratings are not comparable to any other companies’ ratings and are based on observations by Corson Maize staff.

For more information on trait ratings see page 10.

Key: Silage Dual Purpose

CORSON MAIZE HYBRID TRAITS

The following traits are rated for the respective Corson Maize hybrids. The ratings provided are based on observations by Corson Maize staff and are not comparable to any other companies' ratings. For some hybrids, specific trait ratings are Not Applicable (NA), while for others there is Insufficient Data (ID) to present.

1. Grain Protein

Relative grain crude protein levels.

2. Grain Hardness

Based on the amount of energy required and/or the time taken to grind a standard grain sample. Usually measured using a Stenvert Hardness Tester.

3. Kernel Depth

Length of individual kernels from the crown to the tip cap. D = Deep; MD = Medium deep; M = Medium; S = Shallow..

4. Kernel Texture: Endosperm texture

H = Hard; MH = Medium hard; M = Medium;
MS = Medium soft; S = Soft.

5. Grain Drydown

Relative rate of moisture loss from grain following physiological maturity.

6. Test Weight

Based upon grain test weight (kg/hl) corrected to 14% kernel moisture content.

7. Protein

Rating of whole plant crude protein content.

8. Forage Starch

Rating of starch available from the forage.

9. Whole Plant Digestibility

Based on digestibility of organic matter. This provides a relative indication of the energy potential of a forage.

10. Total Energy

This takes into account estimated feed energy and yield to give a relative rating for total energy harvested per hectare.

11. Disease Ratings

Please note that these ratings are not absolute. Environmental conditions play a critical role in disease development, which can, in turn, predispose plants to secondary diseases. If conditions are severe, even hybrids rated with excellent resistance can be adversely affected. Growers should balance yield potential, hybrid maturity and cultural practices (crop rotations, crop residue management etc.) against the anticipated risk of disease pressure.

12. Husk Cover

Length of husk extending over the cob. L = Long; M = Medium; S = Short.

13. Ear Flex

F = Flex (Indeterminate ear size) the hybrid has the ability to extend ear length and/or kernel rows when growing conditions allow; SF = Semi flex ear type.

14. Early Growth

Rating of early growth to the 5th collared leaf stage.

15. Relative Plant Height

T = Tall; MT = Medium tall;
M = Medium; S = Short.

16. Staygreen

A measure of late season plant health. A lower score means the plant stover dries down more rapidly as it approaches maturity.

17. Comparative Relative Maturity (CRM)

Rating based on Growing Degree Units (GDU) to silage harvest and harvest moisture relative to other Corson Maize hybrids.



DUAL PURPOSE

SILAGE CRM 78 / GRAIN CRM 88



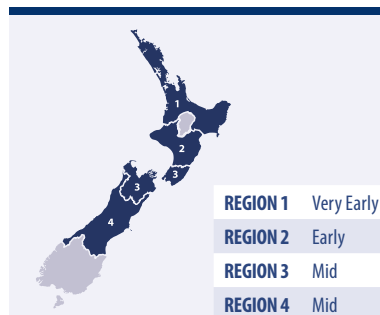
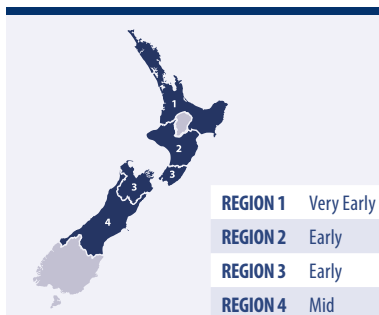
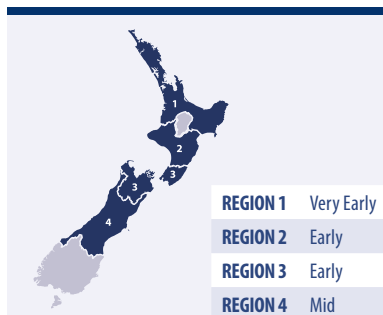
DUAL PURPOSE

SILAGE CRM 80 / GRAIN CRM 94



MAIZE SILAGE

CRM 87



HYBRID TRAITS	
Early Growth	★★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★★
Total Energy	★★★★
Stalk Strength	★★★★
Root Strength	★★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★

HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★★
Root Strength	★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★

HYBRID TRAITS	
Early Growth	★★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	NA

- Very early maturing dual purpose hybrid
- High silage yield with reliable grain content for this maturity
- High test weight grain suitable for food grade markets

Delitop is a very early dual purpose hybrid for silage or a later planting option throughout the country. For grain, **Delitop** is accepted for food grade production in northern regions.

Excellent early growth, with very good drought tolerance and resistance to Northern Leaf Blight for this maturity.

Delitop has respectable yield performance for both silage and grain and produces high energy silage with excellent whole plant digestibility.

- A quick silage hybrid for cool and warm climates
- Tall plant with good bulk
- Large girthy cobs and broad leaves
- Excellent stalk strength and leaf integrity

PAC 040 is a purpose bred animal nutrition variety that is perfectly adapted to the cooler environments prevalent in Canterbury and higher altitude/inland parts of the central North Island. It is also very adaptable and regularly outperforms other varieties in the 75 to 85 CRM maturity group in regions as far north as Waikato. Tolerant of windy conditions, **PAC 040** maintains healthy leaf area when the leaves of most other hybrids get shredded.

- Mid maturity silage hybrid for Canterbury, northern South Island, and lower North Island
- Vigorous early growth
- Well filled ears
- Tall plant with high silage yields

N23-K3 is a hybrid from the Syngenta breeding programme, which will give growers in the South Island and lower North Island a great option for high yielding silage. With excellent early growth **CORSON K3** will be particularly suited as a mid hybrid for the mid Canterbury region and as an early-mid maturity option for the upper South Island and lower North Island.

Very good tolerance to Northern Leaf Blight enables **CORSON K3** to move into the northern North Island as an early maturity option. **CORSON K3** is a tall plant that produces well filled ears giving this hybrid a high silage yield potential.

Key:

★	Poor
★★	Below Average
★★★	Good
★★★★	Very Good
★★★★★	Excellent

NA	Not Applicable
ID	Insufficient Data

All ratings are not comparable to any other companies' ratings and are based on observations by Corson Maize staff.



DUAL PURPOSE

SILAGE CRM 92 / GRAIN CRM 94



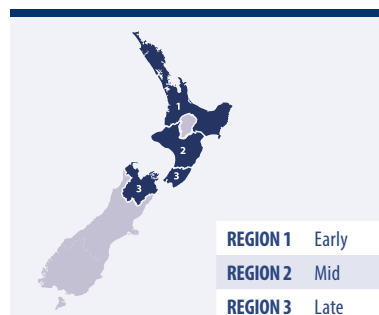
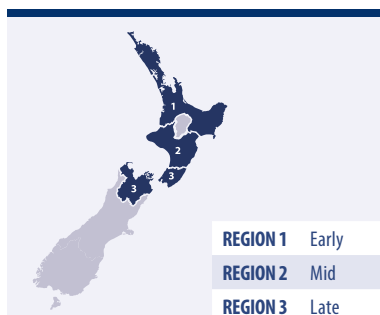
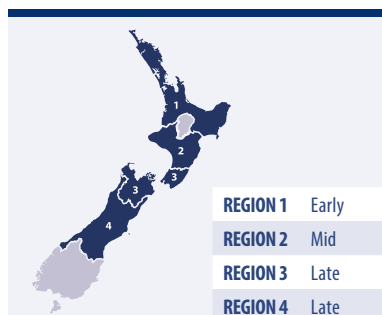
DUAL PURPOSE

SILAGE CRM 95 / GRAIN CRM 97



DUAL PURPOSE

SILAGE CRM 95 / GRAIN CRM 98



HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	ID
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★
Rust Tolerance	★★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★★★

HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	★★★★★
Staygreen	★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★
Root Strength	★★★
Rust Tolerance	★★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★★

HYBRID TRAITS	
Early Growth	★★★★★
Drought Tolerance	ID
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★★
Stalk Strength	★★★★★
Root Strength	★★★★
Rust Tolerance	★★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★★★

- Dual purpose hybrid delivering high yields of both grain and silage
- Very good staygreen and excellent rust tolerance
- Deep kernels with a medium to soft grain texture

Comet is a great silage or grain option with a silage CRM of 92, giving growers impressive results in the lower North Island and upper South Island.

It has a long husk cover and semi-flex ear to go with its medium stature. An excellent rust resistance score means this is a great choice where this disease is a concern.

Comet is suited as a full maturity silage hybrid for the upper South Island and a mid-maturity choice for the lower North Island. For grain, it will be a feature for those growers looking for a robust and consistent early maturity variety.

- Mid-season dual purpose hybrid for central regions
- Proven drought tolerance with AriDapt™ technology
- Performs well at lower planting rates

PAC 249 is a reliable top performing dual purpose hybrid that delivers optimal yields of silage and grain across a wide range of environments and soil types. It is a medium-tall hybrid with very good staygreen and plant bulk.

Cobs are large and well filled with good sized kernels producing silage rich in grain. **PAC 249** performs particularly well on light soils, recognised as a hardy hybrid capable of outperforming hybrids in the 100-104 CRM maturity bracket.

- The first maize hybrid bred in Germany released in NZ by Corson Maize, gives further genetic diversity to our portfolio
- Fast growth through to tassel stage delivers quick canopy closure
- Excellent total energy maize derived from high silage yield

Velocity produces a medium statured plant that is deceiving in its capability to produce high silage yields with very good digestibility and starch content. Uniform ears with excellent test weight grain give **Velocity** the added advantage of being able to be harvested for grain if required.

Velocity has excellent stalk strength and with very good root strength can stand confidently through to harvest for either silage or grain. Very good tolerance to rust infection adds to its strong late-season plant health.



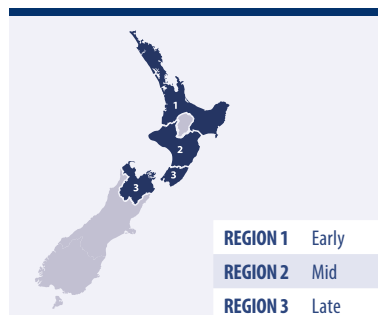
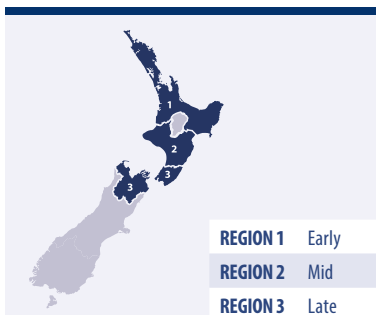
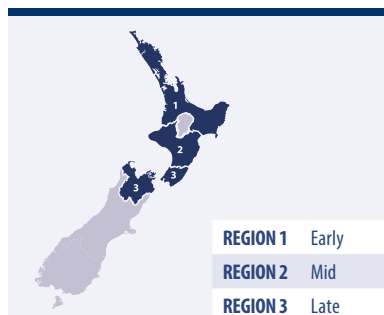
DUAL PURPOSE
SILAGE CRM 96 / GRAIN CRM 96



AriDapt™
DROUGHT READY MAIZE
DUAL PURPOSE
SILAGE CRM 96 / GRAIN CRM 98



DUAL PURPOSE
SILAGE CRM 97 / GRAIN CRM 100



HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★★

HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	★★★★★
Staygreen	★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★
Root Strength	★★★★★
Rust Tolerance	★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★★★

HYBRID TRAITS	
Early Growth	★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★★

- Strong performance as an early maturity dual purpose hybrid
- Very tall plant producing high grain content silage
- Excellent silage and grain yields

Distinct with a very tall bulky plant and large, well filled ears, **C29-A1** retains its plant health late into the season to maximise its huge silage and grain yield potential.

While primarily targeted at the silage market, **CORSON A1** does not compromise on grain yield and will deliver high yields of large, softer textured grain. **CORSON A1** will perform best on medium to heavy soil types and in other situations where there is adequate fertility and soil moisture to complete the growing cycle.

- Leafy medium height plant with decent bulk
- Produces silage with high starch content
- Excellent drought tolerance with AriDapt™ technology

Over the last five seasons **PAC 230** has proven itself to be a consistent, top end performer ranking highly in the majority of the silage and grain trials. A very high yield potential and excellent adaptability drives this hybrid's superior performance. Ears are consistently large and well filled. Grain quality and drydown is excellent and grain content in the silage is exceptionally high. Well suited to earlage and alkagrain owing to its rapid drydown characteristics. Ensure timely harvest once grain reaches 20% moisture content.

- Early to mid-maturity silage hybrid for most North Island regions
- Tall plant with high grain content
- Excellent silage and grain yields

While primarily targeted at the silage market, **N39-Q1** can also be taken through for grain with confidence. This hybrid is characterised by a tall plant and a large flex ear giving it excellent silage yields with high grain content. It has a sound agronomic package including very good stalk strength and drought tolerance.

CORSON Q1 is an exciting option for silage growers in the southern North Island as a mid-maturity hybrid or in the northern North Island regions as an early maturity option.

Key:

★	Poor
★★	Below Average
★★★	Good
★★★★	Very Good
★★★★★	Excellent

NA	Not Applicable
ID	Insufficient Data

All ratings are not comparable to any other companies' ratings and are based on observations by Corson Maize staff.



DUAL PURPOSE

SILAGE CRM 97 / GRAIN CRM 100



HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	ID
Staygreen	★★★★
Whole Plant Digestibility	★★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★★
Grain Drydown	★★★★

- Full season grain hybrid for lower North Island
- Ear uniformity provides consistent yields
- Robust agronomic package

Afinity is a medium-tall hybrid characterised by a uniform, well-filled cob with a deep kernel which gives a high yield of medium textured grain.

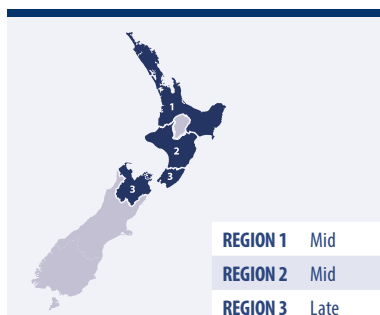
Afinity has strong agronomic traits, with very good stalk strength, excellent Northern Leaf Blight resistance, very good staygreen and a full husk cover for maximum ear protection.

Afinity is suited to the southern North Island as a full maturity grain hybrid and as an early to mid-maturity option for the northern North Island including the East Coast.



DUAL PURPOSE

SILAGE CRM 101 / GRAIN CRM 101



HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	★★★★★
Staygreen	★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★
Root Strength	★★★★★
Rust Tolerance	★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★★

- Mid season dual purpose hybrid for all North Island regions
- Medium-tall, well-structured plant with plenty of eye-appeal
- AriDapt™ drought ready technology ensures reliable results across environments and seasons

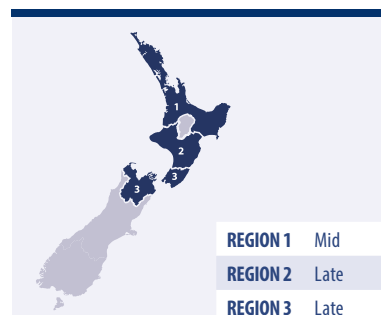
PAC 314 is an attractive, medium-tall plant with excellent drought tolerance and adaptability, good early vigour and vegetative growth. The broad semi-erect leaves and nice thick stalks of **PAC 314** provide good bulk for silage. Dent-type grain quality is very good and will be readily accepted by grain buyers and feed mills. Excellent grain and silage results to date put this hybrid at or near the head of the pack, regardless of maturity, soil type or location.

NEW



DUAL PURPOSE

SILAGE CRM 102 / GRAIN CRM 102



HYBRID TRAITS	
Early Growth	★★★★★
Drought Tolerance	★★★★
Staygreen	★★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★★
Grain Drydown	★★★★

- Mid-full season dual purpose hybrid for central and upper North Island regions
- Unique, medium-height, compact plant with thick stalks and very broad leaves
- Excellent stalks, ear-rot and Northern Leaf Blight profiles

PAC 344 is an exceptionally fast and strong starting hybrid and maintains this advantage throughout the season with excellent staygreen and Northern Leaf Blight resistance and very good rust tolerance and finishing ability.

PAC 344 is segment leading in early vigour, uniformity, vegetative growth and plant integrity. Drought tolerance is very good but can be improved by lowering plant population density. Grain quality is very good.

Key:

★	Poor
★★	Below Average
★★★	Good
★★★★	Very Good
★★★★★	Excellent

NA	Not Applicable
ID	Insufficient Data

All ratings are not comparable to any other companies' ratings and are based on observations by Corson Maize staff.



MAIZE SILAGE
CRM 104



DUAL PURPOSE
SILAGE CRM 104 / GRAIN CRM 104



DUAL PURPOSE
SILAGE CRM 106 / GRAIN CRM 102



HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★
Grain Drydown	NA

- **Exciting silage hybrid that delivers very good yield potential**
- **Tall dark green plant with flexible stalks and large ears**
- **Reliable agronomic traits assist in maintaining maximum yield potential**

G49-T9 produces a tall crop with large ears which combine to provide its high dry matter yield potential and dependable silage quality. Along with very good whole plant digestibility and total energy, it will favour both the silage grower and the silage user.

CORSON T9 is widely adapted and suitable for maize silage growers on all soil types targeting high silage yields. Moderate populations are recommended to get the best balance of cob to stover.

HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★★

- **Competitive and stable grain and silage yields**
- **Wide adaption across northern regions and soils**
- **An excellent choice for silage and grain growers throughout the East Coast, Bay of Plenty and Waikato**

N51-N4 has been long recognised as a market leading grain hybrid. Over the last few years **CORSON N4** has demonstrated a strong aptitude for silage particularly in more challenging situations. A strong all-round agronomic profile is highlighted by excellent drought tolerance and root strength, with very good ratings for early growth, stalk strength and tolerance to leaf diseases. Feed quality parameters also rate very good to excellent. Fast drydown from medium to soft density grain means it is suited to starch and feed markets.

HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★★★

- **Mid-to-late maturity silage hybrid with the ability to go through for grain**
- **Very tall plant with large ears**
- **A strong performer in this category**

C56-C4 is a mid-late maturity hybrid with a silage focus. Producing a tall crop with good grain yields, **CORSON C4** has very good all-round plant health traits, staygreen and standability in particular. Trialled widely throughout the North Island over several seasons, **CORSON C4** lifts mid-late maturity performance to another level.

CORSON C4 is an impressive hybrid. It is tall in stature and has high yield potential which will interest all maize growers. **CORSON C4** gives the grower greater flexibility coupled with superb performance.



DUAL PURPOSE

SILAGE CRM 107 / GRAIN CRM 107



DUAL PURPOSE

SILAGE CRM 109 / GRAIN CRM 109



HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	ID
Staygreen	★★★★
Whole Plant Digestibility	★★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★
Grain Drydown	★★★★

HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	★★★
Staygreen	★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★
Root Strength	★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	★★★

HYBRID TRAITS	
Early Growth	★★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	★★★★
Total Energy	★★★★★
Stalk Strength	★★★★
Root Strength	★★★★
Rust Tolerance	★★★★
Northern Leaf Blight	★★★★
Grain Drydown	NA

- Dual purpose hybrid with impressive stature and yield
- Very good stalk and root strength
- Medium-soft kernel texture with good husk cover

Plenitude is a dual purpose hybrid producing high yields of both grain and silage. The large leaves on this tall plant catch the eye and the medium-soft textured kernels suit both silage and grain users. With a CRM of 107, it is ideally placed as a longer hybrid in the upper North Island and East Coast.

Plenitude has performed exceptionally in trials over several seasons in New Zealand and will find a fit with growers who require both quality and yield from a hybrid of this maturity.

- Full season dual purpose hybrid for northern and central regions
- Very good staygreen and a lengthy grain fill period provides a long harvest window
- Very good rust resistance and late season plant health

PAC 456 is a tall, high yielding dual purpose hybrid with a large bulky canopy and long harvest window. Purpose bred in Europe for dry matter and energy production. **PAC 456** can have a high ear placement particularly if planted at high rates, this means that planting rates should not go above 90,000 seeds/ha for grain crops. However, good grain quality, yields, drydown, standability and plant integrity during grain drydown make this hybrid a top performer for both grain and silage. Husk cover is very good and ears are large and packed with large deep kernels ensuring silage of high grain content and energy.

- Full maturity **TENDERLEAFY®** silage hybrid developed in New Zealand by Corson Maize
- Very large plant with high grain yield and a sound agronomic package
- Excellent yield performance in this maturity

Z71-F1 offers very good early growth developing into a tall, bulky plant with large ears as well as very good staygreen which contributes to a wide harvest window. **CORSON F1** has a high grain content and very good whole plant digestibility.

CORSON F1 is suitable for warmer northern regions where early planting is possible. It is ideally suited to contract silage production, targeting high yields and quality silage. Dairy farmers can take advantage of its performance by planting early on a run-off.

Key:

★	Poor
★★	Below Average
★★★	Good
★★★★	Very Good
★★★★★	Excellent

NA	Not Applicable
ID	Insufficient Data

All ratings are not comparable to any other companies' ratings and are based on observations by Corson Maize staff.



MAIZE SILAGE
CRM 115



HYBRID TRAITS	
Early Growth	★★★
Drought Tolerance	★★★★
Staygreen	★★★★
Whole Plant Digestibility	ID
Total Energy	ID
Stalk Strength	★★★★★
Root Strength	★★★★
Rust Tolerance	★★★
Northern Leaf Blight	★★★★
Grain Drydown	NA

- **Ultra-full season silage hybrid for Northland, Waikato and the Bay of Plenty**
- **Huge cobs typically 20 kernels around with large kernels**
- **Very good staygreen with a long grain fill period**

PAC 624 is a purpose-bred silage hybrid for early plant situations in the warmer northern regions and is firmly positioned as a market leader in this ultra-long maturity group. Large girth cobs packed with soft, starchy grain combined with good digestibility ensures silage of excellent quality is produced.

The hybrid has good standability, however the sheer size of the plants means that it can become overcrowded at high planting rates, increasing cob height and reducing standability and cob tip fill. For this reason we recommend lower than usual planting rates that will still produce very high yields.

RE-PLANT POLICY*

Growing an excellent maize crop requires good planning and following best practice processes, however sometimes failures may occur.

At Corson Maize we will share some of the cost of a failed crop. We will supply replacement Corson Maize seed at half price if, within two months of planting, the crop fails and needs to be re-planted. This policy allows growers who have had a crop, sourced from any maize seed company, fail within two months of planting to purchase Corson Maize seed at half price to re-sow the failed crop. This does not cover So-green or other greenfeed maize products and does not cover the cost of the seed treatment.

Talk to your Corson Maize Sales Agronomist for further details or visit www.corsonmaize.co.nz

*Conditions apply – for full terms and conditions go to www.corsonmaize.co.nz



MAIZE SELECTION TOOLS

Use the tables below and to the right to help you find the hybrid from the Corson Maize portfolio with the right silage maturity for your farm.

TABLE 1: DETERMINE THE NUMBER OF DAYS FROM PLANTING THROUGH TO HARVEST

HARVEST DATE	PLANTING DATE																			
	20 SEP	24 SEP	27 SEP	1 OCT	4 OCT	8 OCT	11 OCT	15 OCT	18 OCT	22 OCT	25 OCT	29 OCT	1 NOV	5 NOV	8 NOV	12 NOV	15 NOV	19 NOV	22 NOV	26 NOV
1 Feb	134	130	127	123	120															
6 Feb	139	135	132	128	125	121														
11 Feb	144	140	137	133	130	126	123													
16 Feb	149	145	142	138	135	131	128	124	121											
21 Feb	154	150	147	143	140	136	133	129	126	122										
26 Feb	159	155	152	148	145	141	138	134	131	127	124	121								
2 Mar	164	160	157	153	150	146	143	139	136	132	129	125	122							
7 Mar	169	165	162	158	155	151	148	144	141	137	134	130	127	123	120					
12 Mar	174	170	167	163	160	156	153	149	146	142	139	135	132	128	125	121				
17 Mar		175	172	168	165	161	158	154	151	147	144	140	137	133	130	126	123			
22 Mar				173	170	166	163	159	156	152	149	145	142	138	135	131	128	124	121	
27 Mar					175	171	168	164	161	157	154	150	147	143	140	136	133	129	126	122
1 Apr						176	173	169	166	162	159	155	152	148	145	141	138	134	131	127
6 Apr							174	171	167	164	160	157	153	150	146	143	139	136	132	129
11 Apr								176	172	169	165	162	158	155	151	148	144	141	137	134
16 Apr									177	174	170	167	163	160	156	153	149	146	142	139
21 Apr											175	172	168	165	161	158	154	151	147	144
26 Apr												177	173	170	166	163	159	156	152	149
1 May														178	175	171	168	164	161	157

Planting and estimated harvest dates have been compiled using heat unit information in conjunction with trial data within each broad regional category. Many factors influence crop growth and development hence these recommendations should be used as a guide only. Contact your Corson Maize Sales Agronomist for more detailed recommendations.


MAIZE SELECTION TOOLS

TABLE 2: SELECT THE HYBRID/S BASED ON YOUR REQUIRED SILAGE MATURITY AND REGION


	SILAGE CRM	REGION 1	REGION 2	REGION 3	REGION 4
HYBRID	APPROXIMATE DAYS FROM PLANTING TO HARVEST				
Delitop	78	115-129	123-137	128-142	143-163
PAC 040	80	117-131	125-139	130-144	145-165
N23-K3	87	123-137	130-144	133-147	151-171
Comet	92	126-140	133-147	137-151	156-176
PAC 249	95	129-143	137-151	140-154	
Velocity	95	129-143	137-151	140-154	
C29-A1	96	130-144	138-152	141-155	
PAC 230	96	130-144	138-152	141-155	
N39-Q1	97	131-145	139-153	143-157	
Afinity	97	133-147	141-155	145-160	
PAC 314	101	134-148	142-156	146-161	
PAC 344	102	135-149	143-157	147-162	
G49-T9	104	136-150	144-158		
N51-N4	104	136-150	144-158		
C56-C4	106	139-153	147-163		
Plenitude	107	140-154	149-165		
PAC 456	109	142-156	151-167		
Z71-F1	111	144-158			
PAC 624	115	149-163			

GROWING REGIONS


REGION ONE

	VERY EARLY	EARLY	MID	LATE
	Delitop	Comet	PAC 314	PAC 456
	PAC 040	PAC 249	PAC 344	Z71-F1
	N23-K3	Velocity	G49-T9	PAC 624
		C29-A1	N51-N4	
		PAC 230	C56-C4	
		N39-Q1	Plenitude	
		Afinity		

REGION TWO

	VERY EARLY	EARLY	MID	LATE
		Delitop	Comet	PAC 344
		PAC 040	PAC 249	G49-T9
		N23-K3	Velocity	N51-N4
			C29-A1	C56-C4
			PAC 230	Plenitude
			N39-Q1	PAC 456
			Afinity	PAC 314

REGION THREE

	VERY EARLY	EARLY	MID	LATE
		Delitop	N23-K3	Comet
		PAC 040		PAC 249
				Velocity
				C29-A1
				PAC 230
				N39-Q1
				Afinity
				PAC 314
				PAC 344

REGION FOUR


	VERY EARLY	EARLY	MID	LATE
			Delitop	Comet
			PAC 040	
			N23-K3	


ESTIMATED GROWING COSTS

		MAIZE SILAGE		MAIZE GRAIN	
ACTIVITY	ESTIMATED GROWING COSTS	RATE/HA	\$/HA	RATE/HA	\$/HA
PRE-PLANTING	Soil test		\$17		\$17
SPRAY-OUT	Chemical		\$49		\$49
	Ag Chem application		\$38		\$38
BASE FERTILISER	Lime (including spreading)	2.9 t/ha	\$134	1 t/ha	\$72
	Base fertiliser		\$376		\$198
	Fertiliser spreading		\$45		\$45
CULTIVATION	Plough		\$185		\$185
	Power harrow		\$170		\$170
PLANTING	Planting		\$150		\$150
	Corson hybrid maize seed (Poncho® treated + FAR levy)	95 k/ha	\$544	85 k/ha	\$487
	Starter fertiliser		\$249		\$249
CROP PROTECTION PRE-EMERGENCE	Pre-emergence chemical		\$102		\$94
	Ag Chem application		\$38		\$38
CROP PROTECTION POST-EMERGENCE	Post-emergence chemical + application				\$66
	Side dress nitrogen + application	250 kg/ha	\$247	250 kg/ha	\$247
Total Growing Cost/Ha		GST Excl	\$2,344	GST Excl	\$2,105
ACTIVITY	HARVESTING COSTS	RATE/HA	\$/HA	RATE/HA	\$/HA
HARVESTING	Harvesting (and stacking, silage)		\$1,000		\$390
	Covering		\$155		
	Inoculant		\$269		
TOTAL HARVEST COST/HA		GST Excl	\$1,424	GST Excl	\$390
TOTAL GROWING AND HARVEST COSTS/HA		GST Excl	\$3,768	GST Excl	\$2,495

Disclaimer: The information on these pages is presented as estimates to the best of our knowledge at the time of presentation. Corson Maize recommends the farmer reviews all costings for their own operation, and as such is not liable for any outcome by comparison with this information.

SENSITIVITY ANALYSIS

MAIZE SILAGE		SENSITIVITY ANALYSIS – COST OF FEED (HARVESTED CROP)				
		FEED COST				
	MAIZE YIELD (T DM/HA)	C /KGDM		C /MJME		
		18	20.8	1.93		
		20	18.7	1.73		
		22	17.0	1.57		
		24	15.6	1.44		
		26	14.4	1.33		

MAIZE GRAIN		YIELD	Field wet t/ha	12.14	13.29	14.45	15.61	16.76
			DRY t/ha	10.5	11.5	12.5	13.5	14.5
		CARTAGE	50 km @ \$18/wet t	\$219	\$239	\$260	\$281	\$302
		DRYING	\$44/t @ 24%	\$534	\$585	\$636	\$687	\$737
		SUMMARY (T/HA)		10.5t	11.5t	12.5t	13.5t	14.5t
		GROWING AND HARVEST COSTS/HA		\$2,495	\$2,495	\$2,495	\$2,495	\$2,495
		INTEREST (INPUTS)	10% for 8 months	\$166	\$166	\$166	\$166	\$166
		CARTAGE AND DRYING		\$753	\$824	\$896	\$968	\$1,039
		TOTAL ESTIMATED COSTS/HA		\$3,414	\$3,485	\$3,557	\$3,629	\$3,700

SENSITIVITY ANALYSIS – GRAIN GROSS MARGIN PER HA						
GRAIN YIELD DRY T/HA						
MAIZE GRAIN PRICE (\$/T)	10.5 T/HA	11.5 T/HA	12.5 T/HA	13.5 T/HA	14.5 T/HA	
\$370	\$477.00	\$776.00	\$1,074.00	\$1,372.00	\$1,671.00	
\$385	\$634.50	\$948.50	\$1,261.50	\$1,574.50	\$1,888.50	
\$400	\$792.00	\$1,121.00	\$1,449.00	\$1,777.00	\$2,106.00	
\$415	\$949.50	\$1,293.50	\$1,636.50	\$1,979.50	\$2,323.50	
\$430	\$1,107.00	\$1,466.00	\$1,824.00	\$2,182.00	\$2,541.00	
\$445	\$1,264.50	\$1,638.50	\$2,011.50	\$2,384.50	\$2,758.50	

Note: All costs are estimates and exclude GST

- Chemical for spray-out includes glyphosate and penetrant at recommended rates.
- Contracting costs are based on surveyed contractor rates.
- Fertiliser (applied to both maize silage and grain) costs are calculated to replace what the crop will remove from the soil.
- Corson Maize hybrid used for these cost estimates are N39-Q1 for silage and N51-N4 for grain.
- The cost of Poncho® seed treatment and the FAR levy are included.
- Pre-emergence weed control chemicals used in these estimates were atrazine and acetochlor, for silage at 3+3 litres/ha and grain at 2+3 litres/ha.
- Post-emergence weed control for grain includes atrazine at 1 litre/ha, mesotrione and spraying oil.
- Inoculant estimate is using a maize silage specific product at a yield of 21 t DM/ha.
- Average land rentals have not been included in the cost for silage or grain.
- Maize silage cost per megajoule of metabolisable energy (MJME) assumes an average maize silage energy content of 10.8 MJME/kg DM.

MAIZE SEED TREATMENT

The application of seed treatment to maize seed is an important step in helping ensure crops establish and grow to their full potential.

Seed treatment has a key role to play in the first four to six weeks after planting, the period when young seedlings are most at risk from external threats such as insect and disease pressure.

All hybrids in the Corson Maize portfolio are treated with industry leading, plant protection agents including Poncho® Votivo and Rancona® Dimension. Both products have a registration for maize seed treatment, with proven efficacy against insect pests and diseases in New Zealand.

GROWER BENEFITS:

- Provides highly targeted protection against economically damaging insect pests and diseases during the plant establishment period, helping maximise seedling emergence, early plant development and crop yield.
- Minimises costly re-plants and lost production, protecting the maize seed investment.
- Reduced environmental impact due to very small quantities of chemical active ingredients being applied to the seed.
- With pesticides pre-applied, seed treatment products are recognised for their ease of use and safety profile, provided the appropriate handling procedures are adopted.



MAIZE SEED TREATMENT

1: INSECT PROTECTION - PONCHO® VOTIVO

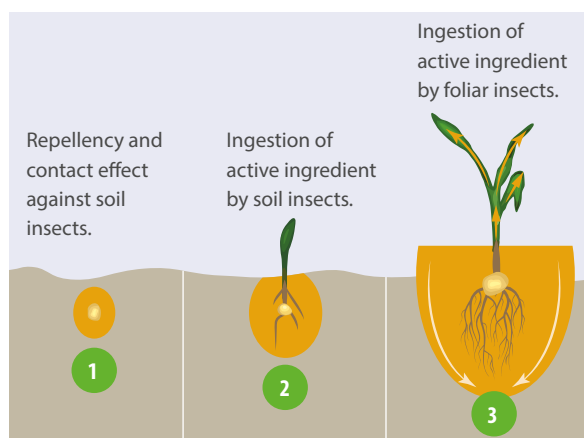


Poncho® Votivo is a new seed treatment combination providing both synthetic and biological control of target pests. Poncho® is the industry-leading seed-applied insecticide and includes the active ingredient clothianidin. Through its systemic mode of action and increased spectrum, Poncho® provides a high level of protection against early crop pests for up to six weeks after sowing. Votivo (*Bacillus firmus* L -1582) is a world leading biological seed treatment, providing suppression against root feeding soil nematodes and improved plant health.

Poncho® Votivo protects against:

- ✓ Argentine Stem Weevil (adults and larvae)
- ✓ Black Beetle (adults)
- ✓ Greasy Cutworm (larvae)
- ✓ Soil Nematodes

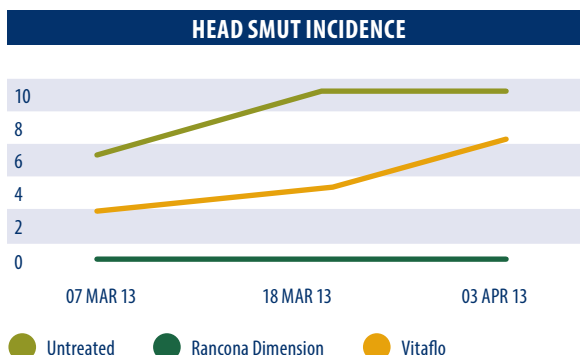
HOW SYSTEMIC INSECTICIDES WORK



MODE OF ACTION

- 1 Active ingredient is released after seed is planted forming a protective barrier around the seed.
- 2 Plant absorbs active ingredient through the roots.
- 3 Active ingredient is transported to developing foliage and is uniformly distributed in plant tissues.

2: DISEASE PROTECTION - RANCONA® DIMENSION



Trial NUNZ1225 - Conducted by Nufarm New Zealand: Control of Head Smut in Sweetcorn, Hawkes Bay, 2012

Rancona® Dimension is a unique fungicidal treatment for maize seed, tested under local conditions and now registered in New Zealand for maize seed treatment. It is a world-first formulation, and combines two active ingredients which are new to maize growers: ipconazole and metalaxyl.

Metalaxyl gives systemic control of *Pythium*, while ipconazole has both systemic and contact modes of action for protective and curative control of *Fusarium*, *Rhizoctonia* and Head Smut.

Extensive field trials have shown superior Head Smut control and improved seedling emergence. Other key benefits of Rancona® Dimension include rapid establishment, improved early crop vigour and high seed safety. It is particularly useful for sites where soil-borne pathogens (especially Head Smut) have built up under repeat crops.

Rancona® Dimension protects against:

- Head Smut
- Seed-borne seed and seedling rot diseases (including *Rhizoctonia*, *Pythium* and *Fusarium* spp.)

MAIZE SEED TREATMENT

3: BIRD PROTECTION - AVIPEL®

Avipel®

Avipel® contains a naturally occurring organic substance which acts as a bird deterrent. When birds consume seeds treated with Avipel® they experience an unpleasant but harmless gut reaction which they associate with the location. Birds quickly learn to avoid Avipel® treated seeds and look to forage for other food sources.

Avipel® bird repellent is available exclusively from Corson Maize.

Poncho® Votivo and Rancona® Dimension are applied as a standard treatment to all hybrids in the Corson Maize portfolio.

Avipel® is available on request.

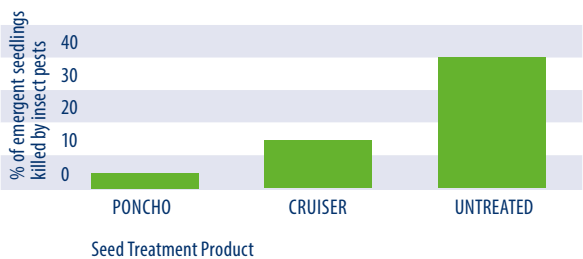
4: SEED TREATMENT PERFORMANCE

The following data was collected from a replicated field trial carried out by AgResearch in the Waikato prior to the commercial release of Poncho® into the maize market. The trial was drilled in October 1999. Evaluations were carried out over the first six weeks to ascertain the effect of seed treatment on insect pests, with plant numbers and crop yields measured in March 2000.



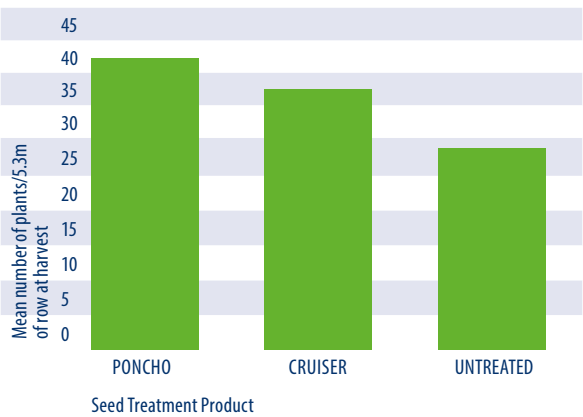
INSECT EFFICACY

The effect of seed treatment on the % of emergent seedlings killed by insect pests (Black Beetle, Argentine Stem Weevil, Greasy Cutworm) during establishment



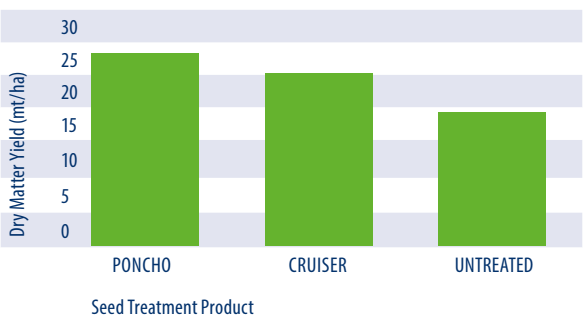
PLANT NUMBERS

The effect of seed treatment on plant numbers



CROP YIELD

The effect of seed treatment on crop yield



MAIZE SEED TREATMENT

CROP YIELD & FEED VALUE		
	PONCHO® TREATED SEED	UNTREATED SEED
Crop Yield (kgDM/ha)	24,600	17,110
Feed Value/ha	\$5,904	\$4,106

*Yield data extracted from AgResearch field trial in 1999/2000.

NET FINANCIAL BENEFIT

THE APPLICATION OF PONCHO® IN THE ABOVE TRIAL PRODUCED AN ADDITIONAL 7,490 KG OF DM/HA OVER AND ABOVE UNTREATED SEED, PROVIDING A NET FINANCIAL BENEFIT OF \$1,648/HA.

Assumptions:

Maize silage valued at \$0.24/kgDM.

Maize seed sown at 1.25 bags/ha (100,000 seeds)

Estimated retail cost of the Poncho® treatment is \$150/ha (GST inclusive)

5: PRODUCT STEWARDSHIP

The seed treating process undertaken by Corson Maize Seed ensures all seed treatment products are applied with a high degree of accuracy to every seed in order to maximise the plant protection benefits.

The application of an industry leading polymer (Peridiam® EV309) binds the active ingredients to the seed, ensuring they are delivered to the soil as required. The seed treatment polymer minimises any 'dust off', protecting the environment and ensuring the safety of drilling operators. The polymer has also shown superior performance in terms of flow-ability of treated maize seed through drills.

When handling treated maize seed, it is important to wear protective clothing including gloves and a mask, as well as washing hands and any exposed skin prior to meals. Treated seed should be kept out of reach of children, livestock and birds. Store treated seed in a cool, dry environment away from direct sunlight.

Poncho® Votivo is a registered trademark of Bayer Crop Science and is registered pursuant to the ACVM Act 1997. Rancona® Dimension is a registered trademark of MacDermid Agricultural Solutions Inc and is registered pursuant to the ACVM Act 1997. Avipel® is a registered trademark of Arkion Life Sciences.



SIZE & SHAPE OF MAIZE SEED

Questions arise every year regarding the effects of seed size and shape on plantability and yield potential.

It is important to recognise the variability in terms of seed size and shape, and the effect these may have on plant establishment and population. Seed is sized to help maintain a uniform sample – consistent seed size will help with plant counts and seed spacing.

To understand the effect seed size may or may not have on yield potential it is important to:

- 1 Understand how seed size is determined
- 2 Examine how it might affect emergence and early growth
- 3 Understand the importance of proper planter settings

1: HOW SEED SIZE IS DETERMINED

Seed sizes from hybrid production will vary from field to field, and year to year due to many factors. These include specific hybrid characteristics, parent tendencies and growing conditions, especially during the pollination and fill period. Seed from a single cob falls into many size/shape categories. Large rounds usually come from the base of the ear, flats from the centre and small flats and small rounds from the tip. Very small seed usually comes from the base or tip of the cob, but will fall outside the weight ranges established by the grading system.

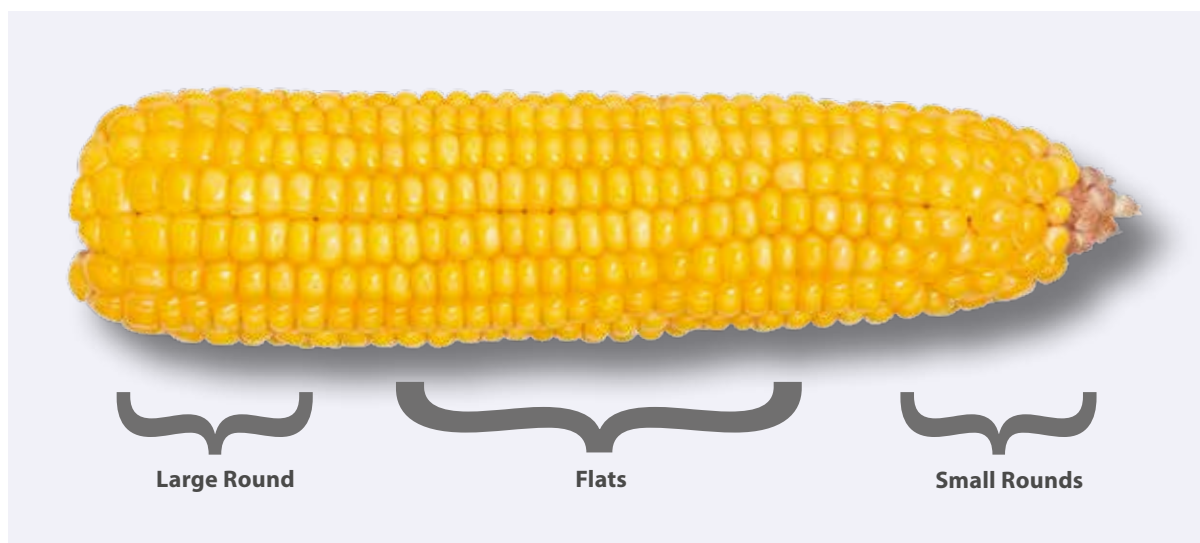
2: EFFECT ON EMERGENCE AND EARLY GROWTH

There have been minor differences in emergence noted under adverse planting conditions. Large seed can have slightly decreased emergence rates in dry soil conditions as the amount of moisture needed for germination and emergence is relative to the size of the seed. Small seed can have slightly decreased emergence in cool or crusted soils, as the amount of energy needed in those situations may exceed the amount stored in the endosperm. Even with the potential effect on emergence and reduced early vigour, the effect of seed size on yield potential is not significant if harvest populations are similar.

3: IMPORTANCE OF PLANTER SETTINGS

This is where seed size and shape matters. Planter settings should be adjusted for accurate seed positioning, placement, and the intended population. When set properly for the seed size, a planter can more accurately singulate and deliver the seed. Planters that are not properly adjusted to seed size can deliver excessive numbers of seed or misses, reducing grain yield potential.

Vacuum Planters in General. Depending on if the planter is equipped with cell or flat disks, adjustments can be made to the vacuum pressure, cell size, and seed singulation devices that can affect plantability.



SIZE & SHAPE OF MAIZE SEED

Additionally, the use of talc or graphite can help improve seed flow and drop. When planting small seed, consider increasing the talc or graphite rate to account for the increased surface area with small seed. The importance of talc or graphite increases with high rates of seed treatments and/or humid conditions. Mixing the talc or graphite well throughout the hopper or tank can help provide adequate coverage. Another component to examine regardless of disk type is the way the disk is adjusted relative to the meter housing. Having the disk rub the housing with light contact can help improve singulation, reduce seed damage, and help load the planter drives, improving their consistency.

Finger Pick-up Planters. Based on research conducted in Illinois, USA, planter test stand indications for John Deere and Kinze® Finger Pick-up planters show a tendency to over-plant small seed, depending on the seeds per kg, the seed coating, and the seed shape. Singulation averaged around 95% to 96% for small seed and ranged plus or minus two to three percent from the average.

Additionally, the Precision Finger Meter from Precision Planting was capable of delivering 98.5% singulation, on average, for small seed. Planter speed is a major component of calibration and accurate seed placement. Planting at speeds faster than recommendations of the manufacturer's manual may result in poor seed singulation and placement, which can adversely affect yield potential. Likewise, planting at speeds lower than the recommended range may result in a lower than intended population. Keeping a finger pick-up planter well maintained is a good way to help minimise planting errors.

SUMMARY

Overall, seed size does not affect genetic yield potential. Having a planter set properly can improve your opportunity to achieve an optimal standby minimising skips, doubles, and triples. Focusing on genetic yield potential, seed quality, increasing populations, and identifying planter settings that optimise plantability is helpful in increasing yield potential.



ROOT DEVELOPMENT & NUTRIENT UPTAKE

Maize is classified as a grass having a fibrous root system, rather than a tap root. The following explains root development in relation to nutrient uptake. Remember that factors such as weather, soil properties, fertiliser and pests can influence the growth, distribution and coordination of the root system within the soil.



FUN FACT

The total end-on-end root length can be up to 126,500 km per ha!

DID YOU KNOW THAT THERE CAN BE DIFFERENCES IN ROOT GROWTH PATTERNS BETWEEN MATURITY GROUPS?

Differences between maturity groups are greater than individual hybrids. Given similar growing conditions, a full season hybrid will produce a higher root mass and a corresponding higher yield potential.

WEEK 1: GERMINATION

- The primary (radicle) root elongates and breaks through the seed coat.
- The coleoptile then surrounds the shoot before forming two to five seminal roots.

WEEK 2 – 3: THE SEMINAL AND NODAL ROOTS

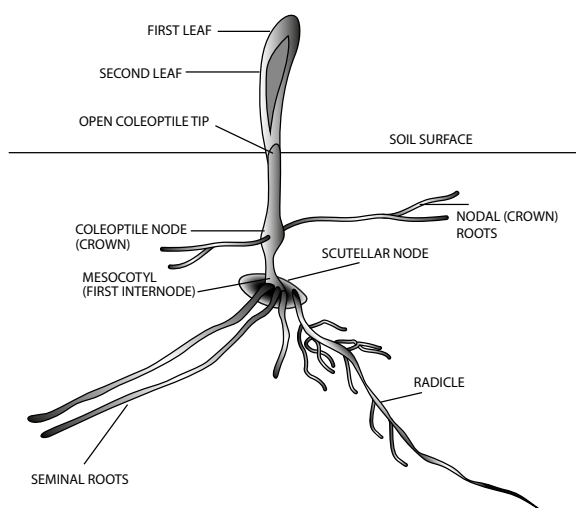
- The seminal root system anchors and absorbs essential water and nutrients for the developing plant. These roots will be taken over by the nodal root system.
- After the coleoptile and first leaves emerge from the soil during which time the nodal root system begins to develop from the crown.
- By approximately the third week the plant has reached the fourth leaf stage and total plant mass per hectare has roughly doubled from seed weight.

WEEK 4 – 8: VEGETATIVE GROWTH

- The vegetative growth phase sees a large increase in root mass in the top profile of the soil. Root depth is also increasing rapidly.

WEEK 9 – 11: TASSLING AND REPRODUCTION

- At the point of tassling, the plant has taken up approximately 75% of its nitrogen, 75% of its phosphate and 85% of its potash requirement.
- Providing there are no physical or chemical barriers, rooting depth may easily exceed 1.5m.
- Growth is focused on cob development causing nutrient intake to slow.
- The plant starts to now produce grain over leaves.



ROOT DEVELOPMENT & NUTRIENT UPTAKE

POST POLLINATION

- Two to five weeks after pollination, from blister to full milk/dent the kernel fills rapidly and the balance of nutrient uptake occurs.
- The root system begins to senesce and die off. By the end of grain fill, up to 40% of the root mass will have died. This is shown above ground level as the plant gets rid of 'excess baggage' as it nears maturity.

THREE WEEKS FROM "BLACK LAYER": GRAIN FILLING

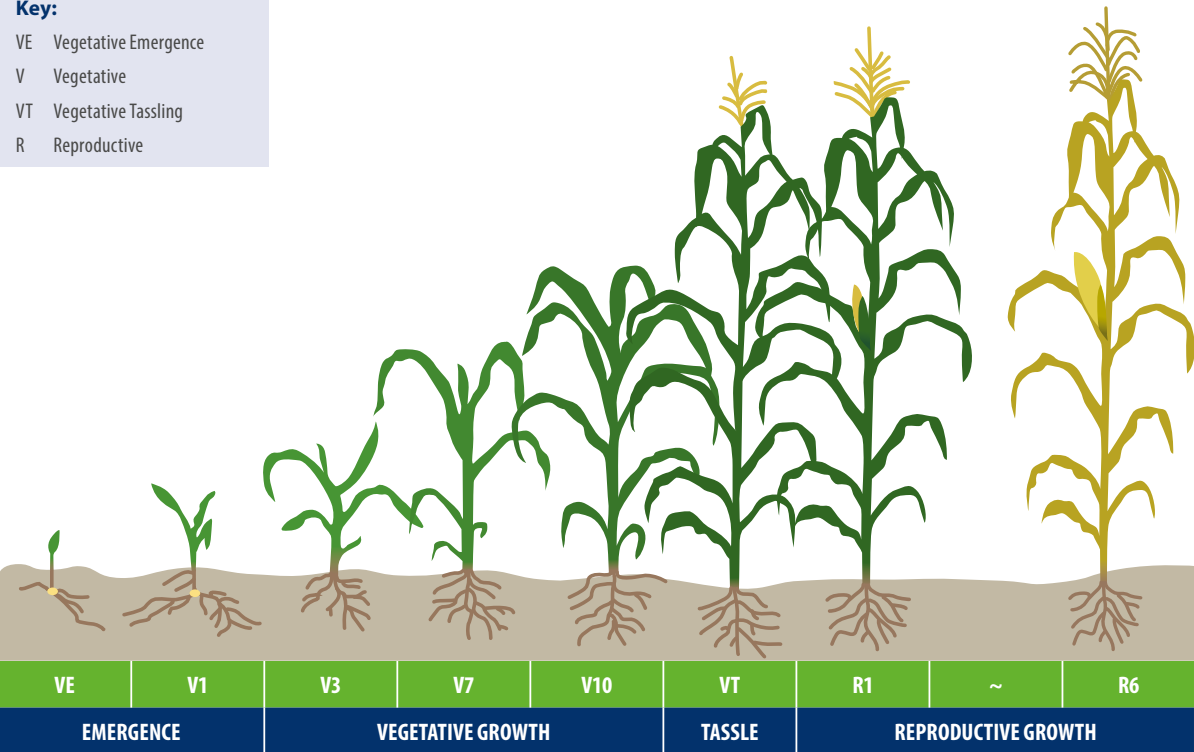
- Senescence continues as the plant channels photosynthate from leaves, stalks and roots into developing grain. Almost no nutrient uptake occurs during this stage.



GROWTH STAGES OF A MAIZE PLANT

Key:

- VE Vegetative Emergence
- V Vegetative
- VT Vegetative Tassling
- R Reproductive



SOIL FERTILITY & FERTILISER

THE NUTRIENT UPTAKE PROCESS

For nutrient uptake to occur, the individual nutrient ion must be positioned adjacent to the root. There are three ways this positioning occurs – the root can “bump” into the nutrient ion as it grows (interception), nutrients in the soil solution flow to the root as water is taken up (mass flow) or by diffusion. Nutrients such as phosphate (P) and potassium (K) are held strongly by soils and as their concentration around a root reduces through absorption, a gradient is created for the nutrient to diffuse from an area of higher concentration to a depleted area.

Mass flow supplies the bulk of the nitrogen (N) requirement, as well as calcium and sulphur as these elements are more soluble and taken in as the plant takes in water. Diffusion is responsible for the majority of the P, K and trace elements moving to the root zone. They are taken into the root by an active process therefore it requires energy to do so. A protein carrier binds with a nutrient ion and carries it across a protective membrane and into the xylem system for delivery to the growth areas.

In normal patterns of uptake, nutrient uptake mirrors plant growth. The plant will take up most of its nutrients during periods of vegetative growth and then move

stored nutrients to the developing grain during the reproductive stage. Nutrient uptake increases rapidly after the 4 leaf stage and remains high until after flowering. After pollination, nutrient uptake slows, and nutrient loss from the plant will occur after the dent stage.

Weather can have a significant effect on the root system and its ability to take up nutrients. The location of the root system changes with temperature and moisture stress. Under ideal conditions, there is a high density of roots in the top 100mm of soil and an even amount of root mass throughout the top 200mm. In a dry season, the whole root system will be located deeper, where there is available moisture and lower temperatures. In wetter years, the opposite occurs and root growth is reduced and the root system is much shallower. More importantly, the activity of the whole root system is reduced – roots need oxygen to function and also their rate of metabolism is affected by temperature. Nutrient uptake can be reduced by cool temperatures and overcast conditions will also affect photosynthesis. In dry seasons, the nutrient content of a maize plant is lower – moisture stress means less uptake of nutrients as water is required for this process.



SOIL FERTILITY & FERTILISER

FERTILISER AND THE MAIZE CROP

Growers have a responsibility to ensure they only supply the nutrients that are essential for crop development – anything above that has the potential to remain in the soil and leach into groundwater (especially nitrogenous fertilisers).

Nitrogenous Fertilisers

The timing of the availability of nitrogen (N) is one of the key building blocks of a successful crop – too little or too late will compromise crop potential. A soil test before cultivation will determine the levels of available N in the soil and provide a baseline for determining the crops needs.

A maize plant will use very little N in the first month. This increases to reach a peak prior to flowering – and with a need for phosphate (P) and potassium (K) as well as water in this key period, any stress or deficiency at this stage has the potential to cause major yield penalties for the crop. With N, split applications present the fertiliser in a more natural way – therefore a drip feed approach (or the use of slow release products) will gain the best response in the majority of situations. With a nitrogen efficiency coefficient of 60% before 4 leaves to 80% thereafter, the plant has a large need for N from 6 leaves onwards.

N efficiency improves with yield. With a good root system and good soil structure, roots are able to access a greater soil area. This means increased root mass, along with good soil moisture results in decreased stress. Stress inhibits growth and causes a downward spiral to begin.

Phosphate (P) and Potassium (K)

The key to what a maize crop requires is what is available in the soil less what the yield potential is and how much P and K is needed to get there.

Both P and K are best added to the seed bed, but when smaller amounts of P are required, placement in the form of starter fertiliser in close proximity to the seed is desirable. P is required particularly by the growing tips of the plant, hence its importance for root growth. Any shortage, especially in the very early stages, reduces root growth and nutrient uptake and this can adversely affect the growth of the crop for the rest of the season.

K has a number of diverse roles in plants. It plays an important role in regulating the water content of the plant and with an adequate supply of K plants can survive drought stress more easily. It is essential for the transport of sugar from the leaves to the storage organs where the sugar is converted to starch. It plays a major role in maintaining the turgor (i.e. rigidity) of plant tissue. Leaves need to be turgid to remain fully extended to maximise the surface exposed to sunlight that provides the energy to convert carbon dioxide in the atmosphere to sugars in the leaves. Plants well supplied with K also seem to be less susceptible to fungal and pest attacks.

Trace Elements

Magnesium (Mg) is an essential element in chlorophyll and hence for photosynthesis. Crop removal is in the region of 40 kg/ha Mg. The typical Mg deficiency symptoms are a browning/reddening of the leaf tips and margins and pronounced yellow striping of the leaf veins.

Zinc (Zn) and manganese (Mn) are two trace elements removed by maize crops – typically 500g/ha and 1500g/ha respectively by a maize grain crop. Unless there is historically a deficit, these two elements are unlikely to be specifically included in a nutrient plan. A soil test will show this, and the best way to overcome a Zn issue is to include this in a base dressing pre-planting; Mn deficiency is best corrected in the growing crop, with two applications of Mn sulphate – at the 4-5 leaf stage and then again two weeks later.

Soil pH and Maize

Maize requires a soil pH of 5.8-6.0. Soil microbial activity is optimised at pH levels around 6.0, increasing nutrient cycling and biological activity. When the soil pH drops below 5.5, Mg, calcium, K and molybdenum availability falls. There can also be a reduced effectiveness of herbicide activity at soil pH levels below 5.5 and at lower than 5.0, toxicity from certain trace elements becomes a factor in plant health.

A soil test pre-planting will determine whether the selected paddock(s) require an application of lime.

PEST IDENTIFICATION/ ESTABLISHMENT



#

ARGENTINE STEM WEEVIL (ASW)

Can be a major threat to seedling maize plants.

Larvae enter the maize shoot soon after emergence then bore towards the base of the plant and sever the growing point.

ASW feeds on pasture tillers, therefore maize crops sown into paddocks previously in pasture or with pasture weeds with a short cultivation period, are most at risk.

Visible damage includes emergence failure, wilting and collapse. Protect against ASW with Poncho® Votivo (page 24)



#

BLACK BEETLE

Tends to stay near the soil surface, eating roots of immature plants and also brace roots and can bore into stems of mature plants or ears lying on the surface.

They can survive through winter to affect crops in the new season.

On average each adult can kill one October planted maize plant.

Early planted crops are generally most susceptible.

Ground inspection should ideally occur before planting. Protect against black beetle with Poncho® Votivo (page 24)



#

GREASY CUTWORM

Cutworm damage is determined by the number and growth stage of the caterpillars in relation to the crop growth stage.

The first stages of a cutworm's life is spent on the soil surface feeding on plant leaves. As the cutworm grows it begins to sever plants and consume them, this is referred to as the "cutting stage". The most devastating effect occurs where the "cutting stage" coincides with crop emergence. However, damage is more frequently caused by caterpillars tunnelling up the maize stem after the 4-leaf stage. Protect against greasy cutworm with Poncho® Votivo (page 24)



#

SLUGS

Slugs may damage emerging maize crops. Cavities are gouged into the seed, sometimes affecting the growing point, and early leaves often appear shredded as a result of slug feeding. Crops sown on heavy, moist soils which have a cloddy structure and direct drilled crops are most at risk. Protect developing maize plants by applying slug bait in areas or paddocks where slugs are causing concern.

PEST IDENTIFICATION/ LATE SEASON



SHIELD BUGS

Most common: brown shield bug and green shield bug.

Commonly called “stink bugs”.

They use their needle-like mouth parts to suck sap from plants, often penetrating the developing kernels on the maize cob causing discolouration and potentially causing problems with secondary fungal pathogens (e.g. *Fusarium* spp.)

They have a powerful unpleasant odour when squashed.

Shield bugs can usually be found on plant foliage that is exposed to sunlight.



COSMOPOLITAN ARMYWORM (CAW)

Caterpillars are usually found at or shortly before silking. CAW caterpillars graze on leaf laminae of maize and leave only the midribs in severe cases.

CAW will consume the bottom half of plants before moving to the upper parts. Silks and seeds may also be consumed.

Parasitic wasps often provide adequate control of CAW in most crops, however in crops with high grass weed pressure, CAW infestations can boom causing severe damage and yield reductions.

Squashing caterpillars and observing their leaked insides for tell-tale signs of wasp egg larvae will provide an indication of whether or not a synthetic pyrethroid spray is warranted.

Note: Always check withholding periods and seek expert advice if in doubt.

DISEASE IDENTIFICATION



EYESPOT

Eyespot appears as a large number of small circular spots, usually less than 4 mm in diameter and often just confined to the leaves. Eyespot is cream to grey coloured in the centre, with a purplish-brown edge and surrounded by a translucent halo when seen against the light. Initial symptoms can appear at the seedling stage and spread to the lower leaves; but the disease does not become fully established until after flowering, when it attacks the leaves above the cob. Leaf loss is the result, with severe infection causing kernels to shrivel. Lower summer temperatures and leaf surface moisture help the disease to manifest itself, with several hours of leaf moisture required for the disease to spread.

The fungus survives easily on crop residues, so it is important to bury this if the disease is present in a mono-crop situation.



HEAD SMUT

Head Smut can cause serious yield losses. The cobs and tassels are invaded by spores, taking over the zone of the kernels and stamens. It is more prevalent in low-lying areas or on land prone to flooding and in sandy or silty soils. Affected cobs are bulbous, soft and with no visible silks. The fungus gets into the plant through the mesocotyl and roots before the 8-leaf stage and spreads systemically, going up to the developing cob and tassel. Cold temperatures will slow the rate of germination and establishment of the pathogen, which thrives in warm environments. Disease development is helped by any factor that slows early growth, for example, early dry conditions or compacted soil.

Protection is in the form of hybrid resistance and the fungicidal seed treatment Rancona® Dimension (page 24). Seed crops should be monitored carefully to ensure no carry-over of infection.



FUSARIUM HEAD BLIGHT

Caused by a number of *Fusarium* species, with the disease occurring on crop residues and spreading to the growing plant. Symptoms appear after flowering and the pathogen infects the cob via the silks, forming a mycelium sheath starting at the apex of the ear and progressing downwards. The decomposing kernels and the mycelium produce a characteristic pinky-brown colouring. Often an infection occurs opportunistically, following corn earworm damage or similar.

There is potentially some varietal resistance, but effective management of previous crop residue is the key to control.

DISEASE IDENTIFICATION



ROOT NECROSIS – *RHIZOCTONIA/FUSARIUM*

Root rot diseases are caused by a number of different pathogenic fungi affecting the roots. *Rhizoctonia* affects main and brace roots, causing severe necrosis with a blackening of the affected areas. *Fusarium* fungi causes rotting with a characteristic browning of the roots. Visible effects in the crop are often seen during early grain fill with leaves turning to green-grey, then to pink before drying out. The plant is weak, easy to pull out and therefore prone to lodging.

Higher risk situations are: sandy soils, irrigated land and in single-crop conditions where there are soil structure problems.



NORTHERN LEAF BLIGHT – NLB

Leaf blight is an endemic leaf disease, with visible symptoms in the form of large spindle-shaped lesions, running in the direction of the veins and causing premature drying of the leaves. In damp weather, dark brown fructifications develop, causing the disease to spread, with airborne spores infecting the upper leaves. The impact on the crop occurs through the loss of leaf area for photosynthesis and can happen rapidly – 5-12 days from initial infection to visible symptoms.

NLB is often restricted to certain specific regions of New Zealand due to the occurrence of the required climatic conditions. Risk is increased with the following factors: planting in a known hotspot, planting in a paddock subject to a previous outbreak or in close proximity to one, and close to a grain dumping site or a grain storage facility.

Control is improved by hybrid selection and shredding/mulching of previous crop residues.



RUST

Maize, like many other grasses, can suffer from rust infection – and maize rust (*Puccinia sorghi*) has its own characteristic symptoms. The disease is not found to be hybrid specific and occurs in areas of higher temperature/humidity. The orange/brown spots are found on any leaves, stalks and husks that are exposed to the light and the spots darken and appear scab-like, when the next cycle of spores are produced. Damage to the crop occurs through this loss of leaf area for photosynthesis.

Rust has a very short biological cycle – spores are formed approximately seven days after infection, so several cycles can infect a single crop.

WEED IDENTIFICATION

Effective weed control will play a large part in how successful a maize crop is in terms of both yield and quality. Poor weed control can result in competition for water and space, as well as robbing the maize plant of available nutrients. Weeds can also provide a source of infection for disease and an environment for pests to multiply and infest a crop. From a quality perspective, weeds can take away grain yield and add low-quality forage into a silage stack.

Weed identification should begin prior to planting, with cropping plan decisions being taken to include particular weed issues.

Chemical resistance is being seen in some regions and there will be specific issues with differing locations and rotations that will require an individual approach to weed control.

The first step is identifying the weed, and the pictures on the next page illustrate some of the more common weeds found in maize paddocks. For specific methods of control, please discuss this in more detail with your Corson Maize Sales Agronomist or retail representative.



WEED IDENTIFICATION



FATHEN



SHEPHERD'S PURSE



STORKSBILL



SPURREY



WIREWEED



DOCK



SPEEDWELL



CALIFORNIAN THISTLE



YARROW



NIGHTSHADE



PERENNIAL RYEGRASS*



BATHURST BUR

* In a maize crop perennial ryegrass is considered a weed.

CROP MONITORING FOR SILAGE HARVEST

Walk the crop on a regular basis, with more frequent checks needed as a likely harvest date approaches. Walk into the crop at least 15-20 rows to get a representative view of crop maturity. Things to watch as crop maturity starts to advance include the following:



CROP COLOUR

- The whole plant will typically still be green (unless moisture stressed or frost damaged).
- Husk cover – this starts to yellow off/dry when the remainder of the plant is green.



KERNEL MATURITY STAGE

As maize approaches maturity, plants mobilise water soluble carbohydrates (sugar) from leaves and stalk to lay down starch in the kernels. Starch accumulates first in the outer part of the kernel (closest to the inner husk). As maturity advances, starch fills from the outer part of the kernel, moving inwards towards the centre of the cob.

Kernel milk line monitoring provides a handy guide to determine approximate:

- DM percentage of the whole plant.
- Timing for crop harvest.

NOTE: DM percentage of the whole plant can't be determined accurately using kernel milk line position alone – planting date, weather and between hybrid variation mean that kernel milk line is a **guide** for harvest only. Whole plant DM% remains the 'gold standard' for assessing DM%.



ASSESSING KERNEL MILK LINE:

- Select 3-4 cobs at least 15-20 rows in from crop edge.
- Strip husks, snap cobs in half, discard bottom half.
- Hold top (tip) of cob, tip facing towards ground.
- **Milk line** = junction between harder starch and softer milk endosperm.
- Assess how far down the kernel the milk line has moved. Run fingernail or pen tip from outer starchy edge to milk line to identify the milk line.



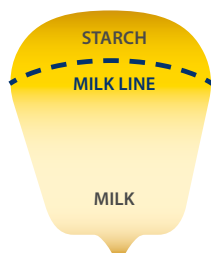
WHOLE PLANT DM%

- Kernel milk line is only a **guideline** for probable harvest timing.
- Whole plant DM% is the best way to be sure timing is right.
- Harvest a number of individual plants from 15-20 rows into the crop. Use a garden shredder to process plants and cobs. Mix shredded whole plant material well and grab two to three large handfuls of chopped material.
- Send to a feed testing laboratory for DM% analysis. Alternatively, microwave methods are useful for providing DM% results more quickly. Ask your Corson Maize Sales Agronomist for more information about DM% testing of whole plants or refer to the FAR "Good Practice Guide for the Trading of Maize Forage": far.org.nz/assets/files/uploads/FTDG+Code+of+Practice.pdf

CROP MONITORING FOR SILAGE HARVEST

1/3 MILK LINE

DIRECTION OF STARCH FILL

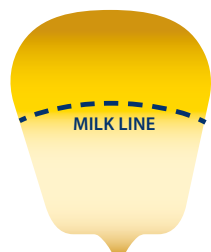


Accumulating tDM/ha and DM%

- Less than 30% DM
 - Watch and wait
 - 1-2 weeks to reassess DM%*
- * Depending on weather and dry down rate, DM can increase by 1% every 2 to 3 days.

1/2 MILK LINE

DIRECTION OF STARCH FILL



Accumulating tDM/ha and DM%

- 30 to 35% DM
- Watch closely
- Within 7-10 days of harvest especially if silage quality a priority
- Check against:
 - Husk colour
 - Whole plant moisture
- Chop whole plants for DM% test

* Depending on weather and dry down rate, DM can increase by 1% every 2 to 3 days.

2/3 MILK LINE

DIRECTION OF STARCH FILL



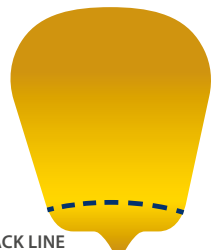
Accumulating tDM/ha and DM%

- 35 to 38% DM
- Check against:
 - Husk colour
 - Whole plant moisture
- Chop whole plants for DM% test
- Harvest imminent

* Depending on weather and dry down rate, DM can increase by 1% every 2 to 3 days.

BLACK LINE

DIRECTION OF STARCH FILL



Physiological maturity

- 40% DM
- Chop as soon as possible
- TOO DRY for good quality silage
- Short theoretical length of chop required
- Focus on good kernel processing

* Depending on weather and dry down rate, DM can increase by 1% every 2 to 3 days.

MAIZE SILAGE HARVEST BEST PRACTICE



DRY MAIZE SILAGE

is difficult to compact well/
exclude air from. Starch
digestibility is reduced.



MAIZE SILAGE CROP CHOPPING TOO WET?

Contact your Corson Maize Sales
Agronomist for more advice.
Ideas include lengthening
theoretical length of chop (TLC)
to 15-20mm for wet maize silage
and not processing the kernels.



MAIZE SILAGE CROP CHOPPING TOO DRY?

Contact your Corson Maize Sales
Agronomist for more advice.
Ideas include a shorter theoretical
length of chop (TLC) to improve
stack compaction and closely
monitoring the percentage of
kernels cracked.

DRY MATTER PERCENTAGE AT HARVEST

Decisions around harvest timing are a balance between:

- Leaving the crop growing as long as possible to maximise DM yield/ha.
- Harvesting the crop early enough before the whole plant becomes too dry/too mature to yield a top quality silage.

Target dry matter (DM) percentage is a compromise between getting the best possible yield per hectare and having top quality silage for the animal.

Target harvest DM% = between 32 and 38% DM (the same as 62 to 68% moisture).

For day one of harvest, start harvesting at the lower end of the target DM%. DM% can increase by 1% every 2 to 3 days depending on weather conditions.

MAIZE SILAGE CROP THAT'S TOO WET (LESS THAN 30% DM)?

Effluent losses from the stack

- Environmental concerns if nutrient-rich effluent reaches waterways.
- DM losses are likely in effluent – final DM yield of stack silage will be lower than silage at 32-38%DM.
- Sugar and protein losses – effluent run-off contains good quality soluble nutrients, leaving poorer quality fibre behind = lower MJME silage.

High total acid production in the maize silage stack

- Wet maize produces too much acid, making the pH of the stack very low. This might cause feed refusal problems by animals.
- Acetic acid (vinegar) is produced in wet maize stacks. Cows dislike vinegar, increasing problems of feed refusal and losses at feedout.

MAIZE SILAGE CROP THAT'S TOO DRY (MORE THAN 40% DM)?

Leaf material can shatter and be lost in the paddock during harvest

Stack is harder to chop/pack/roll

- Air can't be squeezed from the stack, fermentation takes longer to drop stack pH to final level. More soluble nutrients are consumed. Final DM yield of stack is reduced.
- Stack can be unstable and dangerous to roll.
- Aerobic instability (heating and spoiling) of the face at feedout is likely.

Quality of the final product

- Dry maize silage contains less energy per kgDM.
- Stover is less digestible (lower MJME), higher neutral detergent fibre (NDF) and NDF is less digestible (lower NDFd) and contains fewer sugars.
- Rate and extent of rumen digestion of starch may be lower. Starch may be lost in the dung of cows, especially if cows are on lush pasture (rapid transit of maize through the gut) and if maize hasn't been left in the stack for a number of months before feeding out.

MAIZE SILAGE HARVEST BEST PRACTICE

Maize silage chop length and kernel processing. Assessing chopped forage from forage harvester:

SQUEEZING A HANDFUL OF CHOPPED MAIZE

can help estimate possible DM%.
This won't replace laboratory
or microwave methods for
DM% measurement.

1: "SQUEEZE TEST" (INDICATION OF DRY MATTER %)

NOTE: *This is not a replacement for a laboratory assessment of DM% of chopped maize*

1. Grab a large handful of chopped maize arriving at the stack or silage pit.

2. Squeeze chopped material very firmly for 1-2 minutes into a tight ball.

3. Quickly release and watch the maize ball:

- **Under 25% DM** – Ball holds its shape, free plant juices flow between fingers.
Delay the harvest
- **25-30% DM** – Ball holds its shape, very little free plant juices, moisture is noticeable on hands.
Delay the harvest, or chop longer TLC 15-20mm
- **30-40% DM** – Ball slowly loses its shape and crumbles. Hands feel just damp but no free plant juices.
Target – start or continue with the harvest
- **Greater than 40%** – Ball is dry and crumbles/falls apart quickly. Hand feels dry. Chop shorter TLC 5-9mm to improve packing density.
Consider use of a lactobacillus buchnerii aerobic stability inoculant

CHOP LENGTH

can be adjusted for maize
crops that are harvested too
wet or too dry.

2: THEORETICAL LENGTH OF CHOP

Check length of 'average' chopped plant material. Very occasional longer leaf pieces are not unusual.

- Theoretical length of chop ("TLC") for maize silage 32-38% DM = 10-15mm.
- Maize silage less than 30% DM TLC = 15-20 mm.
- Maize silage greater than 40% DM TLC = 5-9 mm.

CATTLE CANNOT DIGEST UNPROCESSED KERNELS

so aim for more than 95% of
kernels to be crushed/
cracked.

3: COB PROCESSING

Target pieces smaller than tip of your little finger. Larger pieces increase problems of air exclusion from the stack.

4: PERCENTAGE OF KERNELS PROCESSED

Placing the silage sample in a bucket of water, allowing the cob/stover to float off, then pouring water out can leave kernels at the bottom to improve the speed at which kernel processing can be checked.

Sort chopped material, checking for:

- Extent of kernel processing. Kernels must be well processed/crushed, not just nicked.
- Percentage of kernels adequately processed. Target is 95%+. Very low numbers of unprocessed, very small kernels are acceptable.

MAIZE SILAGE QUALITY

Many maize hybrid and management factors influence the final quality of maize silage. Examples of factors that change quality include the following:



RATIO OF MAIZE STOVER TO MAIZE GRAIN

Maize silage is a mixture of different parts of the maize plant.

- Stover – stalk, leaves, husk that covers the core, and the cob that holds the maize grain.
- Maize kernel/grain.

The combination of stover and maize grain provides an excellent source of starch, combined with effective fibre for ruminant species (cattle, sheep, goats, deer). Maize kernels deliver an energy dense, high starch feed that complements the lower quality stover.



QUALITY OF MAIZE STOVER AND GRAIN ARE VERY DIFFERENT

Stover, made up of stalk, leaf, husk cover and core is of lower quality than maize grain. Stover contains no starch, limited water soluble carbohydrates, low protein and is high in fibre (NDF). As a maize crop matures, quality of stover falls. By the time the whole plant DM% reaches 40-42% DM or more, content of NDF and lignin increases (so NDFd – digestibility of NDF falls), water soluble carbohydrate content and MJME/kgDM are lower than for a less mature plant.

Quality of maize grain is high compared to maize stover. MJME is high, due to a high starch and low fibre (NDF) content. As maize plants mature, starch accumulation increases until the plant reaches physiological maturity (black line, or black layer). As the plant dries down, starch digestibility reduces.

Like stover, protein content of maize grain is low, typically lower than 10% DM.

As the ratio of stover to maize grain changes, so does the quality of maize silage. More grain means better overall quality of maize silage.

Typical analyses for maize grain and maize stover harvested at 35% DM

	GRAIN	STOVER
NDF %	9.5	65
ENERGY (MJME/ KGDM)	14.5	8.5
STARCH %	78.0	0

Effect of different ratios of maize grain to maize stover

GRAIN %	STOVER %	NDF %	MJME/KGDM	STARCH %
30	70	48.4	10.3	23.4
35	65	45.6	10.6	27.3
40	60	42.8	10.9	31.2
45	55	40.0	11.2	35.1
50	50	37.3	11.5	39.0

FEEDING MAIZE SILAGE

INTRODUCING MAIZE SILAGE INTO THE DIET

Feeding maize silage:

Two aspects of adaptation

1. Behavioural adaptation – for cows or heifers that haven't been offered maize silage before.
2. Ruminal adaptation – for microbial populations to adjust to the new feed.

Behavioural adaptation

- New cows and rising two year old heifers need time with mixed age cows who are more experienced with a maize silage feeding system.
- Expose heifers to maize silage several weeks pre-calving – they'll be settled and consuming maize silage well, in time for calving.

Ruminal adaptation

- Types of rumen microbes that utilise starch are different to those that digest pasture.
- Microbial populations take 10-14 days to change from pasture to starch digesters.
- Sudden change to starchy diets may increase risk of ruminal acidosis ("grain overload"). Risk depends on maize silage feeding rates, total levels of dietary fibre (NDF), and on the presence of other starchy feeds.
- Low rates of maize silage (less than 3 kgDM/cow/day) typically won't require adaptation.
- Higher rates (more than 5 kgDM/cow/day) increases requirement for adaptation.
- Start cows on low rates of maize silage, building up to final rates over a few days. For example, if the target is 5 kgDM maize silage/cow/day, start at 2 kgDM for two days, lifting by a further 1.0-1.5 kgDM every two days.
- For calving cows, use time spent by cows in different mobs to gradually 'step' up silage feeding rates:
 - Springers – start on lower rates of maize silage.
 - Colostrum cows – offer maize at 1-2 kgDM/cow/day more than to springers.
 - Milking cows – offer maize at an additional 1-2 kgDM/cow more than to colostrum cows.
- Monitor the maize stack face when feeding silage at lower rates – slow feed out increases risk of aerobic spoilage/heating.



MAIZE NUTRITION

MINERALS FOR MAIZE SILAGE – WHAT IS REQUIRED?

Maize silage contains low levels of calcium, sodium and magnesium.

Supplementary mineral recommendations are not absolute for all situations, but reflect:

1. Quantity of maize silage offered

- Feeding maize silage as a higher proportion of the diet increases the need for mineral supplementation.

2. Levels of minerals found in other feeds (including pasture)

- Feeding maize silage with other low mineral feeds increases the requirement for supplementation. E.g. extra sodium is more important when feeding maize plus other low sodium feeds e.g. PKE or inland pastures.

3. Maize silage for different stock classes

- Lactating dairy and beef cows can need calcium, sodium and magnesium.
- Springer cows only need magnesium.
- Finishing beef cattle need sodium and sometimes calcium.

Contact your Corson Maize Sales Agronomist, a nutritionist or veterinarian for mineral recommendations specific to the feeding situation.

COMMON ADDITIVES FOR MAIZE SILAGE

Calcium (Ca) = Limeflour (35% Ca)

**Sodium (Na) = Salt (39% Na)
or sodium bicarbonate (27% Na)**

**Magnesium (Mg) = As magnesium
oxide (52% Mg), chloride (12% Mg)
or sulphate (10% Mg)**



MAIZE SILAGE – THE VALUE PROPOSITION FOR YOUR BUSINESS

Fully feeding your cows in a cost effective manner – the core focus for any business.

PASTURE FIRST!

Growing and harvesting plenty of high quality pasture is our first focus. Don't consider different supplementary feeds until pastures are performing well. Operating profit per hectare links in closely with pasture harvested per hectare.

With pasture harvested already a key focus, next steps involve looking at supplementary feed options.

WHICH SUPPLEMENT FOR MY BUSINESS – IS ONLY MAIZE SILAGE NEEDED?

There's no such thing as a 'one size fits all' approach for supplementary feeds for your cows. Different businesses will have different opportunities and constraints for harvesting, storing and feeding out a range of supplementary feeds.

POINTS TO PONDER WHEN LOOKING AT DIFFERENT FEEDS

Cost landed of maize silage and other supplementary feeds

How much do your supplementary feeds cost to land on farm? Often quite cheap feeds might be too good to be true. Feeds valued on a wet weight basis (e.g. low dry matter percentage vegetable by-products) might seem cheap but when valued on a dry matter (DM) basis can be very expensive.

Baleage is another feed that's often landed on a per bale price. When costed on a cents per kgDM basis, baleage is often a very expensive feed.

Compare the price of maize silage to other feeds. Cost on a cents per kgDM basis often shows maize silage to be better value than other purchased feeds, depending on the supplementary feed market at the time.

The ultimate way to value feeds is to divide the cents per kgDM cost of a feed by the feeds megajoules of metabolisable energy (MJME) value per kgDM. This gives you the cents per MJME value of a feed compared with another.

How much maize silage or other supplementary feed are you likely to use each year?

If you're largely a pasture based business, with only a small amount of supplementary feed offered per cow per lactation, chances are you'll be keen to keep things simple. The relatively low cost of gear needed to feed baleage might be the best option if you're planning to feed out for just a few weeks every year. It's easy to catch "hardware disease" and end up over-capitalised – lots of expensive machinery that's parked up for most of the year. In this case, maize silage might not necessarily be the right choice for you, at this point in time.

At the other extreme, if cows will be fully fed year round on a range of supplements, you have a feed pad, silage wagon or mixer wagon or a feed barn, your requirement for feed types will be very broad, needing a wide range of silages and possibly other feeds such as cereal grains and protein meals. Maize silage will likely form an extremely valuable part of the overall cow's diet.



CONSIDER THIS

Maximise pasture consumed/ha before investing heavily in supplementary feeds.



THE MAIZE HYBRID PERFORMANCE TRIAL PROGRAMME (MPT)



BACKGROUND

For a number of years maize growers asked for an independent maize hybrid testing scheme. In 2014, FAR (Foundation for Arable Research) convened an industry discussion to explore the idea of having such a scheme open to all seed companies, similar to the Cereal Performance Trial (CPT) programme that has been operating successfully in New Zealand for over 30 years. Corson Maize Seed was one of the key supporters of the MPT.

The purpose of the MPT programme is to:

- Provide objective measurement of the agronomic and quality performance of commercial maize hybrids available in New Zealand.
- Foster industry adoption of proven hybrids to maximise industry efficiency and profitability.
- Be a pilot testing programme for maize grain and silage hybrids at four trial sites developed in spring 2014. These sites are in the Waikato (two sites), Bay of Plenty and Canterbury.
- Add further New Zealand maize grain and silage growing regions into the scheme as experience is gained with the trialling procedures.
- Allow any seed company to enter a hybrid into the scheme. It is expected that their hybrids will be backed up with their own trial data, and that seed will be either available commercially or be very close to (within one year) commercialisation.

A Maize Technical Committee of representatives from the maize industry was established to govern the trial programme to operate under agreed MPT Operating Procedures. Analyses of the trial results are carried out by an independent statistician, FAR, NZ Plant Breeding & Research Association (NZPBRA) and the participating

seed companies. Any organisation or company may join the committee if they agree to pay an appropriate share of the operating costs, participate in the running of the trials or contribute a service to the scheme.

The MPT comprises a single stage of hybrid testing focussing on the agronomic and quality characteristics of close-to-market pre-commercial and commercial maize grain and silage hybrids. The trial design is fully replicated, small plot design which includes agreed standard hybrids for comparison and harvest assessments which will be made at an agreed maturity value for the individual hybrids entered into the programme. Weather and soil information is collected for all trial sites.

The MPT is now in its fourth year, with its aim being to provide objective measurement of agronomic and quality performance of commercial maize hybrids available to the New Zealand arable industry across appropriate production regions; and to foster industry adoption of proven hybrids to maximise industry efficiency and profitability.

The development of an independent maize hybrid testing programme is a considerable investment for the maize seed industry.

Corson Maize was an inaugural supporter of the MPT programme of independent maize hybrid trials, and FAR acknowledges the good industry support of Corson Maize with the MPT programme.

The latest results can be found on the FAR website www.far.org.nz.

CORSON MAIZE SEED PROCESSING - GISBORNE

Over recent years Corson Maize has developed a new maize and sweetcorn seed processing facility at Matawhero on the outskirts of Gisborne. The latest technology in drying, cleaning and seed handling is employed at the facility ensuring high quality seed is produced for customers.

The following diagram provides an overview of the technology and systems used at the new site, from crop intake through to cob and husk waste disposal.

RECEIVING THE CROP

Received from truck onto the extended green mat. The mat is wound in and ears fall onto the vibratory conveyor, separating the ears and distributing to the infeed conveyor.

WASTE

There are two waste streams, 1) On the right the husk and reject ears from the husking and grading line and 2) on the left behind the dust screen, the shelled cobs after the seed has been removed. The husk waste is often composted or used as stock feed in dry years.

BOX DRYER

There is a box dryer for small, experimental seed lots and parent seed.

REMAINING PROCESSES

- Conditioning
 - Cleaning
 - Sizing
 - Density Separation
- Treating
- Packing
- Picking and Dispatch

HUSKING

Husking beds remove the husk from the ears. Metering belts control the flow of ears onto the husking beds. More opportunity for ears to be husked is provided by the husking beds variable drop settings. The ears of easy-to-husk crops are dropped onto the husking beds and roll towards the end of the bed, whereas the ears of hard to husk crops can be dropped onto the start.

HUSKER DISTRIBUTION

The Power Shear distributes the ears to the husking beds.



SEED WEIGH STATION AND BOXES

The shelled seed is then weighed and put into seed boxes ready for the sizing and cleaning processes.

PRE-CLEANING

After shelling, the seed is passed through a pre-cleaner to remove pieces of broken cob, fleck, dust and very small unusable seed. This is achieved with screens and air suction.

CORSON MAIZE SEED PROCESSING - GISBORNE

GRADING

Ears are graded to remove diseased, damaged, and immature ears and any off-type ears. Unhusked ears are recycled back to the husking beds.

CONVEYORS TO DRYER

Husked and graded ears are then conveyed to the dryer and into the drying bins.

DRYING BIN

Dryer bins are filled to different depths dependent on the intake moisture. The wetter the seed on the ears the less depth. Seed at 50% intake moisture (sweetcorn) has a maximum depth of 1.5m while seed at 25-30% moisture can be loaded to 3m.

DRYING UNITS

Drying bins operate independently with their own fan and burner. Due to this, there is more flexibility to control the drying process individually, rather than the traditional dryers with one burner and fan for many bins. Ducting to the roof allows the airflow to be reversed during the drying process to ensure even drying throughout the bed depth.

DRYER CONTROL

A central operations platform controls drying. Air speed, direction and temperature can be controlled on each drying bin with outputs shown on the screen. There are several stages involved in the drying from an equilibration period at 30 degrees celcius for 6-12 hrs, followed by a preliminary drying period at 34°C and a final drying period of 38-40°C. The aim is to control the drying rate of the seed to avoid embryo damage. Drying too fast can affect final seed viability. Typically drying takes 3-5 days depending on intake moisture.

UNLOADING THE DRYER

Once dry, the ears have to be unloaded from the drying bin and conveyed to the sheller. The flow is controlled by hand as the ears slide down the sloped floor of the dryer bin.

SHELLING

A sheller removes seed off the cobs. This is a simple drum and concave, like that seen in a grain combine but is modified to run at low rpm and has wide clearances between drum and concave. Most seed is rubbed off the cob by ear-to-ear contact, rather than ear-to-metal contact and so keeping the sheller running at capacity is crucial to avoid excessive seed damage.



SWEETCORN

WHAT IS SWEETCORN?

Sweetcorn is a true summer vegetable which ripens from early planting in warm areas around Christmas/New Year and is available fresh from the plant through to the end of March/early April.

Sweetcorn is a sub-species of *Zea mays* (maize), which has been bred by selecting natural mutations of maize. Going back many years maize was eaten in the late milk to dough stage of development similar to the way we eat sweetcorn now.

GENETICS

The first sweetcorn type developed was known as “Normal” or “Sugary” sweetcorn. These sweetcorn varieties store sugars in the endosperm of the seed rather than starch, which is the storage compound in maize. This makes them sweeter than maize and have a sweetcorn flavoured endosperm that is smooth and creamy in texture when fresh but rapidly loses sweetness and flavour if left too long on the plant and not eaten soon enough. The Sugary sweetcorns are now almost used exclusively in the processing industry.

The second major development in sweetcorn was the discovery of the “Shrunken” or “Supersweet” gene, which store elevated levels of sugars in the endosperm and retain their sweetness for longer. Supersweet sweetcorn is used widely in the processing industry and makes up virtually all fresh market sweetcorn. In New Zealand the release of Supersweet sweetcorn coincided with the development of Bicolour sweetcorn, which is a cross between white and yellow kernelled parent lines. The resulting bicolour hybrid ear has white kernels amongst a predominantly yellow cob. The bicolour ears distinguish themselves as being Supersweet compared to the full yellow ears of the less appealing Sugary sweetcorn, bicolour corn became the preferred fresh market sweetcorn.

The hybrid “Honey ‘n’ Pearl” was the first commercial bicolour available in New Zealand in the early 1980’s and to this day bicolour sweetcorn is often referred to as “Honey ‘n’ Pearl” despite the hybrid no longer being available. Yellow ears are slowly becoming a part of a fresh market in New Zealand as memories of the Sugary fresh market corn fade. Today there is a complex range of additional sweetness enhancing genes and combinations of sweetcorn mutants which have been bred and developed. One of these modern variants of sweetcorn is the Tendersweet™ brand that Corson Maize Seed has available for the fresh market. The Tendersweet™ type is a Supersweet base with very high sugar levels, tender pericarp (the outer seed coat), and retains optimum eating quality for longer than the traditional Supersweet corn.

PLANNING

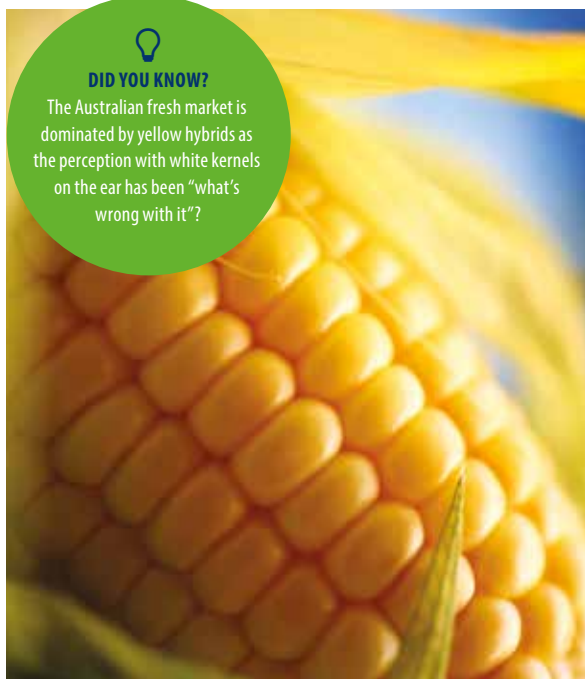
Planning before planting is important. Know your market and how much sweetcorn you can sell or consume at any given harvest time. The sweetcorn maturity dates on page 52 is a useful guide in determining the planting times to achieve certain harvest dates. When planning plantings of sweetcorn it is important to know about isolating your sweetcorn from maize. Sweetcorn is peculiar in that the pollen source influences the type of storage compounds in the endosperm of the kernels. The sweetcorn mutant types (Sugary and Supersweet) are expressed by recessive genes, meaning the dominant starchy gene from maize pollen will result in a starchy maize kernel if there is cross pollination. If cross pollination is significant it negatively impacts the sweetness, flavour and texture of the sweetcorn ear, therefore sweetcorn needs to be isolated from maize pollen at flowering time. This can be done by isolating the sweetcorn crop by a distance of 100-200 metres or by ensuring that there is no maize flowering within 100-200 metres of the sweetcorn whilst flowering.

As sweetcorn generally has an earlier maturity than maize, it can be planted at the same time as a mid-maturity maize and will be flowering well ahead of the maize. The two base genetics of Sugary and Supersweet will also produce starchy kernels if cross pollinated, but this is unlikely to be a major issue unless you are growing in a region where process sweetcorn is being produced.



DID YOU KNOW?

The Australian fresh market is dominated by yellow hybrids as the perception with white kernels on the ear has been “what’s wrong with it”?



SWEETCORN

ESTABLISHMENT

Establishment is vital to a successful crop. Sweetcorn seed, and particularly Supersweet sweetcorn seed, is much lower in vigour than maize and requires optimum conditions for the best results. A fine, well prepared seed bed is required with warm, moist soil.

It is recommended that sweetcorn is planted when soil temperature is 15 degrees celcius or greater. While many sweetcorn growers plant in cooler soils than 15°C to get the bonus of early harvest and premium prices, there is a risk that poor stands are achieved. Planting depth should be as shallow as possible, to promote rapid emergence and ensuring that the seed has placement in good moisture at all times during establishment is also important. Plant at 2-3 centimetres (cm) deep but if surface moisture is prone to drying out then 4-5 cm deep may be more suitable.

Insects at establishment can also reduce plant stands so if there is any risk of insect pressure during establishment, ensure that the seed is treated with an effective insecticide such as Gaucho®, which is registered for sweetcorn.

Planting population should be about 65,000 seeds/ha to achieve a stand of 50-60,000 plants/ha. High population in sweetcorn can result in reduced ear size and consistency and as each ear is sold and consumed as a single entity, the look and size of the ears needs to be as good as possible. Low population in sweetcorn is often compensated by good development of the secondary ears and so more than one ear per plant is possible in low population situations.

Sweetcorn can be very sensitive to leaf disease, so if planting later in the season, when rust may become an issue around flowering and harvest, plant hybrids that have suitable rust resistance. There are good hybrids available that are rust resistant so ensure correct hybrid selection to suit the time of year that the sweetcorn will be planted.

Sweetcorn has similar fertiliser requirement to maize, with nitrogen being a major benefit to plant growth and development. Good moisture from flowering through to harvest is required to maximise development of consistent, well filled, large ears. Irrigation could be beneficial if available.

WEED CONTROL

Weed control is important to reduce competition for moisture and nutrients and as the sweetcorn plant is slower growing and not as tall as maize, canopy closure can be delayed. A good weed control programme including pre and post emergent herbicides is encouraged and again, the standard maize herbicides are generally able to be used on sweetcorn.

It is important to note however that some maize herbicides are not registered for sweetcorn or may have different label recommendations, so always read the labels and apply as recommended by the manufacturer. Ensure compliance to any harvest withholding periods as indicated on the label. Any herbicides containing Nicosulfuron or Dicamba are to be treated with caution and should be avoided, as sweetcorn can be quite sensitive to these chemicals.

HARVEST

Harvest timing is generally about 30 days after mid silk so when approaching harvest time monitor the crop and sample some ears for sweetness and flavour.

In recent years most sweetcorn seed suppliers have adopted selling seed as units of one thousand seeds (M) rather than by the kg. While this may be confusing at first, it simplifies the calculation of the amount of seed required for planting of a specific area of sweetcorn. Previously, when ordering by the kg, if you had 1 ha to plant at 65,000 seeds/ha it depended on the seed size and the number of seeds per kg as to how much seed was needed. A large seed of 5,000 seeds/kg required 13 kg/ha and a small seed with a seed count of 8,000 seeds/kg required 8.1 kg/ha.

Now if you have 1 ha to plant at 65,000 seeds/ha you order 65M or 65,000 seeds – simple.

SWEETCORN MATURITY DATES

APPROXIMATE SWEETCORN MATURITY DATE BY PLANTING DATE BY LOCATION

Select your Corson sweetcorn hybrid and planting date within your appropriate location table and the approximate harvest dates are at the intersection of the sweetcorn variety row and plant date column. Eg Tenderfresh™ planted 11-Oct in Hamilton gives 29-Jan harvest.

These tables are calculated using heat unit data averages from each location and hybrid heat unit data from our Gisborne research location. As there are many environmental and management factors that can influence plant development these tables should only be used as a guide.

HAMILTON	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	7 Jan	11 Jan	16 Jan	20 Jan	26 Jan	1 Feb	7 Feb	13 Feb	20 Feb	27 Feb	9 Mar	19 Mar	30 Mar
	Tenderfresh™	10 Jan	14 Jan	19 Jan	23 Jan	29 Jan	3 Feb	9 Feb	16 Feb	23 Feb	3 Mar	13 Mar	23 Mar	4 Apr
	Tendersweet Gold™	13 Jan	17 Jan	22 Jan	26 Jan	1 Feb	6 Feb	12 Feb	19 Feb	26 Feb	6 Mar	16 Mar	26 Mar	8 Apr
PALMERSTON NORTH / NELSON	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	13 Jan	17 Jan	21 Jan	25 Jan	31 Jan	5 Feb	11 Feb	17 Feb	24 Feb	2 Mar	13 Mar	23 Mar	4 Apr
	Tenderfresh™	26 Jan	20 Jan	24 Jan	29 Jan	3 Feb	8 Feb	14 Feb	21 Feb	26 Feb	7 Mar	17 Mar	27 Mar	10 Apr
	Tendersweet Gold™	19 Jan	23 Jan	27 Jan	1 Feb	6 Feb	11 Feb	17 Feb	24 Feb	1 Mar	11 Mar	21 Mar	31 Mar	15 Apr
BLENHIEM	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	13 Jan	17 Jan	20 Jan	24 Jan	29 Jan	3 Feb	10 Feb	17 Feb	24 Feb	3 Mar	14 Mar	25 Mar	7 Apr
	Tenderfresh™	16 Jan	20 Jan	24 Jan	27 Jan	1 Feb	7 Feb	13 Feb	20 Feb	26 Feb	9 Mar	18 Mar	29 Mar	14 Apr
	Tendersweet Gold™	19 Jan	23 Jan	27 Jan	30 Jan	4 Feb	10 Feb	16 Feb	23 Feb	1 Mar	11 Mar	22 Mar	2 Apr	20 Apr
CHRISTCHURCH	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	
Approximate Harvest Date	Early Tender™	23 Jan	26 Jan	29 Jan	2 Feb	7 Feb	12 Feb	17 Feb	24 Feb	1 Mar	13 Mar	24 Mar	5 Apr	
	Tenderfresh™	27 Jan	29 Jan	2 Feb	5 Feb	10 Feb	15 Feb	21 Feb	27 Feb	4 Mar	17 Mar	28 Mar	12 Apr	
	Tendersweet Gold™	30 Jan	2 Feb	5 Feb	9 Feb	13 Feb	18 Feb	24 Feb	2 Mar	7 Mar	21 Mar	1 Apr	18 Apr	
WHANGAREI	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	21 Dec	26 Dec	1 Jan	7 Jan	13 Jan	19 Jan	26 Jan	2 Feb	10 Feb	17 Feb	26 Feb	7 Mar	19 Mar
	Tenderfresh™	24 Dec	29 Dec	4 Jan	9 Jan	15 Jan	21 Jan	28 Jan	5 Feb	12 Feb	20 Feb	1 Mar	11 Mar	21 Mar
	Tendersweet Gold™	27 Dec	1 Jan	7 Jan	12 Jan	18 Jan	24 Jan	31 Jan	8 Feb	15 Feb	23 Feb	4 Mar	14 Mar	24 Mar
TAURANGA	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	27 Dec	1 Jan	6 Jan	10 Jan	16 Jan	22 Jan	29 Jan	6 Feb	14 Feb	21 Feb	28 Feb	8 Mar	18 Mar
	Tenderfresh™	29 Dec	4 Jan	8 Jan	13 Jan	19 Jan	25 Jan	2 Feb	9 Feb	16 Feb	23 Feb	2 Mar	11 Mar	21 Mar
	Tendersweet Gold™	2 Jan	7 Jan	11 Jan	16 Jan	22 Jan	28 Jan	5 Feb	12 Feb	19 Feb	26 Feb	5 Mar	14 Mar	24 Mar
GISBORNE	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	28 Dec	2 Jan	7 Jan	11 Jan	17 Jan	23 Jan	30 Jan	6 Feb	14 Feb	21 Feb	3 Mar	14 Mar	25 Mar
	Tenderfresh™	31 Dec	5 Jan	9 Jan	14 Jan	20 Jan	26 Jan	2 Feb	9 Feb	17 Feb	24 Feb	6 Mar	17 Mar	29 Mar
	Tendersweet Gold™	3 Jan	8 Jan	12 Jan	17 Jan	23 Jan	29 Jan	5 Feb	12 Feb	20 Feb	27 Feb	10 Mar	20 Mar	1 Apr
WHAKATANE / NAPIER	PLANT DATE	1 SEP	11 SEP	21 SEP	1 OCT	11 OCT	21 OCT	1 NOV	11 NOV	21 NOV	1 DEC	11 DEC	21 DEC	1 JAN
Approximate Harvest Date	Early Tender™	2 Jan	7 Jan	11 Jan	15 Jan	21 Jan	27 Jan	2 Feb	9 Feb	16 Feb	23 Feb	5 Mar	15 Mar	26 Mar
	Tenderfresh™	5 Jan	9 Jan	14 Jan	18 Jan	24 Jan	30 Jan	5 Feb	12 Feb	19 Feb	26 Feb	8 Mar	19 Mar	29 Mar
	Tendersweet Gold™	8 Jan	12 Jan	17 Jan	21 Jan	27 Jan	2 Feb	8 Feb	15 Feb	22 Feb	1 Mar	11 Mar	22 Mar	2 Apr

OUR PREMIER SWEETCORN HYBRIDS CARRY THE NAME TENDERSWEET™

TENDERSWEET™ hybrids are the new generation of sweetcorn which combine the qualities of several different sweetcorn genetic sources. TENDERSWEET™ hybrids typically are short to medium stature plants with good root and stalk strength that produce attractively packaged cobs with excellent tip fill. TENDERSWEET™ kernels are very tender and have exceptional sweetness and taste. TENDERSWEET™ hybrids also have the added advantage of their extended harvest window, allowing corn to be picked from the same planting for up to 10 days. The following sweetcorn hybrids have been selected by Corson Maize agronomists in conjunction with our trial growers. They represent a marked improvement over our previous standard Supersweet hybrids in eating quality, plant and cob characteristics.



EARLY TENDER™

Tendersweet™ Bicolour CRM70

- The perfect corn to start off your new season plantings
- Early maturity from early planting means early to market
- Strong emergence and vigorous seedling growth for early season planting
- Moderate tolerance to Common Rust
- Green medium length, tight husk make for an attractive package
- Well filled ears typically 21 cm in length with 14-16 rows
- Good Tendersweet™ eating quality
- Can hold well in the field for an extended harvest window

TENDERFRESH™

Tendersweet™ Bicolour CRM74

- A mid-season bicolour
- Good emergence and vigorous early growth allow earlier plantings
- A medium statured plant with few tillers producing very regular ears
- Dark green, long husk accented with showy flag leaves provide an attractive package
- Well filled girthy ears, typically 19 cm in length with 16-18 rows
- Resistance to Common Rust (Rp1-G) makes this hybrid suitable for planting throughout the season
- Very good Tendersweet™ eating quality and an extended harvest window

NEW

TENDERSWEET GOLD™

Tendersweet™ Yellow CRM76

- Mid-season yellow hybrid
- Very good early vigour and a tall growthy plant provides good canopy cover to assist suppression of weeds
- Long firm husk cover provides excellent ear protection and showy flag leaves add to this attractive package
- Well filled heavy ears, typically 21-22 cm in length with 16-18 rows
- Resistance to Common Rust (Rp1-G) makes this hybrid suitable for planting throughout the season
- Good eating quality with tender pericarp and sweet flavour as well as the typical Tendersweet™ extended harvest window

**Untreated seed available
for organic growers**

Note: Results will vary depending on all the circumstances. PGG Wrightson Seeds Limited and its officers, employees, agents and licensors of intellectual property (PGW Seeds) provide no assurances, guarantees or warranties in relation to any advice, information, hybrid or product referred to or recommended, except those that by law must be provided. To the extent permitted by law PGW Seeds excludes all liability, and has no liability to anyone, however arising, from or in relation to any advice, information, hybrid or product referred to or recommended, or the use of any such advice, information, hybrid or product. If PGW Seeds has any liability then the total liability in relation to the advice, information, hybrid or product is limited to the greatest extent permitted by law, and to the extent permitted by law not include any liability for loss of income, profits, savings, goodwill or for any indirect or consequential loss or special or exemplary damages or exceed the total monetary payment received by PGW Seeds in relation to the advice, information, hybrid or product in respect of which the liability arises. © Copyright 2018. PGG Wrightson Seeds.



MORE FEED FASTER.

- *Ideal between maize crops*
- *Fast to establish*
- *Quick, early feed for grazing or silage*
- *Ideal for undersowing into existing pastures*
- *Improved spring production and quality*
- *Autumn sow for high yields of quality autumn, winter and spring feed*



Winter Star II tetraploid annual ryegrass – more feed, faster.

You expect the best from autumn sown annual ryegrasses as the window of opportunity to grow feed quickly is short. Winter Star II is fast out of the ground, provides high winter and spring yields and excellent quality.

Need more feed? Contact your local seed retailer, go to
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