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FAR HYBRID EVALUATION



FOUNDATION FOR ARABLE RESEARCH



maize hybrids 2018/2019

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Welcome to the fifth edition of the Maize Hybrid Performance Trials (MPT) results booklet.

This is the third edition to include results from multiple sites and multiple years. This means that some hybrid results are given as averages from five different seasons, and from up to 17 separate trials. The more trials a cultivar has been in, the more confidence can be taken from its reported performance. Data from multiple seasons for a maize hybrid's performance are more valuable than results from a single season as they show the hybrid's ability to perform under different weather patterns. Ultimately, the most consistent performers will rise to the top of multi-year results.

For the 2018/19 season we continued with eight trial sites, with one of the maize seed companies in the programme hosting, managing and

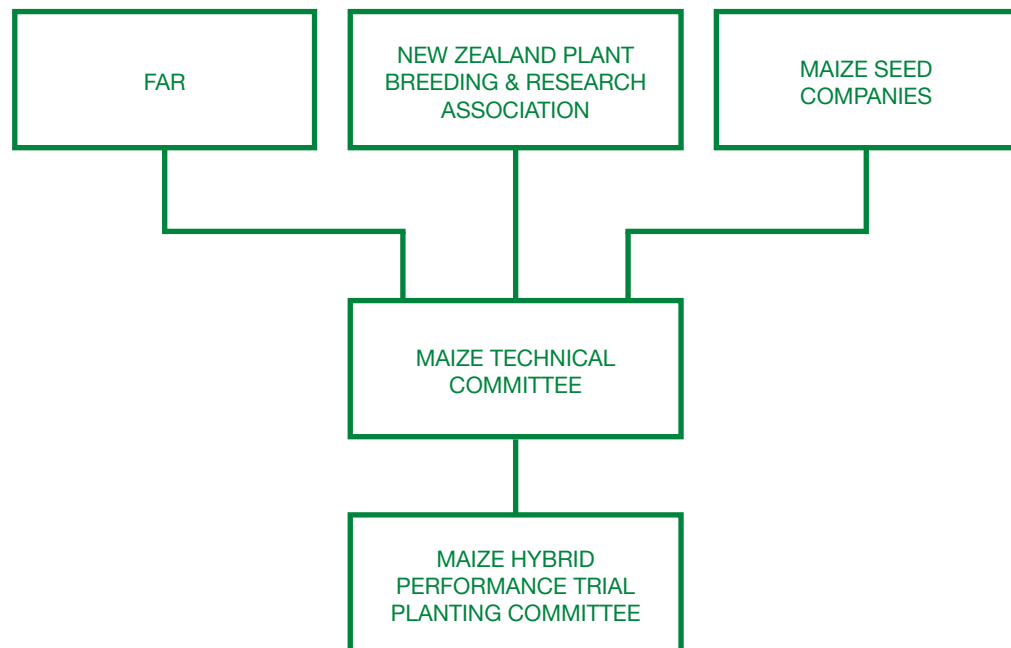
harvesting each MPT trial. The MPT system relies on companies collaborating and including their cultivars for the overall good of the industry. We encourage you to use the information in this booklet to help you make sound hybrid selection decisions.

We welcome any queries or suggestions on how we might further improve these booklets. Please contact us if you have ideas, or if you require any additional information not included in this booklet.

Barry McCarter
President
New Zealand Plant Breeders Association

July 2019

STRUCTURE OF THE MAIZE HYBRID PERFORMANCE TRIALS



MPT GUIDING PRINCIPLES

The purpose of the MPT programme is to:

- Provide objective measurement of the agronomic and quality performance of commercial maize hybrids available to the New Zealand arable industry across appropriate production regions.
- Foster industry adoption of proven hybrids to maximise industry efficiency and profitability.

The MPT are organised and funded through the MPT Committee with representatives from FAR, NZ Plant Breeding & Research Association (NZPBRA), independent researchers and the participating seed companies. Secretarial services are provided by NZPBRA.

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.

Parties who are not members of the Committee are welcome to participate as observers in appropriate meetings where their hybrids are under discussion. If their involvement becomes long-term, they will be invited to join the Committee.

The Committee meets at least once a year to review the trial results, and at any other time a meeting is required. The Committee views the field trial sites prior to harvest.

METHODOLOGY

The MPT comprises a single stage of hybrid testing administered through a single management committee. The committee recognises the purpose of the hybrid testing, and will not compromise the stakeholder requirements of the programme.

The trial programme focuses on the agronomic and quality characteristics of close-to-market pre-commercial and commercial maize hybrids. It is not intended to provide extra evaluation data for commercialisation decisions; the seed companies must make these independently before the hybrids are entered into the MPT programme. The trial

programme will evaluate both silage and grain hybrids.

Harvest assessments are made at an agreed maturity value for the individual hybrids entered into the programme. These maturity values will be determined on a year-by-year basis by the Committee and an agreed harvest schedule is developed at the start of the season.

At each trial site, plots consist of four rows, approximately 5 metres long, planted at 76 cm spacing. Each hybrid is replicated four times within a randomised complete block design. All data are collected from the middle two rows of the plot. Participating companies supply relative maturity data for placement in trials. The plots are planted from pre-counted packets of seed using an air plot planter and harvested by hand.

The maize seed is provided directly from the seed companies. The individual seed treatments used by each company may vary, but are all commercially available and contain at least one insecticide and one fungicide.

In-season assessments include plant count, lodging and disease score; and harvest assessments include an assessment of ear rots, bird damage and yield. At silage harvest, a sample is taken from each plot to determine dry matter content. For grain hybrids, grain moisture and test weights are measured using a Dickey John GAC 2100 Agri moisture meter.

All information published by any party from the MPT programme must be clearly acknowledged as MPT data. The following statement must accompany any such publication.

This information has been generated by the Maize Performance Trial (MPT) operating procedures.

MPT represents a collaboration of the Foundation for Arable Research, the New Zealand Plant Breeding & Research Association and individual seed companies.

COMMERCIAL HYBRIDS

HYBRID	Seed supplier	Silage CRM*	Grain CRM*	Website
Delitop	Corson	78	88	corsonmaize.co.nz
Titus	Nutritech	82	82	nutritech.co.nz
Booster	Corson	81	88	corsonmaize.co.nz
CMS Comet	Corson	92	Silage only	corsonmaize.co.nz
Obelix	Nutritech	94	94	nutritech.co.nz
Velocity	Corson	95	98	corsonmaize.co.nz
PAC249	Corson	95	97	corsonmaize.co.nz
C29-A1	Corson	96	96	corsonmaize.co.nz
Afinity	Corson	97	100	corsonmaize.co.nz
N39-Q1	Corson	97	100	corsonmaize.co.nz
PAC314	Corson	101	101	corsonmaize.co.nz
PAC344	Corson	102	102	corsonmaize.co.nz
Maximus	Nutritech	102	Silage only	nutritech.co.nz
N51-N4	Corson	102	104	corsonmaize.co.nz
PAC343	Corson	105	104	corsonmaize.co.nz
PAC432	Corson	105	107	corsonmaize.co.nz
Brutus	Nutritech	105	105	nutritech.co.nz
Plenitude	Corson	107	107	corsonmaize.co.nz
PAC430	Corson	108	108	corsonmaize.co.nz
PAC456	Corson	109	109	corsonmaize.co.nz
Z71-F1	Corson	111	Silage only	corsonmaize.co.nz
Olympiad	Nutritech	112	112	nutritech.co.nz
PAC564	Corson	113	115	corsonmaize.co.nz

* CRM = Comparative relative maturity

PRECOMMERCIAL HYBRIDS

HYBRID	Seed supplier	Silage CRM*	Grain CRM*	Website
RGT OXXFORD	Seed Force	78	78	seedforce.co.nz
RGT HAUXXTIN	Seed Force	80	80	seedforce.co.nz
RGT DIREXXION	Seed Force	82	82	seedforce.co.nz
RGT LUXXIDA	Seed Force	93	93	seedforce.co.nz
RGT FARAONIXX	Seed Force	110	110	seedforce.co.nz
Pelota	Corson	107	107	corsonmaize.co.nz
Asterix	Nutritech	85	85	nutritech.co.nz
PAC050	Corson	85	88	corsonmaize.co.nz
Axis	Corson	92	Silage only	corsonmaize.co.nz

* CRM = Comparative relative maturity

CHECK HYBRIDS

Up to five industry standard hybrids may be included in each MPT trial. These are required to provide data linkages among trials, and across multiple seasons. The expected life of the standard entries is around five years, and after that they are gradually changed out for newer hybrids, reflecting their stable performance, popularity, and their continued commercial availability, while providing a baseline of performance against which genetic gain can be judged. The standard hybrids used in the trials reported here are:

HYBRID	Silage CRM*	Grain CRM*
39G12	78	Silage only
P8805	88	88
38V12	91	Silage only
P0640	106	106
P0791	106	Silage only
P1253	109	109
P1636	112	Silage only
P9721	97	97
P9911	99	Silage only
P9400	94	94

* CRM = Comparative relative maturity

For a number of years maize growers were asking for an independent maize hybrid-testing scheme. FAR convened a discussion group comprising members of the maize industry in 2014, which ultimately led to the establishment of the MPT, similar to the Cereal Performance Testing (CPT) programme that has been operating successfully for over 30 years.

A pilot testing programme for maize grain and silage hybrids was undertaken at three sites in the 2014/15 maize season, in the Waikato, Bay of Plenty and Canterbury. The trial design was a fully replicated, small plot design that included agreed standard hybrids for comparison.

Following the success of this first season, the Maize Trials Committee increased the number of sites to six, with an additional site in the Waikato, on peat ground, and two trials in the Rangitikei and Manawatu regions.

The development of an independent maize hybrid testing programme is a considerable

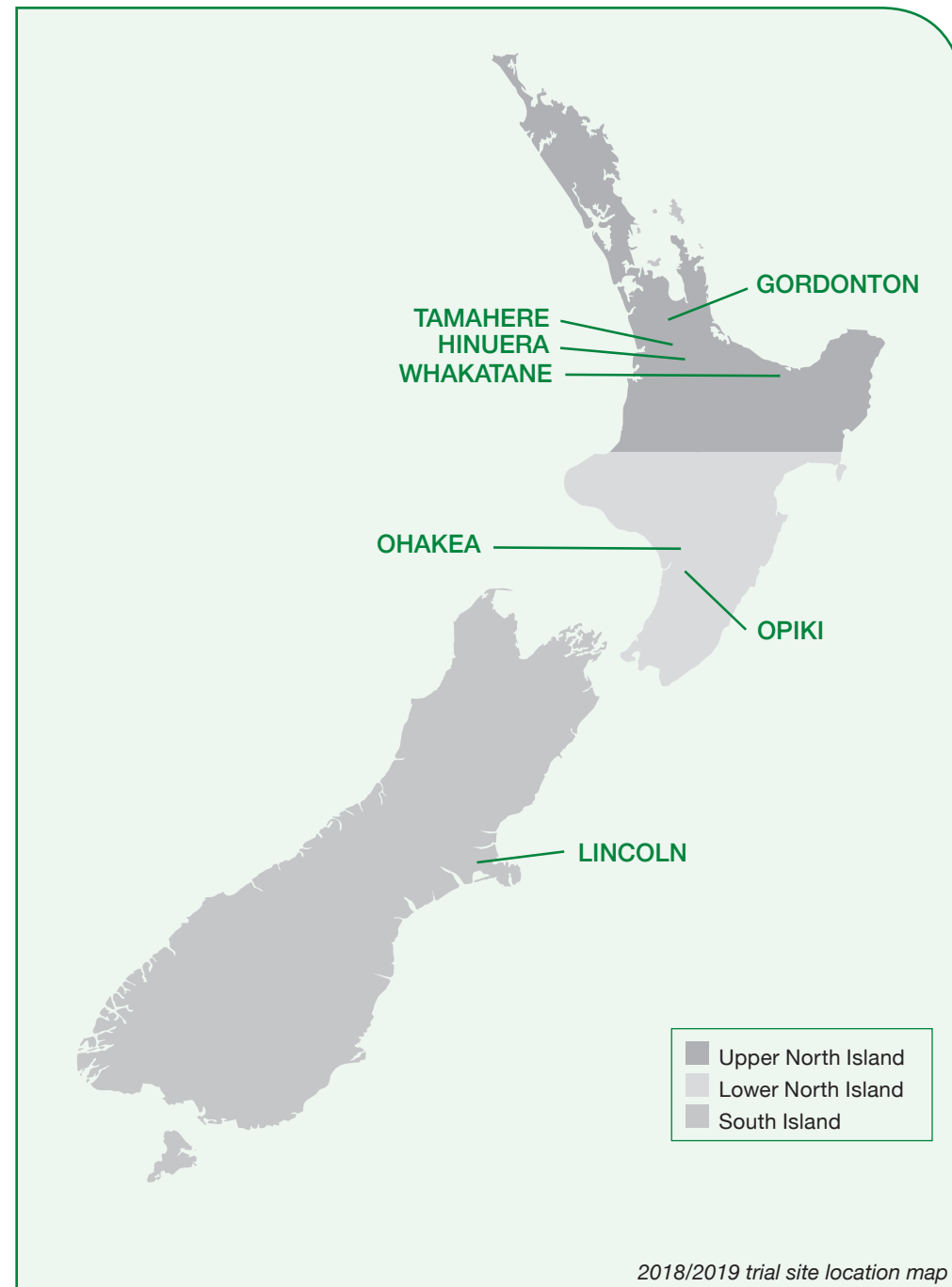
investment for the industry collectively, but a well-operated scheme should reduce individual company investment, and as a consequence grower investment, in developing hybrids. Seed companies will invest in the programme by paying to have their hybrids included in the scheme. Maize levy money is invested in the governance of the programme, analysis of the results and reporting. We started with a pilot scheme in 2014, and now present the results from seven trials in the 2018/19 season.

The results from previous seasons of the MPT trials are available on the FAR website.

FAR welcomes any queries or suggestions on the MPT system. If you require any additional information, please contact us.

Allister Holmes
Maize Hybrid Performance Trials Project Manager

July 2019



The multi-year adjusted mean is the most important result in the MPT Results Booklet. This is the third year we have presented multi-year, multi-site data. Multi-year adjusted means show how the hybrids perform over multiple seasons, and across different locations.

To analyse these data, the trials have been separated into three zones:

- Upper North Island includes Waikato and Bay of Plenty
- Lower North Island includes Manawatu and Rangitikei
- South Island

The combined trial analysis is undertaken in a way that avoids advantaging an entry from a high yielding trial over another from a low yielding trial. After analysis, the variations from the trial means are averaged using a weighted average, where more weight is given to trials with higher precision (less variability).

For example, if Trial A had twice the precision of Trial B, the weighted average would be $(2 \times \text{Trial A result} + \text{Trial B result})/3$, and so the result would be closer to the Trial A mean than the Trial B mean.

Data from multiple seasons for a maize hybrid's performance are more valuable than results from a single season as they show the hybrids ability to perform over seasons with different weather patterns. Ultimately, the most consistent performers will rise to the top of multiple year results. The more trials a cultivar has been in, the more confidence can be taken from its reported performance.

THE LEAST SIGNIFICANT DIFFERENCE

The Least Significant Difference (LSD) listed at the bottom of each table for each column of data should be used to determine if the difference between hybrids is due to differences in performance or random chance.

This booklet presents data with an LSD of 5%. If the difference between two hybrids was equal to or greater than the LSD, the difference would be attributable to hybrid differences in 95% of instances when the two hybrids are evaluated under conditions like those of the test.

Hybrids with the same letter beside them are not significantly different for the characteristic listed. When no significant difference for a given parameter is found among hybrids, "ns" (non-significant) replaces an LSD value. A difference which is less than the LSD is likely due to chance.

For example, on page 15 the hybrids Maximus (a), Z71-F1 (ab) and P1636 (ab) all include the letter 'a' beside them in the yield column. This indicates that while their yields in this trial varied, this variation was not statistically significant. Likewise, any hybrid with another letter beside it, will not be significantly different from any other hybrid which includes that same letter.

COEFFICIENT OF VARIATION

The "Coefficient of Variation", or CV%, is another measure of the variability in a trial. If the differences between cultivars are similar across all replicates, the trial CV% is low (below 10%). Where there is a high level of unexplained variation the CV% is high, and the trial results are less accurate.

Upper North Island

HYBRID	CRM	Number of trials	Number of years	Yield (t DM/ha)	Normalised silage yield (%)
C78-S8	114	7	3	28.6	113
PAC564	113	9	2	28.6	113
PAC456	108	16	5	27.5	108
PAC432	107	16	5	27.2	107
Pelota	107	9	2	27.2	107
33M54	113	5	2	27.1	107
Olympiad	112	15	4	26.5	104
P1253	109	8	2	26.4	104
Plenitude	107	15	4	26.4	104
PAC343	104	17	5	26.3	103
34P88	109	5	2	26.2	103
C56-C4	106	13	4	26.1	103
P0640	106	5	2	26.0	102
N51-N4	104	16	5	25.8	101
P9721	97	7	2	25.1	99
PAC314	101	8	2	25.1	99
Brutus	105	12	3	25.0	98
Afinity	100	12	4	24.9	98
C29-A1	96	13	5	24.8	97
Maximus	102	15	4	24.6	97
PAC230	98	8	3	24.3	96
P0021	100	5	2	24.0	94
Velocity	98	7	2	23.9	94
N39-Q1	97	13	5	23.9	94
37Y12	95	5	2	23.8	94
G49-T9	104	5	2	22.8	90
PAC249	95	9	3	22.5	88
Titus	82	6	2	21.6	85
Mean				25.4	100
LSD 5%				1.6	
CV%				6.6	

Lower North Island

HYBRID	CRM	Number of trials	Number of years	Yield (t DM/ha)	Normalised silage yield (%)
PAC314	101	4	2	24.9	112
N39-Q1	97	8	4	24.2	109
Afinity	100	8	4	24.1	108
Velocity	98	4	2	24.0	108
PAC343	104	6	3	24.0	108
C29-A1	96	6	3	23.9	107
37Y12	95	4	2	23.3	105
38V12	91	4	2	23.2	105
P9721	97	4	2	23.2	104
P0021	100	4	2	23.2	104
PAC230	98	4	2	23.1	104
PAC249	95	8	4	23.0	104
P9400	94	8	4	22.6	102
Maximus	102	7	4	22.5	101
Booster	85	4	2	21.9	99
PAC064	85	4	2	21.5	97
PAC123	91	6	3	21.4	96
PAC065	89	6	3	20.6	93
P8805	88	4	2	20.1	91
N23-K3	87	6	3	20.1	91
PAC040	80	4	2	20.1	90
Delitop	78	8	4	19.4	87
Obelix	93	3	2	19.1	86
Titus	82	7	4	19.0	86
Mean				22.2	100
LSD 5%				1.8	
CV%				5.6	

South Island

HYBRID	CRM	Number of trials	Number of years	Yield (t DM/ha)	Normalised silage yield (%)
Booster	85	2	2	24.1	115
38V12	91	5	5	22.4	107
P9400	94	3	3	22.2	106
PAC065	89	4	4	21.7	104
PAC064	85	2	2	21.5	103
PAC040	80	3	3	21.0	101
Delitop	78	5	5	20.9	100
PAC123	91	4	4	20.6	99
N23-K3	87	4	4	20.5	98
Titus	82	4	4	20.1	97
L07-A9	72	2	2	18.8	90
39V43	72	3	3	16.4	79
Mean				20.9	100
LSD 5%				2.9	
CV%				6.0	

Upper North Island

HYBRID	CRM	Number of trials	Number of years	Harvest moisture (%)	Yield (t/ha at 14% moisture)	Normalised grain yield (%)
PAC564	113	8	2	25.8	18.0	124
PAC314	101	8	2	20.3	16.2	112
P1636*	112	8	2	23.9	16.2	111
P0640	106	5	2	21.3	15.7	108
P1253	109	7	2	22.6	15.7	108
Pelota	107	8	2	20.9	15.6	107
P0791*	106	6	2	21.1	15.6	107
PAC432	107	15	5	21.8	15.5	107
PAC343	104	15	5	21.0	15.4	106
P9721	97	6	2	19.6	15.2	105
PAC456	108	12	4	22.1	15.2	104
Afinity	100	10	4	20.0	14.8	102
N51-N4	104	15	5	20.7	14.8	102
P9911*	99	6	2	20.0	14.5	100
C29-A1	96	11	5	19.7	14.4	99
Plenitude	107	13	4	20.8	14.2	98
PAC230	98	7	3	19.5	14.2	98
Olympiad	112	13	4	22.7	13.9	95
P0021	100	5	2	20.2	13.9	95
Velocity	98	6	2	19.8	13.8	95
34P88	109	5	2	23.3	13.8	95
37Y12	95	5	2	19.3	13.7	94
Brutus	105	10	3	23.7	13.6	93
Z71-F1*	111	5	2	23.9	13.4	92
N39-Q1	97	11	5	19.8	13.3	92
PAC249	95	7	3	19.7	13.1	90
Maximus	102	13	4	22.5	12.8	88
Titus	82	5	2	19.0	10.4	72
Mean				21.2	14.5	100
LSD 5%				0.9	1.1	
CV%				3.8	6.6	

* These hybrids are not recommended for grain production. They are included in the multi-year results for reference only.

Lower North Island

HYBRID	CRM	Number of trials	Number of years	Harvest moisture (%)	Yield (t/ha at 14% moisture)	Normalised grain yield (%)
PAC314	101	3	2	20.5	16.4	122
P9911*	99	4	2	21.1	15.9	118
Afinity	100	8	4	20.7	15.1	112
PAC343	104	6	3	23.4	14.9	110
PAC249	95	8	4	20.0	14.6	108
P9721	97	4	2	19.2	14.6	108
P0021	100	4	2	20.5	14.0	104
Velocity	98	4	2	20.3	14.0	104
CMS Comet*	92	8	4	19.5	14.0	103
37Y12	95	4	2	19.9	13.9	103
PAC123	91	6	3	18.5	13.6	101
N39-Q1	97	8	4	20.5	13.6	101
Axis*	90	4	2	19.6	13.5	100
P8805	88	4	2	17.9	13.4	99
P9400	94	8	4	18.9	13.3	98
C29-A1	96	6	3	21.3	13.2	98
PAC230	98	4	2	19.6	13.2	98
Booster	85	4	2	18.7	12.9	96
PAC065	89	6	3	18.4	12.9	96
Obelix	93	3	2	18.6	12.6	94
Maximus	102	7	4	25.0	12.5	92
PAC040	80	4	2	19.9	12.4	92
Delitop	78	8	4	18.7	12.1	90
PAC064	85	4	2	20.7	11.6	86
39G12*	78	8	4	18.3	11.4	85
Titus	82	7	4	19.4	10.8	80
Mean				20.0	13.5	100
LSD 5%				1.0	1.2	
CV%				4.0	6.7	

* These hybrids are not recommended for grain production. They are included in the multi-year results for reference only.

Trial site	Soil type	Host farmer	Planting date	Altitude
Northern Crop Research Site, Tamahere, Waikato	Otorohonga deep loam over clay	Foundation for Arable Research	10 October 2018	49 metres
Seddon Road, Gordonton, Waikato	Ardmore deep peat	Gavins Limited	18 November 2018	49 metres
Hinuera, Waikato	Haupehi steepland soils	Corson Maize Seed	6 October 2018	161 metres
Paroa Road, Whakatane, Bay of Plenty	Awakaponga deep loam	Power Grain Limited	14 October 2018	0 metres
Tangimoana Road, Ohakea, Manawatu	Manawatu fine sandy loam	David Dempsey	5 October 2018	41 metres
Opiki Road, Opiki, Manawatu	Opiki peat loam	Adrian Noaro	24 October 2018	6 metres
Kimihia Research Centre, Lincoln, Canterbury	Templeton deep silty loam	Corson Maize Seed	29 October 2018	20 metres

DATA FORMAT

The performance data for each trial site is reported in a single table. Hybrids in each table are listed by yield in descending order. Comparisons can be made only between hybrids within a table. Comparing two hybrids from different tables (i.e. different environments and/or production levels) would likely lead to a mistaken conclusion.

LODGING

If no lodging data is presented, it is because there was no significant lodging present in the trial.

SILAGE HARVEST PROTOCOLS

The trials were harvested at approximately 35% dry matter. The decision to harvest was made based on leaf and stalk state, and milk line in grain.

The hybrids within the trial represent a broad range of maturities and it is important to note that typically the longer maturity hybrids should have the greater yield potential as they are receiving sunlight energy, growing, and accumulating yield for a longer period of time than the shorter maturity hybrids.

GRAIN HARVEST

Lodging counts were undertaken on the day of harvest, with stalk lodging defined as plants that have broken stalk below the ear; and root lodging defined as plants that are touching the adjacent row or equivalent angle if lodged along the row. All of the cobs (primary or secondary) of all of the plants in one of the plot centre rows was harvested, then shelled. Grain was then weighed and the grain moisture and test weight (bulk density) of each grain sample was measured using a Dickey-John GAC 2100 Agri-meter.

Waikato (Tamahere) Planted 10 October 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
Maximus	102	93784	abcd	135	46.4	ab	23.9	a
Z71-F1	111	94698	abc	139	42.0	bcde	21.6	ab
P1636	112	90199	bcdef	140	48.6	a	21.6	ab
PAC344	102	94363	abc	135	40.7	cde	21.4	bc
P0791	106	90447	bcdef	135	43.5	abcd	20.3	bcd
Pelota	107	89442	cdef	138	43.8	abc	20.2	bcd
Olympiad	112	97867	a	139	45.4	abc	20.1	bcd
PAC564	113	85543	fg	140	41.9	bcde	20.1	bcd
C29-A1	96	91259	bcdef	135	46.9	ab	19.9	bcde
PAC343	105	98259	a	135	42.2	bcde	19.5	bcdef
P9721	97	90522	bcdef	135	44.9	abc	19.5	bcdef
N51-N4	102	93816	abcd	135	44.3	abc	19.5	bcdef
Brutus	105	89367	cdef	131	40.9	cde	19.2	cdefg
PAC314	101	92675	abcde	135	43.1	bcd	19.2	cdefg
Plenitude	107	85486	fg	138	45.4	abc	19.0	defgh
RGT FARAONIXX	110	81240	g	139	43.8	abc	18.8	defgh
N39-Q1	97	96509	ab	131	44.2	abc	18.7	defgh
PAC430	108	81622	g	139	43.7	abcd	18.6	defgh
P1253	109	72507	h	139	46.4	ab	18.6	defgh
PAC456	109	94115	abcd	138	42.6	bcd	18.5	defghi
PAC432	105	88371	cdef	135	38.4	de	18.0	defghi
P9911	99	89927	bcdef	131	42.0	bcde	17.6	efghi
Obelix	94	87564	defg	131	48.3	a	17.2	fghi
Velocity	95	89056	cdef	131	41.0	cde	16.9	ghi
Afinity	97	96443	ab	135	46.4	ab	16.8	hi
P0640	106	86644	efg	138	46.4	ab	16.8	hi
RGT LUXXIDA	93	90419	bcdef	128	37.4	e	16.2	i
Mean		90079		136	43.7		19.2	
LSD 5%		6585			5.1		2.3	
CV%		5.2			10.8		7.9	

silage 2018/19 data

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
PAC564	113	89977	bcdef	168	41.2	abcd	33.8	a
P1636	112	89306	bcdef	168	41.5	abc	32.5	ab
RGT	110	90913	abcde	168	40.3	abcde	32.3	abc
FARAONIXX								
PAC456	109	93104	abcd	161	38.1	efgh	32.0	abcd
PAC344	102	93904	abc	154	33.8	jk	31.6	abcde
PAC432	105	92065	abcde	154	36.0	fghij	31.3	abcde
PAC314	101	94112	abc	149	39.0	cdef	31.0	abcdef
PAC343	105	96621	a	154	35.3	hijk	30.9	abcdef
Z71-F1	111	92425	abcde	168	40.0	abcde	30.6	abcdef
P0640	106	88609	bcdef	154	35.8	ghij	30.1	bcdefg
Afinity	97	92969	abcd	149	39.7	bcde	29.9	bcdefg
RGT	93	93201	abcd	154	38.7	def	29.7	bcdefg
LUXXIDA								
N39-Q1	97	91448	abcde	149	41.8	ab	29.5	bcdefg
P9911	99	88790	bcdef	154	35.1	ijk	29.4	bcdefg
Olympiad	112	92426	abcde	161	37.6	efghi	29.4	bcdefg
N51-N4	102	93539	abcd	154	35.8	ghij	29.3	bcdefgh
C29-A1	96	94478	ab	149	42.6	a	28.9	cdefgh
P0791	106	87959	def	161	39.5	bcde	28.7	defgh
P9721	97	92189	abcde	149	39.3	bcde	28.7	defgh
Brutus	105	86713	ef	154	35.4	ghijk	28.4	efgh
Plenitude	107	91415	abcde	154	34.9	ijk	28.3	efgh
Pelota	107	84973	f	161	38.1	efgh	27.6	fgh
Velocity	95	91008	abcde	143	37.6	efghi	27.0	gh
PAC430	108	88423	cdef	154	33.0	k	27.0	gh
Maximus	102	91925	abcde	149	38.1	efg	25.9	hi
Obelix	94	88372	cdef	143	41.1	abcd	22.8	i
Mean		91187		155	38.0		29.5	
LSD 5%		5962			2.8		3.4	
CV%		5			5.2		7.8	

Waikato (Gordonton) Planted 18 November 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
P0640	106	88529	fg	145	35.5	bcdefg	29.1	a
P0791	106	92687	bcdef	141	37.2	abc	28.8	ab
P1636	112	95840	abc	145	33.0	fghi	28.4	abc
C29-A1	96	95428	abcde	129	35.4	bcdefg	28.3	abc
Plenitude	107	94102	abcde	135	36.6	bcd	27.8	abcd
PAC456	109	96901	ab	145	34.9	cdefg	27.6	abcde
Olympiad	112	97366	ab	141	35.7	bcdef	27.4	abcdef
P9911	99	98110	a	129	35.5	bcdefg	26.9	abcdef
P1253	109	77158	h	150	37.9	ab	26.5	abcdef
N51-N4	102	95779	abcd	135	38.0	ab	26.5	abcdef
Brutus	105	90235	efg	141	39.7	a	26.4	abcdef
PAC564	113	86641	g	150	34.2	defgh	26.4	abcdef
Z71-F1	111	96182	ab	145	31.0	ij	25.9	abcdef
RGT FARAONIXX	110	90909	cdefg	150	36.0	bcde	25.5	bcdef
PAC344	102	93250	abcdef	135	30.0	j	25.4	cdef
PAC343	105	90226	efg	141	37.6	abc	25.4	cdef
P9721	97	92799	bcdef	129	36.2	bcd	25.3	cdef
PAC432	105	90566	defg	145	36.1	bcd	25.3	cdef
PAC314	101	95492	abcde	135	33.8	defgh	25.2	cdef
Afinity	97	95205	abcde	129	38.4	ab	25.2	cdef
Pelota	107	92608	bcdef	145	31.8	hij	25.1	def
PAC430	108	86792	g	145	34.8	cdefg	25.0	def
Velocity	95	92736	bcdef	122	33.2	efghi	24.9	defg
RGT LUXXIDA	93	94846	abcde	129	32.7	ghij	24.9	defg
N39-Q1	97	95182	abcde	122	30.7	ij	24.4	efg
Obelix	94	95709	abcd	122	35.5	bcdefg	24.4	fg
Maximus	102	94681	abcde	122	27.1	k	21.8	g
Mean		92813		137	34.7		26.1	
LSD 5%		5269			2.9		3.2	
CV%		4.0			5.8		9.5	

silage 2018/19 data

Bay of Plenty (Whakatane) Planted 14 October 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Lodging (%)		Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance	Result	Significance
PAC343	105	91542	bcde	144	0.3	c	43.2	bc	33.1	a
RGT FARAONIXX	110	86443	def	149	0.0	c	38.0	defg	32.7	ab
PAC456	109	95665	ab	149	0.0	c	35.7	efg	32.4	ab
P1636	112	89915	bcdef	156	13.3	a	38.6	def	32.1	abc
Pelota	107	91375	bcde	141	0.3	c	39.2	cdef	32.0	abc
PAC314	101	93978	abc	141	0.0	c	39.4	cde	31.7	abc
Z71-F1	111	92613	abcd	156	8.5	b	37.5	efg	31.0	abcd
N51-N4	102	92353	abcd	144	0.0	c	42.7	bc	30.8	abcd
Afinity	97	98863	a	144	0.0	c	44.7	ab	30.7	abcde
Olympiad	112	95627	ab	149	0.3	c	36.4	efg	30.3	abcdef
PAC344	102	87430	cdef	144	3.5	c	38.6	def	30.2	abcdefg
P0791	106	90285	bcdef	149	0.0	c	38.1	def	30.1	abcdefg
PAC564	113	87345	def	156	0.0	c	36.5	efg	29.5	bcdefgh
RGT LUXXIDA	93	91291	bcde	144	1.5	c	41.8	bcd	29.0	cdefghi
PAC432	105	91456	bcde	149	0.0	c	35.4	fg	28.3	defghi
PAC430	108	90035	bcdef	149	0.0	c	34.4	fg	27.9	defghij
P1253	109	85717	ef	156	2.3	c	39.5	cde	27.5	efghij
P0640	106	84048	f	149	0.0	c	35.8	efg	27.1	efghij
Brutus	105	92690	abcd	141	0.8	c	36.1	efg	26.9	ghij
Obelix	94	92032	bcde	141	0.0	c	47.9	a	26.4	hij
Plenitude	107	89345	bcdef	151	2.0	c	37.6	efg	26.1	ij
Maximus	102	89641	bcdef	141	1.0	c	34.1	g	24.8	j
Mean		90895		147	1.5		38.7		29.6	
LSD 5%		6621		1	4.2		4.0		3.3	
CV%		5.2		0.5			7.2		7.8	

Manawatu (Ohakea) Planted 5 October 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
PAC344	102	104947	bcd	153	35.2	hi	30.9	a
C29-A1	96	106719	bc	157	38.5	ab	30.9	a
CMS Comet	92	113011	a	143	36.1	efgh	30.9	a
Afinity	97	111020	ab	153	38.1	abc	30.0	ab
Velocity	95	101848	cdefg	146	37.6	bcd	29.8	abc
P9911	99	99045	defg	157	36.9	cdef	29.6	abc
N39-Q1	97	103540	cde	150	39.2	a	29.4	abc
PAC343	105	101679	cdefg	153	37.1	cde	29.2	abc
PAC314	101	102893	cdef	150	35.7	fgh	29.2	abc
PAC249	95	97872	efg	150	37.5	bcde	29.0	abc
Axis	92	101522	cdefg	143	35.6	fgh	28.2	bcd
P9721	97	96538	g	150	37.5	bcde	28.1	bcd
RGT LUXXIDA	93	102928	cdef	143	34.1	i	27.6	bcde
P9400	94	97115	fg	146	36.6	defg	27.5	cde
PAC050	85	99545	defg	137	37.2	bcde	26.2	def
Booster	81	105752	bc	137	34.7	hi	25.8	def
P8805	88	88047	h	137	36.3	defgh	24.9	efg
Delitop	78	104890	cd	133	35.2	hi	24.7	fg
39G12	78	98513	efg	137	35.1	hi	23.0	g
Mean		101970		146	37		28.2	
LSD 5%		6264			1.3		2.5	
CV%		4.3			2.5		6.2	

Manawatu (Opiki) Planted 24 October 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
PAC314	101	101079	ab	148	32.4	hi	27.6	a
P9911	99	95860	bcde	153	35.8	bcd	27.6	a
Afinity	97	99975	ab	152	37.8	a	27.4	ab
N39-Q1	97	100559	ab	148	36.3	abc	26.9	abc
PAC344	102	94012	bcde	160	36.3	abc	26.3	abcde
Maximus	102	99605	abc	153	35.5	bcd	26.3	abcde
Axis	92	98520	abcde	146	34.5	cdef	26.2	abcde
PAC343	105	100246	ab	153	34.8	cdef	26.1	abcde
Velocity	95	100901	ab	152	35.6	bcd	26.0	abcde
C29-A1	96	101226	ab	152	34.9	bcde	25.9	bcdef
P9721	97	94046	bcde	152	36.6	ab	25.4	cdefg
PAC249	95	95951	bcde	148	33.2	efghi	25.2	defg
P9400	94	95329	bcde	146	34.3	defg	24.9	efgh
RGT LUXXIDA	93	97617	bcde	146	33.0	fghi	24.8	efgh
Obelix	94	91407	e	142	35.0	bcde	24.2	fgh
Booster	81	99088	abcd	138	33.5	efgh	24.1	ghi
PAC050	85	97624	bcde	134	34.0	defgh	23.9	ghij
CMS Comet	92	100719	ab	138	29.5	j	23.9	ghij
P8805	88	93678	bcde	142	35.6	bcd	23.4	hij
Asterix	85	93978	bcde	142	32.5	ghi	22.5	ijk
Titus	82	92006	cde	138	34.7	cdef	22.2	jk
Delitop	78	105773	a	134	34.1	defgh	20.8	kl
39G12	78	91799	de	134	31.4	i	19.4	l
Mean		97435		145.7	34.4		24.8	
LSD 5%		7636			1.9		1.7	
CV%		5.6			3.8		5.8	

Canterbury (Lincoln) Planted 29 October 2018

HYBRID	CRM	Plants per hectare		Days to harvest	Harvest dry matter (%)		Yield (t DM/ha)	
		Result	Significance		Result	Significance	Result	Significance
CMS Comet	92	106440	a	161	33.1	d	26.9	a
Axis	92	104866	a	161	32.5	d	26.2	ab
RGT DIREXXION	82	105510	a	154	39.6	ab	25.9	ab
Asterix	85	99677	a	157	37.4	bc	25.1	abc
RGT OXXFORD	78	107531	a	154	39.9	a	24.8	abcd
Booster	81	103283	a	154	36.0	c	24.2	bcd
PAC050	85	100780	a	157	37.5	abc	24.2	bcd
38V12	91	88720	b	161	32.6	d	23.9	bcde
Delitop	78	102516	a	154	39.3	ab	23.2	cdef
RGT HAUXXTIN	80	103563	a	154	37.6	abc	22.7	def
Titus	82	103016	a	154	37.6	abc	21.8	ef
39G12	78	88572	b	154	37.4	abc	21.0	f
Mean		101206		156	36.7		24.2	
LSD 5%		9394			2.5		2.4	
CV%		6.5			4.7		6.8	

Waikato (Hinuera) Planted 6 October 2018

HYBRID	CRM	Plants per hectare		Harvest moisture (%)		Test weight (kg/hl)		Yield (t/ha @14% moisture)	
		Result	Significance	Result	Significance	Result	Significance	Result	Significance
PAC430	108	94353	ab	19.0	efg	75.6	cde	21.6	a
PAC564	115	86587	bcde	22.5	b	72.9	jk	20.7	ab
PAC456	109	93825	ab	18.9	fgh	76.7	abc	20.5	ab
PAC432	107	92399	abc	18.8	fghi	73.8	ghij	20.2	ab
P0640	106	89195	abcde	19.3	ef	74.5	fgh	19.7	abc
PAC314	101	95472	a	17.7	lm	75.2	def	19.6	abc
PAC343	104	91034	abcd	19.0	efg	75.1	def	19.4	abcd
PAC344	102	86614	bcde	18.3	ijk	75.3	def	19.2	bcde
P0791	Silage only	84389	cde	19.2	efg	74.7	efg	19.0	bcde
P1636	Silage only	86837	bcde	21.2	c	77.2	a	19.0	bcde
P9721	97	95500	a	17.4	m	73.6	ghij	19.0	bcdef
Pelota	107	90653	abcd	17.9	klm	75.4	def	18.8	bcdef
Olympiad	112	92338	abc	20.8	c	71.7	l	17.7	cdefg
RGT FARAONIXX	110	81168	e	20.0	d	76.7	ab	17.7	cdefg
Afinity	100	86900	bcde	18.4	hijk	75.1	def	17.6	cdefg
P9911	Silage only	90286	abcd	18.2	jkl	74.4	fgh	17.5	cdefg
N51-N4	104	88047	abcde	18.7	ghij	75.3	def	17.3	defgh
RGT LUXXIDA	93	90410	abcd	18.1	jkl	76.0	bcd	17.1	defgh
Plenitude	107	87262	abcde	18.2	ijkl	73.5	hij	17.1	defgh
C29-A1	96	91923	abc	17.5	m	73.9	ghij	16.9	efghi
N39-Q1	100	91348	abc	17.8	klm	73.3	ij	16.7	fghi
Brutus	105	90808	abcd	20.0	d	75.9	bcd	16.2	ghi
Z71-F1	Silage only	90706	abcd	23.5	a	74.5	efgh	15.0	hij
Maximus	102	89715	abcd	19.5	de	71.9	kl	14.7	ij
Velocity	98	89143	abcde	17.7	lm	76.1	bcd	14.7	ij
Obelix	94	82222	de	16.4	n	74.0	ghi	13.6	j
Mean		89533		19.0		74.7		18.0	
LSD 5%		8571		0.6		1.1		2.3	
CV%		7		2.2		1.0		10.2	

Waikato (Gordonton) 18 November 2018

HYBRID	CRM	Plants per hectare		Harvest moisture (%)		Test weight (kg/hl)		Yield (t/ha @14% moisture)	
		Result	Significance	Result	Significance	Result	Significance	Result	Significance
PAC564	115	86407		30.3	b	68.5	hijk	19.1	a
PAC314	101	96355		23.3	lmno	73.5	ab	18.0	a
Obelix	94	95458		20.9	p	74.3	ab	18.0	a
N51-N4	104	96089		24.1	klm	72.4	bcd	17.8	a
PAC344	102	95075		24.3	jkl	71.2	cdefg	17.7	a
Afinity	100	94785		23.9	lm	70.8	cdefgh	17.6	a
P0791	Silage only	91787		25.2	ij	70.0	fghi	17.4	a
C29-A1	96	91587		22.9	no	72.6	bc	17.4	a
PAC430	108	91390		26.1	gh	71.0	cdefg	17.2	a
P0640	106	89703		26.3	g	68.5	ijk	17.0	a
PAC456	109	94558		26.2	gh	70.7	defgh	16.9	ab
PAC432	107	93903		26.7	fg	68.8	ghijk	16.8	ab
Pelota	107	89904		25.4	hij	71.5	bcdef	16.8	ab
P1253	109	86997		27.5	def	71.3	cdefg	16.8	ab
PAC343	104	91461		24.9	jk	70.9	cdefg	16.8	ab
RGT FARAONIXX	110	94826		27.9	de	70.1	fghi	16.7	ab
RGT LUXXIDA	93	92303		23.2	mno	74.9	a	16.6	abc
N39-Q1	100	94992		22.4	o	72.0	bcde	16.5	abc
P9721	97	93529		23.0	mno	71.3	cdefg	16.4	abc
P1636	Silage only	89710		28.9	c	69.7	fghij	16.2	abcd
P9911	Silage only	95566		23.4	lmn	71.0	cdefg	16.0	abcd
Plenitude	107	90892		24.2	jklm	71.4	bcdefg	16.0	abcde
Velocity	98	90247		22.9	no	74.6	a	15.0	bcde
Olympiad	112	91040		27.1	ef	67.9	k	14.7	cde
Z71-F1	Silage only	93530		32.1	a	71.5	bcdef	14.3	cde
Maximus	102	96287		25.9	ghi	68.1	jk	14.1	de
Brutus	105	88871		28.2	cd	70.5	efgh	13.8	e
Mean		92491		25.4		71.1		16.6	
LSD 5%		8847		0.9		2.0		2.3	
CV%		5.4		2.0		1.6		7.8	

Bay of Plenty (Whakatane) Planted 14 October 2018

HYBRID	CRM	Plants per hectare		Root lodging (%)		Harvest moisture (%)		Test weight (kg/hl)		Yield (t/ha @14% moisture)	
		Result	Signif.	Result	Signif.	Result	Signif.	Result	Signif.	Result	Signif.
PAC564	115	88009	cdef	2.6	cd	24.8	a	70.0	h	19.7	a
PAC343	104	92631	abcd	0.7	cd	21.6	fghi	73.6	ef	19.3	ab
PAC430	108	92583	abcd	3.8	bcd	21.5	ghij	74.5	cde	18.7	abc
PAC344	102	93633	abcd	5.0	bcd	20.6	ijkl	75.4	bcd	18.5	abcd
PAC432	107	89219	bcdef	2.9	cd	21.3	hijk	72.6	fg	18.2	abcde
RGT FARAONIXX	110	89612	bcdef	0.0	d	22.3	efg	74.5	cde	18.0	bcde
PAC314	101	94321	abc	5.0	bcd	20.5	kl	74.0	def	18.0	bcdef
P0640	106	89594	bcdef	4.9	bcd	22.5	cde	74.4	cde	17.7	bcdefg
P0791	Silage only	84395	ef	7.6	bcd	22.0	efgh	73.6	ef	17.5	cdefgh
N51-N4	104	95978	ab	1.0	cd	21.0	ijkl	73.5	ef	17.2	cdefghi
P1253	109	83122	f	4.0	bcd	22.4	def	78.1	a	17.0	defghi
Afinity	100	98361	a	3.6	bcd	20.9	ijkl	73.7	ef	16.9	efghi
RGT LUXXIDA	93	89502	bcdef	0.7	cd	20.8	ijkl	75.7	bc	16.5	fghi
PAC456	109	91931	abcd	7.9	bc	20.8	ijkl	74.5	cde	16.4	ghi
Pelota	107	90524	bcde	2.3	cd	20.2	l	74.6	cde	16.3	ghi
Brutus	105	89287	bcdef	0.4	cd	23.5	bc	74.8	bcde	16.2	ghij
P1636	Silage only	90488	bcde	16.3	a	23.3	bcd	76.2	b	16.2	ghij
Plenitude	107	84532	ef	8.2	bc	21.0	ijkl	73.5	ef	16.0	hij
Olympiad	112	94042	abc	11.1	ab	22.7	bcde	68.6	h	15.7	ij
Obelix	94	87025	def	3.2	bcd	18.9	m	74.7	bcde	14.6	jk
Maximus	102	89545	bcdef	7.6	bcd	23.5	b	71.7	g	13.1	k
Mean		90397		4.7		21.7		73.9		17.0	
LSD 5%		7005		8.1		0.9		1.6		1.5	
CV%		5.4		152.6		3.3		1.7		7.6	

Manawatu (Ohakea) Planted 5 October 2018

HYBRID	CRM	Plants per hectare		Harvest moisture (%)		Test weight (kg/hl)		Yield (t/ha @14% moisture)	
		Result	Signif.	Result	Signif.	Result	Signif.	Result	Signif.
PAC314	101	97628	defg	18.6	def	74.5	def	17.7	a
PAC343	104	106426	ab	20.0	b	73.5	fg	17.6	a
P9911	Silage only	98490	cdefg	20.5	b	72.3	gh	17.6	a
PAC249	97	98175	defg	18.0	fg	74.6	def	17.3	a
Afinity	100	105849	abc	19.6	bcd	73.9	ef	17.0	ab
PAC344	102	99496	bcdefg	19.5	bcde	74.1	ef	17.0	abc
P9721	97	93119	g	18.1	fg	73.8	ef	16.9	abc
CMS Comet	Silage only	107346	a	17.8	fgh	71.8	h	16.0	bcd
N39-Q1	100	100559	abcdefg	18.8	cdef	73.4	fg	16.0	bcd
Velocity	98	104939	abcd	19.6	bcd	74.4	def	16.0	cd
RGT LUXXIDA	93	100681	abcdef	19.8	bc	75.0	de	15.7	de
C29-A1	96	103719	abcde	19.4	bcde	73.4	fg	15.4	def
P9400	94	95177	fg	17.1	ghi	77.7	c	15.3	def
Axis	Silage only	99591	bcdefg	18.7	cdef	77.3	c	14.8	ef
PAC050	88	99506	bcdefg	18.4	ef	78.4	bc	14.6	efg
P8805	88	77116	h	16.9	ghi	75.7	d	14.3	fgh
Delitop	88	105182	abcd	16.8	hi	81.3	a	13.6	gh
Booster	88	106588	ab	16.3	i	79.5	b	13.3	h
39G12	Silage only	98227	defg	16.5	i	79.5	b	12.0	i
Mean		99885		18.4		75.5		15.7	
LSD 5%		7735		1.2		1.3		1.1	
CV%		5.4		4.2		1.2		5.6	

Manawatu (Opiki) Planted 24 October 2018

HYBRID	CRM	Plants per hectare		Harvest moisture (%)		Test weight (kg/hl)		Yield (t/ha @14% moisture)	
		Result	Significance	Result	Significance	Result	Significance	Result	Significance
Afinity	100	100393	a	21.9	def	70.87	jk	16.2	abc
CMS Comet	Silage only	96994	abcd	20.1	hij	70.64	k	15.7	bcd
PAC249	97	92294	cdefgh	20.0	hij	73.66	g	15.6	bcd
N39-Q1	100	97543	abcd	20.8	gh	71.72	ijk	15.6	bcd
RGT LUXXIDA	93	94261	abcdefg	22.4	de	74.04	fg	15.3	cde
P9721	97	86355	h	20.1	hij	72.92	ghi	15.2	cde
P9911	Silage only	90183	efgh	21.9	def	71.09	jk	15.1	cde
P8805	88	93477	bcdefg	18.7	lm	75.97	de	14.8	def
C29-A1	96	96568	abcde	21.4	efg	70.87	jk	14.7	defg
Maximus	102	98800	abc	25.8	b	68.72	l	14.6	defgh
P9400	94	92060	defgh	19.1	jklm	77.26	cd	14.4	efghi
Velocity	98	93654	bcdefg	21.3	fg	73.88	fg	14.3	efghi
Axis	Silage only	97701	abcd	20.2	hi	76.25	de	14.2	efghi
PAC050	88	99000	ab	19.8	ijk	77.89	c	13.8	fghi
Obelix	94	89169	fgh	18.7	m	75.07	ef	13.6	ghi
Booster	88	97460	abcd	19.4	ijklm	78.20	c	13.5	hij
Delitop	88	100565	a	19.5	ijklm	81.26	a	13.4	ij
Titus	82	97225	abcd	18.9	klm	79.80	b	12.5	jk
Asterix	85	89909	fgh	19.7	ijkl	78.29	c	12.4	jk
39G12	Silage only	91896	defgh	18.5	m	77.61	c	12.0	k
Mean		94624		21.1		74.32		14.7	
LSD 5%		6535		1.0		1.32		1.1	
CV%		4.9		3.3		1.3		5.6	

FAR would like to thank the people who have helped contribute to the timely production of this booklet:

TRIAL HOSTS

Adrian Noaro
Corson Maize Seed
David Dempsey
FAR, Northern Crop Research Site
Gavins Ltd
Kimihi Research Centre, PGG Wrightson Seeds
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BIOMETRICIAN

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This information has been generated by the Maize Performance Trial (MPT) operating procedures.

MPT represents a collaboration between the Foundation for Arable Research, the New Zealand Plant Breeding & Research Association and individual seed companies.