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# FAR HYBRID EVALUATION



FOUNDATION FOR ARABLE RESEARCH



**maize hybrids**  
**2015/2016**

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Welcome to the second edition of the Maize Hybrid Performance Trials results booklet.

The first season of MPT trials, undertaken in the 2014/15 season, were a solid start to the MPT system, providing the only independent source of information you have available when making decisions on hybrid selection.

For the 2015/16 season, the number of sites increased to five, and a third seed company joined the programme. 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.

FAR welcomes any queries or suggestions on how to improve the MPT programme, and this results booklet. Please contact us if you have any new ideas, or if you require any additional information not included in this booklet.

Tom Bruynel  
President  
New Zealand Plant Breeders Association

July 2016

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

A smaller working group developed these ideas with the intention of having a hybrid trial programme, of some sort, in place for the 2014 maize planting season.

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 which includes agreed standard hybrids for comparison.

The results of the first year of trials are available in the publications section of the FAR website.

Following the success of this first season, the Maize Technical Committee increased the number of sites to five, with an additional site in the Waikato, on peat ground, and also 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 will be invested in the governance of the programme, analysis of the results and reporting. This booklet covers the results of the five trial sites. Data from a 2015/16 Canterbury site has not been included due to concerns by the Maize Technical Committee around consistency. We plan to undertake six trials in the 2016/17 season.

Allister Holmes  
Maize Hybrid Performance Trials Project Manager

July 2016

### MPT STRUCTURE

The Maize Hybrid Performance Trials (MPT) are organised and funded through the Maize Hybrid Performance Trial Committee with representatives from 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.

Secretarial services are provided by NZPBRA.

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 will meet at least once a year to review the trial results, and at any other time that a meeting is required. The committee will view the field trial sites prior to harvest.

**PURPOSE**

- 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.
- To foster industry adoption of proven hybrids to maximise industry efficiency and profitability.

The Maize Performance Trials (MPT) are organised and funded through the Maize Hybrid Performance Trial Committee with representatives from the 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.

**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, these must be made independently by the seed companies before the hybrids are entered into the MPT programme. The trial programme will evaluate

silage and grain hybrids.

A set of standard, control hybrids, typically well-established leading commercial hybrids, are entered in the MPT programme each year to provide a set of benchmark hybrids for comparison over multiple years.

Harvest assessments will be 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 will be developed at the start of the season.

At each trial site, plots consisted of four rows, approximately 5 metres long, planted at 76 cm spacings. Each hybrid was replicated four times within a randomized complete block design. All data was collected from the middle two rows of the plot. Comparative Relative Maturity ratings have been supplied by participating seed companies. They are not directly comparable between companies as they reflect relative time to silage or grain harvest as assessed by individual companies. They are presented as a guide to hybrid relative maturity. The plots were planted from pre-counted packets of seed using an air plot planter and harvested by hand.

In-season assessments include plant count, lodging and disease score; and harvest assessments include an assessment of ear rots, bird damage and yield.

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.

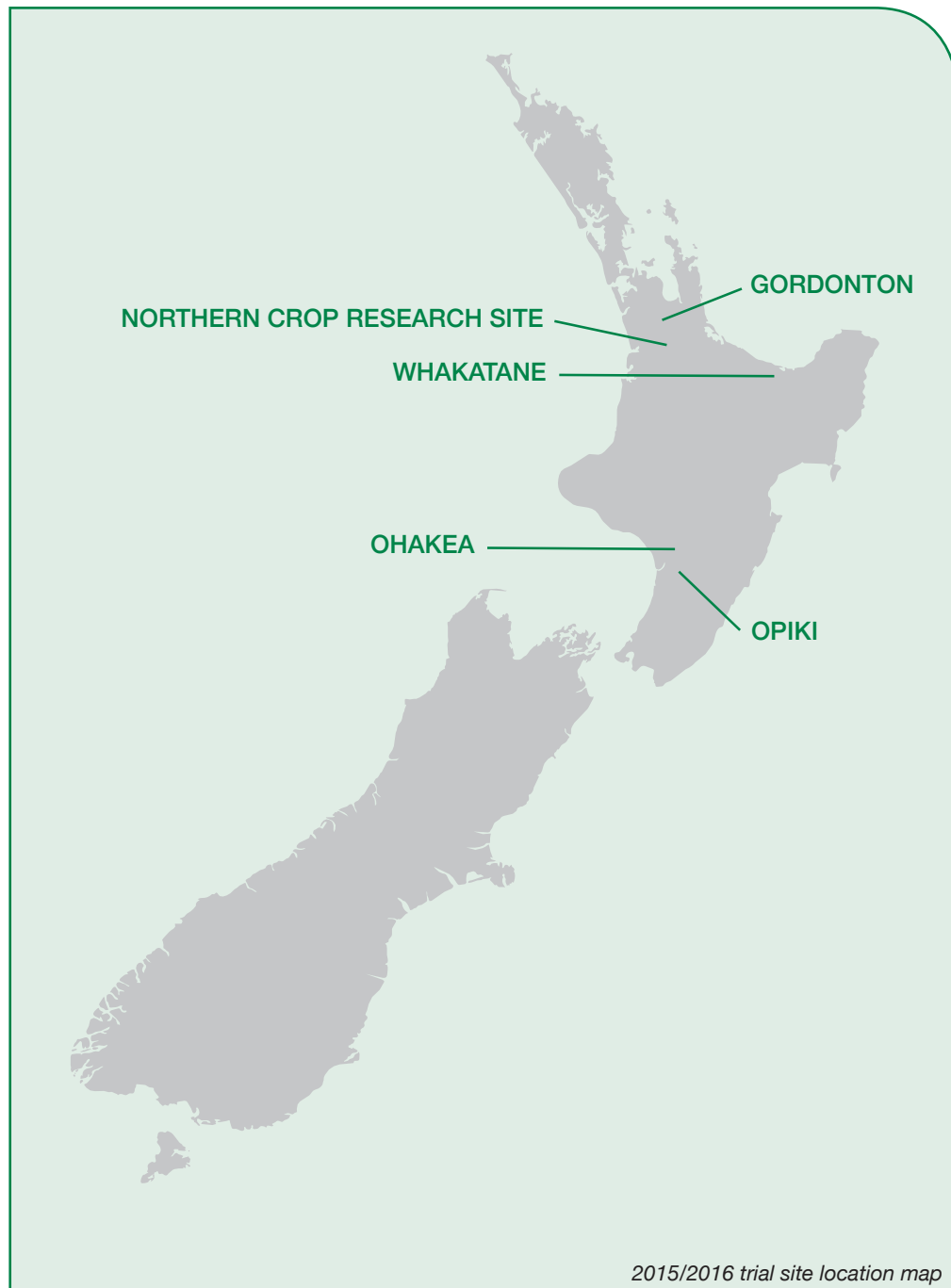
MPT represents the collaboration of FAR, the New Zealand Plant Breeding & Research Association and individual seed companies.

**COMMERCIAL HYBRIDS**

HYBRID	Seed supplier	CRM	Website
L07-A9	Corson Maize Seed	72	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
Delitop	Corson Maize Seed	78	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
PAC040	Pacific Seeds	80	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
Titus	HSR	82	<a href="http://www.nutritech.co.nz">www.nutritech.co.nz</a>
N23-K3	Corson Maize Seed	87	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
PAC065	Pacific Seeds	89	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
PAC123	Pacific Seeds	91	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
PAC249	Pacific Seeds	95	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
C29-A1	Corson Maize Seed	96	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
N39-Q1	Corson Maize Seed	97	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
PAC230	Pacific Seeds	98	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
Maximus	HSR	102	<a href="http://www.nutritech.co.nz">www.nutritech.co.nz</a>
G49-T9	Corson Maize Seed	104	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
N51-N4	Corson Maize Seed	104	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
PAC343	Pacific Seeds	104	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
C56-C4	Corson Maize Seed	106	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
PAC432	Pacific Seeds	107	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
PAC456	Pacific Seeds	108	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
Z71-F1	Corson Maize Seed	111	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
Olympiad	HSR	112	<a href="http://www.nutritech.co.nz">www.nutritech.co.nz</a>
C78-S8	Corson Maize Seed	114	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
Sirus	HSR	117	<a href="http://www.nutritech.co.nz">www.nutritech.co.nz</a>

**PRE-COMMERCIAL HYBRIDS**

HYBRID	Seed supplier	CRM	Website
PAC ME064	Pacific Seeds	85	<a href="http://www.pacificseeds.co.nz">www.pacificseeds.co.nz</a>
CMS Comet	Corson Maize Seed	92	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
Afinity	Corson Maize Seed	100	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>
Plenitude	Corson Maize Seed	107	<a href="http://www.corsonmaize.co.nz">www.corsonmaize.co.nz</a>



2015/2016 trial site location map

**NORTHERN CROP RESEARCH SITE**

**Soil type:** Horotiu silt loam  
**Host farmer:** FAR  
**Irrigation:** Nil  
**Planting date:** 9 October 2015  
**Altitude:** 49 metres  
**Base dressing:** Nil  
**Starter fertiliser:** Ballance Yaramila 12:5:15:8 250 kg/ha  
**Side dressing:** 26 November 2015; Sustain 250 kg/ha  
**Herbicide pre-emergence:** 10 October 2015; Roustabout® 3l/ha, Sharpen® 150gms/ha  
**Herbicide post-emergence:** Nil  
**Seed treatment:** Vitaflo® and Poncho®  
**Grain harvest:** 20 March 2016

**GORDONTON, WAIKATO**

**Soil type:** Utuhina deep loamy peat  
**Host farmer:** Gavins Limited  
**Irrigation:** Nil  
**Planting date:** 6 November 2015  
**Altitude:** 30 metres  
**Base dressing:** October 2015; 300 kg/ha Urea  
**Starter fertiliser:** Ballance Yaramila 12:5:15:8 250 kg/ha  
**Side dressing:** Nil  
**Herbicide pre-emergence:** Nil  
**Herbicide post-emergence:** 30 November 2015; Calisto 200 ml/ha, Latro 80 g/ha, Gesaprim 1.5 l/ha, Synoil 1%  
**Seed treatment:** Vitaflo® and Poncho®  
**Grain harvest:** 3 May 2016

**WHAKATANE, BAY OF PLENTY**

**Soil type:** Awakaponga deep loam  
**Host farmer:** Power Grain Limited  
**Irrigation:** Nil  
**Planting date:** 12 October 2015  
**Altitude:** 0 metres  
**Base dressing:** Nil  
**Starter fertiliser:** Ballance Yaramila 12:5:15:8 250 kg/ha  
**Side dressing:** Early December 2015; Urea 250 kg/ha  
**Herbicide pre-emergence:** 10 October 2015; Sylon® 3 l/ha, Glyphosate 510 l/ha  
**Herbicide post-emergence:** 25 November 2015; Callisto® 0.2 l/ha, Banvel® 1 l/ha, Atrazine 1 l/ha  
**Seed treatment:** Vitaflo® and Poncho®  
**Grain harvest:** 29 April 2016

**OHAKEA, MANAWATU**

**Soil type:** Manawatu fine sandy loam  
**Host farmer:** David Dempsey  
**Irrigation:** Nil  
**Planting date:** 8 October 2015  
**Altitude:** 41 metres  
**Base dressing:** Late September 2015; 350 kg/ha Urea, 70 kg/ha Sulphate of Ammonia  
**Starter fertiliser:** Ballance Yaramila 12:5:15:8 250 kg/ha  
**Side dressing:** Nil  
**Herbicide pre-emergence:** 30 September 2015; Acetochlor 2.5 l/ha, Gesaprim 1 l/ha  
**Herbicide post-emergence:** Mid November 2015; Callisto® 150 ml/ha, Gesaprim 1 l/ha  
**Seed treatment:** Vitaflo® and Poncho®  
**Grain harvest:** 20 April 2016

**OPIKI, MANAWATU**

**Soil type:** Opiki peat loam  
**Host farmer:** Adrian Noaro  
**Irrigation:** Nil  
**Planting date:** 26 October 2015  
**Altitude:** 6 metres  
**Base dressing:** Nil  
**Starter fertiliser:** Ballance Yaramila 12:5:15:8 250 kg/ha  
**Side dressing:** 16 December 2015; Sustain 300 kg/ha  
**Herbicide pre-emergence:** Nil  
**Herbicide post-emergence:** 11 December 2015; AtraneX 2.5 l/ha, Neeko Oleo 1 l/ha  
**Seed treatment:** Vitaflo® and Poncho®  
**Grain harvest:** 17 May 2016



Results given in the Maize Hybrid Performance Evaluation booklet are from a single year's trials at three sites. One year's data may not reliably indicate the performance of a hybrid due to environmental impacts, so wherever possible, use as many seasons' data as are available when selecting hybrids. The results provide an independent and objective evaluation of the performance of the hybrids in the trials. In order to make good use of the results of these and other trials please consider the following:

1. Use multi-year data. These trials are from the first year of the MPT trial programme.
2. Use multi-location average data. Consider single location results with caution.
3. Evaluate consistency of performance of the hybrids you are interested in over years, across locations in other zones. Look for hybrids that are consistently in the top group, and beware of hybrids that have widely varying performance across various sites and seasons.
4. Look at other reliable, unbiased, replicated independent trial results focusing on consistency.
5. Test new hybrids on your farm before planting large areas.

**Remember you should avoid making hybrid selection decisions based on one year yield comparisons from only one or two local test plots.**

### 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.

### DAYS TO 50% SILK EMERGENCE

Please note the mean, LSD and CV given are for all the hybrids in the trial, not just those shown in the grain or silage results table.

### UNDERSTANDING 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 performance differences or random chance.

This booklet presents data with an LSD of 10%. If the difference between two hybrids were equal to or greater than the LSD, the difference would be attributable to hybrid differences in 90% 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 12 and 13, the hybrids 34P88, Z71-F1, C78-S8, PAC456, P0791, 33M54, Olympiad, N51-N4 and Plenitude all have the letter 'a' beside them in the yield column. This indicates that while their yields in this trial varied, this variation is not statistically significant.**

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.

### LODGING

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

### SILAGE HARVEST PROTOCOLS

The aim was to harvest hybrids 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.

While the data for the trials presented are sorted from highest yield to lowest yield it must be remembered that the highest yielding hybrids are not necessarily the best option for planting on your farm. The first consideration for selecting maize hybrids should be the maturity so that the hybrid selected fits your planting and harvesting timeframe in the environment in which you are growing.

The difference in maturity of the hybrids in the trial can be assessed by comparing the days to harvest and the DM content at harvest (DM%) for silage and the harvest moisture for grain. Wherever possible hybrids were harvested at the same DM content with a target of 35%.

Silage yields are given as tonnes of dry matter per hectare (t DM/ha).

### GRAIN HARVEST

Lodging counts will be 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 will be harvested, then shelled. Grain will then be weighed and grain moisture and test weight (bulk density) of each grain sample will be measured using a Dickey-John GAC 2100 Agri-meter.

## Waikato (Northern Crop Research Site, Tamahere)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare		Days to Harvest		Harvest Dry Matter (%)		Yield (t DM/ha)	
P0791	106	77		93878	bg	130		42.0	be	24.7	a
C56-C4	106	78		97428	ae	125		36.1	gj	24.7	a
PAC432	107	78		95330	ae	130		39.9	ef	23.8	ab
N39-Q1	97	75		94819	af	129		46.7	a	23.8	ab
C78-S8	114	83		89416	hi	136		34.5	ij	23.8	ab
Z71-F1	111	81		96880	ae	130		37.4	gh	23.8	ab
PAC456	108	81		88712	i	129		37.7	fg	23.4	ac
PAC343	104	77		93404	dh	130		41.2	ce	23.4	ac
37Y12	95	75		99094	a	125		36.0	gj	23.3	ac
P0021	100	75		98235	ac	125		36.0	gj	23.3	ac
PAC230	98	75		93664	ch	129		43.9	b	23.0	ac
PAC249	95	75		96021	ae	129		43.0	bd	22.9	ac
Olympiad	112	81		95652	ae	136		36.6	gi	22.9	ac
Afinity	100	78		98884	a	125		34.6	ij	22.9	ac
C29-A1	96	76		83849	j	129		44.2	b	22.6	ac
N51-N4	104	77		98186	ac	125		35.0	hj	22.5	bc
33M54	112	84		97937	ad	136		36.3	gj	22.4	bc
Plenitude	107	82		95990	ae	136		35.6	gj	22.3	bc
34P88	109	81		95560	ae	130		37.9	fg	22.3	bc
Sirus	117	85		94757	af	136		29.9	k	22.2	bd
Maximus	102	75		98526	ab	125		33.9	j	21.8	bd
G49-T9	104	75		90598	gi	129		40.8	de	21.5	cd
Titus	82	68		93004	ei	125		43.3	bc	20.1	d
Mean		78		94775		130		38.4		22.9	
LSD @ 10%				4673				2.4		2.1	
CV%				4.2				5.0		7.7	

## Waikato (Ballard Road, Gordonton)

HYBRID	CRM	Plants per Hectare		Days to Harvest			Harvest Dry Matter (%)		Yield (t DM/ha)	
34P88	109	93983	be	150			42.5	ac	30.2	a
Z71-F1	111	90646	df	150			39.5	be	30.0	a
C78-S8	114	86843	f	151			40.3	be	29.7	ab
PAC456	108	91274	cf	145			41.7	ad	29.1	ac
P0791	106	99339	a	136			34.5	fh	29.0	ac
33M54	112	95610	ad	151			38.9	ce	28.5	ac
Olympiad	112	92340	be	150			39.4	be	27.9	ad
N51-N4	104	95300	ad	145			42.7	ab	27.6	ae
Plenitude	107	94560	ad	145			38.6	df	27.4	ae
PAC343	104	95432	ad	150			42.5	ac	27.0	bf
Afinity	100	99362	a	136			39.5	be	26.5	cg
PAC432	107	91986	bf	150			44.0	a	26.4	cg
C29-A1	96	89307	ef	136			37.9	ef	26.3	cg
PAC230	98	96383	ab	136			39.1	be	25.5	dh
Sirus	117	96261	ac	151			34.4	fh	24.8	ei
P0021	100	96765	ab	133			32.0	gh	24.2	fj
N39-Q1	97	93806	be	133			32.0	gh	24.2	fj
C56-C4	106	93802	be	130			33.2	gh	24.0	gj
37Y12	95	95839	ad	122			30.9	h	23.7	gj
Maximus	102	94830	ad	136			32.8	gh	23.3	hj
G49-T9	104	91211	cf	130			32.8	gh	22.4	ij
PAC249	95	94778	ad	130			34.7	fg	21.4	j
Titus	82	94508	ae	122			34.0	gh	21.3	j
Mean		94094		140			37.3		26.1	
LSD @ 10%		5207					3.6		2.9	
CV%		4.6					8.0		9.3	



## Bay of Plenty (Paroa Road, Whakatane)

HYBRID	CRM	Plants per Hectare		Days to Harvest			Root lodging (%)		Harvest Dry Matter (%)		Yield (t DM/ha)	
C78-S8	114	88790	cd	154			2.5	cg	37.3	bd	32.1	a
34P88	109	96688	ab	143			5.8	bf	36.0	cg	30.3	ab
33M54	112	96188	ab	148			6.3	ae	37.2	bd	30.3	ab
Plenitude	107	96960	ab	143			3.3	bg	36.6	be	29.9	ac
37Y12	95	95503	ab	123			2.3	dg	34.8	eg	29.6	ad
Z71-F1	111	93258	ac	148			2.0	eg	36.3	ce	28.9	be
PAC432	107	91739	bd	143			0.8	g	36.5	ce	28.6	bf
Olympiad	112	94718	ab	148			4.0	bg	41.4	a	28.4	bf
Maximus	102	95449	ab	143			0.5	g	37.9	bc	27.9	bf
C56-C4	106	95783	ab	134			1.5	eg	31.8	hi	27.7	bg
PAC343	104	95973	ab	143			1.0	fg	36.1	cf	27.5	ch
PAC456	108	86459	d	148			10.9	a	36.3	ce	27.3	ch
N51-N4	104	96974	ab	134			1.8	eg	33.9	fh	27.1	di
P0791	106	94241	ac	134			2.5	cg	29.5	i	27.0	di
Sirus	117	96308	ab	154			7.0	ad	38.9	b	26.6	ei
G49-T9	104	95283	ab	134			7.8	ab	34.3	eg	26.1	fj
P0021	100	96965	ab	134			7.3	ac	33.7	gh	25.2	gj
PAC230	98	96141	ab	134			0.8	g	35.3	dg	25.0	hj
PAC249	95	93306	ac	128			0.0	g	30.6	i	24.6	ij
Titus	82	98377	a	123			0.5	g	35.2	dg	23.7	j
Mean		94755		140			3.4		35.5		27.7	
LSD @ 10%		5643					4.8		2.3		2.6	
CV%		5					118.4		5.5		8.0	

## Rangitikei (Tangimoana Road, Ohakea)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare			Days to Harvest		Harvest Dry Matter (%)		Yield (t DM/ha)	
Afinity	100	103.3	a	105337	a		156		40.9	a	26.8	a
P9400	94	98.4	ef	93827	cd		149		37.9	cf	26.3	a
PAC230	98	98.7	df	96325	ad		156		39.4	b	26.0	ab
38V12	91	98.0	f	98420	ac		146		39.1	bc	25.4	ab
N39-Q1	97	99.3	ce	88746	d		152		38.5	bd	25.3	ab
PAC ME064	85	93.5	h	99959	ac		142		36.6	eh	25.3	ac
P0021	100	101.0	b	98997	ac		149		36.9	eg	24.9	ac
Maximus	102	100.0	c	95987	bd		152		36.0	gh	24.5	ac
PAC123	91	98.0	f	99408	ac		146		38.3	be	24.5	ac
37Y12	95	99.3	ce	103036	ab		149		38.9	bc	24.2	ac
CMS Comet	92	98.3	f	98426	ac		142		35.1	hi	23.2	bd
PAC249	95	99.6	cd	90503	cd		149		36.4	fh	23.1	bd
PAC065	89	96.6	g	87226	d		146		38.0	bf	22.7	be
PAC040	80	91.0	j	91153	cd		139		37.6	df	21.9	ce
Titus	82	92.7	hi	93501	cd		137		35.5	gi	21.8	ce
39G12	78	92.8	hi	98997	ac		139		35.4	hi	21.6	de
N23-K3	87	92.5	hi	93407	cd		137		34.7	i	20.8	de
Delitop	78	92.4	i	95547	bd		137		35.7	gi	19.5	e
Mean		97.0		96045			146		37.3		23.8	
LSD @ 10%		0.8		7707					1.2		2.4	
CV%		0.6		6.2					2.3		7.8	

## Manawatu (Opiki Road, Opiki)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare			Days to Harvest		Harvest Dry Matter (%)		Yield (t DM/ha)	
Afinity	100	92.7	a	109352	a		155		40.5	c	29.8	a
N39-Q1	97	92.2	a	95392	cf		155		40.1	c	27.6	b
P0021	100	91.8	ab	98987	bd		148		37.8	d	27.1	bc
PAC249	95	91.2	bc	97633	be		155		40.4	c	26.8	bc
37Y12	95	90.8	cd	100576	bc		155		42.0	ab	26.7	bd
PAC230	98	90.0	d	88180	gh		155		41.1	bc	26.2	bd
C29-A1	96	89.9	de	86754	h		155		42.9	a	26.2	bd
N23-K3	87	86.0	g	95100	cf		140		37.7	de	25.9	ce
P9400	94	90.5	cd	95387	cf		148		38.2	d	25.8	ce
Maximus	102	91.2	bc	97399	be		155		36.4	e	25.8	ce
CMS Comet	92	90.7	cd	102315	b		140		33.8	f	25.2	de
38V12	91	90.5	cd	98931	bd		147		37.9	d	24.6	ef
PAC123	91	89.0	e	89985	fh		147		38.6	d	24.4	ef
PAC ME064	85	86.5	g	91756	eh		140		35.0	f	23.5	f
PAC040	80	85.7	gh	85548	h		135		34.8	f	23.4	f
39G12	78	86.5	g	94817	cf		133		34.8	f	23.2	f
Titus	82	86.0	g	89417	fh		135		34.8	f	23.2	f
PAC065	89	88.0	f	85774	h		147		38.1	d	23.1	fg
Delitop	78	85.0	h	93771	fg		133		37.3	de	21.6	g
Mean		89.2		94583			146		38.0		25.3	
LSD @ 10%		0.9		6235					1.3		1.5	
CV%		0.8		0.0					2.8		5.0	

## Waikato (Northern Crop Research Site, Tamahere)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare			Harvest Moisture (%)		Test Weight (kg/hl)		Yield (t/ha @ 14% moisture)	
PAC343	104	77		93999	bd		17.3	de	71.9	bd	12.3	a
PAC432	107	78		96928	ac		17.3	de	70.5	cf	12.1	ab
PAC230	98	75		93169	cd		16.5	fg	71.8	be	12.1	ab
PAC249	95	75		96416	ad		16.4	fg	71.1	bf	12.1	ab
37Y12	95	75		99915	a		16.9	eg	72.8	b	11.6	ac
Plenitude	107	82		96748	ad		18.4	c	70.2	dg	11.4	ad
P0021	100	75		99843	a		16.9	eg	71.6	be	11.3	ae
Afinity	100	78		97334	ac		16.5	fg	70.5	cf	11.2	be
C29-A1	96	76		85174	e		16.2	g	68.2	hj	10.9	ce
N39-Q1	97	75		94096	bd		16.6	eg	68.4	gi	10.8	cf
Sirus	117	85		99900	a		23.6	a	69.6	fh	10.6	cf
Titus	82	68		91769	d		17.0	ef	75.0	a	10.6	cf
N51-N4	104	77		95364	ad		16.5	fg	69.9	eh	10.4	df
Olympiad	112	81		94398	bd		17.9	cd	66.5	j	10.4	df
34P88	109	81		98352	ab		19.3	b	72.1	bc	10.3	ef
Titus	102	75		93918	bd		18.3	c	67.1	ij	9.9	f
Mean		78		95458			17.6		70.4		11.1	
LSD @ 10%				4998			0.7		1.8		1.0	
CV%				4.5			3.6		2.2		7.4	

## Waikato (Ballard Road, Gordonton)

HYBRID	CRM	Plants per Hectare		Harvest Moisture (%)			Test Weight (kg/hl)		Yield (t/ha @ 14% moisture)	
34P88	109	96703	a	24.5	c		74.4	df	16.8	a
PAC432	107	89453	d	23.1	d		73.0	hi	16.4	ab
PAC343	104	93409	ad	22.6	de		74.8	ce	16.3	ab
PAC230	98	95470	ab	21.3	gh		74.1	eh	15.9	ac
Afinity	100	94688	ac	21.4	gh		73.5	fi	15.7	ac
N51-N4	104	93672	ad	22.4	df		74.1	eh	15.7	ac
Plenitude	107	95414	ab	22.8	d		72.8	i	15.7	ac
P0021	100	97570	a	21.9	eg		75.8	bc	15.6	bc
37Y12	95	97758	a	20.8	hi		76.7	b	15.4	bc
C29-A1	96	91450	bd	21.4	gh		75.5	cd	15.3	bc
N39-Q1	97	95924	ab	21.3	gh		73.1	gi	15.1	c
Olympiad	112	95441	ab	25.6	b		69.6	j	14.8	cd
PAC249	95	90391	cd	21.6	fh		74.2	eg	13.8	de
Maximus	102	96256	ab	24.6	c		69.3	j	13.5	e
Sirus	117	96713	a	27.4	a		71.0	j	13.3	e
Titus	82	89434	d	20.1	i		79.6	a	11.3	f
Mean		94359		22.7			73.8		15.0	
LSD @ 10%		4853		0.7			1.1		1.1	
CV%		4.3		2.6			1.2		6.1	

## Bay of Plenty (Paroa Road, Whakatane)

HYBRID	CRM	Plants per Hectare		Root lodging (%)			Stem Lodging (%)		Harvest Moisture (%)		Test Weight (kg/hl)		Yield (t/ha @ 14% moisture)	
PAC432	107	93248	ab	3.3	cd		0.0	c	19.4	d	73.6	f	13.3	a
37Y12	95	96762	a	1.3	cd		4.5	bc	17.9	gh	76.3	b	13.2	ab
Plenitude	107	90960	ab	2.8	cd		0.5	c	19.2	de	73.5	f	13.1	ab
34P88	109	92519	ab	3.8	cd		1.5	c	21.4	b	76.3	b	13.0	ac
N51-N4	104	97366	a	2.0	cd		1.3	c	18.8	df	74.2	e	12.7	ad
PAC343	104	93471	ab	0.8	cd		5.3	bc	19.1	de	75.3	c	12.2	be
Maximus	102	92905	ab	2.5	cd		0.2	c	21.2	bc	72.9	fg	12.2	be
PAC230	98	97098	a	0.0	d		8.8	b	17.5	h	74.5	de	12.2	be
P0021	100	92478	ab	5.8	bc		0.5	c	18.6	ef	75.1	cd	12.0	ce
Olympiad	112	90818	ab	10.8	ab		5.4	bc	20.7	c	70.4	h	11.8	de
PAC249	95	95050	ab	2.8	cd		2.0	c	18.3	fg	74.5	de	11.6	e
Sirus	117	91610	ab	16.0	a		14.5	a	23.6	a	72.4	g	11.2	e
Titus	82	89835	b	2.0	cd		0.0	c	18.2	fg	79.6	a	9.6	f
Mean		93394		4.1			3.4		19.5		74.5		12.2	
LSD @ 10%		6853		5.6			5.4		0.6		0.6		1.0	
CV%		6		112.9			131.7		2.6		0.6		6.9	



## Rangitikei (Tangimoana Road, Ohakea)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare			Harvest Moisture (%)		Test Weight (kg/hl)		Yield (t/ha @ 14% moisture)	
Afinity	100	103.3	a	101708	a		18.9	bc	73.0	gh	16.2	a
PAC230	98	98.7	df	90189	df		18.4	ce	74.3	ef	15.6	ab
P0021	100	101.0	b	98131	ac		19.2	b	74.8	e	15.5	ac
PAC249	95	99.6	c	93126	ce		18.0	df	73.7	fg	15.3	ac
CMS Comet	92	98.3	f	98796	ac		17.4	fh	69.6	i	14.9	bd
PAC123	91	98.0	f	94580	cd		16.5	ij	77.3	c	14.8	bd
37Y12	95	99.2	ce	101009	ab		18.3	ce	75.9	d	14.7	bd
N39-Q1	97	99.3	cd	87467	ef		18.7	cd	72.6	h	14.6	cd
PAC065	89	96.6	g	91947	df		16.2	j	77.7	bc	13.9	de
P9400	94	98.4	ef	94455	cd		17.3	fh	77.0	c	13.5	ef
PAC ME064	85	93.5	h	93728	cd		18.9	bc	76.8	cd	12.8	f
PAC040	80	91.0	j	86198	f		18.8	bc	78.4	b	12.5	fg
Maximus	102	100.0	c	93936	cd		21.6	a	69.5	i	12.5	fg
Titus	82	92.7	hi	89474	df		17.9	eg	79.8	a	12.2	gh
Delitop	78	92.4	i	95175	bd		17.1	hi	80.6	a	11.9	gh
39G12	78	92.8	hi	94811	cd		17.2	gi	80.2	a	11.2	h
Mean		97.0		94046			18.1		75.7		13.9	
LSD @ 10%		0.8		5980			0.7		0.9		1.0	
CV%		0.6		5.2			3.1		0.9		5.3	

## Manawatu (Opiki Road, Opiki)

HYBRID	CRM	Days to 50% Silk Emergence		Plants per Hectare		Root Lodging (%)			Stem Lodging (%)		Harvest Moisture (%)		Test Weight (kg/hl)		Yield (t/ha @ 14% moisture)	
Afinity	100	92.7	a	102427	a	10.0	a		0.3	c	20.5	b	71.2	h	18.6	a
N39-Q1	97	92.2	ab	95027	bc	0.0	b		0.3	c	19.1	cd	71.4	h	16.4	b
PAC123	91	89.0	f	98542	ab	0.0	b		0.3	c	17.6	i	76.7	de	16.3	b
37Y12	95	90.8	ce	95205	ac	0.0	b		0.0	c	18.6	ef	74.9	f	16.2	b
P0021	100	91.8	ac	95261	ac	1.1	b		0.0	c	18.9	de	75.3	ef	16.1	b
PAC249	95	91.2	bd	93292	bd	2.1	b		0.5	bc	19.3	c	74.1	fg	16.1	b
PAC230	98	90.0	e	86642	de	0.2	b		0.0	c	19.5	c	73.0	g	16.0	b
CMS Comet	92	90.7	de	95979	ac	3.5	b		1.5	a	17.6	hi	69.8	h	15.6	bc
P9400	94	90.5	de	89041	ce	0.5	b		0.0	c	18.2	fg	77.5	cd	14.6	cd
PAC065	89	88.0	f	84922	e	0.0	b		0.3	c	17.6	hi	78.2	bd	14.4	ce
Titus	82	86.0	gh	93160	bd	0.1	b		0.0	c	18.5	ef	79.4	ab	14.2	de
Maximus	102	91.2	cd	95880	ac	0.3	b		0.5	bc	23.9	a	68.2	i	14.1	de
39G12	78	86.6	g	99555	ab	0.8	b		1.0	ab	18.0	gi	78.6	bc	13.8	de
PAC040	80	85.7	gh	92329	be	1.2	b		0.3	c	20.5	b	77.5	cd	13.4	de
Delitop	78	85.1	h	88821	ce	0.0	b		0.3	c	18.0	gh	80.4	a	13.1	e
PAC ME064	85	86.5	g	89423	ce	0.0	b		0.0	c	20.1	b	76.8	de	13.1	e
Mean		89.1		93469		1.2			0.3		19.1		75.2		15.1	
LSD @ 10%		0.8		6164		3.7			0.6		0.4		1.3		1.1	
CV%		0.8		5.5		248.7			158.4		1.6		1.5		6.2	

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