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FAR Cultivar Evaluation

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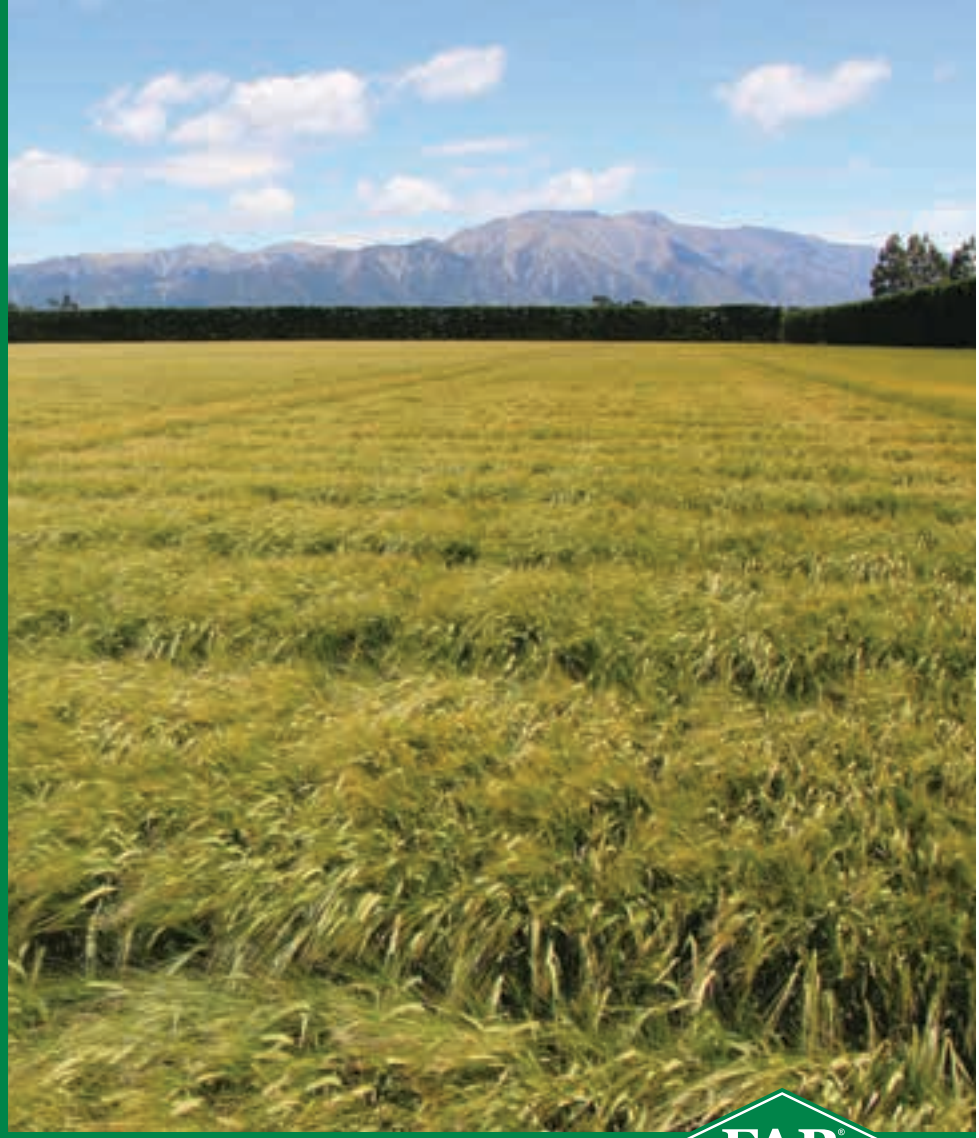
FAR CULTIVAR EVALUATION



FOUNDATION FOR ARABLE RESEARCH

FAR

autumn sown wheat and barley 2015/2016

contents

introduction and welcome

The dry spring conditions suited autumn sown feed wheat trials sited under good irrigation systems in Canterbury, leading to yields between 13 and 15 t/ha. The cooler temperatures over grain fill in January would also have contributed to these higher yields. However, yields were down on the four year average by 2 to 2.3 t/ha in South Canterbury dryland trials reflecting the dry season. The four year analysis showed the top yielding cultivars in the Canterbury irrigated trials were Wakanui, Torch, Starfire and the new coded cultivar KWW59. Wakanui and Torch were in the top group in the dryland trials together with the coded cultivar CRWT227.

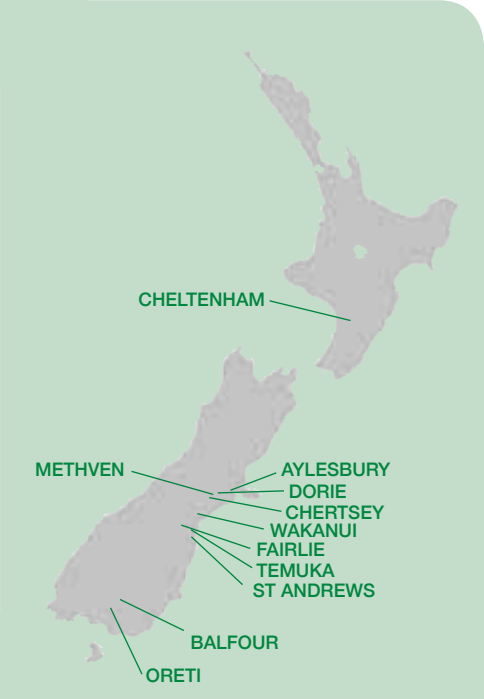
A number of newer milling cultivars are showing good yield performance. In the premium milling category Duchess and Reliance are out-yielding Conquest. Discovery, in its third year in CPT2, was the top yielding medium grade milling wheat. Hanson, which is in its second year of CPT2 was the highest yielding gristing wheat.

Sanette and the more recent cultivars Dragoon, Scholar and Piper are at the top of the autumn sown barley trials in Canterbury. Sanette and two coded cultivars SYN413-347 and CRBA146 had the highest yields in the Southland trial.

FAR welcomes any queries or suggestions to further improve these booklets. Alternatively, if you require any additional information that we have not included please contact us.

Rob Craigie
Research Manager

wheat - trial site details



2015/2016 trial site location map

AYLESBURY (Milling Wheat)

Lismore silt loam, Irrigated
Trial operator: John van den Bosch
Host farmer: Andrew Brooker

Following peas, this trial was sown on 19 May 2015 into a surrounding crop of Discovery. The trial received 206 kg N/ha, three herbicides and one insecticide. Two fungicide applications and a PGR were also applied during the growing season. A total of 280 mm irrigation was applied over seven applications. Establishment was patchy due to debris at drilling. Following a desiccant, the trial was harvested on 11 February 2016.

BALFOUR (Feed Wheat)

Crookston silt loam, Dryland
Trial operator: Stewart Armstrong
Host farmer: Collins Farming Company

This site was established in a surrounding crop of Starfire on 8 April 2015 following peas. A total of 253 kg N/ha was applied in two split applications in the spring. The trial received one herbicide, a PGR and three fungicides. The trial established well with no issues and was harvested on 24 February 2016.

CHELTENHAM (Feed Wheat)

Kiwitea silt loam, Dryland
Trial operator: Kevin Sinclair
Host farmer: John Ridd

This site was sown on 24 April 2015 in a surrounding crop of Starfire following green peas. A total of 225 kg N/ha was applied in four split applications. The trial received two herbicides, a foliar insecticide, four fungicides and one PGR during the growing season. The crop suffered from moisture stress during mid-winter but recovered and was harvested on 9 February 2016.

CHERTSEY (Feed Wheat)

Chertsey shallow silt loam, Dryland and Irrigated
Trial operator: NZ Arable
Host farmer: FAR Arable Site

These trials were drilled at the FAR Arable Site on 16 April following grass. Each trial received a total of 240 kg N/ha split into three timings. The trials received three herbicides, three fungicides and a PGR. An insecticide at planting was followed by two foliar applications during the season. The irrigated trial received 450 mm of water applied over fifteen passes. The dryland trial was harvested on 22 January and the irrigated trial was harvested on 4 February 2016.

DORIE (Milling Wheat)

Templeton silt loam, Irrigated
Trial operator: Andy Hay
Host farmer: Geoff Maw

This trial was sown on 19 May 2015 into a surrounding crop of Reliance, following potatoes. A total of 185 kg N/ha was applied split between three applications. The trial received two herbicides and one foliar insecticide and a PGR. Four fungicides were applied between September and December. The trial received five irrigation applications totalling 200 mm. The trial was harvested on 3 February 2016.

FAIRLIE (Feed Wheat)

Claremont silt loam, Dryland
Trial operator: NZ Arable
Host farmer: Ashley Biggs

This site was sown in a surrounding crop of wheat on 2 April 2015 following oil seed rape. A total of 200 kg N/ha was applied in three split applications. The trial received one foliar insecticide, two herbicides and three fungicide applications. The crop experienced a dry spring and a period of drought stress, with rainfall 200 mm below average. The trial was harvested on 6 February 2016.

METHVEN (Milling Wheat)

Lyndhurst silt loam, Irrigated
Trial operator: John van den Bosch
Host farmer: Bevan Lill

This trial was sown in a paddock of Duchess following linseed on 2 May 2015. Crop 15 was applied to the trial followed by four fertiliser applications totalling 255 kg N/ha. Three herbicide and five fungicide applications were made during the growing season. The trial also received a PGR spray, slug bait and four foliar insecticides. Irrigation totalling 276 mm was applied over seven applications. Most cultivars were affected by shedding due to strong winds prior to harvest on 2 March 2016.

METHVEN (Feed Wheat)

Mayfield silt loam, Irrigated
Trial operator: Paul Bowater
Host farmer: David Grant

The trial was sown in a crop of Starfire on 7 April 2015 following radish. In total, 315 kg N/ha was applied between four split applications. The trial received three herbicides, three insecticides and three fungicide applications during the season. A PGR mix was applied in early October. Irrigation totalling 210 mm was applied over 11 applications. Slug damage was recorded early in the season. The trial was harvested on 20 February 2016.

ORETI (Feed Wheat)

Drummond loam, Dryland
Trial operator: Stewart Armstrong
Host farmer: Robbie Clark

This feed wheat trial was sown on 20 May 2015 into a surrounding crop of wheat following peas. 178 kg N/ha was applied, split between three applications. The trial received one herbicide and three fungicide applications. The trial established well despite wet winter conditions. The trial was harvested on 15 February 2016.

ST ANDREWS (Feed Wheat)

Claremont clay loam, Dryland
Trial operator: Andy Hay
Host farmer: Nick Porter

This dryland trial was established in a crop of Starfire following a ryegrass seed crop on 2 April 2015. A total of 180 kg N/ha was applied in two split applications. The trial received three fungicides and two applications of herbicide and insecticide. A PGR was applied in August. The season was dry and tiller numbers were low, otherwise there were no issues and the trial was harvested 9 February 2016.

TEMUKA (March and April Feed Wheat)

Waimakariri silt loam, Irrigated
Trial operator: Matt Hicks
Host farmer: Nick Ward

The March (25 March 2015) and April (9 April 2015) trials were sown into a surrounding crop of Starfire, following a brassica seed crop. Both trials received 260 kg N/ha, one herbicide application and two PGRs. Four fungicide applications were made to the March sown trial, and three to the April sown trial. The trials also received seven irrigations totalling 210 mm. Both trials were harvested on 16 February 2016.

WAKANUI (Feed Wheat)

Wakanui silt loam, Irrigated
Trial operator: John van den Bosch
Host farmer: Eric Watson

This trial was sown on 4 May 2015 into a surrounding cultivar of L45 wheat, following radish seed. Three applications of N totalling 258 kg/ha were applied during the spring. Three herbicides and two foliar insecticides were applied during the season. The trial also received five fungicides and two PGRs. Irrigation totalling 200 mm was applied over six applications. A desiccant was applied and the trial was harvested on 25 February 2016.

Autumn Sown Wheat Agronomic Comment 2015/2016 Season

CULTIVAR	Years in FAR trials	BYDV	Septoria tritici blotch	Stripe rust	Leaf rust		Powdery mildew	Fusarium head blight[1]	Straw strength	Crop height	Maturity	Sprouting susceptibility
Claire	16	MSS	MS	MSS*	MR		MS*	MS	Moderate	Medium-tall	Late	Moderate-high
Conqueror	2	(MR)	MS	MR	S		MRR	Unknown	Stiff	Medium	Intermediate	Low-moderate
Conquest	11	MRMS	MR	MR	MSS*		MS	MS	Moderate-stiff	Medium	Early-int	Low
Discovery (KWM31)	3	(MS)	MR	MRMS	MRR		MRR	(MR)	Stiff	Tall	Intermediate	Low-moderate
Duchess	2	(MS)	MR	MR	MS		MSS	(MS)	Stiff	Medium	Intermediate	Low
Empress	6	MS	MRR	MRR	MRMS*		MRR	Unknown	Stiff	Medium	Intermediate	Low-moderate
Excede	10	(MS)	MSS	MR	MRMS		MR	MR	Stiff	Short	Intermediate	Low
Gator	3	(MS)	MS	MR	MSS		MRR	Unknown	Stiff	Short	Intermediate	Low
Hanson (CRWT204)	2	(MS)	MS	MR	MRMS		MS	(MR)	Stiff	Medium-tall	Intermediate	Low-moderate
Inferno (KWW47)	4	(MS)	MRR	MS*	(MR)		MRR	Unknown	Moderate	Medium-tall	Late	Low-moderate
Phoenix	11	MS	MR	MR	MSS		MR*	MRR	Moderate	Medium	Int-late	Low
Raffles	12	MS	MR	MSS	MSS		MR	MS	Moderate	Tall	Intermediate	Low
Reliance	4	MRMS	MS	MR	MSS		MSS	(MS)	Moderate-stiff	Short-medium	Early-int	Low
Resolution (PRL-954)	3	(MS)	MR	MRMS	MR		MRR	Unknown	Stiff	Tall	Late	Moderate-high
Richmond	9	(MSS)	MS	MR	MS*		MR	MR	Stiff	Medium	Late	Low-moderate
Saracen	8	(MS)	MR	MR	MSS		MR	MS	Stiff	Short	Intermediate	Low
Starfire (KWW46)	5	(MR)	MR	MR	MS		MR	Unknown	Stiff	Medium	Intermediate	Moderate
Torch	3	(MS)	MRR	MRR	MS*		MR	Unknown	Stiff	Medium	Late	Low
Viceroy	6	(MR)	MS	MR	MS		MS	(MSS)	Stiff	Medium-tall	Intermediate	Low-moderate
Wakanui	8	(MS)	MR	MRR	MRMS		MS	MR	Stiff	Tall	Late	Moderate
CRWT218	1	(MR)	(MS)	(MR)	MS		MS	Unknown	Stiff	Tall	Intermediate	Low-moderate
CRWT227	1	(MRMS)	(MS)	(MR)	MS		(MR)	Unknown	Stiff	Medium	Late	Low-moderate
KWW59	1	(MR)	(MR)	(MR)	MS		(MRR)	Unknown	Stiff	Medium	Late	Low-moderate

[1] Fusarium head blight ratings are based on limited data because of infrequent infections.
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).
(brackets) indicate there is limited NZ trial data to assess resistance.
"Unknown" indicates there is insufficient trial information in NZ to assess resistance.
Disease susceptibility sourced from FAR-funded Disease Nurseries and CPT trials (assessments carried out by Plant & Food Research).
Sprouting susceptibility comments are sourced from FAR funded Sprouting Nurseries carried out by Plant & Food Research.

Key S = susceptible
MSS = mostly susceptible
MS = moderately susceptible
MRMS = intermediate resistance
MR = moderately resistant
MRR = mostly resistant
R = resistant

Autumn Sown (April) FEED/BISCUIT Wheat Cultivar Evaluation 2015/2016 Season - yield, t/ha - Canterbury

CULTIVAR	Methven	Chertsey Dryland	Chertsey Irrigated	Wakanui	Temuka	St Andrews	Fairlie	Cant. mean yield	Seasons in FAR trials (Autumn sown)
Region	Mid Cant	Mid Cant	Mid Cant	Mid Cant	Mid Cant	South Cant	South Cant		
Soil type	Mayfield silt loam	Chertsey shallow silt loam	Chertsey shallow silt loam	Wakanui silt loam	Waimakariri silt loam	Claremont clay loam	Claremont silt loam		
Previous crop	Radish	Grass	Grass	Radish	Brassica seed	Ryegrass	Oil seed rape		
Sow date	7 Apr	16 Apr	16 Apr	4 May	9 Apr	2 Apr	2 Apr		
Harvest date	20 Feb	22 Jan	4 Feb	25 Feb	16 Feb	9 Feb	6 Feb		
Dryland/Irrigated	Irrigated	Dryland	Irrigated	Irrigated	Irrigated	Dryland	Dryland		
Claire	12.5	6.0	13.0	14.5	13.5	6.2	7.7	10.5	16
Conqueror	13.6	6.7	13.8	13.7	13.4	7.1	9.0	11.1	2
Empress	12.0	6.7	12.4	14.2	12.7	6.9	8.7	10.5	6
Excede	14.7	6.6	13.1	14.8	13.9	7.1	8.0	11.2	10
Gator	13.2	6.6	13.3	14.9	13.2	7.2	8.9	11.0	3
Inferno (KWW47)	13.3	6.7	13.2	15.4	13.1	6.7	7.8	10.9	4
Phoenix	13.7	6.9	13.2	14.8	12.6	7.6	8.3	11.0	11
Resolution (PRL-954)	13.9	6.4	13.2	15.4	13.3	6.6	8.1	11.0	3
Richmond	13.5	6.4	13.4	14.1	13.8	6.8	8.6	10.9	9
Starfire (KWW46)	14.4	6.7	14.4	15.8	14.3	7.2	8.4	11.6	5
Torch	14.5	6.4	14.0	14.8	14.2	7.6	9.0	11.5	3
Wakanui	14.5	6.7	13.3	15.3	13.1	8.3	8.5	11.4	8
CRWT227	13.0	6.9	14.4	14.6	14.2	7.7	9.0	11.4	1
KWW59	13.7	6.6	13.6	15.6	14.7	6.9	8.4	11.4	1
Site mean yield (t/ha)	13.7	6.6	13.4	15.0	13.7	7.0	8.4	11.1	
LSD	0.7	0.3	0.3	0.6	0.7	0.3	0.4	0.5	
CV%	3.5	3.0	1.7	2.7	3.6	3.4	3.7	4.5	

Autumn Sown (March compared with April) FEED/BISCUIT Wheat
Cultivar Evaluation 2015/2016 Season - yield, t/ha - Canterbury

CULTIVAR	Temuka (March sown)	Temuka (April sown)[1]	Seasons in FAR trials (Autumn sown)
Region	Mid Cant	Mid Cant	
Soil type	Waimakariri silt loam	Waimakariri silt loam	
Previous crop	Brassica seed	Brassica seed	
Sow date	25 Mar	9 Apr	
Harvest date	16 Feb	16 Feb	
Dryland/Irrigated	Irrigated	Irrigated	
Claire	12.6	13.5	16
Conqueror	12.2	13.4	2
Empress	11.6	12.7	6
Excede	13.1	13.9	10
Gator	12.1	13.2	3
Inferno (KWW47)	12.2	13.1	4
Phoenix	12.1	12.6	11
Resolution (PRL-954)	11.7	13.3	3
Richmond	13.1	13.8	9
Starfire (KWW46)	13.1	14.3	5
Torch	13.6	14.2	3
Wakanui	11.9	13.1	8
Site mean yield (t/ha)	12.6	13.7	
LSD	0.6	0.7	
CV%	3.4	3.6	

[1] April-sown trial yields are repeated from the previous table for ease of comparison with March-sown trial yields. These trials are close together in the same paddock however yield differences between sow dates could be a result of soil variation and not time of sowing.

Autumn Sown FEED/BISCUIT Wheat

Cultivar Evaluation 2015/2016 Season - yield, t/ha - Southern North Island, Southland

CULTIVAR	Balfour	Oreti	Southland mean yield	Cheltenham	Seasons in FAR trials (Autumn sown)
Region	Northern Sthland	Central Sthland		Manawatu	
Soil type	Crookston silt loam	Drummond silt loam		Kiwitea silt loam	
Previous crop	Peas	Peas		Peas	
Sow date	8 Apr	23 Apr		24 Apr	
Harvest date	24 Feb	3 Mar		9 Feb	
Dryland/Irrigated	Dryland	Dryland		Dryland	
Claire	8.8	11.6	10.2	12.1	16
Conqueror	9.7	11.5	10.6	12.7	2
Empress	9.6	11.9	10.8	12.2	6
Excede	8.2	10.4	9.3	12.1	10
Gator	9.1	11.6	10.3	13.0	3
Inferno (KWW47)	9.6	11.8	10.7	12.7	4
Phoenix	9.4	11.1	10.2	12.0	11
Resolution (PRL-954)	9.4	10.2	9.8	12.9	3
Richmond	8.8	11.8	10.3	12.6	9
Starfire (KWW46)	9.6	11.7	10.7	12.6	5
Torch	9.6	11.6	10.6	13.6	3
Wakanui	9.8	11.3	10.5	13.7	8
CRWT227	9.4	12.6	11.0	13.2	1
KWW59	8.7	11.7	10.2	13.2	1
Site mean yield (t/ha)	9.2	11.4	10.3	12.5	
LSD	0.4	0.6	0.9	0.6	
CV%	3.4	3.6	4.2	3.7	

Autumn Sown MILLING Wheat

Cultivar Evaluation 2015/2016 Season - yield, t/ha - Canterbury

CULTIVAR	Aylesbury	Methven+	Dorie	Canterbury mean yield	Seasons in FAR trials (Autumn sown)
Region	Central Canterbury	Mid Canterbury	Mid Canterbury		
Soil type	Lismore silt loam	Lyndhurst silt loam	Templeton silt loam		
Previous crop	Peas	Linseed	Potatoes		
Sow date	19 May	2 May	19 May		
Harvest date	18 Feb	2 Mar	3 Feb		
Dryland/Irrigated	Irrigated	Irrigated	Irrigated		
Conquest	12.7	11.0	11.0	11.6	11
Discovery (KWM31)	15.3	11.6	12.5	13.1	3
Duchess	13.8	11.9	11.6	12.4	2
Hanson (CRWT204)	14.5	11.2	13.2	13.0	2
Raffles	11.4	10.3	11.6	11.1	12
Reliance	13.8	12.5	10.7	12.3	4
Saracen	14.0	11.7	11.9	12.5	8
Viceroy	13.9	12.2	12.1	12.7	6
CRWT218	14.4	10.5	12.1	12.3	1
Site mean yield (t/ha)	13.9	11.6	12.2	12.6	
LSD	0.6	0.5	0.4	1.2	
CV%	3.0	3.1	2.5	5.7	

+ Discovery and Raffles were most affected by shattering caused by strong winds prior to harvest. Raffles had poor establishment in these trials with an average plant population of 87 plants/m^2.

Autumn Sown Wheat Grain Quality Data 2015/2016 Season

Southern North Island

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)+
Claire	45	71	9.2	1.5	202
Conqueror	43	70	8.3	2.2	
Empress	40	69	9.7	1.8	329
Excede	49	76	9.1	0.8	
Gator	50	73	8.1	1.5	
Inferno (KWW47)	44	72	8.6	2.7	237
Phoenix	50	74	9.7	0.9	
Resolution (PRL-954)	48	73	9.1	1.8	
Richmond	44	73	9.2	2.6	
Starfire (KWW46)	47	73	9.1	1.9	
Torch	45	73	8.5	1.1	
Wakanui	48	77	8.8	1.0	
CRWT227	46	72	8.8	1.4	127
KWW59	47	74	8.9	0.9	318
Mean	**46**	**73**	**8.9**	**1.7**	**243**
LSD	-	-	-	-	-

Single trial - no LSD available.
+ Feed wheats not tested for falling number.
The quality data for each region is also presented as a 4 year mean on the individual cultivar description pages.

Canterbury April-sown FEED/BISCUIT wheat trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)+
Claire	44	70	10.3	1.8	192
Conqueror	44	70	9.2	2.7	
Empress	40	70	10.2	1.4	184
Excede	47	73	10.1	1.0	
Gator	48	73	9.6	1.7	
Inferno (KWW47)	47	73	10.3	1.6	200
Phoenix	49	72	10.9	1.0	
Resolution (PRL-954)	47	74	10.2	1.3	
Richmond	45	73	10.3	2.1	
Starfire (KWW46)	44	73	10.0	2.0	
Torch	43	73	9.5	2.2	
Wakanui	46	75	9.6	1.1	
CRWT227	47	71	9.8	1.5	161
KWW59	45	71	9.7	1.4	201
Mean	**45**	**72**	**10.0**	**1.6**	**187**
LSD	**2**	**2**	**0.4**	**0.8**	**37**

Averaged over seven trials.

Canterbury March-sown FEED/BISCUIT wheat trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)+
Claire	41	70	11.2	1.3	225
Conqueror	36	63	10.2	2.1	
Empress	37	65	10.6	2.1	102
Excede	47	73	11.0	0.4	
Gator	44	68	10.0	1.0	
Inferno (KWW47)	46	71	10.5	1.4	176
Phoenix	51	70	11.6	0.6	
Resolution (PRL-954)	44	73	10.7	0.7	
Richmond	44	71	10.8	1.0	
Starfire (KWW46)	42	72	10.4	1.2	
Torch	42	72	10.1	1.6	
Wakanui	40	72	10.1	1.2	
Mean	**43**	**70**	**10.6**	**1.2**	**168**
LSD	-	-	-	-	-

Single trial - no LSD available.
+ Feed wheats not tested for falling number.
The quality data for each region is also presented as a 4 year mean on the individual cultivar description pages.

Canterbury MILLING wheat trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Conquest	45	75	12.8	0.3	328
Discovery (KWM31)	56	74	11.0	0.2	321
Duchess	44	76	11.7	1.3	386
Hanson (CRWT204)	46	73	10.9	0.7	354
Raffles	52	74	10.9	0.5	368
Reliance	48	74	12.5	0.5	310
Saracen	49	75	11.0	0.6	356
Viceroy	46	79	11.5	0.6	365
CRWT218	45	74	11.4	0.4	360
Mean	**48**	**75**	**11.5**	**0.6**	**350**
LSD	**4**	**2**	**0.7**	**0.3**	**52**

Averaged over three trials.

Southland

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)+
Claire	46	71	8.3	1.8	236
Conqueror	45	69	6.8	2.8	
Empress	45	70	8.2	1.0	228
Excede	46	75	8.5	1.3	
Gator	51	72	7.9	1.8	
Inferno (KWW47)	48	72	8.1	2.1	197
Phoenix	52	72	8.8	1.0	
Resolution (PRL-954)	48	74	7.9	1.4	
Richmond	46	73	7.7	2.1	
Starfire (KWW46)	46	72	8.2	2.5	
Torch	47	73	8.1	1.3	
Wakanui	50	74	7.9	0.7	
CRWT227	48	70	8.0	1.9	102
KWW59	48	72	8.5	1.1	257
Mean	**48**	**72**	**8.0**	**1.6**	**204**
LSD	**3**	**3**	**1.1**	**1.3**	**68**

Averaged over two trials.
+ Feed wheats not tested for falling number.
The quality data for each region is also presented as a 4 year mean on the individual cultivar description pages.

wheat - 4 year adjusted mean

Autumn Sown (April) FEED/BISCUIT Wheat - 4 year adjusted mean - relative yield by site

CULTIVAR	Methven	Chertsey Dryland	Chertsey Irrigated	Wakanui+	Temuka	St Andrews	Fairlie		Canterbury dryland yield	Canterbury irrigated yield	Canterbury mean yield	Balfour	Oreti	Southland mean yield	Cheltenham /Bulls	Seasons in FAR trials (Autumn sown)
Region	Mid Cant	Mid Cant	Mid Cant	Mid Cant	South Cant	South Cant	South Cant					Nth Sthland	Central Sthland		Manawatu	
Dryland/Irrigated	Irrigated	Dryland	Irrigated	Irrigated	Irrigated	Dryland	Dryland					Dryland	Dryland		Dryland	
No. of trials	4	4	4	3	4	4	4		12	15	27	4	4	8	4	
Claire	94	95	98	98	100	94	95		96	97	97	100	98	99	96	16
Conqueror	103	100	102	95	100	104	105		101	100	100	105	94	99	102	2
Empress	96	102	96	101	96	99	100		102	98	99	102	106	104	90	6
Excede	99	97	95	93	99	95	94		93	96	95	95	88	91	102	10
Gator	99	102	100	99	97	103	102		101	99	100	103	100	101	98	3
Inferno (KWW47)	98	101	99	104	91	100	98		100	98	99	100	102	101	93	4
Phoenix	96	103	93	101	89	101	98		99	95	97	98	98	98	94	11
Resolution (PRL-954)	100	96	99	101	98	94	94		96	100	98	94	99	97	101	3
Richmond	101	97	99	96	104	97	99		96	100	98	97	93	95	102	9
Starfire (KWW46)	106	102	105	104	103	102	100		102	104	103	106	105	105	102	5
Torch	105	99	105	100	108	104	104		103	104	104	102	103	102	104	3
Wakanui	107	101	101	106	103	105	106		104	104	104	102	102	102	105	8
CRWT227	(95)	(104)	(108)	(98)	(103)	(106)	(105)		(107)	(101)	(103)	(103)	(110)	(107)	(106)	1
KWW59	(100)	(100)	(101)	(104)	(108)	(98)	(100)		(100)	(103)	(102)	(95)	(101)	(99)	(107)	1
Site mean yield (t/ha)	13.3	7.7	12.5	14.5	11.9	9.5	10.3		9.7	13.1	11.4	9.6	11.5	10.5	11.2	
LSD (estab. cv)	5	6	4	9	9	7	4		6	6	4	8	6	11	9	
LSD (new vs estab)	8	9	6	13	15	11	7		9	9	7	11	10	18	14	

+ No trial in 2013/14 season

Figures in brackets are more variable as they are only based on one year of data.

LSD (estab. cv) is for comparing two “established” cultivars (that have both been in all trials).

LSD (new vs estab.) is for comparing a “new” (first year) cultivar with an “established” cultivar.

Autumn Sown (March) FEED/BISCUIT Wheat - 4 year adjusted mean - relative yield by site

CULTIVAR	Temuka (March sown)
Region	South Canterbury
Dryland/Irrigated	Irrigated
No. of trials	2
Claire	101
Conqueror	98
Empress	93
Excede	102
Gator	99
Inferno (KWW47)	94
Phoenix	99
Resolution (PRL-954)	102
Richmond	107
Starfire (KWW46)	107
Torch	113
Wakanui	101
Site mean yield (t/ha)	12.4
LSD (estab. cv)	13
LSD (new vs estab.)	16

LSD (estab. cv) is for comparing two “established” cultivars (that have both been in all trials).
LSD (new vs estab.) is for comparing a “new” (first year) cultivar with an “established” cultivar; note that Conqueror is “new” to the March-sown series of trials (second-year in autumn-sown overall).

Autumn Sown MILLING Wheat Canterbury - 4 year adjusted mean - relative yield by site

CULTIVAR	Aylesbury/ Norwood	Methven	Dorie	Wakanui+	Canterbury irrigated mean yield	Seasons in FAR trials (Autumn sown)
Region	Central Canterbury	Mid Canterbury	Mid Canterbury	Mid Canterbury		
Dryland/ Irrigated	Irrigated	Irrigated	Irrigated	Irrigated		
No. of trials	4	3	4	2	13	
Conquest	94	98	89	84	**91**	11
Discovery (KWM31)	107	104	101	110	**105**	3
Duchess	100	106	95	-	**100**	2
Hanson (CRWT204)	107	98	112	-	**105**	2
Raffles	97	95	101	97	**97**	12
Reliance	96	105	95	92	**97**	4
Saracen	98	99	92	97	**96**	8
Viceroy	102	105	101	101	**102**	6
CRWT218	(105)	(91)	(98)	-	**(98)**	1
Site mean yield (t/ha)	**10.8**	**11.4**	**10.9**	**10.9**	**11.0**	
LSD (estab. cv)	**9**	**13**	**10**	**12**	**8**	
LSD (new vs estab.)	**15**	**16**	**16**	**15**	**13**	

+ no trial for last two seasons
- Cultivar not included for that site.
Figures in brackets are less robust as they are only based on one year of data.
LSD (estab. cv) is for comparing two “established” cultivars (that have both been in all trials).
LSD (new vs estab.) is for comparing a “new” (first year) cultivar with an “established” cultivar.

Autumn Sown Wheat - plant counts 2015/2016 season

Canterbury FEED/BISCUIT Wheat Trials (target plant population = 125 plants/m² for March sown and 150 plants/m² for April sown)

CULTIVAR	March-sown plants/m²	April-sown plants/m²
Claire	149	132
Conqueror	174	130
Empress	163	139
Excede	168	140
Gator	175	138
Inferno (KWW47)	175	140
Phoenix	159	131
Resolution (PRL-954)	151	137
Richmond	150	127
Starfire (KWW46)	176	126
Torch	170	144
Wakanui	165	141
CRWT227	-	142
KWW59	-	143
Mean	164	136
LSD	-	12

Means are for one site for March-sown trials and over seven sites for April-sown trials.
- Cultivar not included in this series of trials.

Canterbury MILLING Wheat Trials (target plant population = 175 plants/m²)

CULTIVAR	Plants/m²
Conquest	124
Discovery (KWM31)	163
Duchess	140
Hanson (CRWT204)	157
Raffles	87
Reliance	154
Saracen	162
Viceroy	160
CRWT218	170
Mean	146
LSD	24

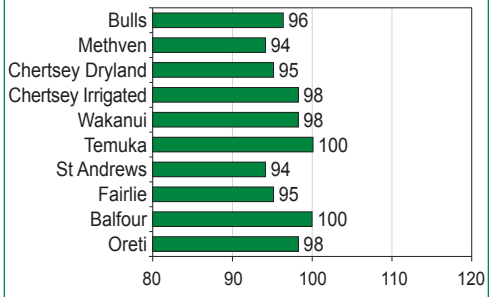
Means are over three sites.

CLAIRE

YEAR 16

Average to below average yielding biscuit and feed cultivar. Relatively susceptible to most diseases but has moderate resistance to leaf rust. A late maturing cultivar with moderate straw strength. Be aware of sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	96
Irrigated sites (4 year)	97

DISEASE RESISTANCE	
BYDV	Mostly susceptible
Septoria leaf blotch	Moderately susceptible
Stripe rust	Mostly susceptible*
Leaf rust	Moderately resistant
Powdery mildew	Moderately susceptible*
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium-tall
Maturity	Late
Sprouting risk	Moderate-high

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	39	43	46
Test weight (kg/hl)	66	70	73
Protein (%) (N% x 5.7)	10.5	10.3	9.3
Falling number (sec)	256	295	291
Screenings (%)	3.4	1.4	1.6

END USE	
	Biscuit, feed

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

Note: Yields are relative to other feed/biscuit wheats only.

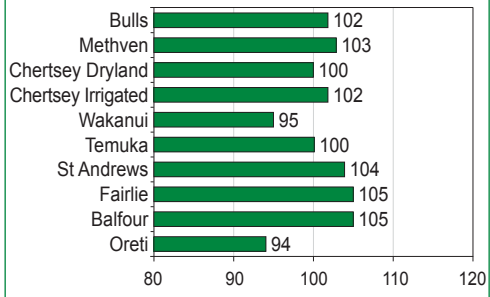
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

CONQUEROR

YEAR 2

Conqueror is a feed cultivar producing mostly average to above average yields. Monitor for septoria leaf blotch and particularly leaf rust. Good standing power, intermediate maturity and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	101
Irrigated sites (4 year)	100

DISEASE RESISTANCE	
BYDV	Moderately resistant
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Susceptible
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	38	43	43
Test weight (kg/hl)	67	70	70
Protein (%) (N% x 5.7)	10.1	9.4	8.2
Falling number (sec)			
Screenings (%)	3.2	2.3	2.1

END USE	
	Feed

BACKGROUND	
Breeder	KWS UK
Head licensee/Agent	Canterbury Seed

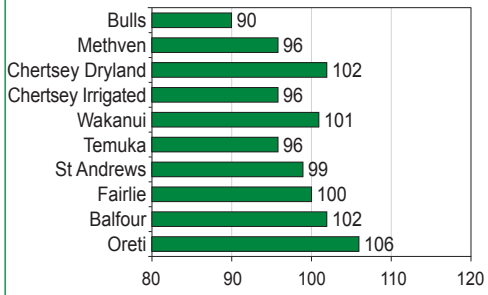
Note: Yields are relative to other feed/biscuit wheats only.

EMPRESS

YEAR 6

Low yields for this biscuit wheat at some Canterbury irrigated sites have pulled the irrigated 4 year average down to 98%. Empress is relatively resistant to most foliar diseases but now has intermediate resistance to leaf rust and is moderately susceptible to BYDV (symptoms are purple coloured heads at grain fill). It is of medium height with stiff straw strength.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	102
Irrigated sites (4 year)	98

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Mostly resistant
Stripe rust	Mostly resistant
Leaf rust	Intermediate resistance*
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Low -moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	34	41	44
Test weight (kg/hl)	63	70	72
Protein (%) (N% x 5.7)	10.8	10.3	9.5
Falling number (sec)	330	292	303
Screenings (%)	3.8	1.3	0.8

END USE	
	Biscuit

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

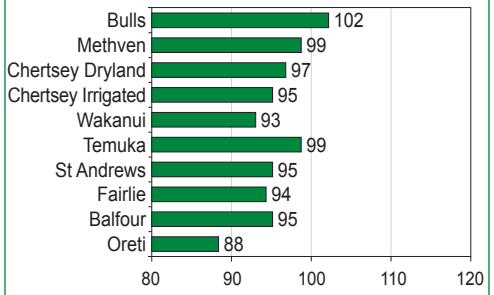
Note: Yields are relative to other feed/biscuit wheats only.

EXCEDE

YEAR 10

Mostly below average yielding feed cultivar in the South Island with above average yields in the southern North Island. Moderately resistant to most foliar diseases with the exception of BYDV and septoria leaf blotch. This European feed cultivar has good straw strength, and low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	93
Irrigated sites (4 year)	96

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Mostly susceptible
Stripe rust	Moderately resistant
Leaf rust	Intermediate resistance
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	45	46	49
Test weight (kg/hl)	72	74	75
Protein (%) (N% x 5.7)	10.7	10.7	10.0
Falling number (sec)			
Screenings (%)	1.4	0.7	0.9

END USE	
	Feed

BACKGROUND	
Head licensee	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

Note: Yields are relative to other feed/biscuit wheats only.

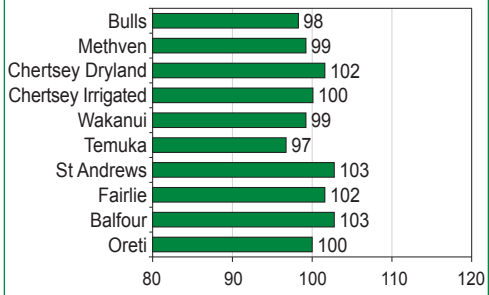
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

GATOR

YEAR 3

Mostly average to above average yielding in Canterbury with below average yields in southern North Island. A good performer at dryland sites in Canterbury and Southland. Monitor for septoria leaf blotch and leaf rust. Shows resistance to stripe rust and powdery mildew. A short, stiff strawed variety with low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	101
Irrigated sites (4 year)	99

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	43	49	50
Test weight (kg/hl)	68	72	73
Protein (%) (N% x 5.7)	10.4	9.6	8.5
Falling number (sec)			
Screenings (%)	2.4	1.2	1.5

END USE	
	Feed

BACKGROUND	
Breeder	KWS, UK
Licensee/Agent	Canterbury Seed

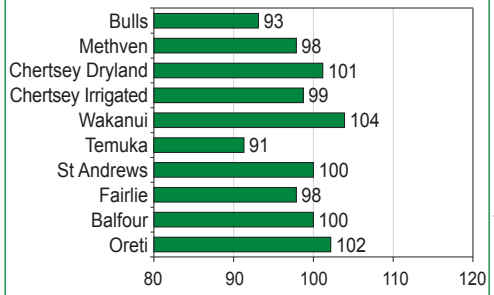
Note: Yields are relative to other feed/biscuit wheats only.

INFERNO (KWW47)

YEAR 4

A biscuit wheat that has yielded about average on Canterbury and Southland dryland sites but yields have been more variable at Canterbury irrigated sites. Mostly resistant to powdery mildew and septoria leaf blotch and to a lesser degree leaf rust. Moderately susceptible to some stripe rust pathotypes. A taller cultivar with moderate straw strength so consider a more robust PGR programme.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	100
Irrigated sites (4 year)	98

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Mostly resistant
Stripe rust	Moderately susceptible*
Leaf rust	Moderately resistant
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium-tall
Maturity	Late
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	38	47	47
Test weight (kg/hl)	68	72	73
Protein (%) (N% x 5.7)	10.5	10.1	9.4
Falling number (sec)	269	263	260
Screenings (%)	3.4	1.2	1.8

END USE	
	Biscuit

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

Note: Yields are relative to other feed/biscuit wheats only.

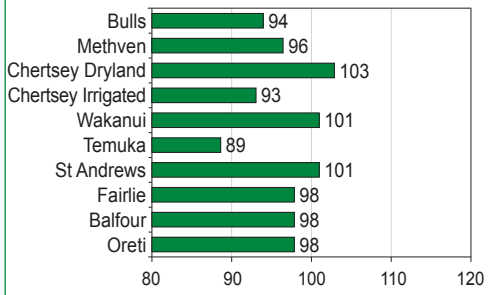
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

PHOENIX

YEAR 11

A feed cultivar with average to below average yields. Slightly better performance on dryland sites in Canterbury. Good resistance to most foliar diseases but monitor for leaf rust. Moderate straw strength with medium plant height and low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	99
Irrigated sites (4 year)	95

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant*
Fusarium head blight	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate-late
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	44	50	53
Test weight (kg/hl)	68	72	73
Protein (%) (N% x 5.7)	11.1	10.9	9.9
Falling number (sec)			
Screenings (%)	1.7	0.8	0.7

END USE	
	Feed

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

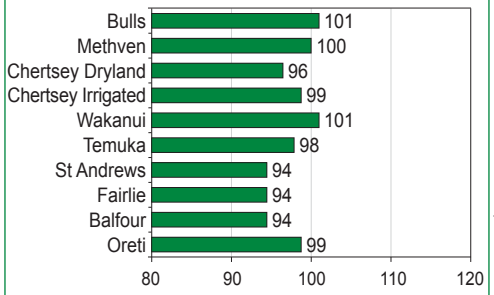
Note: Yields are relative to other feed/biscuit wheats only.

RESOLUTION (PRL-954)

YEAR 3

Feed cultivar Resolution has produced mostly average yields at Canterbury irrigated sites but mostly below average at dryland Canterbury and Southland sites. Shows varying levels of resistance to most foliar diseases. A tall stiff strawed cultivar with late maturity and moderate to high risk of sprouting.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	96
Irrigated sites (4 year)	100

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Intermediate resistance
Leaf rust	Moderately resistant
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Late
Sprouting risk	Moderate-high

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	43	47	48
Test weight (kg/hl)	72	74	75
Protein (%) (N% x 5.7)	10.8	10.3	9.4
Falling number (sec)			
Screenings (%)	2.4	0.9	1.2

END USE	
	Feed

BACKGROUND	
Breeder/Agent	Plant Research (NZ) Ltd
Head licensee	Townsend Seeds

Note: Yields are relative to other feed/biscuit wheats only.

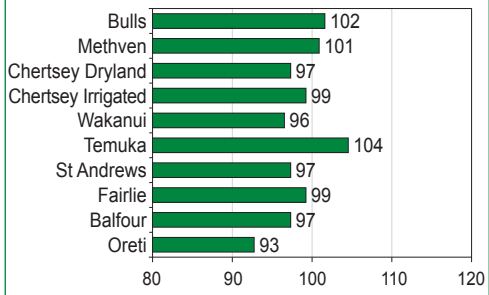
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

RICHMOND

YEAR 9

Mostly average yields at Canterbury irrigated sites but mostly below average at dryland Canterbury and Southland sites. Above average yielding in the southern North Island. Monitor for septoria leaf blotch and leaf rust. Moderate resistance to powdery mildew and stripe rust. A late maturing with a stiff straw and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	96
Irrigated sites (4 year)	100

DISEASE RESISTANCE	
BYDV	Mostly susceptible
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible*
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	39	44	46
Test weight (kg/hl)	69	72	74
Protein (%) (N% x 5.7)	10.8	10.4	9.3
Falling number (sec)			
Screenings (%)	3.3	1.7	1.8

END USE	
	Feed

BACKGROUND	
Breeder	Limagrain Europe S.A.
Head licensee	Plant Research (NZ) Ltd
Agent	Midlands Seed Ltd

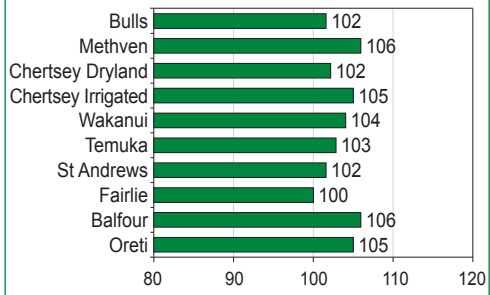
Note: Yields are relative to other feed/biscuit wheats only.

STARFIRE (KWW46)

YEAR 5

A consistently above average to high yielding feed cultivar performing well at irrigated sites in Canterbury and on dryland sites in Southland. Moderately susceptible to leaf rust but shows moderate resistance to other foliar diseases. Starfire is stiff strawed with moderate sprouting risk and intermediate maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	102
Irrigated sites (4 year)	104

DISEASE RESISTANCE	
BYDV	Moderately resistant
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	39	44	45
Test weight (kg/hl)	68	73	74
Protein (%) (N% x 5.7)	10.4	9.9	9.2
Falling number (sec)			
Screenings (%)	3.1	1.6	2.2

END USE	
	Feed

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

Note: Yields are relative to other feed/biscuit wheats only.

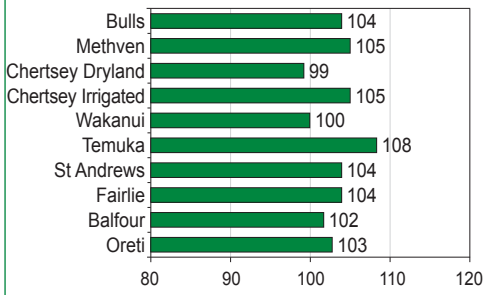
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

TORCH

YEAR 3

Torch is mostly an above average to high yielding feed cultivar performing well across all three regions, at both irrigated and dryland sites. Torch is now moderately susceptible to leaf rust. It has good resistance to most other foliar diseases. Good standing power coupled with late maturity and a low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	103
Irrigated sites (4 year)	104

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Mostly resistant
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible*
Powdery mildew	Moderately resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	39	43	45
Test weight (kg/hl)	69	72	73
Protein (%) (N% x 5.7)	9.9	9.7	9.2
Falling number (sec)			
Screenings (%)	3.4	2.0	1.6

END USE	
	Feed

BACKGROUND	
Breeder	RAGT, UK
Head licensee	Seed Force Limited
Agent	Cates Grain and Seed, Plant Research (NZ) Ltd

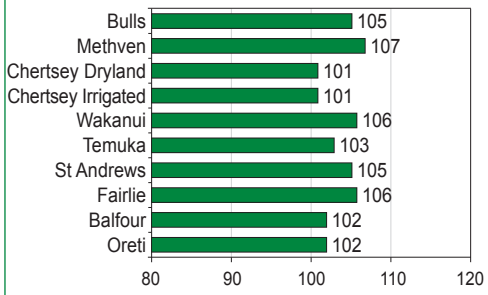
Note: Yields are relative to other feed/biscuit wheats only.

WAKANUI

YEAR 8

Wakanui is a mostly above average to high yielding feed cultivar performing well across all three regions at both irrigated and dryland sites. Has varying levels of resistance to most diseases, but moderately susceptible to powdery mildew. Late maturing and tall but with a stiff straw.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	104
Irrigated sites (4 year)	104

DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Mostly resistant
Leaf rust	Intermediate resistance
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Late
Sprouting risk	Moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	43	47	49
Test weight (kg/hl)	72	74	75
Protein (%) (N% x 5.7)	10.0	9.6	9.0
Falling number (sec)			
Screenings (%)	2.1	0.9	0.7

END USE	
	Feed

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

Note: Yields are relative to other feed/biscuit wheats only.

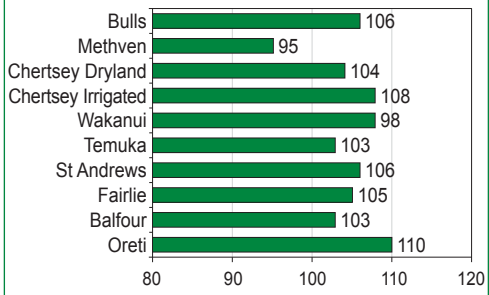
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

CRWT227

YEAR 1

Mostly above average to high yielding feed cultivar in its first year of CPT2 trials. Excellent performer at dryland sites. Moderately susceptible to septoria and leaf rust. A medium height cultivar with a stiff straw and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	107
Irrigated sites (4 year)	101

DISEASE RESISTANCE	
BYDV	Intermediate resistance
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	41	47	48
Test weight (kg/hl)	67	71	71
Protein (%) (N% x 5.7)	10.5	9.9	9.2
Falling number (sec)	156	253	166
Screenings (%)	2.5	1.2	1.6

END USE	
	Feed

BACKGROUND	
Breeder	Sejet
Agent	Luisetti Seeds

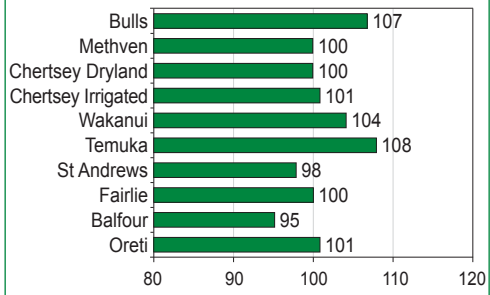
Note: Yields are relative to other feed/biscuit wheats only.

KWW59

YEAR 1

A new feed and potential biscuit cultivar that mostly produced average to high yields in its first year in CPT 2 trials. Moderately susceptible to leaf rust with good resistance to most other diseases. A medium height plant with a stiff straw and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



IRRIGATION RESPONSE (Canterbury rel yield)	
Dryland sites (4 year)	100
Irrigated sites (4 year)	103

DISEASE RESISTANCE	
BYDV	Moderately resistant
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)	41	45	48
Test weight (kg/hl)	70	70	73
Protein (%) (N% x 5.7)	10.6	9.7	9.7
Falling number (sec)	347	292	321
Screenings (%)	2.0	1.1	0.8

END USE	
	Feed/potential biscuit

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

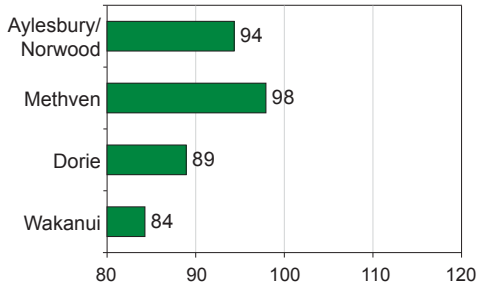
Note: Yields are relative to other feed/biscuit wheats only.

CONQUEST

YEAR 11

Below average yielding premium milling cultivar with high protein content. Conquest has moderate resistance to stripe rust and septoria leaf blotch. Monitor for leaf rust and powdery mildew. Early maturing with a moderate to stiff straw and excellent sprouting resistance and falling number.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Intermediate resistance
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible*
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Early-intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		44	
Test weight (kg/hl)		77	
Protein (%) (N% x 5.7)		13.2	
Falling number (sec)		389	
Screenings (%)		0.6	

END USE	
	Premium milling

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

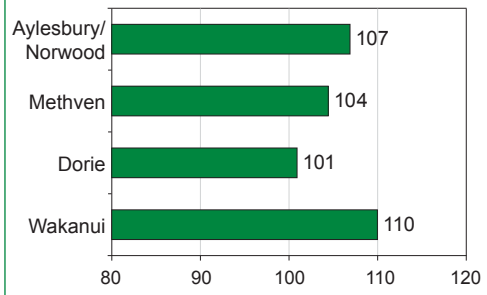
Note: Yields are relative to other milling wheats only. Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

DISCOVERY (KWM31)

YEAR 3

An average to high yielding milling wheat cultivar, with low to moderate sprouting risk. Shows good resistance to most diseases. Discovery is susceptible to shattering. A tall wheat that will benefit from a PGR programme. Intermediate maturity with large grain size.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Intermediate resistance
Leaf rust	Mostly resistant
Powdery mildew	Mostly resistant
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		55	
Test weight (kg/hl)		75	
Protein (%) (N% x 5.7)		11.4	
Falling number (sec)		341	
Screenings (%)		0.7	

END USE	
	Bread

BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

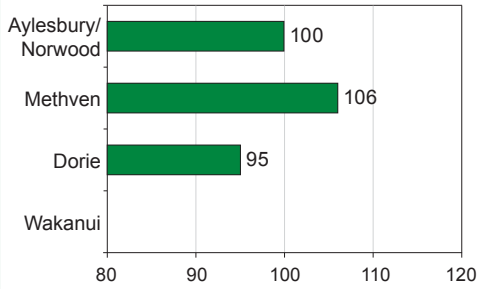
Note: Yields are relative to other milling wheats only.

DUCHESS

YEAR 2

A premium milling cultivar, with yields on average 9% higher than Conquest and with a similar grain size. Has a susceptibility to leaf rust, powdery mildew and fusarium head blight. Moderate resistance to septoria leaf blotch and stripe rust. This stiff strawed cultivar has intermediate maturity with low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly susceptible
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		44	
Test weight (kg/hl)		76	
Protein (%) (N% x 5.7)		11.9	
Falling number (sec)		382	
Screenings (%)		1.7	

END USE	
	Milling

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

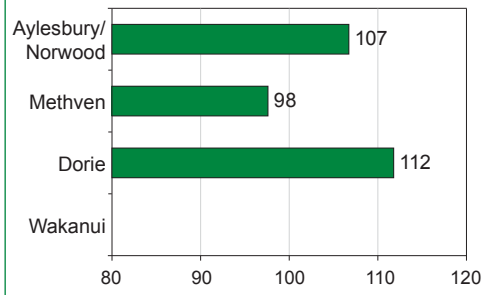
Note: Yields are relative to other milling wheats only.

HANSON (CRWT204)

YEAR 2

Hanson is a gristing wheat that has been higher yielding at the Dorie and Norwood sites. Shows susceptibility to septoria leaf blotch, powdery mildew and leaf rust. Moderately resistant to stripe rust and fusarium head blight. An intermediate maturity with a stiff straw and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Intermediate resistance
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium-tall
Maturity	Intermediate
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		45	
Test weight (kg/hl)		73	
Protein (%) (N% x 5.7)		11.0	
Falling number (sec)		365	
Screenings (%)		1.3	

END USE	
	Milling

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

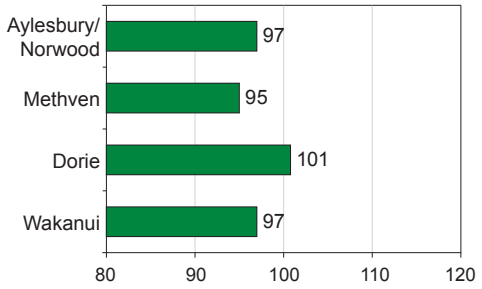
Note: Yields are relative to other milling wheats only.

RAFFLES

YEAR 12

Mostly below average yielding feed and gristing cultivar. Large grain with high falling number. Moderate resistance to powdery mildew and septoria leaf blotch, but susceptible to most other diseases. A tall cultivar with moderate straw strength and low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Mostly susceptible
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		52	
Test weight (kg/hl)		75	
Protein (%) (N% x 5.7)		10.9	
Falling number (sec)		396	
Screenings (%)		1.0	

END USE	
	Gristing, feed

BACKGROUND	
Breeder	KWS, UK
Agent	Canterbury Seed

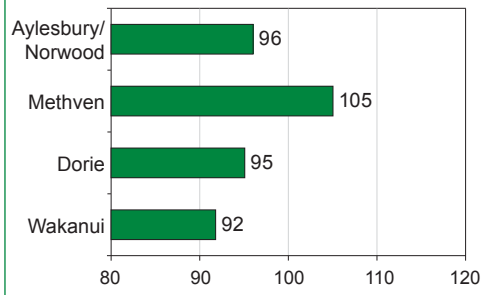
Note: Yields are relative to other milling wheats only.

RELIANCE

YEAR 4

A premium milling cultivar with yields on average 6% higher than Conquest and with a larger grain size. Shows moderate resistance to stripe rust but susceptible to most other disease especially powdery mildew and leaf rust. Reliance produces high proteins, has good straw strength and a low risk of sprouting.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Intermediate resistance
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Mostly susceptible
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Moderate-stiff
Crop height	Short-medium
Maturity	Early-intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		46	
Test weight (kg/hl)		75	
Protein (%) (N% x 5.7)		12.7	
Falling number (sec)		365	
Screenings (%)		1.2	

END USE	
	Bread

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

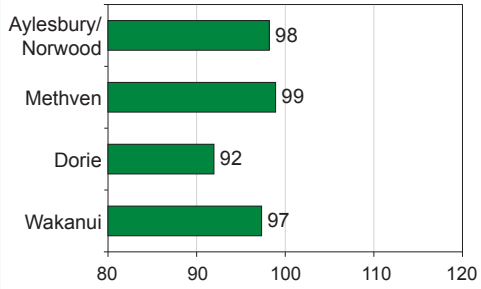
Note: Yields are relative to other milling wheats only.

SARACEN

YEAR 8

Saracen is a mostly below average yielding milling wheat. Monitor for leaf rust and fusarium head blight. Moderately resistant to septoria leaf blotch, stripe rust and powdery mildew. Saracen is a stiff short strawed variety with intermediate maturity and low sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		48	
Test weight (kg/hl)		75	
Protein (%) (N% x 5.7)		11.3	
Falling number (sec)		373	
Screenings (%)		1.4	

END USE	
	Bread

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

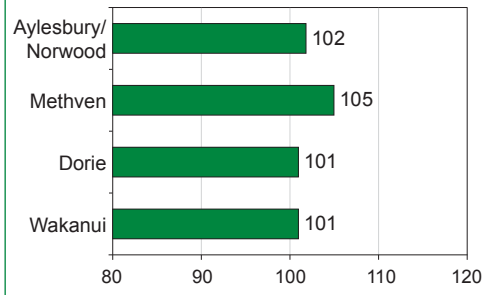
Note: Yields are relative to other milling wheats only.

VICEROY

YEAR 6

Average to above average yielding milling cultivar with high test weights. Moderately susceptible to most foliar diseases but shows moderate resistance to stripe rust. Viceroy is medium to tall with a stiff straw and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately resistant
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Mostly susceptible

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium-tall
Maturity	Intermediate
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		47	
Test weight (kg/hl)		80	
Protein (%) (N% x 5.7)		11.9	
Falling number (sec)		399	
Screenings (%)		1.3	

END USE	
	Bread

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

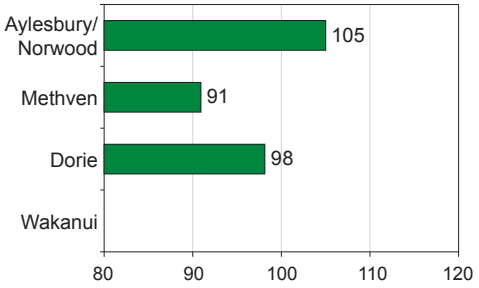
Note: Yields are relative to other milling wheats only.

CRWT218

YEAR 1

A new potential premium milling wheat producing variable yields in its first year of CPT 2 trials. In CPT1 trials CRWT218 yielded on average 10% higher than Conquest. Moderately susceptible to septoria leaf blotch, leaf rust and powdery mildew but shows some resistance to stripe rust. A tall stiff strawed variety with intermediate maturity and low to moderate sprouting risk.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately resistant
Septoria leaf blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Unknown

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Low-moderate

GRAIN QUALITY (4 year means)	Sth Nth Is	Canty	Sthld
TGW (g)		45	
Test weight (kg/hl)		75	
Protein (%) (N% x 5.7)		11.7	
Falling number (sec)		385	
Screenings (%)		0.9	

END USE	
	Milling

BACKGROUND	
Breeder	Plant & Food Research
Agent	Luisetti Seeds

Note: Yields are relative to other milling wheats only.

2015/2016 trial site location map

BALFOUR, EASTERN SOUTHLAND

Kaweku silt loam, Dryland
Trial operator: Stewart Armstrong
Host farmer: Earl Dillon

The trial was sown on 24 April 2015 into a crop of Cassia following wheat. The site received 129 kg N/ha split between two applications. Two herbicide applications and two fungicides were applied during the season. Dry conditions led to premature ripening with the trial harvested on 1 February 2016.

CHERTSEY, MID CANTERBURY

Lismore silt loam, Irrigated
Trial operator: Matt Hicks
Host farmer: Ross Hewson

This barley trial was sown on 5 May 2015 into a crop of Sanette following onions. The site received 246 kg N/ha split between three applications. Two herbicide applications, four insecticides and two PGR's were applied during the season. The trial received two fungicides, but a third GS49 application was not applied to the trial area. Harvest took place on 23 January 2016.

ST ANDREWS, SOUTH CANTERBURY

Claremont silt loam, Dryland
Trial operator: Matt Hicks
Host farmer: Nick Porter

This trial was sown on 1 May 2015 following barley. The trial received one herbicide and 138 kg N/ha split between two applications. Four fungicide applications, an insecticide and a PGR were applied during the growing season. The trial produced good yields despite the dry conditions. A desiccant was applied prior to harvesting on 12 January 2016.

Autumn Sown Barley Agronomic Comment 2015/2016 Season

CULTIVAR	Years in FAR trials	BYDV	Scald	Net blotch	Leaf rust	Powdery mildew	Straw strength	Crop height	Maturity
Calibre	6	(MS)	MSS	MR	MS	MR	Moderate	Med-tall	Early-int
Garner	5	(MS)	MS*	MR	MS	MR	Stiff	Tall	Intermediate
Jimpy	8	(MR)	MR	MR	MS	MS	Moderate-stiff	Medium	Int-late
Kelim	4	(MR)	MS	MR	MS	(MRR)	Stiff	Tall	Intermediate
Piper (SYN411-287)	2	(MS)	MS	MS	MS	(MRR)	Stiff	Medium	Intermediate
Quench	10	MS	MS*	MS	MSS	MRR	Stiff	Medium	Int-late
Sanette	4	(MS)	MR	MR	MS	(MRR)	Moderate	Medium	Early-int
Scholar (SYN411-285)	3	(MS)	MS	MS	MR	(MRR)	Stiff	Medium	Int-late
Snakebite	8	(MS)	MS	MSS	MS	MS	Stiff	Medium	Early-int
Sumit	5	(MS)	MS	MS	MS	MS	Stiff	Short-med	Early-int
Tavern	12	MS	MR	MS	MSS	MR*	Stiff	Short-med	Intermediate
CRBA144	2	(MR)	MR	MS	MRMS	(MRR)	Moderate	Medium	Intermediate
CRBA146	1	Unknown	MR	MR	MRMS	(MRR)	Moderate	Medium	Intermediate
Dragoon (SYN411-291)	2	(MS)	MS	MR	MR	(MRR)	Moderate	Short	Int-late
SYN413-347	1	Unknown	MS	MRMS	MS	(MRR)	Moderate-stiff	Short-med	Early-int

Disease susceptibility sourced from FAR-funded Disease Nurseries and CPT trials (assessments carried out by Plant & Food Research).
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).
"Unknown" indicates there is insufficient trial information in NZ to assess resistance.
(brackets) indicate there is limited NZ trial data to assess resistance.

Key
HS = highly susceptible
S = susceptible
MSS = mostly susceptible
MS = moderately susceptible
MRMS = intermediate resistance
MR = moderately resistant
MRR = mostly resistant
R = resistant

Autumn Sown Barley Cultivar Evaluation 2015/2016 Season - yield (t/ha)

CULTIVAR	Chertsey+	St Andrews	Balfour	Seasons in FAR trial
Region	Mid Canterbury	South Canterbury	Southland	
Soil Type	Lismore silt loam	Claremont silt loam	Kaweku silt loam	
Previous crop	Onions	Barley	Wheat	
Sowing date	6 May	1 May	24 Apr	
Harvest date	23 Jan	12 Jan	1 Feb	
Dryland/Irrigated	Irrigated	Dryland	Dryland	
Calibre	10.1	8.9	5.9	6
Garner	10.0	8.7	6.9	5
Jimpy	9.9	8.7	7.6	8
Kelim	9.9	8.5	6.8	4
Piper (SYN411-287)	10.3	9.0	7.1	2
Quench	9.7	8.3	7.2	10
Sanette	10.5	8.8	6.7	4
Scholar (SYN411-285)	10.6	9.3	6.8	3
Snakebite	10.0	8.2	6.8	8
Sumit	9.5	8.5	7.1	5
Tavern	10.3	8.3	7.5	12
CRBA144	10.7	8.8	7.2	2
CRBA146	10.3	8.9	7.3	1
Dragoon (SYN411-291)	10.0	9.2	7.5	2
SYN413-347	10.0	9.1	7.4	1
Site mean yield (t/ha)	10.1	8.7	7.0	
LSD	0.5	0.3	0.5	
CV%	3.1	2.8	5.3	

+ Chertsey trial did not receive a GS49 fungicide application.

Canterbury

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Calibre	45	64	10.6	3.1
Garner	44	63	10.0	3.3
Jimpy	46	66	10.7	1.5
Kelim	47	63	10.3	1.2
Piper (SYN411-287)	45	63	10.1	2.0
Quench	45	65	10.7	1.6
Sanette	45	63	10.4	1.9
Scholar (SYN411-285)	43	65	10.3	2.4
Snakebite	48	66	11.1	1.3
Sumit	45	64	10.5	3.1
Tavern	44	66	10.3	1.4
CRBA144	47	66	10.4	0.9
CRBA146	48	64	10.5	1.5
Dragoon (SYN411-291)	43	60	9.9	3.8
SYN413-347	46	62	9.7	2.3
Mean	**45**	**64**	**10.3**	**2.1**
LSD	**3**	**2**	**0.8**	**1.8**

Southland

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Calibre	47	63	11.2	1.9
Garner	49	64	9.5	1.0
Jimpy	49	65	10.7	0.9
Kelim	51	63	9.9	0.9
Piper (SYN411-287)	51	61	11.0	1.4
Quench	47	62	11.3	2.1
Sanette	50	60	9.7	2.0
Scholar (SYN411-285)	44	61	10.6	2.8
Snakebite	52	63	10.4	1.1
Sumit	46	61	9.9	1.7
Tavern	48	65	9.8	1.3
CRBA144	48	63	10.6	1.3
CRBA146	49	62	9.9	1.6
Dragoon (SYN411-291)	52	61	9.2	1.3
SYN413-347	51	60	9.7	1.9
Mean	**49**	**62**	**10.2**	**1.5**
LSD*	-	-	-	-

*Single trial - no LSD available

The Canterbury and Southland quality data are also presented as 4 year means on the individual cultivar description pages.

Autumn Sown Barley - 4 year adjusted mean - relative yield by site

CULTIVAR	Rakaia+	St Andrews	Canterbury mean yield	Balfour	Seasons in FAR trials
Region	Mid Canterbury	South Canterbury		Southland	
Dryland/Irrigated	Irrigated	Dryland		Dryland	
No. of trials	2	3	5	4	
Calibre	96	98	96	93	6
Garner	97	98	97	99	5
Jimpy	95	97	95	101	8
Kelim	98	97	97	95	4
Piper (SYN411-287)	-	104	104	100	2
Quench	100	97	97	101	10
Sanette	107	103	104	107	4
Scholar (SYN411-285)	107	104	105	96	3
Snakebite	98	95	96	98	8
Sumit	102	99	100	100	5
Tavern	100	98	98	101	12
CRBA144	-	100	100	101	2
CRBA146	-	101	102	103	1
Dragoon (SYN411-291)	-	106	106	100	2
SYN413-347	-	104	104	104	1
Site mean yield (t/ha)	**9.0**	**9.3**	**9.2**	**7.7**	
LSD (estab. cv)	**13**	**5**	**5**	**7**	
LSD (new vs estab.)	**16**	**7**	**8**	**12**	

+ Mean of two trials (no trial in 2014/15 and 2015/16 excluded due to fungicide issue).

LSD (estab. cv) is for comparing two "established" cultivars (that have both been in all trials).

LSD (new vs estab.) is for comparing a "new" (first year) cultivar with an "established" cultivar.

These 4-year adjusted mean relative yields are also presented in graphical form on the following pages for each individual cultivar.

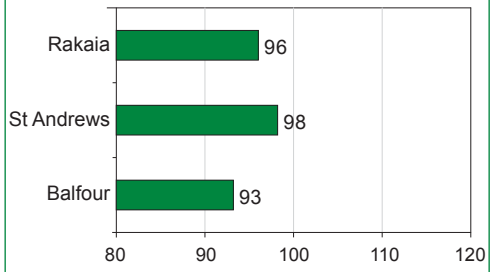
- Cultivar not included in this series of trials.

CALIBRE

YEAR 6

A feed cultivar producing below average yields. Calibre is mostly susceptible to scald and moderately susceptible to leaf rust, and shows moderate resistance to net blotch and powdery mildew. A medium to tall variety with moderate straw strength.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Mostly susceptible
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium-tall
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	47	45
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	8.9	9.3
Screenings (%)	2.5	2.9

END USE	
	Feed

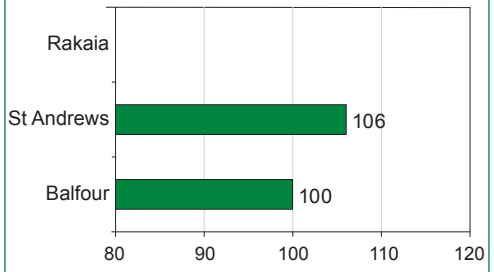
BACKGROUND	
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Canterbury Seed

DRAGOON (SYN411-291)

YEAR 2

An average to high yielding feed variety in its second year of CPT2 trials. Shows varying levels of resistance to most diseases with the exception of scald and BYDV. An intermediate to late maturing, short strawed cultivar with below average proteins.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible
Net blotch	Moderately resistant
Leaf rust	Moderately resistant
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Short
Maturity	Intermediate-late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	46	48
Test weight (kg/hl)	59	60
Protein (%) (N% x 6.25)	8.0	8.1
Screenings (%)	3.4	2.5

END USE	
	Feed

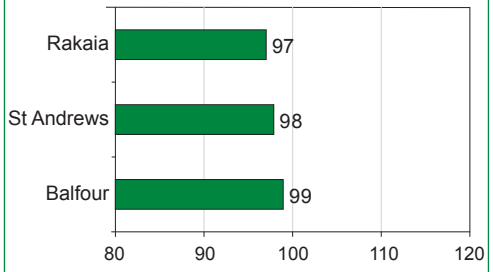
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

GARNER

YEAR 5

Average to below average yielding feed cultivar. Watch for scald and leaf rust. Moderately resistant to powdery mildew. Garner is a tall stiff strawed cultivar with average grain protein and higher screenings.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible*
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	46	47
Test weight (kg/hl)	61	63
Protein (%) (N% x 6.25)	8.5	8.8
Screenings (%)	3.0	3.0

END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

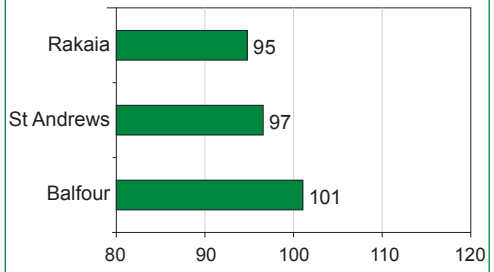
* Resistance is affected by pathotypes present (score is an average)

JIMPY

YEAR 8

A malting cultivar with average yields in Southland and below average in Canterbury. Jimpy is moderately resistant to scald, and net blotch. It has moderate susceptibility to leaf rust and powdery mildew. A moderate to stiff strawed cultivar with intermediate to late maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately resistant
Scald	Moderately resistant
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Intermediate-late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	45	46
Test weight (kg/hl)	63	64
Protein (%) (N% x 6.25)	8.9	8.9
Screenings (%)	2.1	2.2

END USE	
	Malting

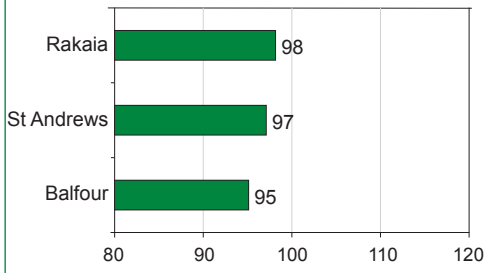
BACKGROUND	
Breeder	Malteurop
Head Licensee	Malteurop
Agent	Malteurop

KELIM

YEAR 4

Below average yielding feed cultivar. Moderately susceptible to leaf rust and scald. Shows varying levels of resistance to net blotch and mildew. Kelim is tall with a stiff straw strength and good grain weight.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately resistant
Scald	Moderately susceptible
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	49
Test weight (kg/hl)	61	61
Protein (%) (N% x 6.25)	8.7	8.7
Screenings (%)	1.6	1.7

END USE	
	Feed

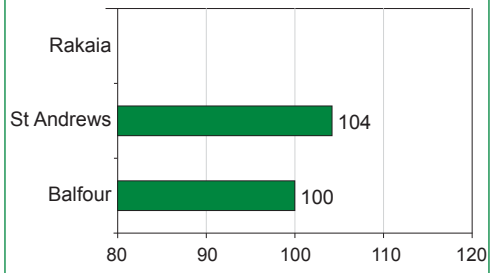
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not assigned

PIPER (SYN411-287)

YEAR 2

In its second year, Piper has produced average yields in Southland and above average in South Canterbury. Moderately susceptible to scald, net blotch and leaf rust, but good resistance to mildew. A stiff strawed cultivar with intermediate maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible
Net blotch	Moderately susceptible
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	47	48
Test weight (kg/hl)	61	61
Protein (%) (N% x 6.25)	8.4	9.7
Screenings (%)	2.2	2.2

END USE	
	Feed

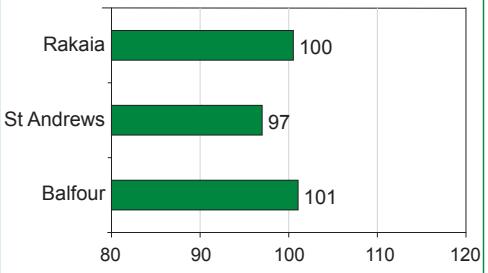
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

QUENCH

YEAR 10

Quench is an average to below average yielding feed cultivar. Shows good resistance to mildew but watch for other diseases, particularly leaf rust. A stiff strawed variety combined with medium crop height and intermediate to late maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible*
Net blotch	Moderately susceptible
Leaf rust	Mostly susceptible
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate-late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	47	46
Test weight (kg/hl)	63	62
Protein (%) (N% x 6.25)	8.8	9.6
Screenings (%)	1.5	2.4

END USE	
	Feed, malting potential

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain, Ruapehu Farm Supplies (NI)

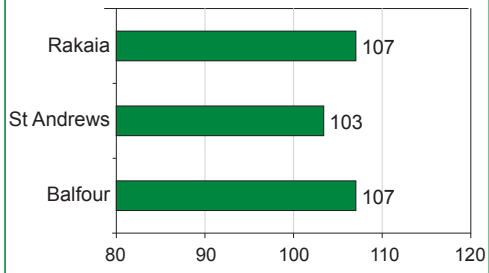
* Resistance is affected by pathotypes present (score is an average)

SANETTE

YEAR 4

Above average to high yielding feed and malting potential cultivar in both Canterbury and Southland. Shows varying levels of resistance to most diseases with the exception of leaf rust and BYDV. A medium height variety with moderate to stiff straw strength.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately resistant
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	48	48
Test weight (kg/hl)	61	60
Protein (%) (N% x 6.25)	8.5	8.6
Screenings (%)	1.6	2.2

END USE	
	Feed, malting potential

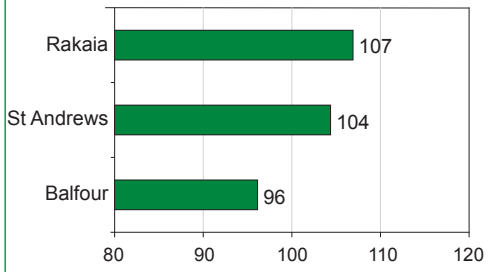
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain, Cates Grain and Seed, Advanced Agriculture

barley cultivar descriptions

SCHOLAR (SYN411-285) YEAR 3

A feed variety producing above average to high yields in Canterbury, with below average yields in Southland. Moderately susceptible to scald and net blotch but shows resistance to leaf rust and powdery mildew. An intermediate to late maturing, stiff strawed cultivar.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible
Net blotch	Moderately susceptible
Leaf rust	Moderately resistant
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate-late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	45	43
Test weight (kg/hl)	62	62
Protein (%) (N% x 6.25)	8.3	9.0
Screenings (%)	2.3	3.5

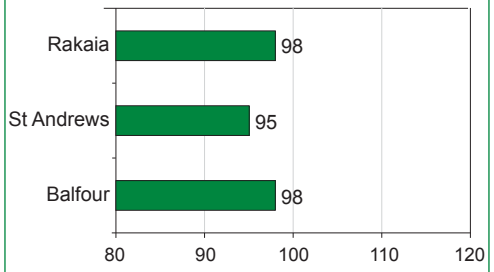
END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

SNAKEBITE YEAR 8

Below average yielding feed cultivar. It is relatively susceptible to most diseases. Snakebite has stiff straw strength, early to intermediate maturity, good grain weight and above average proteins.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible
Net blotch	Mostly susceptible
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	49
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	9.2	9.1
Screenings (%)	1.4	1.8

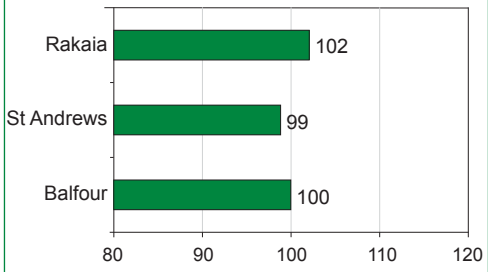
END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Ravensdown

SUMIT YEAR 5

Sumit is an average to above average yielding feed cultivar. Sumit has susceptibility to most diseases, so needs monitoring. A stiff strawed, short to medium height variety. Early to intermediate maturity with average grain quality characteristics.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately susceptible
Net blotch	Moderately susceptible
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short-Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	46	46
Test weight (kg/hl)	62	62
Protein (%) (N% x 6.25)	8.8	8.9
Screenings (%)	2.5	3.1

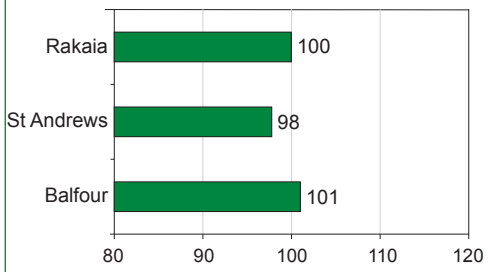
END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Seed Production

TAVERN YEAR 12

Average to below average yielding feed cultivar. Moderately resistant to scald and powdery mildew. Excellent straw strength combined with short-moderate crop height.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately susceptible
Scald	Moderately resistant
Net blotch	Moderately susceptible
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant*

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short-medium
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	45	45
Test weight (kg/hl)	63	64
Protein (%) (N% x 6.25)	8.7	8.8
Screenings (%)	2.1	3.3

END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

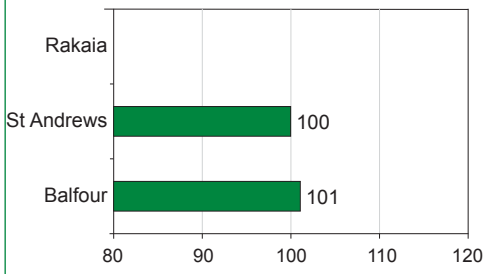
* Resistance is affected by pathotypes present (score is an average)

CRBA 144

YEAR 2

In its second year of CPT2 trials, CRBA 144 has produced average yields. Shows moderate resistance to scald, intermediate resistance to leaf rust but is moderately susceptible to net blotch. A medium height feed variety with intermediate maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Moderately resistant
Scald	Moderately resistant
Net blotch	Moderately susceptible
Leaf rust	Intermediate resistance
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	47	47
Test weight (kg/hl)	62	63
Protein (%) (N% x 6.25)	8.5	8.6
Screenings (%)	1.2	2.0

END USE	
	Feed

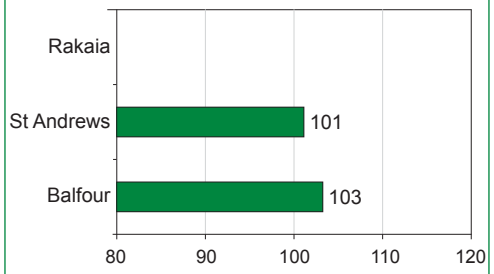
BACKGROUND	
Breeder	Sejet
Head Licensee	Plant and Food Research
Agent	Luisetti Seeds

CRBA 146

YEAR 1

A new cultivar producing average to above average yields in its first year of CPT 2 trials. Shows good resistance to most diseases. A medium height feed variety with intermediate maturity.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Unknown
Scald	Moderately resistant
Net blotch	Moderately resistant
Leaf rust	Intermediate resistance
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	47
Test weight (kg/hl)	62	61
Protein (%) (N% x 6.25)	8.7	8.5
Screenings (%)	1.5	2.6

END USE	
	Feed

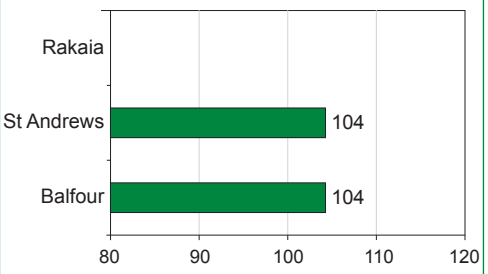
BACKGROUND	
Breeder	Sejet
Head Licensee	Plant and Food Research
Agent	Luisetti Seeds

SYN413-347

YEAR 1

A new feed variety which has produced above average yields in both Canterbury and Southland. Moderately susceptible to scald and leaf rust but shows resistance to net blotch and powdery mildew. An early to intermediate maturing cultivar with a moderate to stiff straw producing good grain weights and low proteins.

RELATIVE YIELDS – 4 year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
BYDV	Unknown
Scald	Moderately susceptible
Net blotch	Intermediate resistance
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate-stiff
Crop height	Short-medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	48	49
Test weight (kg/hl)	59	60
Protein (%) (N% x 6.25)	7.9	8.3
Screenings (%)	2.4	2.9

END USE	
	Feed

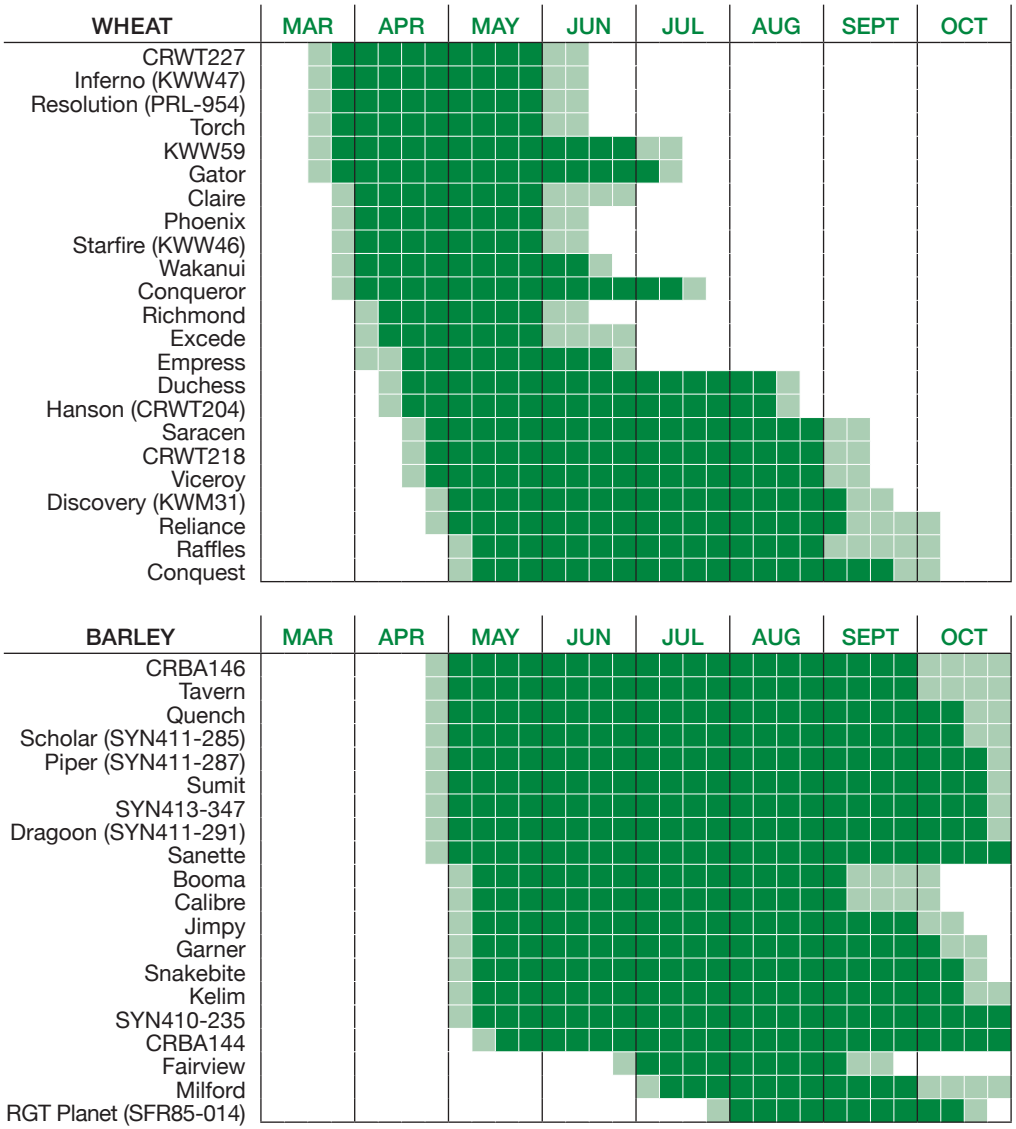
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

sowing date guidelines

Autumn sown wheat and barley – Sowing date guidelines 2016

These guidelines have been constructed from FAR sowing date trial data combined with agronomic experience and in the case of some new cultivars, UK information is also used.

'Optimal' sowing dates – 'Less ideal' sowing dates –



* Less information available for new cultivars.
1. The earlier part of each sowing window may be more suited to higher altitudes and southerly latitudes.
2. Barley cultivars at the late sowing window are more suited to irrigated, higher fertility sites.
3. Spring barley cultivars are also included.

sowing rate calculation

This calculation uses several variables to give an accurate answer for suggested sowing rates.

To use the calculation you will need to know the following:

- the plant population you want to establish for your crop,
- the thousand grain weight of the seed,
- the germination percentage (%) of the seed,
- the expected crop emergence – this is determined by time of sowing, seed quality and management factors (e.g. seed treatment, sowing depth, seed-bed quality).

The steps to follow are:

THOUSAND GRAIN WEIGHT

If using certified seed, the value for thousand grain weight (TGW) should be available on the seed bag or on request. If you need to calculate it for yourself, the number of seeds you will need to count will depend on the accuracy of your scales. Make sure your seed sample is representative of the whole line.

1. If you have scales that will weigh to 0.1g, count 200 seeds, weigh them and multiply the weight by 5 to get thousand grain weight.
2. If not, count and weigh 1000 seeds.

GERMINATION PERCENTAGE (%)

This should also be on the bag label or on request. A purity and germination (P&G) test figure is usually quoted. Germination tests determine the maximum germination potential of a given seed line. Under certain conditions in the field it is often noted by producers that the laboratory germination result overestimates seedling emergence. Although there are many factors that may influence the final plant population, the observed differences are also a result of the physiological quality of a particular seed line and its tolerance to stress. Caution is advised as the germination figure does not equate to the percentage of seeds expected to emerge in the field.

EMERGENCE PERCENTAGE (%)

Emergence percentage is an estimate based on actual emergence in the field. Further information can be gained from 'stress tests' and 'vigour tests'. These test results are not usually available but should hopefully be on request. Experience certainly helps when deciding on this figure.

Examples of emergence % could be:

- April sown: 90% emergence (assumes warm, moist conditions)
- May sown: 85% emergence
- June sown: 80% emergence
- July sown: 75% emergence (assumes maybe poorer quality seedbed, sown too deep, cold soil conditions).

$$\text{SOWING RATE (kg/ha)} = \frac{\text{target plant population (p/m}^2\text{) x TGW (g) x 100}}{\text{\% germination x \% emergence}}$$

Examples:

AUTUMN WHEAT

A wheat sample TGW = 45g
B % germination = 95%
C % emergence = 90%
D target plant population = 125pl/m^2
E required sowing rate is 66kg/ha

SPRING BARLEY

A barley sample TGW = 40g
B % germination = 90%
C % emergence = 85%
D target plant population = 225pl/m^2
E required sowing rate is 118kg/ha

The calculation can be transformed to determine the actual emergence % achieved (useful if poor establishment):

$$\text{\% EMERGENCE} = \frac{\text{actual plant population (p/m}^2\text{) x TGW (g) x 100}}{\text{sowing rate (kg/ha) x \% germination}}$$

The actual plant population needs to be counted in the field (rod or quadrat methods) for the above calculation, whilst TGW, sowing rate and germination % are figures that were known at drilling.

ISSUES FOR SUCCESSFUL ESTABLISHMENT
(in no particular order)

NUTRITION AND MOISTURE: Plant roots follow the easiest path for growth, so nutrition should be placed near the roots. Some fertilisers will, however, "burn" seedlings, so they must be placed out of direct contact with the seed. Moisture is essential for seed germination. Once germinated, the young seedling is also very fragile and may dry out rapidly if there is insufficient moisture in the root zone. Too much moisture (waterlogging) will mean oxygen starvation, which will lead to germination failure or seedling death.

SEEDBED: A trashy seedbed may reduce seed/soil contact, thereby reducing germination, while a compacted seedbed may restrict emergence. A seedbed with large clods may also force emerging seedlings to become deformed (and therefore weakened) in their attempt to emerge.

SOWING DEPTH: Sown too shallow, seed may be subject to bird damage and susceptible to drying out. If sown too deep, young plants will struggle to emerge and may be weak and therefore prone to disease or may become deformed. Check that your drill is placing seed at its optimum depth.

TIME OF SOWING: Crops sown in the early autumn or late spring, when soil temperatures are warm and moisture is (hopefully) ideal, should mean rapid germination and a high emergence rate of seedlings. The autumn sown crops will also have more opportunity to tiller, so sowing rates will need to take this into account.

WEEDS, DISEASES AND PESTS: Weeds will compete with the crop for light, moisture and nutrients. Weeds may potentially be more of a problem in thinly sown (or poorly established) crops. The main disease problem for emerging seedlings is fungi affecting the new roots, but these are more likely to occur in a cool, damp environment, when seedlings are less vigorous and therefore more prone to attack. Seed treatment with fungicides may be beneficial if seed-borne diseases are a concern, but these treatments may also delay crop emergence. A wide range of pests can cause problems - slugs, weevils, grass grubs, etc. If these are present, control options need to be evaluated.

SOWING RATES IN GENERAL FOR AUTUMN SOWINGS

Note: for most recent trial results relating to sowing rates for autumn sown wheat, see FAR Arable Update Cereals Nos. 60, 85 and 100.

Generally establishment targets are:
- April 100 plants/m^2
- May 100-150 plants/m^2
- June 200 plants/m^2

Usually there is no real advantage of sowing more than 200 plants/m^2.

For further reading see FAR Arable Update Cereals numbers 15, 65, 66, and 81.

SEED QUALITY

High quality seed has:
- < 10% *Fusarium/Microdochium*;
- > 95% germination;
- > 40g TSW;
- low abnormals and;
- good vigour.

Attributes of example lines

	UNTREATED					TREATED			
Line	Germ	Abnorm	Remain	Fusari	Vigour	Germ	Abnorm	Remain	Fusari
A	80.2	13.8	6.0	36.0	3.2	76.6	18.0	5.4	2.8
B	73.6	17.0	9.4	31.0	2.8	69.4	21.4	9.2	0.6
C	72.0	14.6	13.4	71.2	3.6	71.4	4.4	6.4	3.6
D	79.6	13.8	6.6	5.0	3.8	71.6	22.0	6.4	0.0
E	83.8	9.2	7.0	21.0	4.4	79.4	11.8	8.8	0.2
F	76.6	17.6	5.8	62.6	3.8	71.4	23.4	5.2	6.2

Vigour 1 = poor, 5 = excellent

A Reasonable line, *Fusarium* mostly controlled with treatment, abnormals increased slightly after treatment indicating some seed damage.

B Reject, abnormals increased after treatment indicating some seed damage, vigour not sufficient, treated germination not sufficient.

C Reject, *Fusarium* extremely high even though mostly controlled with treatment.

D Reject, abnormals increased after treatment indicating some seed damage.

E Reasonable line with good vigour.

F Reject, *Fusarium* extremely high even though mostly controlled with treatment, however abnormals increased after treatment indicating some seed damage.

NOTE:
- It is suggested that 60% of abnormals will emerge. However be aware that these plants have low tillering capacity.
- Remainders are seeds which don't germinate.

PATHOGEN THRESHOLDS

Guidelines for seed-borne disease thresholds based on NIAB (UK) and NZ experiences:

- If < 10% *Fusarium/Microdochium* or 5% *Drechslera* infection sow untreated seed before 1 May or after 1 October.
- Treat if sowing after 1 May or before 1 October.
- All seed should be treated if the cereal follows maize as *Fusarium* risk is higher.
- A zero threshold exists for loose smut and barley seed-borne mosaic virus. Seedlines with loose smut will be rejected from certification and uncertified seed must be treated.

Seed treatments may not be needed on high quality seed (*seed quality details should be freely available from seed merchant*) and if the seedline is not repeatedly sown without treatment.

SEED TREATMENT STRATEGIES

AUTUMN WHEAT STRATEGY:

1. If sowing in April with high quality seed into a warm seedbed that is not too wet – no treatment needed.
2. If sowing in April and require *Fusarium* control only (i.e. >10%) – consider using Vitaflo®, Raxil®, or MBC.
3. If sowing in April and require protection from soil or seed-borne diseases – consider using Vitaflo.
4. If sowing in April and early protection is required from stripe rust and soil-borne diseases – consider using Galmano® or Veteran®.
5. If sowing May/June, need protection from soil-borne diseases, have low *Fusarium* – consider using Vitaflo.

CONSIDERATIONS:

- In damaged (e.g. cracked) seed all products have the potential to reduce establishment and, in severe cases, yield. Raxil then Vitaflo are the least likely to delay emergence of damaged seed. Delayed emergence may be critical for late autumn sowings.
- Vitaflo or Raxil control low *Fusarium* levels but consider using MBC where levels are higher.
- Ideally, reject seedlines which test over 20-25% *Fusarium* and/or with a P&G germination of <85%. However, seasonal conditions will impact on availability of seed with these levels.
- Seed treatments do not reduce the incidence of *Fusarium* head blight in the crop.

INSECTICIDE

Imidacloprid and Poncho® are the only registered insecticide seed treatments providing some control of aphids and grass grub. They should provide control of aphids up until the plant reaches GS13/21 or as the first tiller is appearing. At this time the plant has grown enough that a dilution effect occurs. No matter what the sowing date, control should persist through until GS13/21 (unless heavy rain occurs). For spring sowings, Gaucho® would be used primarily for grass grub control, not aphids.

CONSIDERATIONS FOR INSECTICIDE SEED TREATMENT USE:

- For sowings before 1 May, a foliar aphicide should follow at GS13/21, then monitor the need for further foliar applications.
- For sowings after 1 May, the need for a foliar aphicide should be monitored after 6 weeks.
- The best use may be when both grass grub and early aphid protection are needed, when spraying is difficult or inconvenient, or to provide management flexibility.
- Growers need to closely look at the economics of insecticide seed treatment vs. foliar insecticides if only aphid control is required, especially if sowing is in April and further foliar aphicide applications are essential.

For conventional drilling dates the most cost effective autumn BYDV control is often a tank mix of insecticide with autumn herbicides (at GS13) unless the disease risk was severe before GS13 (3 true leaves), or grass grub control was also required.

4 year adjusted mean	A "4-year adjusted mean" is a mean over trials in the last 4 years. This mean has been adjusted statistically to take account of the absence of some cultivars in some trials (for example, if a cultivar was missing from an especially high yielding trial, it would otherwise be unfairly disadvantaged). This adjustment enables fair comparisons between cultivars within each site and region.
CV%	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 (<10%) and the LSD is low (both desirable). If the trial CV% is high (>10%), there is a high level of unexplained variation, and the trial results are less accurate.
Falling number	An indicator of sprouting if scores are low, falling number (FN) is an indirect measure of alpha-amylase levels in the grain with low FN indicating high alpha-amylase activity. FAR do not test falling number on feed wheat, only milling wheats.
Limited data	For newer cultivars which we have only evaluated for one or two years, we may not have sufficient disease or agronomic observations to feel confident about the data presented. In this case the data is given in brackets ( ).
LSD	The "Least Significant Difference", or LSD, is used to compare the mean yields of two cultivars. The difference in yield between two cultivars must be greater than the LSD for those two cultivars to be proven different (statistically at P=0.05). For example, if the LSD is 0.8, a difference between two cultivars of 0.5 is not 'proven', while a difference of 1.2 is proven.
Protein %	The protein content is obtained by measuring the nitrogen (N) content and using a conversion factor to calculate the protein %. The conversion factors in this booklet are N x 5.7 for all wheat and N x 6.25 for all barley. Some feed wheat users choose to use N x 6.25. To convert the wheat protein from 5.7 to 6.25 use a conversion factor of 1.096 x protein %.
Relative yield	Yields relative to a base 100 are given where 100 is the average yield across all cultivars. These relative yields make it easier to compare sites which may differ widely in mean yields.
Screenings %	Percentage of small grains, weed seeds and foreign matter which pass through a 2.0 mm rotoscreen.
Test weight	Measured in kilograms per hectolitre (kg/hl), test weight is an indication of grain density. Test weight is reported at a standard grain moisture of 14%.
TGW	Thousand grain (seed) weight, reported in grams (g). Grain size is needed both as a measure of grain quality and for calculating sowing rates.
***Fusarium* head scab**	Disease caused by *Fusarium* spp.
Leaf rust	Disease caused by *Puccinia recondite* f.sp. *tritici*.
Powdery mildew	Disease caused by *Erysiphe graminis* f.sp. *tritici*.
Septoria tritici blotch (STB)	Disease caused by *Zymoseptoria tritici*, (perfect stage *Mycosphaerella graminicola*)
Stripe rust	Disease caused by *Puccinia striiformis* f.sp. *tritici*.

paddock sowing record

The table below is for you to record your cultivar choice and other useful information for your paddock history.

An example is provided.

Paddock	Cultivar name	Sowing rate (kg/ha)	Seed treatment	Area sown (ha)	Fertiliser (kg/ha)	Sowing date
Bluegum	Conquest	96 kg/ha	Raxil	10 ha	DAP 200	3 May

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