



ADDING VALUE TO THE BUSINESS OF ARABLE FARMING™

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FAR CULTIVAR EVALUATION



FOUNDATION FOR ARABLE RESEARCH



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wheat and barley
2014/2015**

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In Canterbury, autumn sown feed and biscuit wheat yields overall were the same as the four year average of 11.5 t/ha. However, yields were down by an average 1.2 t/ha in dryland trials reflecting the dry season, and up by 0.8 t/ha in irrigated trials. The average yield at the Wakanui feed and biscuit wheat trial site was 16 t/ha with Katch 42 topping this trial at 16.8 t/ha! The four year analysis showed the top yielding cultivars in the Canterbury irrigated trials were Wakanui, Torch and Starfire. These cultivars were in the top group in the dryland trials as well, together with Conqueror and Gator.

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

For the third season, Sanette is at the top of the autumn sown barley trials in Canterbury and Southland. Three coded cultivars, SYN411-285, SYN411-287 and SYN411-291, also yielded at 10 t/ha or above at St Andrews.

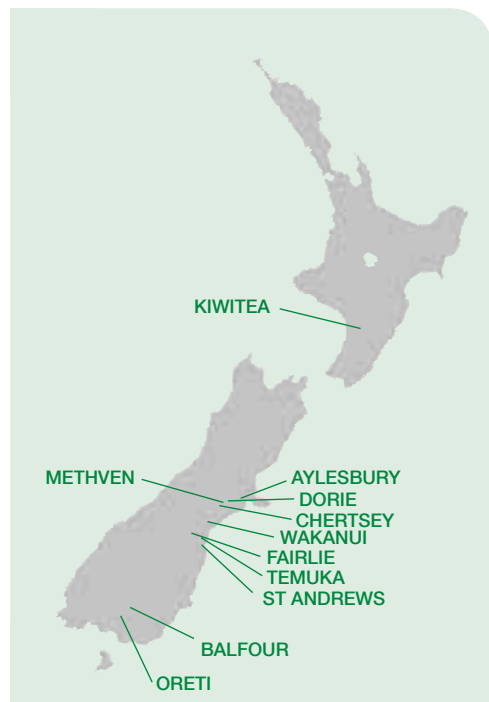
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Rob Craigie
Project Manager

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2014/2015 trial site location map

AYLESBURY (Milling Wheat)

Lismore silt loam, Irrigated
Trial operator: Steve Shorter
Host farmer: Andrew Brooker

This new site replaces the trial that was previously located at Norwood. Following peas, this trial was sown on 19 May 2014 into a surrounding crop of Conquest. The trial received 258 kg N/ha, two herbicides and two insecticides. Three fungicide applications and a PGR were also applied during the growing season. A total of 340 mm irrigation was applied over 10 applications. Some take-all and shattering were observed. The trial was harvested on 11 February 2015.

BALFOUR (Feed Wheat)

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

This site was established in a surrounding crop of KWW46 on 10 April 2014 following peas. A total of 285 kg N/ha was applied in three split applications in the spring. The trial received two herbicides, a PGR and three fungicides. The trial established well with no issues and was harvested on 23 February 2015.

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 15 April following grass in a surrounding crop of Wakanui and Savannah. Each trial received a total of 250 kg N/ha split into three timings. The trials received three herbicides, three fungicides, a PGR and two insecticides. The irrigated trial received 371 mm of water applied over thirteen passes. The dry season led to severe moisture stress in the dryland trial which was harvested on 23 January. The irrigated trial was harvested on 4 February 2015.

DORIE (Milling Wheat)

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

This trial was sown on 11 May 2014 into a surrounding crop of Reliance, following clover. 147 kg N/ha was applied in two split applications along with Potassium chloride and Manganese sulphate. The trial received two herbicides and one foliar insecticide. Three fungicides were applied between October and December. A PGR was not applied at this site and no lodging was observed. The trial received a total of 240 mm from six applications of irrigation. The trial was harvested on 5 February 2015.

FAIRLIE (Feed Wheat)

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

This site was sown in a surrounding crop of Torch on 4 April 2014 following oil seed rape. A total of 222 kg N/ha was applied in three split applications. The trial received three foliar insecticides and an application of slug bait. Two herbicides, a PGR and four fungicides were also applied during the growing season. The trial was harvested on 6 February 2015.

KIWITEA (Feed and Milling Wheat)

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

This site was sown on 19 May 2014 in a surrounding crop of Discovery and Katch 42 following oil seed rape. A total of 238 kg N/ha was applied in three split applications. The trial received two herbicides, an insecticide, four fungicides and one PGR during the growing season. The paddock was grazed by lambs during winter and tillered well in spring. The trial was harvested on 29 January 2015.

METHVEN (Feed Wheat)

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

The trial was sown in a crop of Wakanui on 3 April 2014 following radish. In total, 223 kg N/ha was applied between three split applications. The trial received three herbicides, two insecticides and three fungicide applications during the season. A PGR mix was applied in late September. Irrigation totalling 200 mm was applied over 12 applications. Some minor lodging was recorded. The trial was harvested on 19 February 2015.

METHVEN (Milling Wheat)

Lyndhurst silt loam, Irrigated
Trial operator: Steve Shorter
Host farmer: Bevan Lill

This trial was sown in a paddock of Duchess following linseed on 4 May 2014. Crop 15 was applied to the trial followed by four applications totalling 300 kg N/ha. Two herbicide and five fungicide applications were made. The trial also received a PGR mix, slug bait and four foliar insecticides. Irrigation totalling 270 mm was applied in 11 applications. A period of drought stress was noted in late December/early January, along with some shedding and lodging. This trial was harvested on 18 February 2015.

ORETI (Feed Wheat)

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

This feed wheat trial was sown on 17 April 2014 into a surrounding crop of Starfire (KWW46) following peas. 160 kg N/ha was applied, split between two applications. The trial received one herbicide, a PGR and four fungicide applications. The trial established well and there were no issues during the growing season. The trial was harvested on 4 March 2015.

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 Conqueror following a ryegrass seed crop on 11 April 2014. A total of 202 kg N/ha was applied in two split applications. The trial received three applications of fungicide and herbicide and two insecticides. Harvest occurred on 8 February 2015.

TEMUKA (March and April Feed Wheat)

Waimakariri sandy loam, Irrigated

Trial operator: Matt Hicks

Host farmer: Nick Ward

The March (20 March 2014) and April (11 April 2014) trials were sown into a surrounding crop of Starfire (KWW46), following turnips. Both trials received a total of 285 kg N/ha split between three applications. Two herbicides and four fungicides were applied during the season. The trials also received two insecticides, two PGR's and five irrigations totalling 135 mm. Water restrictions started during the grain fill period in mid December. Both trials were harvested on 18 February 2015.

WAKANUI (Feed Wheat)

Wakanui silt loam, Irrigated

Trial operator: John van den Bosch

Host farmer: Eric Watson

This trial was sown on 25 May 2014 into a surrounding cultivar of Starfire (KWW46) wheat, following peas. The later sowing date was due to high rainfall on heavy soils. Three applications of N totalling 232 kg/ha were applied during the spring. Four herbicides and three foliar insecticides were applied during the season. The trial also received four fungicides and two PGR's. Irrigation totalling 187 mm was applied over 10 applications. The trial was harvested on 5 March 2015.

WAKANUI (Milling Wheat)

The trial was not established this season.

Autumn Sown Wheat Agronomic Comment 2014/2015 Season

CULTIVAR	Years in FAR trials	BYDV Scores	Septoria leaf blotch	Stripe rust	Leaf rust		Powdery mildew	Fusarium head blight ¹	Straw strength	Crop height	Maturity	Sprouting susceptibility
Claire	15	MSS	MS	MSS*	MR		MS*	MS	Moderate	Medium-tall	Late	Moderate-high
Conqueror	1	(MR)	(MS)	(MR)	(S)		(MRR)	Unknown	Stiff	Medium	Intermediate	Low-moderate
Conquest	10	MRMS	MR	MR	MSS*		MS	MS	Moderate-stiff	Medium	Early-int	Low
Discovery (KWM31)	2	(MS)	(MR)	(MRMS)	(R)		(MR)	(MR)	Stiff	Tall	Intermediate	Low-moderate
Duchess	1	(MS)	(MR)	(MR)	(MS)		MSS	(MS)	Stiff	Medium	Intermediate	Low
Empress (CRWT 157)	5	MS	MRR	MRR	MRMS*		MRR	Unknown	Stiff	Medium	Intermediate	Low-moderate
Excede	9	(MS)	MSS	MR	MRMS		MR	MR	Stiff	Short	Intermediate	Low
Gator	2	(MS)	(MS)	(MR)	(MSS)		(MRR)	Unknown	Stiff	Short	Intermediate	Low
Hanson (CRWT204)	1	(MS)	(MS)	(MR)	MRMS		(MS)	(MR)	Stiff	Medium-tall	Intermediate	Low-moderate
Inferno (KWW47)	3	(MS)	MRR	(MS*)	(MR)		(MRR)	Unknown	Moderate	Medium-tall	Late	Low-moderate
Katch 42 (KWW42)	4	(MS)	MS	(MR*)	MS		MR	(MSS)	Stiff	Medium	Intermediate	Low-moderate
Kingdom (CMWW06)	3	(MS)	MS	(MSS)	MR		Unknown	Unknown	Stiff	Medium	Int-late	Low-moderate
Morph	14	MS	MS	MRR	MS*		R	MR	Weak-moderate	Medium	Intermediate	Low
Orator	6	(MS)	MS	MR	MR		MR	Unknown	Stiff	Medium	Late	Moderate-high
Phoenix	10	MS	MR	MR	MSS		MR*	MRR	Moderate	Medium	Int-late	Low
Raffles	11	MS	MR	MSS	MSS		MR	MS	Moderate	Tall	Intermediate	Low
Reliance (CRWT185)	3	MRMS	MS	MR	(MSS)		(MSS)	(MS)	Moderate-stiff	Short-medium	Early-int	Low
Resolution (PRL-954)	2	(MS)	(MR)	(MS)	MRMS		(MRR)	Unknown	Stiff	Tall	Late	Moderate-high
Richmond	8	(MSS)	MS	MR	MS*		MR	MR	Stiff	Medium	Late	Low-moderate
Sage	6	(MS)	MR	MSS	MR		MRR	MR	Weak-moderate	Tall	Int-late	Low
Saracen	7	(MS)	MR	MR	MSS		MR	MS	Stiff	Short	Intermediate	Low
Starfire (KWW46)	4	(MR)	MR	MR	MS		MR	Unknown	Stiff	Medium	Intermediate	Moderate
Torch	2	(MS)	(MRR)	(MRR)	MS*		(MR)	Unknown	Stiff	Medium	Late	Low
Viceroy (CRWT151)	5	(MR)	MS	MR	MS		MS	(MSS)	Stiff	Medium-tall	Intermediate	Low-moderate
Wakanui	7	(MS)	MR	MRR	MRMS		MS	MR	Stiff	Tall	Late	Moderate
KWW53	2	(MS)	(MR)	(MR)	(MR)		(MS)	(MR)	Stiff	Tall	Int-late	Low
KWW55	1	(MRR)	(MRR)	(MR)	(MRR)		(MRR)	Unknown	Moderate-stiff	Medium-tall	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

wheat - 2014/2015 yield (t/ha)

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	South Cant	South Cant	South Cant		
Soil type	Mayfield silt loam	Chertsey shallow silt loam	Chertsey shallow silt loam	Wakanui silt loam	Waimakariri sandy loam	Claremont clay loam	Claremont silt loam		
Previous crop	Radish	Grass	Grass	Peas	Turnips	Ryegrass	Oil seed rape		
Sow date	3-Apr-14	15-Apr-14	15-Apr-14	25-May-14	11-Apr-14	11-Apr-14	4-Apr-14		
Harvest date	19-Feb-15	23-Jan-15	4-Feb-15	5-Mar-15	18-Feb-15	8-Feb-15	6-Feb-15		
Dryland / Irrigated	Irrigated	Dryland	Irrigated	Irrigated	Irrigated	Dryland	Dryland		
Claire*	13.0	6.1	11.8	15.8	11.0	8.6	10.3	10.9	15
Conqueror	14.9	6.5	12.0	15.8	11.8	10.3	11.2	11.8	1
Empress	14.2	6.6	11.6	15.6	10.2	9.3	10.3	11.1	5
Excede	14.1	6.4	11.3	15.6	12.5	9.5	10.3	11.4	9
Gator	13.8	6.7	12.2	15.7	11.8	10.2	11.1	11.7	2
Inferno (KWW47)	14.2	6.4	11.9	15.7	9.2	9.2	10.8	11.1	3
Katch 42 (KWW42)	15.6	6.4	11.6	16.8	11.3	9.8	10.9	11.8	4
Kingdom (CMWW06)	14.3	6.5	11.6	15.0	10.2	9.2	10.4	11.0	3
Phoenix*	13.2	6.0	11.2	15.7	10.6	9.2	10.4	10.9	10
Resolution (PRL-954)	14.2	6.6	11.9	15.9	10.2	9.2	10.2	11.2	2
Richmond	14.5	6.8	12.2	16.2	12.8	9.7	10.6	11.8	8
Starfire (KWW46)	15.3	6.6	12.7	16.4	12.0	9.8	11.0	12.0	4
Torch	14.8	6.6	12.3	16.1	12.3	10.2	10.9	11.9	2
Wakanui	15.0	7.0	12.6	16.5	12.9	10.0	11.2	12.2	7
KWW53	13.5	6.8	11.3	16.2	10.9	8.9	10.8	11.2	2
KWW55	14.5	6.2	11.6	16.2	12.3	8.9	9.9	11.4	1
Site mean yield (t/ha)	14.3	6.5	11.9	16.0	11.4	9.5	10.6	11.5	
LSD	0.8	0.4	0.5	0.7	0.5	0.7	0.5	0.5	
CV%	3.8	4.6	2.7	3.1	2.8	5.0	3.1	4.2	

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

*Irrigation restrictions from mid December during grain fill.

Autumn Sown (March compared with April) FEED/BISCUIT Wheat

Cultivar Evaluation 2014/2015 Season - yield, t/ha - Canterbury

CULTIVAR	Temuka (March sown)	Temuka (April sown) ¹	Seasons in FAR trials (Autumn sown)
Region	South Canterbury	South Canterbury	
Soil type	Waimakariri sandy loam	Waimakariri sandy loam	
Previous crop	Turnips	Turnips	
Sow date	20-Mar-14	11-Apr-14	
Harvest date	18-Feb-15	18-Feb-15	
Dryland/Irrigated	Irrigated	Irrigated	
Claire*	12.2	11.0	15
Empress	11.5	10.2	5
Excede	12.1	12.5	9
Gator	12.3	11.8	2
Inferno (KWW47)	11.0	9.2	3
Katch 42 (KWW42)	12.1	11.3	4
Kingdom (CMWW06)	11.3	10.2	3
Orator	11.3	-	6
Phoenix*	12.3	10.6	10
Resolution (PRL-954)	13.5	10.2	2
Richmond	13.3	12.8	8
Starfire (KWW46)	13.2	12.0	4
Torch	14.2	12.3	2
Wakanui	13.0	12.9	7
KWW53	11.0	10.9	2
KWW55	-	12.3	1
Site mean yield (t/ha)	12.3	11.4	
LSD	0.8	0.5	
CV%	4.5	2.8	

NB Irrigation restrictions for both trials from mid December during grain fill.

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

¹April-sown trial yields are repeated from the previous table for ease of comparison with March-sown trial yields.

- Cultivar not included in that particular trial.

wheat - 2014/2015 yield (t/ha)

CULTIVAR	Balfour	Oreti	Southland mean yield			Seasons in FAR trials (Autumn sown)			
Region	Northern Sthland	Central Sthland							
Soil type	Kaweku loam	Pukemutu loam				Bulls	Manawatu	Kiwiitea silt loam	
Previous crop	Peas	Peas				Oil seed rape			
Sow date	10-Apr-14	17-Apr-14				19-May-14			
Harvest date	23-Feb-15	4-Mar-15				29-Jan-15			
Dryland/Irrigated	Dryland	Dryland				Dryland			
Claire*	10.7	12.0	11.3			10.6			15
Conqueror	11.3	10.4	10.8			11.8			1
Empress	10.9	12.7	11.8			9.7			5
Excede	10.9	9.8	10.4			12.3			9
Gator	11.6	11.6	11.6			10.4			2
Inferno (KWW47)	11.0	11.7	11.3			10.2			3
Katch 42 (KWW42)	11.0	11.5	11.2			11.2			4
Kingdom (CMWW06)	11.2	10.0	10.6			10.8			3
Morph	-	-	-			12.2			14
Phoenix*	10.7	11.3	11.0			11.6			10
Resolution (PRL-954)	9.6	12.0	10.8			11.3			2
Richmond	10.7	10.8	10.8			12.5			8
Starfire (KWW46)	11.7	12.3	12.0			12.0			4
Torch	10.8	11.7	11.2			11.6			2
Wakanui	10.8	12.1	11.5			12.1			7
KWW53	11.1	12.1	11.6			12.0			2
KWW55	10.0	11.5	10.7			11.0			1
Site mean yield (t/ha)	10.9	11.5	11.2			11.4			
LSD	0.5	0.6	1.6			0.5			
CV%	3.3	3.8	6.6			3.3			

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- Cultivar not included in that particular trial.

Autumn Sown MILLING Wheat Cultivar Evaluation 2014/2015 Season - yield, t/ha

CULTIVAR	Aylesbury	Methven	Dorie ¹		Canterbury mean yield	Seasons in FAR trials (Autumn sown)
Region	Central Canterbury	Mid Canterbury	Mid Canterbury	Templeton silt loam		
Soil type	Lismore silt loam	Lyndhurst silt loam				
Previous crop	Peas	Linseed		Clover		
Sow date	19-May-14	4-May-14		11-May-14		
Harvest date	11-Feb-15	18-Feb-15		5-Feb-15		
Dryland/Irrigated	Irrigated	Irrigated		Irrigated		
Claire*	10.8	10.6		12.8	11.4	15
Conquest	10.2	11.3		10.7	10.7	10
Discovery (KWM31)	10.8	11.9		10.5	11.1	2
Duchess (CRWT207)	10.9	12.1		11.3	11.4	1
Hanson (CRWT204)	11.6	11.0		13.4	12.0	1
Morph	10.9	10.6		13.0	11.5	14
Phoenix*	10.4	11.6		13.4	11.8	10
Raffles	10.6	11.3		11.9	11.2	11
Reliance (CRWT185)	10.1	11.3		11.9	11.1	3
Sage	11.1	10.6		11.1	10.9	6
Saracen	10.5	10.7		10.6	10.6	7
Viceroy (CRWT151)	11.4	11.6		11.9	11.6	5
Site mean yield (t/ha)	10.8	11.2		11.9	11.3	
LSD	0.6	0.6		0.6	1.2	
CV%	3.9	3.6		3.7	6.5	

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

¹No PGR applied at Dorie. Although no lodging was observed, some cultivars may not have reached their yield potential without PGR. Some shattering recorded for Discovery.

Autumn Sown Wheat Grain Quality Data 2014/2015 Season

Southern North Island

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Claire*	34	69	12.4	3.5	330
Conqueror	38	71	12.4	2.7	-
Empress	32	66	12.7	4.1	381
Excede	47	77	12.9	1.0	-
Gator	39	71	13.0	1.9	-
Inferno (KWW47)	37	71	12.5	2.7	347
Katch 42 (KWW42)	43	72	13.6	2.3	-
Kingdom	33	70	13.8	1.8	-
Morph	39	73	12.5	2.0	-
Phoenix*	45	72	12.7	1.3	-
Resolution (PRL-954)	41	77	12.8	1.6	-
Richmond	39	76	13.2	2.4	-
Starfire (KWW46)	35	73	12.5	3.2	-
Torch	37	73	11.4	3.3	-
Wakanui	38	77	11.8	2.2	-
KWW53	44	71	12.3	1.8	-
KWW55	37	73	13.0	2.7	-
Mean	39	73	12.7	2.4	353
LSD	-	-	-	-	-

(Single trial - no LSD available)

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- feed wheats not tested for falling number.

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	72	10.5	1.5	348
Conqueror	43	71	9.7	2.4	-
Empress	40	70	10.6	1.6	332
Excede	48	75	11.1	0.9	-
Gator	49	73	9.6	1.3	-
Inferno (KWW47)	46	74	10.2	1.5	297
Katch 42 (KWW42)	50	72	11.0	1.3	-
Kingdom	45	72	10.9	1.2	-
Phoenix*	51	73	11.2	0.9	-
Resolution (PRL-954)	47	76	10.3	1.2	-
Richmond	45	75	10.4	2.1	-
Starfire (KWW46)	45	74	10.1	1.5	-
Torch	43	73	10.1	2.1	-
Wakanui	46	76	9.7	0.9	-
KWW53	53	73	10.1	1.0	-
KWW55	47	74	10.2	1.6	-
Mean	46	73	10.4	1.4	326
LSD	2	2	0.5	0.5	62

(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*	46	67	11.0	0.8	394
Empress	38	60	11.9	2.6	216
Excede	45	71	11.9	0.3	-
Inferno (KWW47)	45	66	10.8	0.9	319
Katch 42 (KWW42)	48	69	10.1	0.7	-
Gator	49	71	11.7	0.9	-
Kingdom	39	60	12.8	0.8	-
Orator	44	67	12.0	1.2	372
Phoenix*	48	63	12.5	1.1	-
Resolution (PRL-954)	47	66	12.3	0.5	-
Richmond	49	70	11.2	0.5	-
Starfire (KWW46)	44	72	10.6	0.9	-
Torch	41	65	11.0	1.9	-
Wakanui	41	66	11.0	1.2	-
KWW53	48	60	12.6	0.8	-
Mean	45	66	11.6	1.0	325
LSD	-	-	-	-	-

(Single trial - no LSD available)

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- feed wheats not tested for falling number.

Canterbury MILLING wheat trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Claire*	42	71	11.0	2.6	338
Conquest	41	78	14.5	1.0	445
Discovery (KWM31)	52	76	13.0	1.1	385
Duchess (CRWT207)	42	78	13.0	2.3	394
Hanson (CRWT204)	42	74	12.1	2.1	393
Morph	41	73	11.6	1.5	393
Phoenix*	50	74	12.0	1.1	389
Raffles	47	76	12.4	1.9	445
Reliance (CRWT185)	45	76	13.6	1.2	422
Sage	48	76	14.0	1.5	382
Saracen	46	76	12.3	2.4	404
Viceroy (CRWT151)	45	80	13.2	2.2	449
Mean	45	76	12.7	1.7	403
LSD	4	2	0.9	0.5	32

(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	72	10.7	0.3	342
Conqueror	43	70	9.8	0.6	-
Empress	44	72	11.3	0.3	355
Excede	51	74	11.0	0.1	-
Gator	51	73	9.1	0.2	-
Inferno (KWW47)	45	72	11.1	0.6	345
Katch 42 (KWW42)	52	71	10.7	0.1	-
Kingdom	47	72	10.9	0.1	-
Phoenix*	56	72	11.0	0.0	-
Resolution (PRL-954)	48	74	11.1	0.2	-
Richmond	49	73	10.5	0.2	-
Starfire (KWW46)	45	73	10.2	0.6	-
Torch	45	72	10.6	1.4	-
Wakanui	49	73	10.4	0.1	-
KWW53	59	73	10.3	0.0	-
KWW55	50	74	9.3	0.2	-
Mean	49	72	10.5	0.3	347
LSD	5	2	1.2	0.9	35

(averaged over two trials)

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- 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.

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	Balfour	Oreti	Southland mean	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	3		11	15	26	4	4	8	4	
Claire*	91	95	98	98	100	95	97		96	97	96	100	99	99	99	15
Conqueror	105	100	101	99	104	107	105		104	102	103	105	90	97	104	1
Empress (CRWT157)	101	103	99	105	100	100	101		101	102	101	101	107	105	91	5
Excede	97	99	95	90	100	97	95		97	95	96	99	90	94	104	9
Gator	100	102	102	98	100	104	102		103	100	101	107	101	104	95	2
Inferno (KWW47)	96	101	101	105	91	102	101		101	98	99	99	104	102	91	3
Katch 42 (KWW42)	104	101	100	105	95	99	100		100	101	101	99	100	100	98	4
Kingdom (CMWW06)	100	101	98	91	91	99	99		99	95	97	106	93	99	103	3
Morph	-	-	-	-	-	-	-		-	-	-	-	-	-	107	14
Phoenix*	95	102	94	103	90	102	99		101	96	98	99	100	99	92	10
Resolution (PRL-954)	99	97	101	100	101	95	94		95	100	98	87	105	97	101	2
Richmond	100	100	100	91	105	98	99		99	99	99	98	94	96	105	8
Starfire (KWW46)	105	103	106	103	104	102	101		102	105	103	106	106	106	102	4
Torch	104	99	106	101	113	104	104		103	106	105	99	106	102	102	2
Wakanui	104	99	102	109	107	105	109		104	106	105	102	104	103	105	7
KWW53	99	102	100	102	94	99	102		101	99	100	102	102	102	105	2
KWW55	101	96	98	102	108	95	93		95	102	99	90	100	96	97	1
Site mean yield (and t/ha)	100 (12.8)	100 (8.7)	100 (12.5)	100 (13.6)	100 (11.4)	100 (10.7)	100 (10.8)		100 (10.1)	100 (12.6)	100 (11.5)	100 (9.5)	100 (11.3)	100 (10.4)	100 (10.0)	
LSD (estab. cv)	7	7	4	11	9	7	5		6	6	5	7	5	15	8	
LSD (new vs estab)	11	11	6	15	15	11	7		9	9	6	9	8	21	12	

*2013 trial abandoned

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- Cultivar not included at that particular site or series of sites.

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

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

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

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	2	4	3	13	
Claire*	99	96	106	109	103	15
Conquest	93	95	88	84	90	10
Discovery (KWM31)	105	107	99	110	105	2
Duchess (CRWT207)	101	108	95	-	101	1
Hanson (CRWT204)	108	98	114	-	107	1
Morph	102	99	101	102	101	14
Phoenix*	96	105	107	108	104	10
Raffles	102	104	103	99	102	11
Reliance (CRWT185)	94	101	97	92	96	3
Sage	102	96	101	101	100	6
Saracen	97	92	89	94	93	7
Viceroy (CRWT151)	102	100	101	100	100	5
Site mean yield (and t/ha)	100 (10.1)	100 (10.3)	100 (10.7)	100 (11.2)	100 (10.6)	
LSD (estab. cv)	8	13	8	8	8	
LSD (new vs estab.)	12	16	13	11	11	

*no trial this year.

*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

- Cultivar not included for that site.

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

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

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

Autumn Sown Wheat - plant counts 2014/2015 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/m ²	April-sown plants/m ²
Claire*	145	132
Conqueror	-	135
Empress (CRWT157)	140	148
Excede	139	130
Gator	138	130
Inferno (KWW47)	150	150
Katch 42 (KWW42)	145	137
Kingdom (CMWW06)	150	143
Orator	143	-
Phoenix*	138	131
Resolution (PRL-954)	141	138
Richmond	138	149
Starfire (KWW46)	166	143
Torch	151	138
Wakanui	154	154
KWW53	139	149
KWW55	-	137
Mean	145	140
LSD	-	15

Note: 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/m ²
Claire*	175
Conquest	188
Discovery (KWM31)	189
Duchess (CRWT207)	176
Hanson (CRWT204)	176
Morph	159
Phoenix*	183
Raffles	177
Reliance (CRWT185)	179
Sage	124
Saracen	170
Viceroy (CRWT151)	169
Mean	172
LSD	29

Note: Means are over three sites.

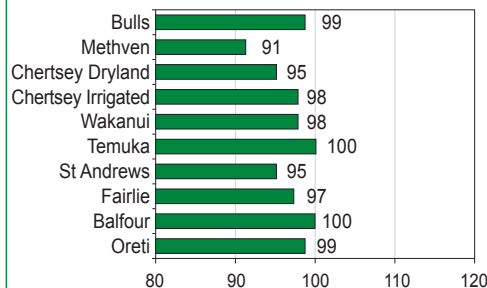
*Biscuit and feed wheat standards which appear in both feed and milling wheat trials to allow cross comparisons.

CLAIRE

YEAR 15

Average to below average yielding 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)	37	44	44
Test weight (kg/hl)	63	70	71
Protein (%) (N% x 5.7)	11.3	10.3	9.9
Falling number (sec)	286	310	342
Screenings (%)	4.0	1.0	1.5

END USE Biscuit, feed

BACKGROUND

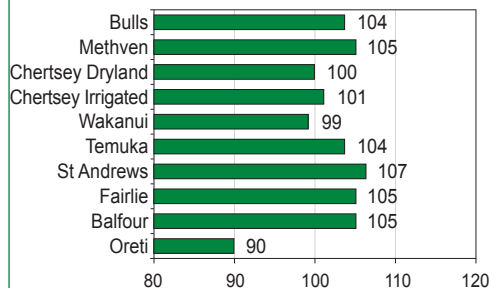
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

CONQUEROR

YEAR 1

Conqueror is a new feed cultivar producing mostly average to above average yields. A good performer at South Canterbury dryland sites. With a susceptibility to septoria leaf blotch and leaf rust Conqueror will need a good fungicide cover. 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)	104
Irrigated sites (4 year)	102

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)	37	43	40
Test weight (kg/hl)	63	69	70
Protein (%) (N% x 5.7)	11.2	9.6	8.9
Falling number (sec)			
Screenings (%)	4.0	2.0	1.5

END USE Feed

BACKGROUND

Breeder	KWS UK
Head Licensee/Agent	Canterbury Seed

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

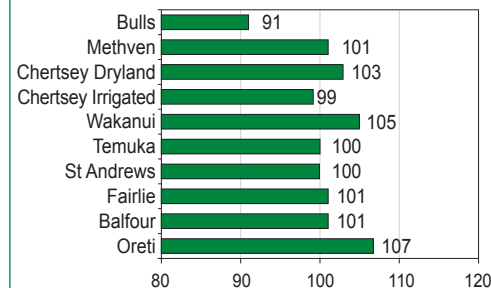
Note: Yields are relative to other feed/biscuit wheats only.

EMPRESS

YEAR 5

Mostly average to above average yielding biscuit wheat in the South Island, but below average in the southern North Island. Empress is relatively resistant to most foliar diseases but is moderately susceptible to BYDV. 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)	101
Irrigated sites (4 year)	102

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)	32	42	43
Test weight (kg/hl)	58	69	72
Protein (%) (N% x 5.7)	11.5	10.4	10.0
Falling number (sec)	287	308	347
Screenings (%)	5.0	1.0	0.9

END USE Biscuit

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

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

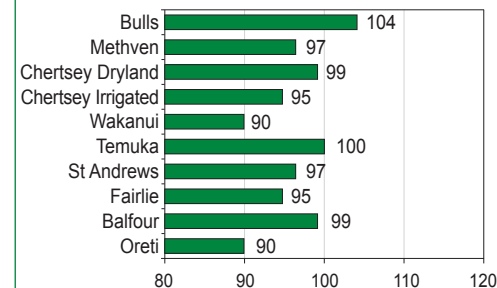
Note: Yields are relative to other feed/biscuit wheats only.

EXCEDE

YEAR 9

Mostly average to below average yielding 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, low screenings and low sprouting risk.

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



IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4 year)	97
Irrigated sites (4 year)	95

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)	42	47	48
Test weight (kg/hl)	68	73	75
Protein (%) (N% x 5.7)	11.7	10.9	10.4
Falling number (sec)			
Screenings (%)	2.0	1.0	0.6

END USE Feed

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

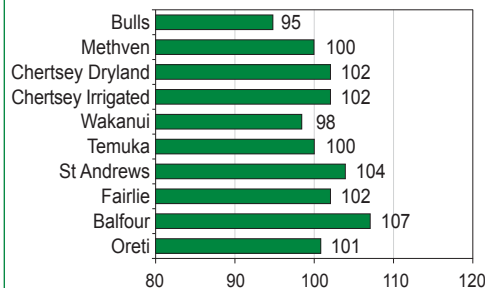
Note: Yields are relative to other feed/biscuit wheats only.

GATOR

YEAR 2

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)	103
Irrigated sites (4 year)	100

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)	39	49	48		
Test weight (kg/hl)	63	71	72		
Protein (%) (N% x 5.7)	11.7	9.6	8.7		
Falling number (sec)					
Screenings (%)	3.0	1.0	1.3		

END USE

Feed

BACKGROUND

Breeder	KWS, UK
Head Licensee/Agent	Canterbury Seed

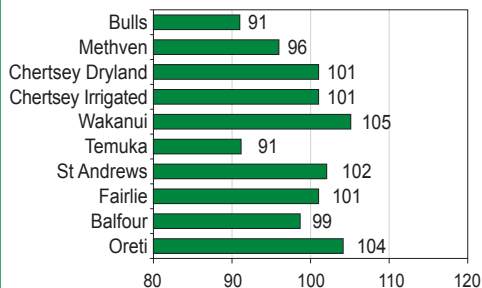
Note: Yields are relative to other feed/biscuit wheats only.

INFERNO (KWW47)

YEAR 3

Yields range from below average to above average for this biscuit wheat cultivar. Mostly resistant to powdery mildew and septoria leaf blotch and to a lesser degree leaf rust. Moderately susceptible to BYDV and 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)	101
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)	35	47	45		
Test weight (kg/hl)	64	72	73		
Protein (%) (N% x 5.7)	11.6	10.0	9.9		
Falling number (sec)	268	265	299		
Screenings (%)	4.0	1.0	1.7		

END USE

Biscuit

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

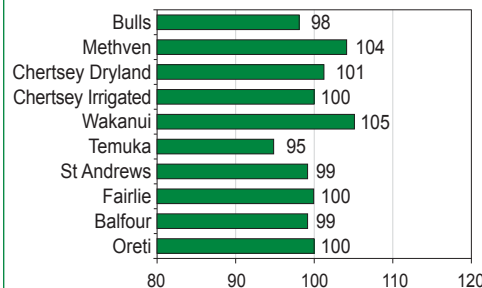
Note: Yields are relative to other feed/biscuit wheats only.

KATCH 42 (KWW42)

YEAR 4

Katch 42 is a feed cultivar which has produced mostly average to above average yields. Moderately susceptible to BYDV, leaf rust and septoria leaf blotch. Shows some resistance to stripe rust and powdery mildew. A stiff strawed variety with 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)	100
Irrigated sites (4 year)	101

DISEASE RESISTANCE

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

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)	41	50	49		
Test weight (kg/hl)	63	71	72		
Protein (%) (N% x 5.7)	12.6	11.0	10.0		
Falling number (sec)					
Screenings (%)	3.0	1.0	1.3		

END USE

Feed

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

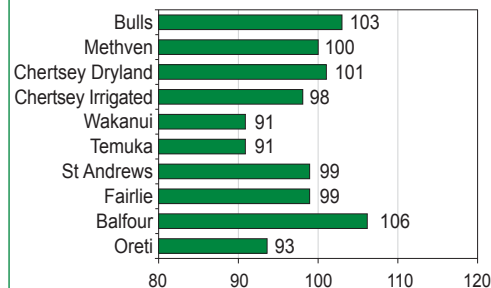
Note: Yields are relative to other feed/biscuit wheats only.

KINGDOM (CMWW06)

YEAR 3

Kingdom has produced a wide range of yields, average yields at Canterbury dryland sites, but below average at irrigated sites. Above average yields in southern North Island. Moderately resistant to leaf rust, but has a susceptibility to BYDV, septoria leaf blotch and especially stripe rust. Stiff straw strength 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)	99
Irrigated sites (4 year)	95

DISEASE RESISTANCE

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

FIELD CHARACTERISTICS

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

GRAIN QUALITY (4 year means)

	Sth	Nth	Is	Canty	Sthld
TGW (g)	34	45	44		
Test weight (kg/hl)	62	70	73		
Protein (%) (N% x 5.7)	12.5	10.7	10.1		
Falling number (sec)					
Screenings (%)	3.0	1.0	1.2		

END USE

Feed

BACKGROUND

Breeder	Syngenta
Agent	Cropmark Seeds

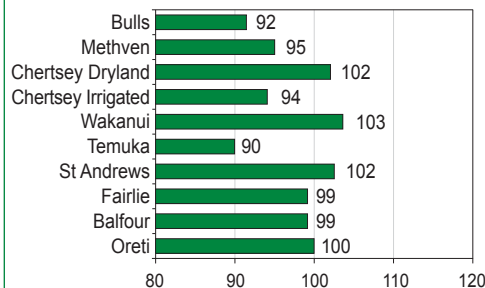
Note: Yields are relative to other feed/biscuit wheats only.

PHOENIX

YEAR 10

A feed cultivar producing average to above average yields at dryland sites in the South Island, with below average yields in the southern North Island and most irrigated Canterbury sites. Monitor for leaf rust. Good resistance to most other foliar diseases. Moderate straw strength and 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)	101
Irrigated sites (4 year)	96

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)	41	51	51
Test weight (kg/hl)	64	72	73
Protein (%) (N% x 5.7)	11.9	11.0	10.4
Falling number (sec)			
Screenings (%)	3.0	1.0	0.5

END USE Feed

BACKGROUND

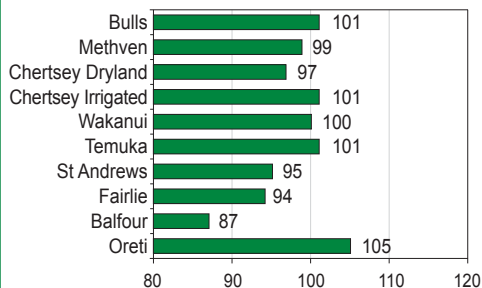
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

RESOLUTION (PRL-954)

YEAR 2

Feed cultivar Resolution has produced average to above average yields in Oreti, the southern North Island and under irrigation in Canterbury. Below average yields at dryland Canterbury sites and Balfour. Some resistance to septoria leaf blotch and particularly powdery mildew. A 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)	95
Irrigated sites (4 year)	100

DISEASE RESISTANCE

BYDV	Moderately susceptible
Septoria leaf blotch	Moderately resistant
Stripe rust	Moderately susceptible
Leaf rust	Intermediate resistance
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)	41	47	46
Test weight (kg/hl)	70	74	74
Protein (%) (N% x 5.7)	11.8	10.3	10.0
Falling number (sec)			
Screenings (%)	3.0	1.0	1.0

END USE Feed

BACKGROUND

Breeder/ Agent	Plant Research (NZ) Ltd
Licensee	Townsend Seeds

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

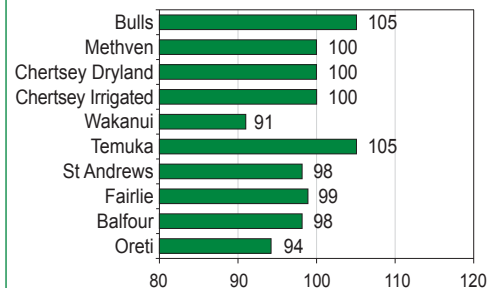
Note: Yields are relative to other feed/biscuit wheats only.

RICHMOND

YEAR 8

An average to below average yielding feed cultivar in the South Island. Above average yielding in the southern North Island. Monitor for septoria leaf blotch and leaf rust. Moderate resistance to powdery mildew, fusarium head blight and stripe rust. Richmond is 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)	99
Irrigated sites (4 year)	99

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)	37	44	44
Test weight (kg/hl)	66	72	73
Protein (%) (N% x 5.7)	11.8	10.5	9.9
Falling number (sec)			
Screenings (%)	4.0	1.0	1.6

END USE Feed

BACKGROUND

Breeder	Limagrain Europe S.A.
Head Licensee	Plant Research Ltd
Agent	Midlands Seed Ltd

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

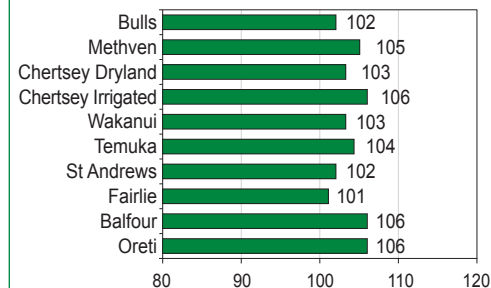
Note: Yields are relative to other feed/biscuit wheats only.

STARFIRE (KWW46)

YEAR 4

A consistently above average to high yielding feed cultivar particularly on irrigated sites in Canterbury. High yielding 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)	105

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)	35	45	44
Test weight (kg/hl)	64	72	73
Protein (%) (N% x 5.7)	11.3	10.1	9.6
Falling number (sec)			
Screenings (%)	4.0	2.0	1.9

END USE Feed

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

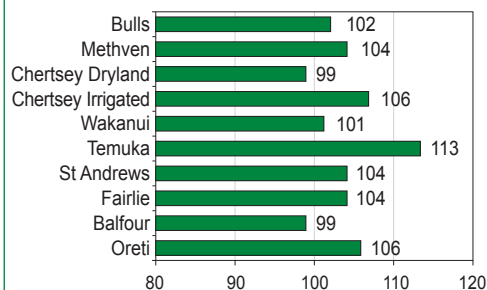
Note: Yields are relative to other feed/biscuit wheats only.

TORCH

YEAR 2

Torch is a mostly above average to high yielding feed cultivar across all three regions, performing well at both irrigated and dryland sites. Torch has become 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)	106

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)	36	43	43
Test weight (kg/hl)	66	71	73
Protein (%) (N% x 5.7)	10.8	9.8	9.7
Falling number (sec)			
Screenings (%)	5.0	2.0	1.9

END USE Feed

BACKGROUND

Breeder	RAGT, UK
Head Licensee	Seed Force Ltd
Agent	Plant Research (NZ) Ltd/Cates Grain and Seed

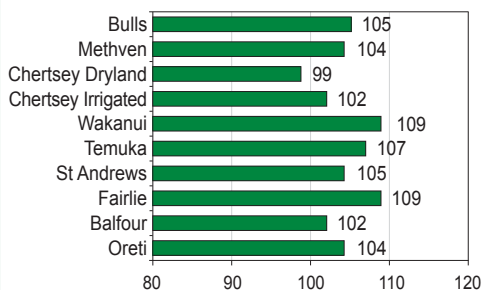
Note: Yields are relative to other feed/biscuit wheats only.

WAKANUI

YEAR 7

Wakanui is a mostly above average to high yielding feed cultivar across the three regions. Performs well on both irrigated and dryland sites. Good resistance to most diseases, but moderately susceptible to BYDV and 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)	106

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)	40	47	48
Test weight (kg/hl)	68	73	74
Protein (%) (N% x 5.7)	10.8	9.7	9.4
Falling number (sec)			
Screenings (%)	3.0	1.0	0.7

END USE Feed

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds, Canterbury Seed

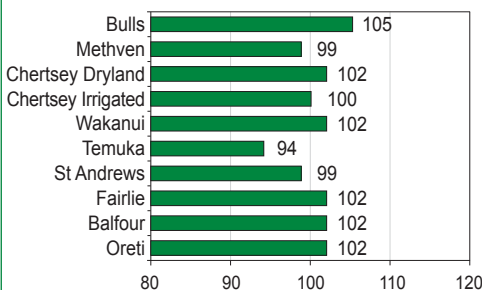
Note: Yields are relative to other feed/biscuit wheats only.

KWW53

YEAR 2

In its second year of CPT2 trials KWW53 has produced mostly average to above average yields. Moderately susceptible to BYDV and powdery mildew, but good resistance to most other diseases. A tall feed variety with a stiff straw and 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 resistant
Stripe rust	Moderately resistant
Leaf rust	Moderately resistant
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate-late
Sprouting risk	Low

GRAIN QUALITY (4 year means) Sth Nth Is Canty Sthld

TGW (g)	45	54	56
Test weight (kg/hl)	64	72	73
Protein (%) (N% x 5.7)	10.8	10.0	9.5
Falling number (sec)			
Screenings (%)	3.0	1.0	1.0

END USE Feed

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

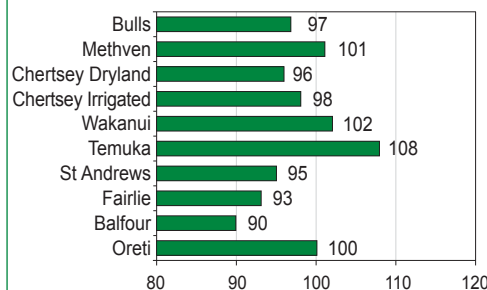
Note: Yields are relative to other feed/biscuit wheats only.

KWW55

YEAR 1

A new feed cultivar that produced a range of yields from below average to high yielding. Performs better with irrigation in Canterbury. Good resistance to most foliar diseases.

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



IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4 year)	95
Irrigated sites (4 year)	102

DISEASE RESISTANCE

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

FIELD CHARACTERISTICS

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

GRAIN QUALITY (4 year means) Sth Nth Is Canty Sthld

TGW (g)	36	47	47
Test weight (kg/hl)	65	72	74
Protein (%) (N% x 5.7)	11.9	10.0	8.5
Falling number (sec)			
Screenings (%)	4.0	1.0	1.1

END USE Feed

BACKGROUND

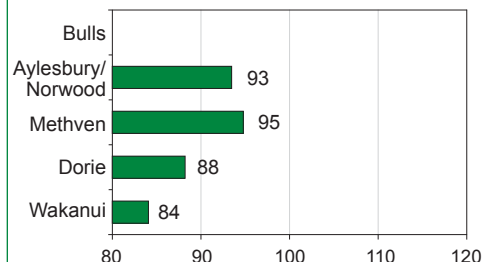
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

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

CONQUEST

YEAR 10

Below average yielding premium milling cultivar with high protein content. It produces high falling number and test weights. Conquest has moderate resistance to stripe rust and septoria leaf blotch. Monitor for leaf rust, fusarium head blight and powdery mildew. Early to intermediate maturing with a moderate to stiff straw and excellent sprouting resistance.

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)	43
Test weight (kg/hl)	76
Protein (%) (N% x 5.7)	12.9
Falling number (sec)	394
Screenings (%)	0.8

END USE Premium milling

BACKGROUND

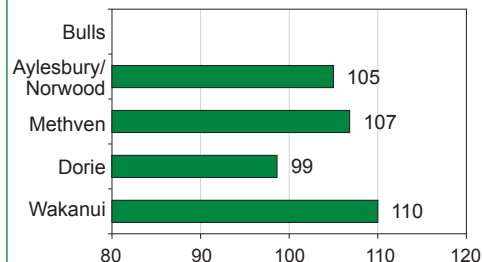
Breeder	Plant & Food Research
Agent	Luisetti Seeds

Note: Yields are relative to other milling wheats only.

DISCOVERY (KWM31)

YEAR 2

An average to high yielding milling wheat cultivar, with a large grain size and low to moderate sprouting risk. Moderately susceptible to BYDV and shows resistance to most other diseases. A tall wheat that will benefit from a PGR programme. Intermediate maturity.

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	Resistant
Powdery mildew	Moderately 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)	11.3
Falling number (sec)	336
Screenings (%)	0.8

END USE Bread

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

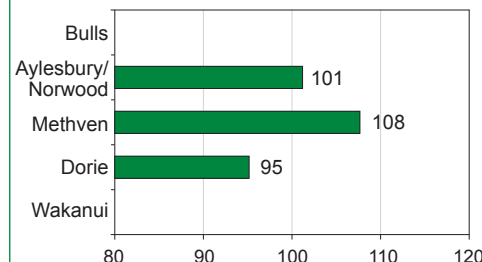
Scores followed by * indicate resistance is affected by pathotypes present (score is an average).

Note: Yields are relative to other milling wheats only.

DUCHESS

YEAR 1

A new premium milling cultivar with yields 10% higher than Conquest and a similar grain size. Has a susceptibility to BYDV, 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)	77
Protein (%) (N% x 5.7)	11.6
Falling number (sec)	347
Screenings (%)	1.8

END USE Milling

BACKGROUND

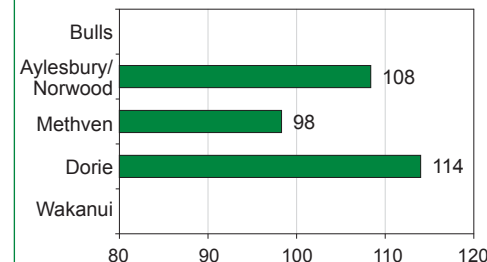
Breeder	Plant & Food Research
Agent	Luisetti Seeds

Note: Yields are relative to other milling wheats only.

HANSON (CRWT204)

YEAR 1

Hanson is a gristing wheat that was high yielding at two out of three sites in its first year of CPT2 testing. Moderately susceptible to septoria leaf blotch, powdery mildew and BYDV. 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)	44
Test weight (kg/hl)	72
Protein (%) (N% x 5.7)	10.7
Falling number (sec)	345
Screenings (%)	1.6

END USE Milling

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

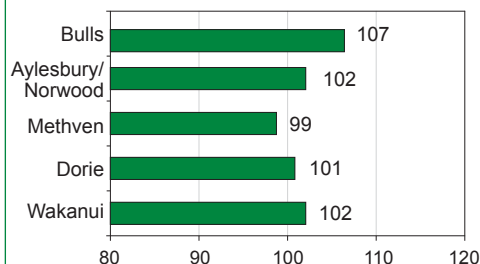
Note: Yields are relative to other milling wheats only.

MORPH

YEAR 14

High yielding in southern North Island with average to above average yields in Canterbury. Good resistance to powdery mildew and stripe rust. Moderately susceptible to BYDV, septoria leaf blotch and leaf rust. It has weak to 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 susceptible
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible*
Powdery mildew	Resistant
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS

Straw strength	Weak-moderate
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Low

GRAIN QUALITY (4 year means) Sth Nth Is Canty Sthld

TGW (g)	38	43
Test weight (kg/hl)	65	70
Protein (%) (N% x 5.7)	11.6	10.2
Falling number (sec)	300	333
Screenings (%)	3.0	1.1

END USE Feed

BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

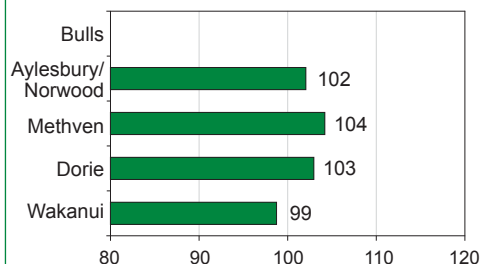
Note: Yields are relative to other milling wheats only.

RAFFLES

YEAR 11

Mostly above 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)	10.6
Falling number (sec)	391
Screenings (%)	1.1

END USE Gristing, feed

BACKGROUND

Breeder	KWS, UK
Agent	Canterbury Seed

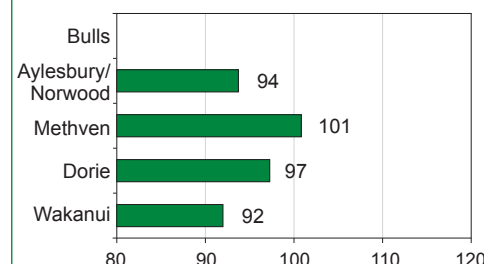
Note: Yields are relative to other milling wheats only.

RELIANCE (CRWT185)

YEAR 3

A premium milling cultivar with yields on average 6% higher than Conquest and which produces high proteins. Shows some resistance to BYDV and stripe rust but susceptible to most other disease especially powdery mildew and leaf rust. Reliance 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)	12.5
Falling number (sec)	371
Screenings (%)	1.4

END USE Bread

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

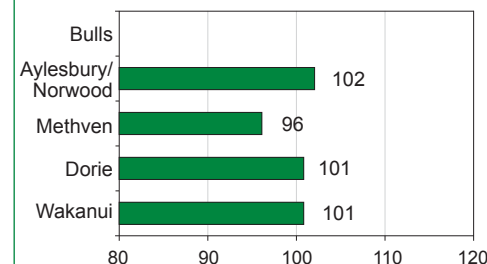
Note: Yields are relative to other milling wheats only.

SAGE

YEAR 6

Yields range from below average to above average for this milling cultivar. It has a good protein content and low sprouting risk. Reasonably resistant to disease with the exception of stripe rust and BYDV. A tall strawed cultivar with weak to moderate straw strength so consider a PGR.

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	Moderately resistant
Powdery mildew	Mostly resistant
Fusarium head blight	Moderately resistant

FIELD CHARACTERISTICS

Straw strength	Weak-moderate
Crop height	Tall
Maturity	Intermediate-late
Sprouting risk	Low

GRAIN QUALITY (4 year means) Sth Nth Is Canty Sthld

TGW (g)	52
Test weight (kg/hl)	76
Protein (%) (N% x 5.7)	12.1
Falling number (sec)	346
Screenings (%)	1.1

END USE Bread

BACKGROUND

Breeder	RAGT, UK
Agent	PGG Wrightson Grain

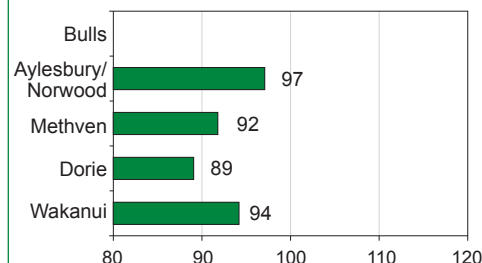
Note: Yields are relative to other milling wheats only.

SARACEN

YEAR 7

Saracen is a below average yielding milling wheat. Monitor for BYDV, 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 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	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)	369
Screenings (%)	1.5

END USE Bread

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

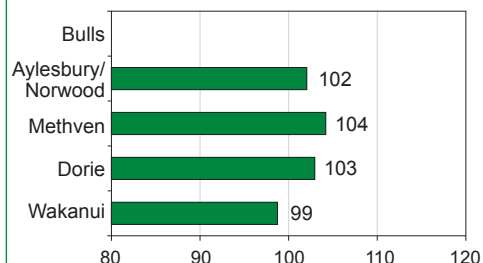
Note: Yields are relative to other milling wheats only.

VICEROY (CRWT151)

YEAR 5

Average to above average yielding milling cultivar with high test weights. Moderately susceptible to many foliar diseases but shows some resistance to BYDV and stripe rust. Viceroy is a 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	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)	79
Protein (%) (N% x 5.7)	11.7
Falling number (sec)	397
Screenings (%)	1.6

END USE Bread

BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

Note: Yields are relative to other milling wheats only.

BALFOUR, EASTERN SOUTHLAND

Waikoikoi silt loam, Dryland

Trial operator: Stewart Armstrong

Host farmer: Earl Dillon

The trial was sown on 1 May 2014 into a crop of Quench following wheat. The site received 138 kg N/ha split between three applications. Two herbicide applications and three fungicides were applied during the season. A desiccant was applied prior to harvesting on 18 February 2015.

ST ANDREWS, SOUTH CANTERBURY

Claremont silt loam, Dryland

Trial operator: Matt Hicks

Host farmer: Nick Porter

This barley trial was sown following wheat into a surrounding crop of Cassia on 6 May 2014. The trial received one herbicide and 160 kg N/ha. Three fungicide applications and a PGR were applied between September and November. The trial established well and produced good yields despite the dry conditions. The trial was harvested on 19 January 2015.

RAKAIA, MID CANTERBURY

This trial was abandoned due to bird damage.



2014/2015 trial site location map

CULTIVAR	Years in FAR trials	BYDV	Scald	Net blotch	Leaf rust	Powdery mildew	Straw strength	Crop height	Maturity
Booma	7	(MR)	MS	MR	MS	MR	Moderate	Med-tall	Early-int
Calibre (CRBA124)	5	(MS)	MSS	(MR)	MS	(MR)	Moderate	Med-tall	Early-int
Fairview	11	MS	MSS	MRR	MS*	HS	Moderate	Medium	Early-int
Garner (NFC406-112)	4	(MS)	MS*	(MR)	MS	(MR)	Stiff	Tall	Intermediate
Jimpy	7	(MR)	MR	MR	MS	MS	Mod-stiff	Medium	Int-late
Kelim (SYN409-202)	3	(MR)	(MS)	(MR)	(MS)	Unknown	Stiff	Tall	Intermediate
Quench	9	MS	MR	MS	MSS	MRR	Stiff	Medium	Int-late
Sanette (SYN409-226)	3	(MS)	MR	(MR)	MS	Unknown	Moderate	Medium	Early-int
Snakebite	7	(MS)	MS	MSS	MS	MS	Stiff	Medium	Early-int
Sumit (NFC407-142)	4	(MS)	MS	MS	MS	(MS)	Stiff	Short-med	Early-int
Tavern	11	MS	MR	MS	MSS	MR*	Stiff	Short-med	Intermediate
CRBA140	2	(MS)	(MR)	(MR)	(MS)	Unknown	Moderate	Medium	Intermediate
CRBA144	1	(MR)	(MRR)	(MS)	(MR)	Unknown	Moderate	Medium	Intermediate
SYN411-285	2	(MS)	(MS)	(MS)	(MR)	Unknown	Stiff	Medium	Late
SYN411-287	1	(MS)	(MS)	(MS)	(MS)	Unknown	Stiff	Medium	Early-int
SYN411-291	1	(MS)	(MS)	(MR)	(MS)	Unknown	Moderate	Short	Int-late

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 2014/2015 Season - yield (t/ha)

CULTIVAR	St Andrews	Balfour	Seasons in FAR trial
Region	South Canterbury	Southland	
Soil Type	Claremont silt loam	Waikoikoi loam	
Previous crop	Wheat	Wheat	
Sowing date	6-May-14	1-May-14	
Harvest date	19-Jan-15	18-Feb-15	
Dryland/Irrigated	Dryland	Dryland	
Booma	9.1	8.3	7
Calibre (CRBA124)	9.6	7.8	5
Fairview	7.7	7.1	11
Garner	9.5	8.5	4
Jimpy	9.5	8.7	7
Kelim (SYN409-202)	9.2	7.6	3
Quench	9.1	9.1	9
Sanette (SYN409-226)	10.0	9.1	3
Snakebite	9.0	8.6	7
Sumit	9.5	8.3	4
Tavern	9.4	8.7	11
CRBA140	8.5	8.4	2
CRBA144	9.5	8.5	1
SYN411-285	10.0	7.9	2
SYN411-287	10.0	8.3	1
SYN411-291	10.1	7.9	1
Site mean yield	9.4	8.3	
LSD	0.3	1.0	
CV%	2.4	8.3	

Canterbury

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Booma	47	62	9.5	1.6
Calibre (CRBA124)	51	59	9.9	2.0
Fairview	49	61	10.5	1.4
Garner	50	61	9.5	1.5
Jimpy	48	63	9.5	1.0
Kelim (SYN409-202)	51	57	9.1	1.5
Quench	50	63	9.2	0.8
Sanette (SYN409-226)	52	59	9.0	0.7
Snakebite	52	59	10.3	0.7
Sumit	47	59	9.3	1.4
Tavern	47	61	9.6	1.3
CRBA140	49	62	10.0	0.9
CRBA144	48	58	8.9	0.9
SYN411-285	48	58	8.7	1.9
SYN411-287	52	60	9.1	1.7
SYN411-291	53	58	8.6	1.6
Mean	50	60	9.4	1.3
LSD**	-	-	-	-

Southland

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Booma	42	64	10.1	4.7
Calibre (CRBA124)	48	62	9.6	2.5
Fairview	46	64	10.1	2.4
Garner	47	62	9.5	3.2
Jimpy	44	63	9.1	3.1
Kelim (SYN409-202)	49	61	9.7	1.9
Quench	47	62	9.5	2.0
Sanette (SYN409-226)	46	61	8.8	2.6
Snakebite	50	63	9.6	1.8
Sumit	46	62	8.6	3.3
Tavern	46	64	8.9	3.2
CRBA140	46	64	9.5	1.0
CRBA144	46	63	8.3	2.1
SYN411-285	43	61	8.9	4.5
SYN411-287	47	60	10.0	2.3
SYN411-291	46	58	8.7	3.1
Mean	46	62	9.3	2.7
LSD**	-	-	-	-

**No LSD available since only one site in both Southland and Canterbury this season, so only one data value per cultivar.

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	Balfour	Seasons in FAR trials
Region	Mid Canterbury	South Canterbury		Southland	
Dryland / Irrigated	Irrigated	Dryland		Dryland	
No. of trials	3	2	5	4	
Booma	92	96	94	97	7
Calibre (CRBA124)	98	99	98	97	5
Fairview	89	85	87	87	11
Garner	100	100	99	102	4
Jimpy	97	98	97	102	7
Kelim (SYN409-202)	100	99	99	96	3
Quench	102	100	100	105	9
Sanette (SYN409-226)	109	107	107	112	3
Snakebite	100	97	98	98	7
Sumit	102	102	101	104	4
Tavern	102	102	101	102	11
CRBA140	101	94	97	103	2
CRBA144	-	102	102	102	1
SYN411-285	109	105	106	98	2
SYN411-287	-	107	107	100	1
SYN411-291	-	108	108	95	1
Site mean yield (and t/ha)	100 (9.4)	100 (9.3)	100 (9.4)	100 (7.9)	
LSD (estab. cv)	8	7	5	7	
LSD (new vs estab)	11	9	7	12	

+ no trial this year

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.

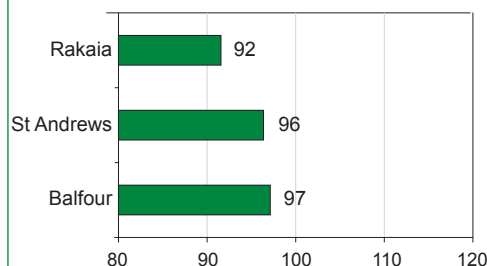
These 4 year adjusted mean relative yields are also presented in graphical form on the following pages for each individual cultivar.

BOOMA

YEAR 7

Booma is a below average yielding cultivar in Canterbury and Southland. The cultivar has shown moderate susceptibility to scald and leaf rust but moderate resistance to BYDV, net blotch and powdery mildew. An early to intermediate maturing cultivar with low thousand grain weights and higher screenings.

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	Moderately resistant

FIELD CHARACTERISTICS

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

GRAIN QUALITY (4 year means)	Canty	Stld
TGW (g)	44	43
Test weight (kg/hl)	65	65
Protein (%) (N% x 6.25)	8.6	8.7
Screenings (%)	3.9	5.2

END USE	Feed
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BACKGROUND

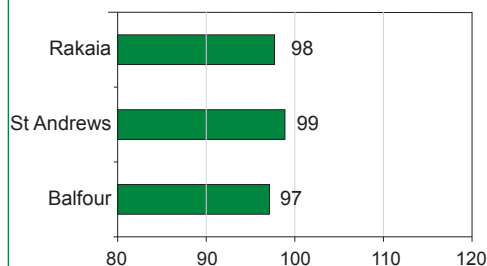
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

CALIBRE (CRBA124)

YEAR 5

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

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	Stld
TGW (g)	48	45
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	8.4	8.6
Screenings (%)	3.0	3.5

END USE	Feed
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BACKGROUND

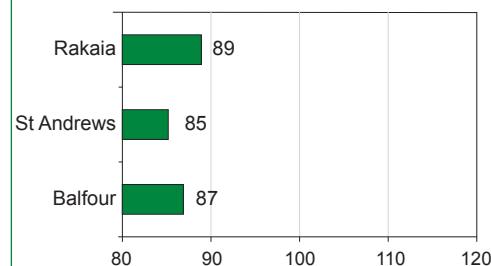
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Canterbury Seed

FAIRVIEW

YEAR 11

Below average yielding malting cultivar with moderate straw strength, and crop height. Fairview is quite disease susceptible particularly to mildew and scald but is mostly resistant to net blotch. Above average proteins and test weights.

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



DISEASE RESISTANCE

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

FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Stld
TGW (g)	47	47
Test weight (kg/hl)	66	65
Protein (%) (N% x 6.25)	9.2	9.2
Screenings (%)	2.2	1.8

END USE	Malting
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BACKGROUND

Breeder	Malteurop
Head Licensee	Malteurop
Agent	Malteurop

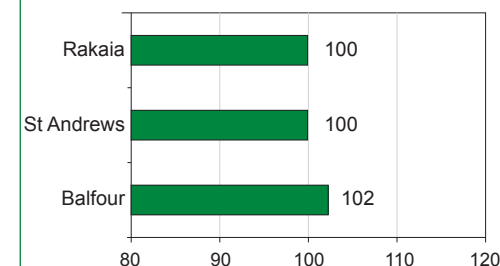
Scores followed by * indicate resistance is affected by pathotypes present (score is an average)

GARNER (NFC406-112)

YEAR 4

Average yielding feed cultivar in Canterbury and above average in Southland. Watch for BYDV, scald and leaf rust. Moderately resistant to powdery mildew. Garner is a tall stiff strawed cultivar with average grain quality 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	Stld
TGW (g)	46	46
Test weight (kg/hl)	62	63
Protein (%) (N% x 6.25)	8.1	8.7
Screenings (%)	3.8	4.3

END USE	Feed
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BACKGROUND

Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

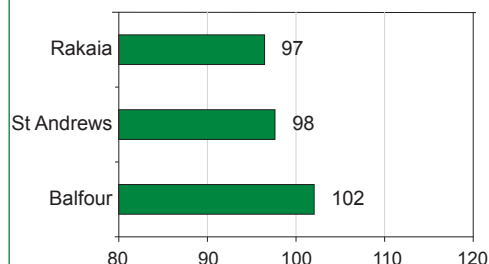
Scores followed by * indicate resistance is affected by pathotypes present (score is an average)

JIMPY

YEAR 7

Jimpy is a malting cultivar with significantly higher yields than Fairview. Jimpy is moderately resistant to scald, BYDV and net blotch, an important consideration for early planting. It has moderate susceptibility to leaf rust and powdery mildew.

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)	44	46
Test weight (kg/hl)	63	64
Protein (%) (N% x 6.25)	8.4	8.3
Screenings (%)	3.2	2.8

END USE	Malting
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BACKGROUND

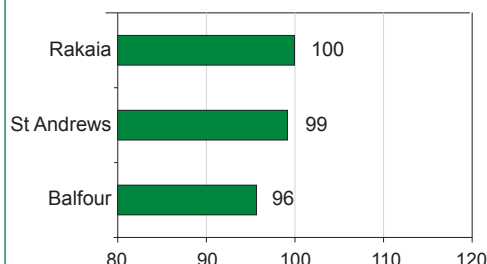
Breeder	Malteurop
Head Licensee	Malteurop
Agent	Malteurop

KELIM (SYN409-202)

YEAR 3

Average yielding feed cultivar in Canterbury and below average in Southland. Moderately susceptible to leaf rust and scald and shows some resistance to BYDV and net blotch. 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	Unknown

FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	48
Test weight (kg/hl)	61	61
Protein (%) (N% x 6.25)	8.3	8.3
Screenings (%)	2.3	2.1

END USE	Feed
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BACKGROUND

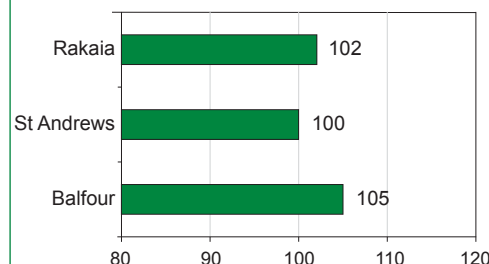
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not assigned

QUENCH

YEAR 9

Quench is an average to above average yielding feed cultivar. Shows good resistance to scald and mildew but watch for net blotch, BYDV and 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 resistant
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	47
Test weight (kg/hl)	64	63
Protein (%) (N% x 6.25)	8.3	9.2
Screenings (%)	1.8	2.1

END USE	Feed, malting potential
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BACKGROUND

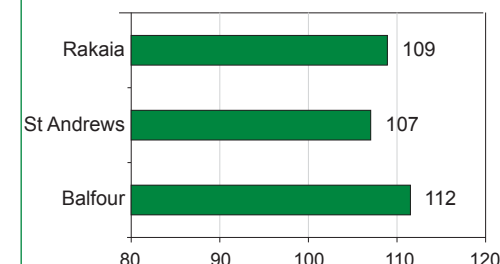
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain, Ruapehu Farm Supplies (NI)

SANETTE (SYN409-226)

YEAR 3

High yielding feed and malting potential cultivar, performing well in both Canterbury and Southland trials. Moderately resistant to scald and net blotch, and moderately susceptible to leaf rust and BYDV. A medium height variety with moderate straw strength and good grain weights.

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	Unknown

FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	47
Test weight (kg/hl)	62	61
Protein (%) (N% x 6.25)	8.0	8.2
Screenings (%)	2.1	2.4

END USE	Feed, malting potential
---------	-------------------------

BACKGROUND

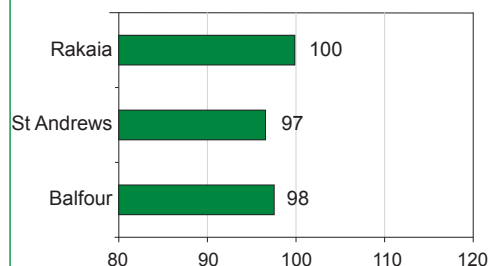
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain, Cates Grain and Seed, Advanced Agriculture

SNAKEBITE

YEAR 7

Average to below average yielding feed cultivar. It is relatively susceptible to a most diseases. Snakebite has stiff straw strength, early to intermediate maturity, good grain weight and low screenings.

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	64
Protein (%) (N% x 6.25)	8.5	8.7
Screenings (%)	1.4	1.7

END USE	Feed
---------	------

BACKGROUND

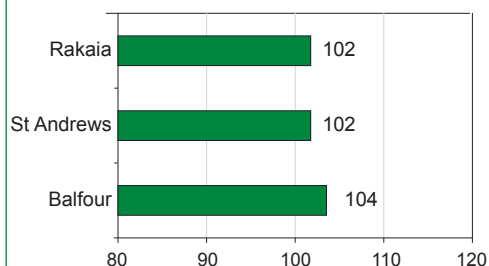
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Ravensdown

SUMIT (NFC407-142)

YEAR 4

Sumit is an 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)	45	46
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	8.5	8.5
Screenings (%)	3.0	3.4

END USE	Feed
---------	------

BACKGROUND

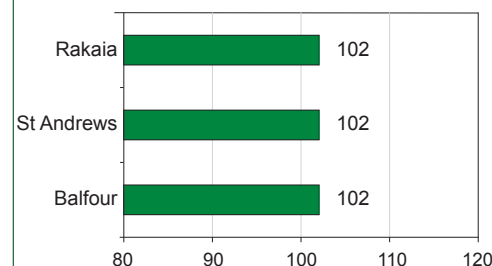
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Seed Production

TAVERN

YEAR 11

Above average yields in Canterbury and Southland. Excellent straw strength combined with short-moderate crop height. Monitor for disease as moderately susceptible to BYDV and net blotch and mostly susceptible to leaf rust. Moderately resistant to scald and powdery mildew.

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)	64	65
Protein (%) (N% x 6.25)	8.2	8.3
Screenings (%)	3.0	3.5

END USE	Feed
---------	------

BACKGROUND

Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

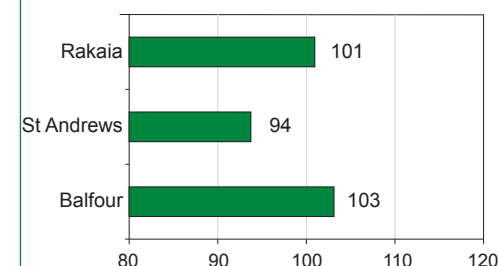
Scores followed by * indicate resistance is affected by pathotypes present (score is an average)

CRBA140

YEAR 2

A feed cultivar with average to below average yields in Canterbury and above average yields in Southland. Shows moderate resistance to scald and net blotch. A medium height variety with intermediate maturity and moderate 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	Unknown

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)	64	64
Protein (%) (N% x 6.25)	8.7	8.8
Screenings (%)	2.3	1.9

END USE	Feed
---------	------

BACKGROUND

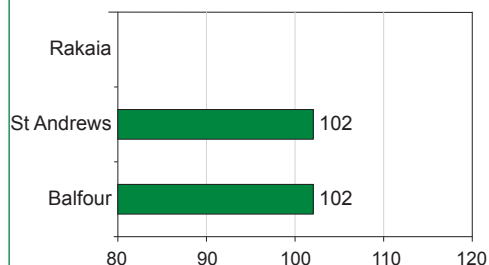
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

CRBA144

YEAR 1

A new cultivar producing above average yields in its first year of CPT 2 trials. Good resistance to scald and leaf rust but 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	Mostly resistant
Net blotch	Moderately susceptible
Leaf rust	Moderately resistant
Powdery mildew	Unknown

FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	45	46
Test weight (kg/hl)	61	64
Protein (%) (N% x 6.25)	7.7	7.5
Screenings (%)	2.4	2.3

END USE	Feed
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BACKGROUND

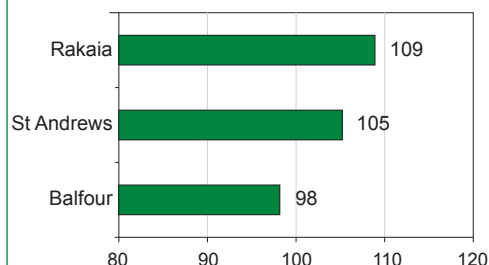
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

SYN411-285

YEAR 2

A feed variety which in its second year in CPT2 produced above average to high yields in Canterbury. Moderately susceptible to BYDV, scald and net blotch but shows resistance to leaf rust. A 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	Unknown

FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	45	44
Test weight (kg/hl)	63	62
Protein (%) (N% x 6.25)	7.7	8.5
Screenings (%)	2.9	3.9

END USE	Feed
---------	------

BACKGROUND

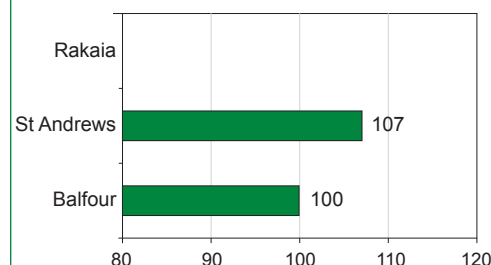
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not assigned

SYN411-287

YEAR 1

A new feed variety which produced high yields in Canterbury with average yields in Southland. Moderately susceptible to most diseases. A stiff strawed cultivar with early to 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	Unknown

FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	49	47
Test weight (kg/hl)	63	61
Protein (%) (N% x 6.25)	7.9	9.2
Screenings (%)	3.2	2.5

END USE	Feed
---------	------

BACKGROUND

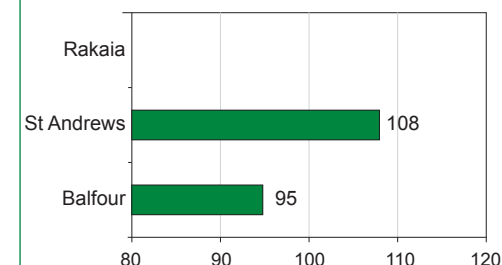
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not assigned

SYN411-291

YEAR 1

A new high yielding feed variety in Canterbury, with below average yields in Southland. Moderately susceptible to BYDV, scald and leaf rust but shows resistance to net blotch. An intermediate to late maturing, short strawed cultivar.

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	Unknown

FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Short
Maturity	Intermediate-late

GRAIN QUALITY (4 year means)	Canty	Sthld
TGW (g)	50	46
Test weight (kg/hl)	61	59
Protein (%) (N% x 6.25)	7.4	7.9
Screenings (%)	3.0	3.2

END USE	Feed
---------	------

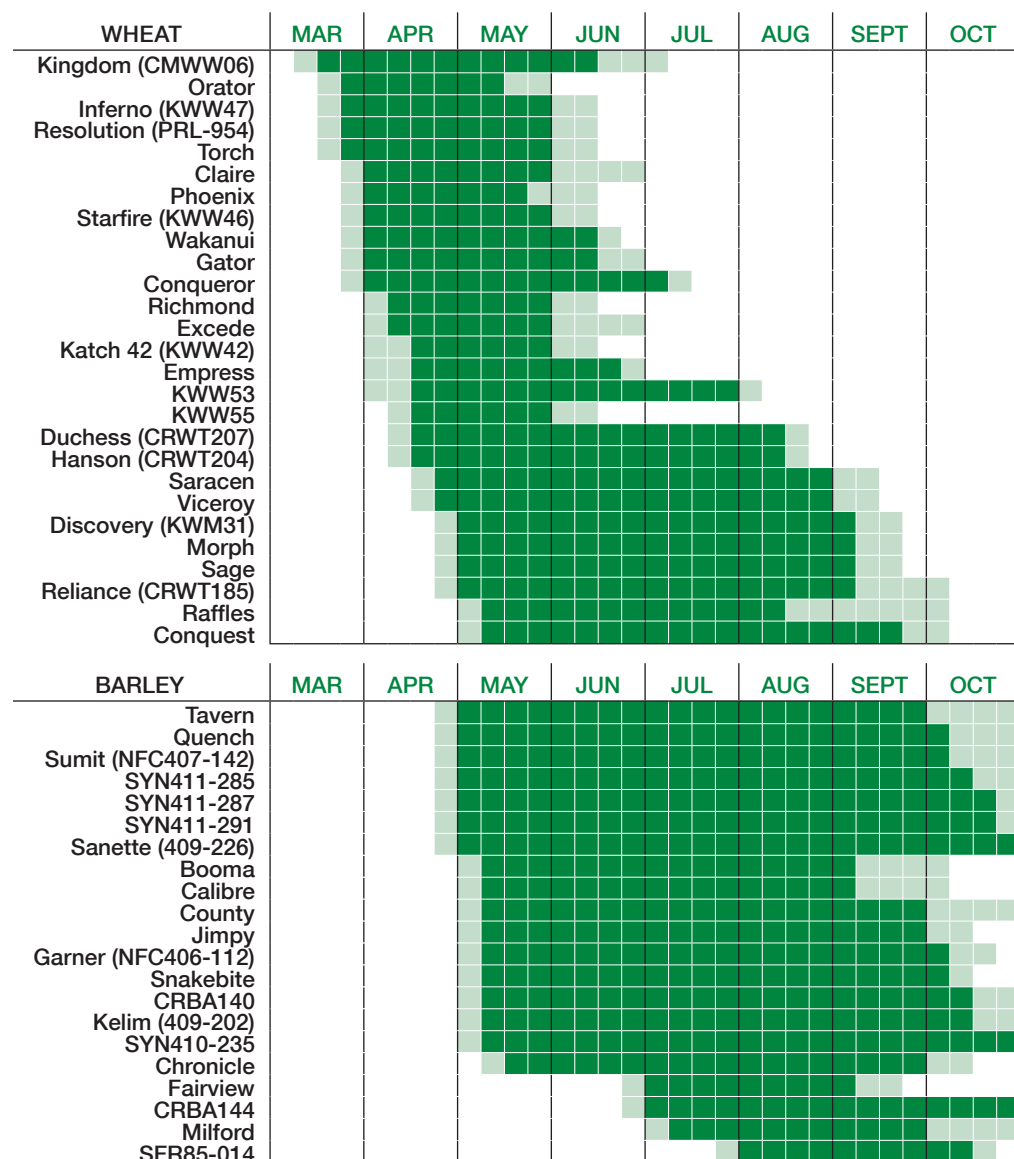
BACKGROUND

Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not assigned

Autumn sown wheat and barley – Sowing date guidelines 2015

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 some new cultivars.

Note: 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.

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).

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

Examples:

AUTUMN WHEAT

- A wheat sample TGW = 45g
- B % germination = 95%
- C % emergence = 90%
- D target plant population = 125pl/m²
- E required sowing rate is 66kg/ha

AUTUMN BARLEY

- A barley sample TGW = 40g
- B % germination = 90%
- C % emergence = 85%
- D target plant population = 225pl/m²
- E required sowing rate is 118kg/ha

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

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

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

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/m²
- May 100-150 plants/m²
- June 200 plants/m²

Usually there is no real advantage of sowing more than 200 plants/m².

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

Line	UNTREATED					TREATED			
	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 six 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*.

Speckled leaf blotch (SLB)

Disease caused by *Septoria tritici*, (perfect stage *Mycosphaerella graminicola*).

Stripe rust

Disease caused by *Puccinia striiformis* f.sp. *tritici*.

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

An example is provided.

[illegible]

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

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