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FAR Cultivar Evaluation  
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FAR CULTIVAR EVALUATION



FOUNDATION FOR ARABLE RESEARCH



**autumn sown  
wheat and barley  
2022/2023**

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Yields from the 2022/23 autumn sown cereal performance trials were around average, to below average across the country. This result is probably linked to variable, and in many cases unfavourable, weather conditions from sowing through to pollination and grain fill. Disease pressure was also moderately high, with leaf rust and Septoria leaf blotch present in the disease nurseries and field trials in Canterbury and North Island. Tan spot was noted in Methven and Temuka. It was a similar case for barley, with net blotch, scald, ramularia leaf spot and leaf rust observed.

The dryland feed wheat trial in the lower North Island produced similar yields to the 4-year mean. Good conditions for autumn drilling, followed by above average rainfall for almost every month until harvest, with the exception of early Spring and December, meant soil moisture wasn't an issue during the growing season. This was combined with average to above average temperatures and some good solar radiation through November and December.

It was warm and dry in Southland during the key months of March, September and January, and despite average to above average rainfall in between, some crops were slow to recover from

the dry start. While some crops would have taken advantage of the above average solar radiation during the later stages of grain-fill in January, the average yield of the autumn feed wheat trials was down just over 1 t/ha on the 4-year mean, with barley back around 0.5 t/ha.

On average, autumn wheat yields in Canterbury were similar to the 4-year mean under irrigation, while dryland wheat yields were back by around 2.5 t/ha. It was a similar story for barley, with irrigated yields up around 1 t/ha on the 4-year mean while dryland yields were back by 1 t/ha. The biggest driver was below average rainfall for most of the growing season, apart from July and November, combined with slightly low solar radiation. However some parts of Canterbury experienced more rainfall in summer (Methven) and solar radiation during grainfill (South Canterbury) have led to improvements in yield.

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2022/2023 trial site location map.

### BALFOUR (Feed Wheat)

Crookston loam, Dryland  
**Trial operator:** Stewart Armstrong,  
 Plant & Food Research  
**Host farmer:** Collins Farming Company Ltd

Following peas, this dryland trial was sown on 8 April 2022 into a paddock drilled in cv. Firelight. Applied N totalled 287 kg N/ha via urea and YaraMila® Actyva S on top of a background soil measurement of 48 kg N/ha. One herbicide and three applications of fungicide went on during the growing season. The trial was harvested on 27 February 2023.

### CHERTSEY (Feed Wheat)

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

These trials were sown at the FAR Arable Site on 26 April 2022 following ryegrass. Soil N measured 33 kg N/ha (0-30 cm) and nitrogen fertiliser was applied as sulphate of ammonia and two applications of Sustain®. The dryland trial received 150 kg N/ha, while the irrigated site received 218 kg N/ha. Both trials received two herbicide and three fungicide applications and plant growth regulator (PGR). Six applications of water totalling 120 mm was applied to the irrigated site. Some bird damage was noted in the dryland trial at harvest on 20 January and the yield results have been adjusted accordingly. The irrigated trial was harvested on 12 February, 2023.

### DORIE (Milling Wheat)

Templeton silt loam, Irrigated  
**Trial operator:** Doug Bowron,  
 Plant & Food Research  
**Host farmer:** Geoff Maw

Following maize, this trial was sown on 13 May 2022 into a paddock drilled in cv. Reliance. Background soil N measured 42 kg N/ha (0-60 cm) and a further 253 kg N/ha was applied via four applications of urea. Crop management included five fungicide, one insecticide and two herbicide applications plus a PGR mix. A total of 240 mm irrigation was applied in six passes. The trial was harvested on 26 January 2023.

### FAIRLIE (Feed Wheat)

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

This dryland site was drilled into a surrounding crop of cv. Firelight on 4 April 2022 following oil seed rape. Background soil N measured 40 kg N/ha (0-50 cm). Two insecticides, a PGR and four fungicide applications went on during the growing season. Other management details not supplied. The trial was harvested on 16 February 2023.

### GREENDALE (Milling Wheat)

Mayfield silt loam, Irrigated  
**Trial operator:** Ashley Harrison,  
 PGG Wrightson Grain  
**Host farmer:** Graeme Marshall

This irrigated trial was sown into a paddock drilled in cv. Discovery on 24 May 2022, following white clover. Background soil N measured 56 kg N/ha (0-60 cm) and a further 193 kg N/ha was applied via sulphate of ammonia, liquid fertiliser and two applications of Sustain®. One insecticide, a PGR mix, plus two herbicide and three fungicide applications were applied during the growing season. The trial was harvested on 9 February 2023.

### HALCOMBE (Feed Wheat)

Marton clay loam, Dryland  
**Trial operator:** Kevin Sinclair,  
 Plant & Food Research  
**Host farmer:** James Abbiss

Following forage brassica, this dryland trial was established in a paddock sown in cv. Graham on 4 May 2022. Background soil N measured 61 kg N/ha (0-60 cm), with the trial receiving a further 125 kg N/ha, split between three applications. The management programme consisted of two herbicide, two foliar insecticide and five fungicide applications plus a PGR. The trial was harvested on 24 January 2023.

### METHVEN (Feed Wheat)

Mayfield stony silt loam, Irrigated  
**Trial operator:** Briar Kinney,  
 Plant Research (NZ) Ltd  
**Host farmer:** David and Sam Grant

The trial was established into a paddock sown in cv. Graham on 11 April 2022, following radish. Background soil N measured 18 kg N/ha (0-50 cm), with an additional 265 kg N/ha applied as urea. The trial received three herbicide and four fungicide applications, plus two insecticides and a PGR mix. Irrigation totalling 60 mm was applied in three passes. The trial was harvested on 8 February 2023.

### METHVEN (Milling Wheat)

Templeton silt loam, Irrigated  
**Trial operator:** Ashley Harrison,  
 PGG Wrightson Grain  
**Host farmer:** Bevan Lill

This trial was sown on 28 April 2022 into a paddock drilled in cv. Duchess, following linseed. Background soil N measured 18 kg N/ha (0-50 cm), with sulphate of ammonia, Cropmaster 15® and N-Protect® providing a further 223 kg N/ha. The trial received three herbicide, five fungicide and five insecticide applications along with two PGRs during the growing season. A total of 105 mm irrigation was applied in five passes. The trial was harvested on 7 February 2023.

### ORETI (Feed Wheat)

Pukemutu and Braxton loam, Dryland  
**Trial operator:** Stewart Armstrong,  
 Plant & Food Research  
**Host farmer:** Robbie Clark

This dryland feed wheat trial was drilled on 14 April 2022 into a paddock sown in cv. Graham following pasture. Background soil N measured 28 kg N/ha (0-60 cm), with an additional 224 kg N/ha applied in the form of sulphate of ammonia and two applications of urea. The trial received a pre-emergent herbicide, one PGR and three fungicide applications. The trial experienced grassweed pressure and some drought stress. Harvest took place on 2 March 2023.

### ST ANDREWS (Feed Wheat)

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Claremont silt loam, Dryland  
**Trial operator:** Doug Bowron,  
Plant & Food Research  
**Host farmer:** Nick Porter

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This dryland trial was abandoned due to take-all.

### TEMUKA (Feed Wheat)

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Waimakariri silt loam, Irrigated  
**Trial operator:** Matt Hicks, Cropmark Seeds  
**Host farmer:** Ben Collis

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This irrigated trial was established on 26 April 2022 into a paddock sown in cv. Kerrin, following a grass seed crop. Applied nitrogen totalled 285 kg N/ha. The trial received three herbicide applications, a PGR and an insecticide, along with three fungicide applications. The trial was affected by the wet winter and high disease pressure and was harvested on 13 February 2023.

### WAKANUI (Feed Wheat)

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Wakanui silt loam, Irrigated  
**Trial operator:** Ashley Harrison,  
PGG Wrightson Grain  
**Host farmer:** Grant Bennett

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This irrigated trial was sown into a paddock of cv. Ignite on 5 April 2022, following spinach. Soil N measured 52 kg N/ha (0-60 cm). Further management details not supplied. Lodging was recorded in some cultivars at harvest on 8 February 2023.

### WINCHESTER (Milling Wheat)

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Rakaia stony silt loam, Irrigated  
**Trial operator:** Doug Bowron,  
Plant & Food Research  
**Host farmer:** Turley Farms Ltd

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This trial was sown on 6 May 2022 into a paddock drilled in cv. W45, following potatoes. Background soil N measured 32 kg N/ha (0-30 cm), with further side dressings of fertiliser providing another 268 kg N/ha. The trial received three herbicide and insecticide applications along with a four-spray fungicide programme. A total of 180 mm irrigation was applied in six passes. The trial was harvested on 10 February 2023.

## Autumn Sown Wheat Agronomic Comment 2022/2023 Season

CULTIVAR	Years in CPT2 trials	Septoria tritici blotch	Stripe rust	Leaf rust	Powdery mildew	Fusarium head blight	Straw strength	Crop height	Maturity	Sprouting susceptibility
Catherine	6	S	MRR	S	MRMS	<b>(MS)</b>	Moderate	Tall	Intermediate	<b>Moderate-high</b>
Conquest	18	MS	<b>(MS)</b>	S	MS	MS	Moderate-stiff	Medium	Early-int	<b>Very low</b>
Discovery	10	<b>MSS</b>	MRMS	MR*	MRR	MSS	Stiff	Tall	Intermediate	<b>Moderate-high</b>
Duchess	9	S	MR	MSS	MS	MS	Stiff	Medium	Intermediate	<b>Very low</b>
Firelight	6	MR	MRR	<b>(MS)</b>	MRMS	MR	Moderate	Medium	Intermediate	<b>Moderate-high</b>
Graham	7	MRMS	MRR	<b>(MSS)</b>	MR	MR	Stiff	Medium	Early	<b>Low-moderate</b>
Griffin	8	MSS	MR	MS	MSS	<b>(MS)</b>	Stiff	Tall	Intermediate	<b>Moderate</b>
Hanson	9	S	MR	MRMS	MS	S	Stiff	Medium-tall	Intermediate	<b>Moderate</b>
Ignite	8	<b>(MS)</b>	MR	MS	MRMS*	MRMS	Stiff	Medium	Late	<b>Moderate</b>
Kerrin	4	MS*	R	<b>(MRMS)</b>	MRR	MRMS	Moderate-stiff	Medium	Intermediate	Moderate
Reflection	7	MRMS	S	MR	MR	MS	Stiff	Short	Early	Low-moderate
Reliance	11	MS	MR	S	MS	MSS	Moderate-stiff	Short-medium	Early-int	Low
RGT Skyfall	6	MS	<b>(MR)</b>	MRMS*	MRR	MRMS	Stiff	Short	Early-int	<b>Moderate-high</b>
Starfire	12	<b>(MS)</b>	MR	<b>(MSS)</b>	(MRMS)	MR	Stiff	Medium	Intermediate	Moderate
SY Springboard	2	<b>(MS)</b>	<b>(MRR)</b>	<b>(MS)</b>	R	MR	Stiff	Medium	Early	<b>Moderate</b>
Viceroy	13	S	MR	(S*)	MS	S	Stiff	Medium-tall	Intermediate	<b>Low-moderate</b>
Voltron	6	MS	MRR	<b>(MS)</b>	MS	MRMS	Moderate-stiff	Medium	Early-int	<b>Low-moderate</b>
Wakanui	15	MS	MRR	MS	MS	MRMS	Stiff	Tall	Late	<b>Low-moderate</b>
Whopper	4	MRMS*	MRR	MSS	MRR	<b>(MR)</b>	Stiff	Medium	Late	<b>Moderate</b>
Zyatt	3	MRMS	MRR	(MRMS)	R	MS	Stiff	Short-medium	Early	<b>Moderate</b>
CK25	1	MRR	R	(MRMS)	R	(MRMS)	Stiff	Short	Early	Moderate
CK130	1	MRMS	R	MS	R	(MRMS)	Moderate	Medium	Early	Low-moderate
CRWT247	4	MRMS*	<b>(MS)</b>	MRMS	MR	MS	Stiff	Medium	Intermediate	<b>Moderate</b>
CRWT263	2	S	R	(MRMS)	R	MRMS	Moderate	Medium	Intermediate	<b>Low-moderate</b>
CRWT267	2	MR	R	<b>(MR)</b>	R	<b>(MRMS)</b>	Stiff	Medium	Intermediate	<b>Moderate-high</b>
KFW2102	1	<b>(MR)</b>	R	<b>(MRR)</b>	R	MR	Stiff	Medium	Intermediate	Moderate
SY115666	1	<b>MRMS</b>	R	MSS	R	MRMS	Stiff	Medium	Early	Moderate
SY119179	1	MRR	R	R	R	MR	Stiff	Short	Early	Low

Scores followed by \* indicate resistance is affected by pathotypes present (score is an average). (brackets) indicate there is limited New Zealand trial data to assess resistance (i.e. the cultivar has either been in trials for less than three years and/or disease pressure has been low). "Unknown" indicates there is insufficient trial information in New Zealand to assess resistance. Disease susceptibility sourced from FAR-funded Disease Nurseries and CPT trials (assessments carried out by Plant & Food Research).

Sprouting susceptibility scores are an indication of susceptibility to preharvest sprouting when conditions are suitable. Data sourced from FAR-funded Sprouting Nurseries (assessments carried out by Plant & Food Research). Bold text indicates a change in rating.

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

# wheat - 2022/2023 yield (t/ha)

Autumn Sown FEED/BISCUIT Wheat Cultivar Evaluation 2022/2023 Season - yield, t/ha - Canterbury

CULTIVAR	Methven		Chertsey		Chertsey		Wakanui		Temuka		Fairlie		Cant mean yield	Years in CPT2 trials (Autumn sown)
	Region	Soil type	Mid Cant	Chertsey shallow silt loam	Mid Cant	Chertsey shallow silt loam	Mid Cant	Wakanui clay loam	South Cant	Waimakariri silt loam	South Cant	Claremont silt loam		
Previous crop	Radish	Ryegrass	Ryegrass	Ryegrass	Ryegrass	Ryegrass	Spinach	Spinach	Grass seed	Grass seed	Oil seed rape	Oil seed rape		
Sow date	11 Apr	26 Apr	26 Apr	26 Apr	26 Apr	26 Apr	5 Apr	5 Apr	26 Apr	26 Apr	4 Apr	4 Apr		
Harvest date	8 Feb	20 Jan	20 Jan	20 Jan	12 Feb	12 Feb	8 Feb	8 Feb	13 Feb	13 Feb	16 Feb	16 Feb		
Dryland/Irrigated	Irrigated	Dryland	Dryland	Dryland	Irrigated	Irrigated	Irrigated	Irrigated	Irrigated	Irrigated	Dryland	Dryland		
Firelight	12.4	<b>8.5</b>	<b>11.4</b>	14.8	10.0	10.0	12.1	12.1	10.0	10.0	12.1	12.1	<b>11.5</b>	6
Graham <sup>B, BR</sup>	12.9	7.3	10.5	15.4	9.7	9.7	12.0	12.0	9.7	9.7	12.0	12.0	11.3	7
Ignite <sup>B</sup>	12.2	7.1	10.6	14.3	8.4	8.4	9.9	9.9	8.4	8.4	9.9	9.9	10.4	8
Kerrin	12.4	7.7	10.7	15.5	7.1	7.1	10.2	10.2	7.1	7.1	10.2	10.2	10.6	4
Reflection	12.3	7.5	10.8	14.9	9.8	9.8	11.6	11.6	9.8	9.8	11.6	11.6	11.1	7
Starfire	12.4	7.6	10.5	13.2	6.7	6.7	10.0	10.0	6.7	6.7	10.0	10.0	10.1	12
SY Springboard	<b>13.7</b>	7.4	11.0	15.4	8.8	8.8	11.1	11.1	8.8	8.8	11.1	11.1	11.2	2
Voltron <sup>B</sup>	12.8	<b>8.2</b>	<b>11.2</b>	14.4	9.7	9.7	<b>12.2</b>	<b>12.2</b>	9.7	9.7	<b>12.2</b>	<b>12.2</b>	<b>11.4</b>	6
Wakanui	12.2	7.1	10.4	14.5	9.5	9.5	11.0	11.0	9.5	9.5	11.0	11.0	11.0	15
Whopper <sup>BR</sup>	12.7	8.1	<b>11.8</b>	14.6	<b>11.0</b>	<b>11.0</b>	<b>12.2</b>	<b>12.2</b>	<b>11.0</b>	<b>11.0</b>	<b>12.2</b>	<b>12.2</b>	<b>11.7</b>	4
CK25 <sup>B</sup>	12.6	7.5	11.0	15.1	<b>10.6</b>	<b>10.6</b>	11.1	11.1	<b>10.6</b>	<b>10.6</b>	11.1	11.1	11.3	1
CK130	<b>13.4</b>	7.0	<b>11.2</b>	<b>16.2</b>	<b>10.5</b>	<b>10.5</b>	12.0	12.0	<b>10.5</b>	<b>10.5</b>	12.0	12.0	<b>11.7</b>	1
CRWT267	12.6	7.6	10.7	14.7	10.0	10.0	11.8	11.8	10.0	10.0	11.8	11.8	11.2	2
KFW2102	<b>13.9</b>	7.8	<b>11.7</b>	<b>16.2</b>	10.2	10.2	11.8	11.8	10.2	10.2	11.8	11.8	<b>12.0</b>	1
SY119179	13.1	7.5	10.8	15.7	<b>11.0</b>	<b>11.0</b>	<b>12.5</b>	<b>12.5</b>	<b>11.0</b>	<b>11.0</b>	<b>12.5</b>	<b>12.5</b>	<b>11.7</b>	1
Site mean yield	12.7	7.4	11.1	15.0	9.4	9.4	11.5	11.5	9.4	9.4	11.5	11.5	11.2	
LSD (p=0.05)	0.7	0.4	0.7	0.5	0.7	0.7	0.4	0.4	0.7	0.7	0.4	0.4	0.7	
CV (%)	3.8	3.3	4.1	2.4	5.0	5.0	2.7	2.7	5.0	5.0	2.7	2.7	5.7	

<sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat. St Andrews trial abandoned due to take-all. Bold text indicates the cultivar was amongst the highest yielding group of cultivars.

Autumn Sown FEED/BISCUIT Wheat

Cultivar Evaluation 2022/2023 Season - yield, t/ha - Southland and Southern North Island

CULTIVAR	Balfour		Oreti		Southland mean yield			Halcombe			Years in CPT2 trials (Autumn sown)			
	Region	Soil type	Central Southland	Pukemutu & Braxton	Manawatu	Maraton clay loam	Forage brassica	Manawatu	Maraton clay loam	Forage brassica				
Previous crop	Peas	Pasture	Pasture	Pasture	4 May	4 May	24 Jan	4 May	4 May	24 Jan	Dryland			
Sow date	8 Apr	14 Apr	14 Apr	14 Apr	24 Jan	24 Jan	24 Jan	24 Jan	24 Jan	24 Jan	Dryland			
Harvest date	27 Feb	2 Mar	2 Mar	2 Mar	24 Jan	24 Jan	24 Jan	24 Jan	24 Jan	24 Jan	Dryland			
Dryland/Irrigated	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland	Dryland			
Firelight	<b>12.1</b>	<b>7.3</b>	<b>9.7</b>	<b>9.7</b>	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	6	
Graham <sup>B, BR</sup>	11.3	6.9	<b>9.1</b>	<b>9.1</b>	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	7	
Ignite <sup>B</sup>	10.5	5.9	8.2	8.2	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	8	
Kerrin	10.1	6.1	8.1	8.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	4	
Reflection	11.6	6.8	<b>9.2</b>	<b>9.2</b>	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	7	
Starfire	10.4	6.6	8.5	8.5	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	12	
SY Springboard	11.6	<b>7.4</b>	<b>9.5</b>	<b>9.5</b>	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	2	
Voltron <sup>B</sup>	10.8	7.0	8.9	8.9	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	6	
Wakanui	10.1	6.6	8.3	8.3	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	15	
Whopper <sup>BR</sup>	11.5	<b>7.6</b>	<b>9.5</b>	<b>9.5</b>	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	4	
CK25 <sup>B</sup>	11.4	<b>7.3</b>	<b>9.3</b>	<b>9.3</b>	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1	
CK130	11.6	<b>7.3</b>	<b>9.5</b>	<b>9.5</b>	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	1	
CRWT267	11.9	6.8	<b>9.3</b>	<b>9.3</b>	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	2	
KFW2102	11.5	6.9	<b>9.2</b>	<b>9.2</b>	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	1	
SY119179	<b>12.4</b>	7.1	<b>9.7</b>	<b>9.7</b>	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	1	
Site mean yield	11.2	6.9	9.1	9.1	10.4	10.4	10.4	10.4	9.1	9.1	10.4	10.4	9.1	
LSD (p=0.05)	0.4	0.5	0.8	0.8	0.5	0.5	0.5	0.5	0.8	0.8	0.5	0.5	0.7	
CV (%)	2.5	5.3	4.0	4.0	3.4	3.4	3.4	3.4	4.0	4.0	3.4	3.4	5.7	

<sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat. Bold text indicates the cultivar was amongst the highest yielding group of cultivars.

Autumn Sown MILLING Wheat Cultivar Evaluation 2022/2023 Season - yield, t/ha - Canterbury

CULTIVAR	Grade	Greendale		Methven		Dorie		Winchester		Cant mean yield	Years in CPT2 trials (Autumn sown)
		Central Cant	Mayfield silt loam	Mid Cant	White clover	Templeton silt loam	Linseed	Mid Cant	Templeton silt loam		
			24 May	28 Apr	13 May	6 May					
			9 Feb	7 Feb	26 Jan	10 Feb					
		Irrigated		Irrigated	Irrigated						
Hanson	Gris	11.9	12.4	12.5	9.3	11.5	9				
RGT Skyfall	Gris	11.6	13.4	13.1	10.2	<b>12.1</b>	6				
Catherine	Med	<b>13.0</b>	13.0	13.4	10.6	<b>12.5</b>	6				
Discovery	Med	<b>13.0</b>	12.6	12.8	10.8	<b>12.3</b>	10				
Viceroy	Med	12.3	12.2	12.1	8.9	11.4	13				
Whopper	Med	12.1	13.3	<b>14.1</b>	<b>11.4</b>	<b>12.7</b>	3				
Zyatt	Med	11.8	<b>14.0</b>	13.6	10.5	<b>12.5</b>	3				
CRWT263	Med	<b>13.0</b>	13.4	12.4	9.3	<b>12.0</b>	2				
SY115666	Med	<b>12.4</b>	13.4	12.9	<b>11.1</b>	<b>12.4</b>	1				
Conquest	Prem	12.1	11.1	11.8	9.7	11.2	18				
Duchess	Prem	11.8	12.0	12.5	9.1	11.4	9				
Griffin	Prem	12.1	12.2	13.2	10.4	<b>12.0</b>	8				
Reliance	Prem	12.2	11.5	12.3	10.2	11.5	11				
CRWT247	Prem	11.2	11.8	12.1	9.0	11.0	4				
Site mean yield		12.2	12.6	12.8	10.0	11.9					
LSD (p=0.05)		0.7	0.3	0.5	0.5	0.8					
CV (%)		3.7	1.9	2.8	3.2	4.5					

Gris - Gristing, Med - Medium, Prem - Premium. Bold text indicates the cultivar was amongst the highest yielding group of cultivars. Grade has been provided by the breeder/agent and does not guarantee a contract will be issued for that cultivar.

Southern North Island FEED/BISCUIT Wheat Trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds) <sup>+</sup>
Firelight	46	69	8.4	0.6	-
Graham <sup>B, BR</sup>	52	73	8.9	0.7	261
Ignite <sup>B</sup>	44	73	9.4	0.6	336
Kerrin	40	70	8.6	1.8	-
Reflection	46	72	8.4	1.8	-
Starfire	39	72	9.5	0.7	-
SY Springboard	52	73	8.8	0.3	-
Voltron <sup>B</sup>	43	72	9.2	1.0	281
Wakanui	47	74	9.5	0.7	-
Whopper <sup>BR</sup>	51	75	9.1	0.5	310
CK25 <sup>B</sup>	48	68	9.3	0.3	195
CK130	50	75	8.4	0.2	-
CRWT267	52	74	9.3	0.4	-
KFW2102	49	73	8.5	0.3	-
SY119179	51	76	8.2	0.5	-
Mean	47	73	9.0	0.7	277
LSD (p=0.05)	-	-	-	-	-

Single trial - no LSD available.

Canterbury FEED/BISCUIT Wheat Trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds) <sup>+</sup>
Firelight	51	73	10.0	1.1	-
Graham <sup>B, BR</sup>	54	76	10.1	0.7	321
Ignite <sup>B</sup>	49	74	10.6	0.6	347
Kerrin	48	73	9.6	1.6	-
Reflection	48	75	9.8	1.6	-
Starfire	44	74	10.8	1.1	-
SY Springboard	53	73	10.6	0.6	-
Voltron <sup>B</sup>	48	77	10.2	0.7	343
Wakanui	46	75	10.3	1.1	-
Whopper <sup>BR</sup>	49	76	10.2	0.7	359
CK25 <sup>B</sup>	55	73	10.6	0.7	233
CK130	53	76	10.2	0.8	-
CRWT267	51	71	10.5	0.8	-
KFW2102	54	77	10.0	0.6	-
SY119179	53	78	10.0	1.2	-
Mean	50	75	10.2	0.9	321
LSD (p=0.05)	3	2	0.4	0.5	33

Averaged over six trials. <sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat. <sup>+</sup> Feed wheats not tested for falling number. The quality data for each region is also presented as a 4-year mean on the individual cultivar description pages.

## Canterbury MILLING Wheat Trials

CULTIVAR	Grade	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Hanson	Gris	45	77	11.9	1.4	399
RGT Skyfall	Gris	53	78	11.4	0.8	394
Catherine	Med	54	77	12.0	1.0	294
Discovery	Med	54	80	12.0	0.5	380
Viceroy	Med	47	81	12.7	1.2	369
Whopper	Med	50	78	10.7	0.8	368
Zyatt	Med	54	77	11.0	1.3	341
CRWT263	Med	41	79	12.0	2.2	390
SY115666	Med	51	77	11.4	0.6	381
Conquest	Prem	47	81	14.1	0.5	427
Duchess	Prem	47	78	12.8	1.9	372
Griffin	Prem	47	78	12.3	0.8	405
Reliance	Prem	51	80	13.6	1.0	377
CRWT247	Prem	50	77	13.1	0.4	368
Mean		49	79	12.2	1.0	376
LSD (p=0.05)		4	3	0.6	0.7	54

Averaged over four trials.

Gris - Gristing, Med - Medium, Prem - Premium.

## Southland FEED/BISCUIT Wheat Trials

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds) <sup>+</sup>
Firelight	44	64	10.0	0.8	-
Graham <sup>B,BR</sup>	44	68	9.7	0.6	335
Ignite <sup>B</sup>	42	67	10.4	0.6	357
Kerrin	43	66	9.7	1.5	-
Reflection	43	68	9.2	1.6	-
Starfire	39	66	10.1	1.0	-
SY Springboard	49	67	10.1	0.6	-
Voltron <sup>B</sup>	41	70	9.8	0.9	360
Wakanui	41	68	9.8	1.2	-
Whopper <sup>BR</sup>	48	71	9.9	0.5	414
CK25 <sup>B</sup>	48	66	10.1	0.5	267
CK130	47	70	9.2	0.9	-
CRWT267	43	61	10.2	0.8	-
KFW2102	46	70	9.8	0.8	-
SY119179	49	72	9.4	0.8	-
Mean	44	68	9.8	0.9	347
LSD (p=0.05)	3	3	1.0	0.6	76

Averaged over two trials. <sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat. <sup>+</sup> 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 FEED/BISCUIT Wheat - 4-year adjusted mean - relative yield by site

CULTIVAR	Methven	Chertsey	Chertsey	Wakanui	Temuka	St Andrews	Fairlie		Canterbury dryland relative yield	Canterbury irrigated relative yield	Canterbury relative mean yield	Balfour	Oreti	Southland relative mean yield	Feilding	Years in CPT2 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	4	3	1	4		9	15	24	3	4	7	4	
<b>Firelight</b>	99	<b>106</b>	<b>106</b>	99	<b>107</b>	112	<b>102</b>		<b>107</b>	<b>102</b>	<b>104</b>	<b>109</b>	<b>109</b>	<b>109</b>	101	6
Graham <sup>B, BR</sup>	101	99	97	101	101	108	102		<b>104</b>	100	101	99	<b>106</b>	<b>102</b>	102	7
Ignite <sup>B</sup>	99	94	94	98	92	97	94		95	96	95	94	89	92	94	8
Kerrin	99	99	<b>101</b>	100	87	94	98		96	97	97	94	90	92	95	4
Reflection	96	99	<b>101</b>	98	106	98	97		98	100	99	101	101	101	101	7
Starfire	95	95	93	93	76	86	95		91	90	90	93	93	93	91	12
SY Springboard	<b>106</b>	99	96	100	92	-	99		99	99	99	103	<b>103</b>	<b>103</b>	100	2
Voltron <sup>B</sup>	99	<b>104</b>	<b>100</b>	96	103	103	<b>102</b>		<b>103</b>	99	100	98	<b>102</b>	99	99	6
Wakanui	95	99	98	99	100	101	100		100	98	98	92	97	94	98	15
Whopper <sup>BR</sup>	99	<b>102</b>	<b>102</b>	99	<b>107</b>	107	101		<b>104</b>	101	<b>102</b>	100	<b>104</b>	<b>102</b>	100	4
CK25 <sup>B</sup>	(99)	(99)	<b>(100)</b>	(101)	<b>(112)</b>	-	(97)		(98)	<b>(102)</b>	(101)	(101)	<b>(104)</b>	<b>(103)</b>	(96)	1
CK130	(105)	(93)	<b>(102)</b>	<b>(108)</b>	<b>(110)</b>	-	<b>(104)</b>		(100)	<b>(106)</b>	<b>(104)</b>	(103)	<b>(104)</b>	<b>(104)</b>	<b>(109)</b>	1
CRWT267	101	<b>104</b>	<b>103</b>	98	104	-	100		<b>102</b>	101	101	<b>106</b>	100	<b>103</b>	<b>104</b>	2
KFW2102	<b>(109)</b>	<b>(102)</b>	<b>(106)</b>	<b>(109)</b>	<b>(108)</b>	-	<b>(103)</b>		<b>(103)</b>	<b>(108)</b>	<b>(106)</b>	(103)	(100)	(102)	<b>(111)</b>	1
SY119179	(102)	(99)	(98)	<b>(105)</b>	<b>(115)</b>	-	<b>(108)</b>		<b>(104)</b>	<b>(105)</b>	<b>(105)</b>	<b>(110)</b>	<b>(102)</b>	<b>(106)</b>	<b>(106)</b>	1
Site mean yield (t/ha)	14.0	8.3	11.8	15.0	10.5	13.9	12.3		11.2	12.9	12.2	11.7	9.4	10.5	10.3	
LSD (estab. cv) (p=0.05)	3	6	7	5	9	-	6		7	6	4	5	7	7	9	
LSD (new vs estab.) (p=0.05)	5	9	10	8	12	-	10		11	9	7	7	12	11	13	

<sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat.

- Cultivar has not been in trials at this location.

No trial results from Balfour in 2020-21 (data is a 3-year mean) and St Andrews from 2020-21 to 2022-23 (data is a 1-year mean).

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.

Bold text indicates the cultivar was amongst the highest yielding group of cultivars (based on estab. cv LSD). Figures in brackets are less robust as they are only based on one year of data.

CULTIVAR	Region	Dryland/Irrigated	Grade	Greendale		Methven		Dorie		Winchester		Canterbury irrigated mean yield	Years in CP T2 trials (Autumn sown)
				Central Canterbury Irrigated	4	Mid Canterbury Irrigated	4	Mid Canterbury Irrigated	4	South Canterbury Irrigated	3		
Hanson			Gris	104	100	100	95	100	100	95	100	15	9
RGT Skyfall			Gris	101	104	105	104	105	105	104	104	15	6
Catherine			Med	107	104	103	107	103	103	107	105	15	6
Discovery			Med	98	97	100	107	100	100	107	100	15	10
Viceroy			Med	98	98	96	94	96	96	94	96	15	13
Whopper			Med	110	104	111	110	111	111	110	109	15	3
Zyatt			Med	98	107	108	105	108	108	105	105	15	3
CRWT263			Med	95	105	98	93	98	98	93	98	15	2
SY115666			Med	(102)	(107)	(101)	(110)	(101)	(101)	(110)	(105)	15	1
Conquest			Prem	95	91	91	93	91	91	93	92	15	18
Duchess			Prem	98	97	95	90	95	95	90	95	15	9
Griffin			Prem	99	99	102	101	102	102	101	100	15	8
Reliance			Prem	95	93	94	99	94	94	99	95	15	11
CRWT247			Prem	99	95	97	93	97	97	93	96	15	4
Site mean yield (t/ha)				10.3	11.8	12.2	11.1	12.2	12.2	11.1	11.4		
LSD (estab. cv) (p=0.05)				13	8	5	8	5	5	8	6		
LSD (new vs estab.) (p=0.05)				20	13	8	11	8	8	11	9		

Gris - Gristing, Med - Medium, Prem - Premium. No trial in Winchester in 2021-22 (data is a 3-year mean). - Cultivar has not been in trials at this location. 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. Bold text indicates the cultivar was amongst the highest yielding group of cultivars (based on estab. cv LSD). Grade has been provided by the breeder/agent and does not guarantee that a contract will be issued for that cultivar. Figures in brackets are less robust as they are only based on one year of data.

## Autumn Sown Wheat - plant counts 2022/2023 season

### Canterbury FEED/BISCUIT Wheat Trials

(target plant population for April and May sown = 150 plants/m<sup>2</sup>)

CULTIVAR	Plants/m <sup>2</sup>
Firelight	156
Graham <sup>B</sup>	158
Ignite <sup>B</sup>	157
Kerrin	159
Reflection	161
Starfire	155
SY Springboard	158
Voltron <sup>B</sup>	173
Wakanui	169
Whopper <sup>BR</sup>	162
CK25	152
CK130	153
CRWT267	163
KFW2102	161
SY119179	163
Mean	160
LSD (p=0.05)	11

Mean of six sites. <sup>B</sup> Biscuit wheat, <sup>BR</sup> Bread wheat.

### Canterbury MILLING Wheat Trials

(target plant population for May sowing = 125-175 plants/m<sup>2</sup>)

CULTIVAR	Plants/m <sup>2</sup>
Catherine	182
Conquest	197
Discovery	208
Duchess	202
Griffin	201
Hanson	196
Reliance	207
RGT Skyfall	181
Viceroy	201
Whopper	189
Zyatt	153
CRWT247	182
CRWT263	186
SY115666	176
Mean	190
LSD (p=0.05)	18

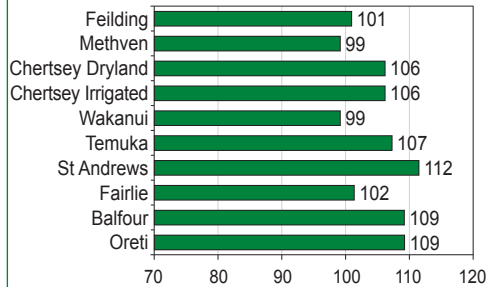
Mean of four sites.

## FIRELIGHT<sup>PVR</sup>

YEAR 6

Firelight is an average to high yielding feed wheat, a top performer at dryland sites. Shows good resistance to most diseases, with the exception of leaf rust. A medium height cultivar with moderate to high sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	107
Irrigated sites (4-year)	102

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately resistant
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible
Powdery mildew	Intermediate resistance
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate-high

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	49	49	45
Test weight (kg/hl)	69	72	68
Protein (%) (N% x 5.7)	9.1	10.0	10.2
Falling number (sec)	-	-	-
Screenings (%)	0.7	1.1	1.1

### END USE

Feed

### BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

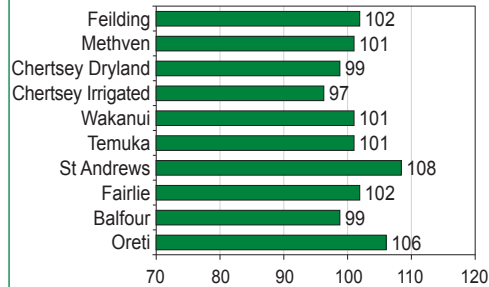
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Temuka (no data in 2018-19) and St Andrews (no data in 2020-21). 2-year mean for St Andrews (no data from 2020-22). \*\* Resistance is affected by pathotypes present (score is an average).

## GRAHAM<sup>PVR</sup>

YEAR 7

Graham is mostly an average to high yielding feed, biscuit and bread variety. Has varying levels of resistance to the common wheat diseases, except for leaf rust. An early maturing, stiff strawed variety with 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)	100

### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance
Stripe rust	Mostly resistant
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

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

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	51	51	47
Test weight (kg/hl)	73	75	71
Protein (%) (N% x 5.7)	9.0	10.1	10.7
Falling number (sec)	332	331	315
Screenings (%)	0.7	0.7	1.0

### END USE

Feed, Milling

### BACKGROUND

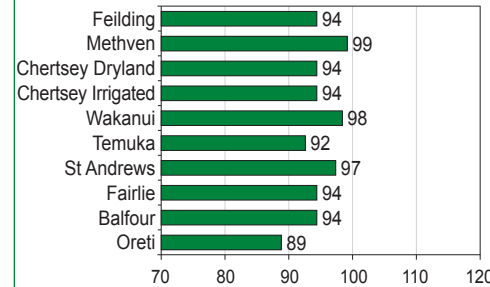
Breeder	Syngenta
Licensee	Cropmark Seeds
Agent	Advance Agriculture, Cates Grain & Seed, PGG Wrightson Grain

## IGNITE<sup>PVR</sup>

YEAR 8

Ignite is a feed and biscuit cultivar that produces mostly below average yields. Moderately susceptible to STB and leaf rust. A medium height plant with a stiff straw and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	95
Irrigated sites (4-year)	96

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Intermediate resistance**
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	47	48	41
Test weight (kg/hl)	72	74	68
Protein (%) (N% x 5.7)	9.7	10.6	10.7
Falling number (sec)	352	330	366
Screenings (%)	0.5	0.7	1.1

### END USE

Biscuit, feed

### BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

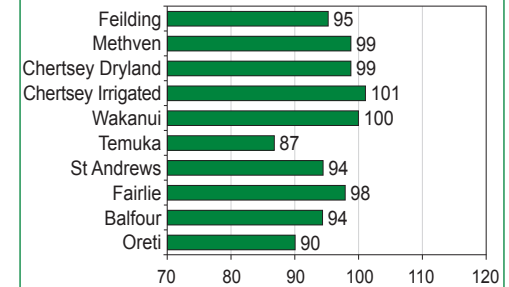
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23). \*\* Resistance is affected by pathotypes present (score is an average).

## KERRIN

YEAR 4

Kerrin is a feed wheat producing average to below average yields. Has varying levels of resistance to most of the common diseases, but susceptible to some STB pathotypes. A medium height cultivar with a moderate to stiff straw and intermediate maturity.

### 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

Septoria tritici blotch	Moderately susceptible**
Stripe rust	Resistant
Leaf rust	Intermediate resistance
Powdery mildew	Mostly resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	48	49	42
Test weight (kg/hl)	72	74	69
Protein (%) (N% x 5.7)	8.7	9.6	9.8
Falling number (sec)	-	-	-
Screenings (%)	1.4	1.4	1.7

### END USE

Feed

### BACKGROUND

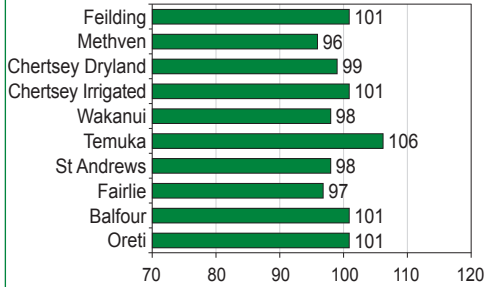
Breeder	KWS, UK
Agent	Carrfields Grain & Seed

## REFLECTION

YEAR 7

A feed cultivar producing mostly average to below average yields. Moderate to intermediate resistance against most diseases, but susceptible to stripe rust. An early maturing variety, with a stiff short straw.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	98
Irrigated sites (4-year)	100

### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance
Stripe rust	Susceptible
Leaf rust	Moderately resistant
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short
Maturity	Early
Sprouting risk	Low-moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	47	47	41
Test weight (kg/hl)	73	75	67
Protein (%) (N% x 5.7)	8.5	10.1	10.1
Falling number (sec)	-	-	-
Screenings (%)	1.5	1.5	1.5

### END USE

Feed

### BACKGROUND

Breeder	Syngenta
Licensee	Cropmark Seeds
Agent	Advance Agriculture, Cates Grain & Seed

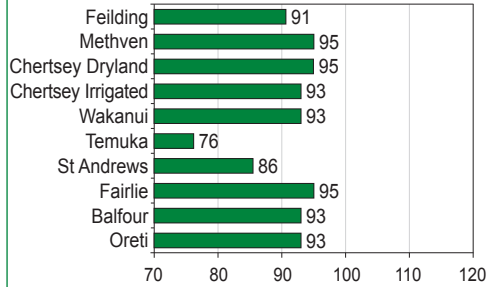
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23)

## STARFIRE<sup>PVR</sup>

YEAR 12

A below average feed cultivar as a first wheat, but performs consistently in a second wheat situation. Moderate to intermediate resistance against most diseases, except for STB and leaf rust. A stiff strawed variety with intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	91
Irrigated sites (4-year)	90

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Intermediate resistance
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	43	45	38
Test weight (kg/hl)	72	75	68
Protein (%) (N% x 5.7)	9.7	10.8	10.9
Falling number (sec)	-	-	-
Screenings (%)	0.9	1.1	1.5

### END USE

Feed

### BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

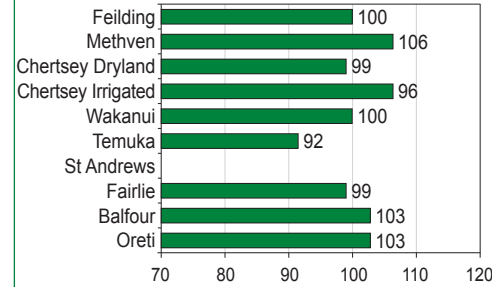
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23)

## SY SPRINGBOARD

YEAR 2

A feed variety producing a range of yields from below average to high yielding. Moderately susceptible to STB and leaf rust, with good resistance to other common wheat diseases. An early maturing, medium height cultivar with a stiff straw.

### 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

Septoria tritici blotch	Moderately susceptible
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible
Powdery mildew	Resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Early
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	55	54	47
Test weight (kg/hl)	72	74	66
Protein (%) (N% x 5.7)	9.1	10.6	10.6
Falling number (sec)	-	-	-
Screenings (%)	0.6	0.6	0.9

### END USE

Feed

### BACKGROUND

Breeder	Syngenta
Licensee	Cropmark Seeds
Agent	Not yet assigned

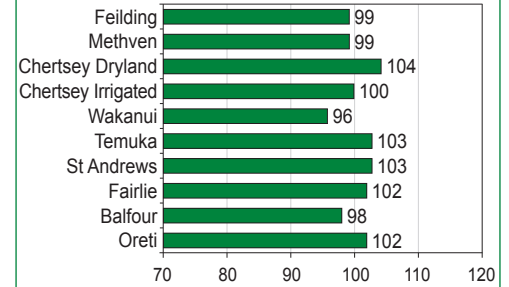
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23)

## VOLTRON<sup>PVR</sup>

YEAR 6

Voltron is a feed and biscuit wheat producing mostly average to above average yields. Moderately susceptible to STB, leaf rust and powdery mildew. A medium height cultivar with low to moderate sprouting risk. It does not require vernalisation and therefore has a wide sowing window, from early April to late August.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	103
Irrigated sites (4-year)	99

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

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

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	47	47	41
Test weight (kg/hl)	74	76	70
Protein (%) (N% x 5.7)	9.2	10.2	10.1
Falling number (sec)	346	334	339
Screenings (%)	0.8	0.8	1.5

### END USE

Feed/Biscuit

### BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

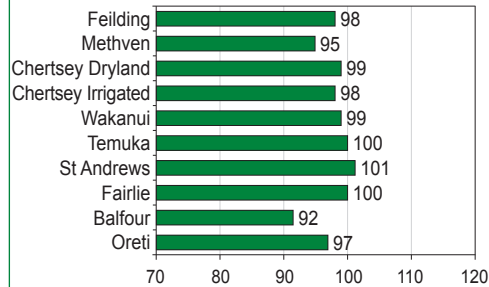
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23)

## WAKANUI<sup>PVR</sup>

YEAR 15

Average to below average yielding feed cultivar. Mostly resistant to stripe rust but has varying susceptibility to other diseases. 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)	100
Irrigated sites (4-year)	98

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Mostly resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Tall
Maturity	Late
Sprouting risk	Low-moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	47	47	41
Test weight (kg/hl)	74	76	71
Protein (%) (N% x 5.7)	9.3	10.4	10.5
Falling number (sec)	-	-	-
Screenings (%)	1.1	0.8	1.2

### END USE

Feed

### BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds, Carrfields Grain & Seed

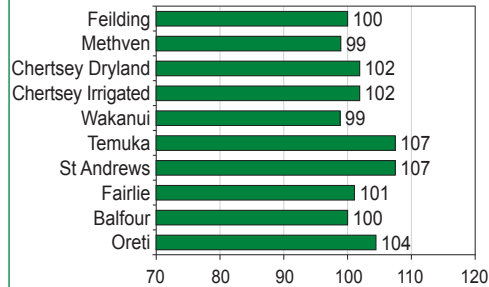
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23). \*\* Resistance is affected by pathotypes present (score is an average).

## WHOPPER<sup>PVR</sup>

YEAR 4

An average to high yielding feed and milling variety. Performs well under dryland conditions. Has good resistance to most diseases, with the exception of leaf rust. A medium height, stiff strawed variety with late maturity and 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)	101

### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance**
Stripe rust	Mostly resistant
Leaf rust	Mostly susceptible
Powdery mildew	Mostly resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	51	49	45
Test weight (kg/hl)	74	76	71
Protein (%) (N% x 5.7)	9.0	10.3	10.4
Falling number (sec)	399	368	384
Screenings (%)	0.5	0.7	0.7

### END USE

Feed/Milling

### BACKGROUND

Breeder	Sejet
Licensee	Plant & Food Research Ltd
Agent	Luisetti Seeds

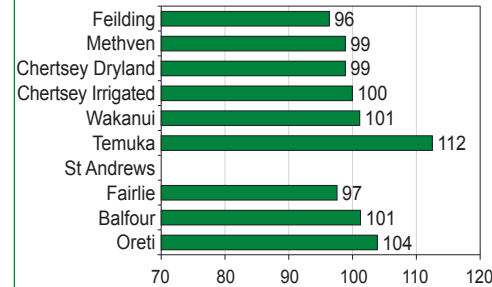
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23). \*\* Resistance is affected by pathotypes present (score is an average).

## CK25

YEAR 1

CK25 is a new biscuit and feed wheat, producing yields ranging from below average to high. Has varying levels of resistance to all of the common diseases. A short stiff strawed variety with early maturity. Produces lower falling numbers, with a moderate risk of sprouting.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	98
Irrigated sites (4-year)	102

### DISEASE RESISTANCE

Septoria tritici blotch	Mostly resistant
Stripe rust	Resistant
Leaf rust	Intermediate resistance
Powdery mildew	Resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short
Maturity	Early
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	53	54	45
Test weight (kg/hl)	71	73	64
Protein (%) (N% x 5.7)	9.3	10.7	10.8
Falling number (sec)	257	232	249
Screenings (%)	0.4	0.6	0.7

### END USE

Feed/Biscuit

### BACKGROUND

Breeder	KWS, UK
Agent	Carrfields Grain & Seed

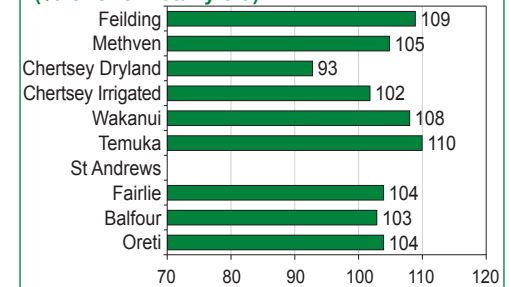
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23).

## CK130

YEAR 1

A predominantly above average to high yielding feed cultivar in its first year of CPT 2 trials. Performed well at irrigated sites in Canterbury and dryland sites in Southland and southern North Island. Has varying levels of resistance to most common diseases, except leaf rust. A medium height cultivar with moderate straw strength.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	100
Irrigated sites (4-year)	106

### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance
Stripe rust	Resistant
Leaf rust	Moderately susceptible
Powdery mildew	Resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Early
Sprouting risk	Low-moderate

### GRAIN QUALITY (4-year means)

	Sthld	Canty	Sth Nth Is
TGW (g)	53	53	47
Test weight (kg/hl)	75	76	71
Protein (%) (N% x 5.7)	8.4	10.3	9.9
Falling number (sec)	-	-	-
Screenings (%)	0.8	0.8	0.6

### END USE

Feed

### BACKGROUND

Breeder	KWS, UK
Agent	Carrfields Grain & Seed

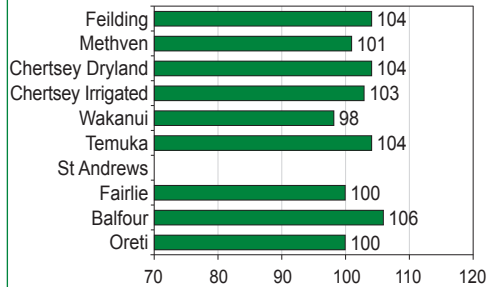
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23).

## CRWT267

YEAR 2

Mostly average to above average yielding feed wheat cultivar. Has varying levels of resistance to the most common diseases. A medium height stiff strawed variety, with intermediate maturity and a moderate to high sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	102
Irrigated sites (4-year)	101

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately resistant
Stripe rust	Resistant
Leaf rust	Moderately resistant
Powdery mildew	Resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate-high

GRAIN QUALITY (4-year means)	Sthld	Canty	Sth Nth Is
TGW (g)	49	51	47
Test weight (kg/hl)	67	72	69
Protein (%) (N% x 5.7)	9.4	10.5	10.9
Falling number (sec)	-	-	-
Screenings (%)	0.7	0.7	0.7

END USE Feed

### BACKGROUND

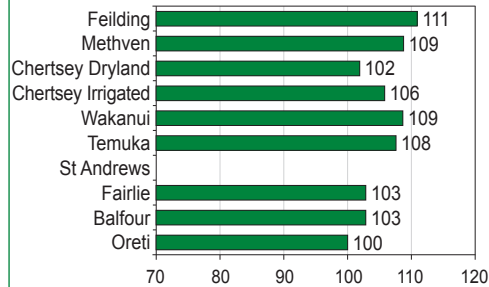
Breeder	Sejet
Licensee	Plant & Food Research Ltd
Agent	Luisetti Seeds

## KFW2102

YEAR 1

Mostly above average to high yielding feed variety in its first year of CPT 2 trials. Excellent performer on irrigated sites in Canterbury and the southern North Island dryland site. Good levels of resistance to the most common diseases. A medium height cultivar with a stiff straw and intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	103
Irrigated sites (4-year)	108

### DISEASE RESISTANCE

Septoria tritici blotch	Moderately resistant
Stripe rust	Resistant
Leaf rust	Mostly resistant
Powdery mildew	Resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate

GRAIN QUALITY (4-year means)	Sthld	Canty	Sth Nth Is
TGW (g)	51	53	46
Test weight (kg/hl)	75	77	70
Protein (%) (N% x 5.7)	9.0	10.1	10.0
Falling number (sec)	-	-	-
Screenings (%)	0.7	0.5	0.7

END USE Feed

### BACKGROUND

Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

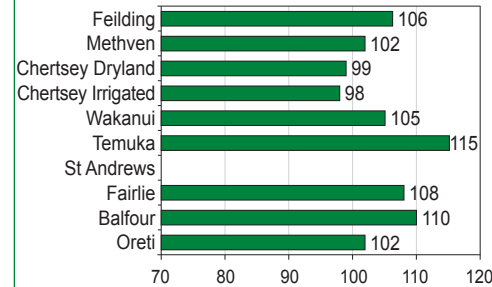
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23).

## SY119179

YEAR 1

Mostly above average to high yielding feed variety in its first year of CPT 2 trials. Performs well on both irrigated and dryland sites. Good levels of resistance to the most common diseases. A short cultivar with a stiff straw and early maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### IRRIGATION RESPONSE (Canterbury rel yield)

Dryland sites (4-year)	104
Irrigated sites (4-year)	105

### DISEASE RESISTANCE

Septoria tritici blotch	Mostly resistant
Stripe rust	Resistant
Leaf rust	Resistant
Powdery mildew	Resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short
Maturity	Early
Sprouting risk	Low-moderate

GRAIN QUALITY (4-year means)	Sthld	Canty	Sth Nth Is
TGW (g)	54	52	47
Test weight (kg/hl)	77	78	72
Protein (%) (N% x 5.7)	8.6	10.1	9.7
Falling number (sec)	-	-	-
Screenings (%)	0.7	1.1	0.9

END USE Feed

### BACKGROUND

Breeder	Syngenta
Licensee	Cropmark Seeds

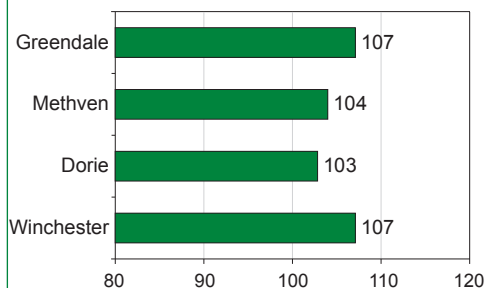
Yields are relative to other feed/biscuit wheats only. \* 3-year mean for Balfour (no data in 2020-21). 1-year mean for St Andrews (only data for 2022-23).

## CATHERINE<sup>PVR</sup>

YEAR 6

Above average to high yielding medium grade milling wheat with lower falling number. Susceptible to leaf rust and STB but with varying degrees of resistance to other diseases. A tall cultivar with moderate straw strength and moderate to high sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Susceptible
Stripe rust	Mostly resistant
Leaf rust	Susceptible
Powdery mildew	Intermediate resistance
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Moderate-high

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	53
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	11.9
Falling number (sec)	297
Screenings (%)	0.6

### END USE Medium grade milling

### BACKGROUND

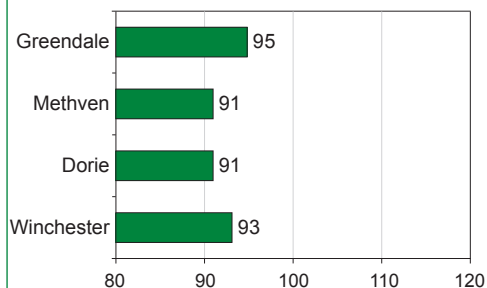
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## CONQUEST<sup>PVR</sup>

YEAR 18

Premium milling cultivar with high protein content and falling number. Lower yielding when compared with other premium varieties. Is moderately susceptible to most diseases, especially leaf rust. Early maturing with a moderate to stiff straw and excellent sprouting resistance.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Moderately susceptible
Leaf rust	Susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Early-intermediate
Sprouting risk	Very low

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	46
Test weight (kg/hl)	81
Protein (%) (N% x 5.7)	13.5
Falling number (sec)	402
Screenings (%)	0.4

### END USE Premium milling

### BACKGROUND

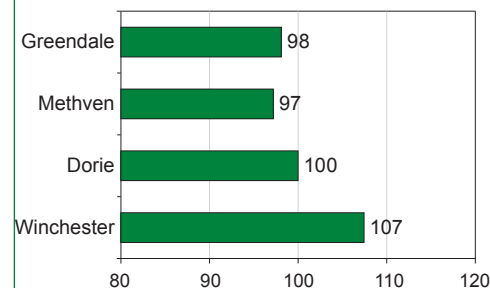
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## DISCOVERY<sup>PVR</sup>

YEAR 10

A medium grade milling wheat with good grain weights and falling number, producing a range of yields. Mostly susceptible to STB and FHB but has a range of resistance to other diseases. Cv. Discovery is susceptible to lodging and shattering and will benefit from a strong PGR programme.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Mostly susceptible
Stripe rust	Intermediate resistance
Leaf rust	Moderately resistant**
Powdery mildew	Mostly resistant
Fusarium head blight	Mostly susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Moderate-high

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	55
Test weight (kg/hl)	79
Protein (%) (N% x 5.7)	11.6
Falling number (sec)	371
Screenings (%)	0.3

### END USE Medium grade milling

### BACKGROUND

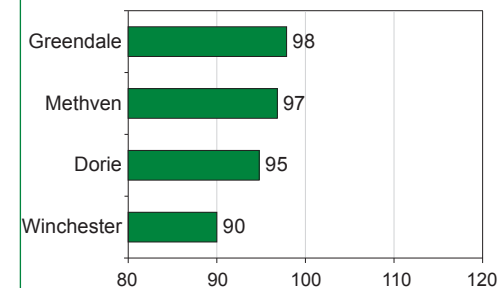
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

## DUCHESS<sup>PVR</sup>

YEAR 9

A premium milling cultivar, with yields similar to cv. Reliance but with lower protein and grain weight. Cv. Duchess shows susceptibility to most diseases with the exception of stripe rust. This stiff strawed cultivar has intermediate maturity with very low sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Susceptible
Stripe rust	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Very low

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	46
Test weight (kg/hl)	80
Protein (%) (N% x 5.7)	12.4
Falling number (sec)	369
Screenings (%)	1.3

### END USE Premium milling

### BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22). \*\* Resistance is affected by pathotypes present (score is an average).

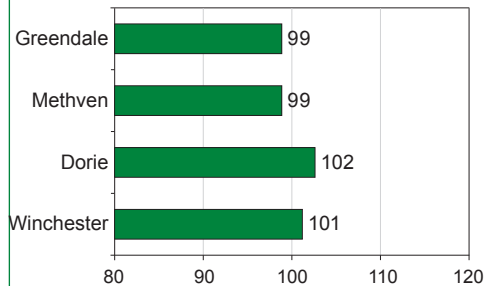
Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22). \*\* Resistance is affected by pathotypes present (score is an average).

## GRIFFIN<sup>PVR</sup>

YEAR 8

A higher yielding premium milling wheat, with lower protein and falling number. Moderately resistant to stripe rust, but monitor for other common diseases, particularly STB and powdery mildew. A tall stiff strawed variety with intermediate maturity and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Mostly susceptible
Stripe rust	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly susceptible
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Tall
Maturity	Intermediate
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	50
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	12.3
Falling number (sec)	363
Screenings (%)	0.5

### END USE Premium milling

### BACKGROUND

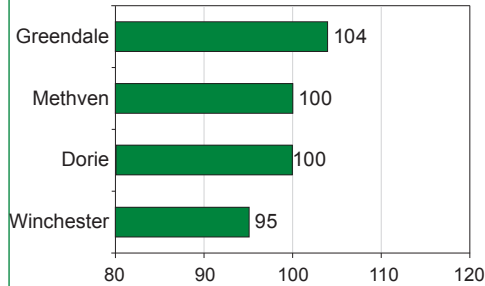
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## HANSON<sup>PVR</sup>

YEAR 9

A gristing wheat cultivar with yields ranging from below to above average. Lower grain weight with good falling number. Has some resistance to the rusts but is susceptible to other diseases. Intermediate maturity with a stiff straw and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Susceptible
Stripe rust	Moderately resistant
Leaf rust	Intermediate resistance
Powdery mildew	Moderately susceptible
Fusarium head blight	Susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium-tall
Maturity	Intermediate
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	48
Test weight (kg/hl)	77
Protein (%) (N% x 5.7)	11.4
Falling number (sec)	369
Screenings (%)	0.9

### END USE Gristing

### BACKGROUND

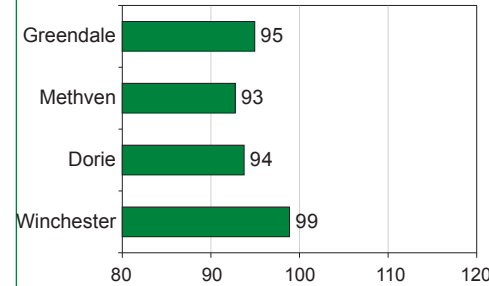
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## RELIANCE<sup>PVR</sup>

YEAR 11

A premium milling cultivar with yields similar to cv. Duchess but with higher protein content, falling number and grain weight. Shows moderate resistance to stripe rust, but has susceptibility to most other diseases. A short to medium height variety with moderate to stiff straw and low risk of sprouting.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Mostly susceptible

### FIELD CHARACTERISTICS

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

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	50
Test weight (kg/hl)	80
Protein (%) (N% x 5.7)	13.3
Falling number (sec)	392
Screenings (%)	0.6

### END USE Premium milling

### BACKGROUND

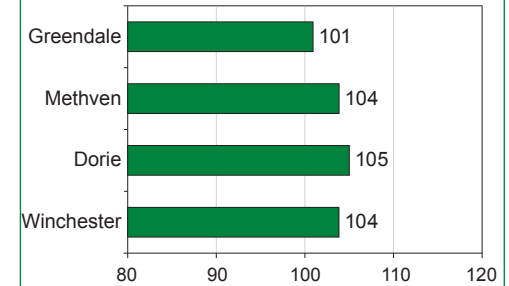
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## RGT SKYFALL

YEAR 6

An average to above average yielding gristing wheat cultivar. Moderately susceptible to STB but has varying levels of resistance to other diseases. A short, stiff strawed variety with good grain weight but moderate to high sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Moderately susceptible
Stripe rust	Moderately resistant
Leaf rust	Intermediate resistance**
Powdery mildew	Mostly resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short
Maturity	Early-intermediate
Sprouting risk	Moderate-high

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	55
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	11.3
Falling number (sec)	332
Screenings (%)	0.5

### END USE Gristing

### BACKGROUND

Breeder	RAGT
Licensee	RAGT New Zealand
Agent	Cates Grain & Seed

Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22).

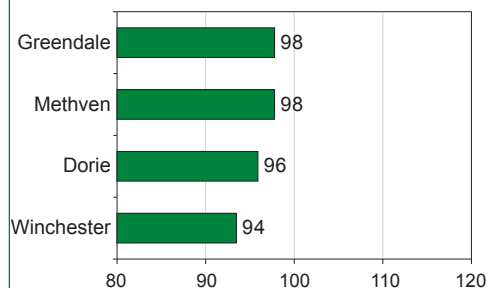
Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22). \*\* Resistance is affected by pathotypes present (score is an average).

## VICEROY<sup>PVR</sup>

YEAR 13

Below average yielding medium grade milling cultivar with higher protein and test weight. Moderately resistant to stripe rust with varying levels of susceptibility to other diseases. A medium to tall with a stiff straw and low to moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Susceptible
Stripe rust	Moderately resistant
Leaf rust	Susceptible**
Powdery mildew	Moderately susceptible
Fusarium head blight	Susceptible

### FIELD CHARACTERISTICS

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

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	49
Test weight (kg/hl)	83
Protein (%) (N% x 5.7)	12.5
Falling number (sec)	403
Screenings (%)	0.7

### END USE Medium grade milling

### BACKGROUND

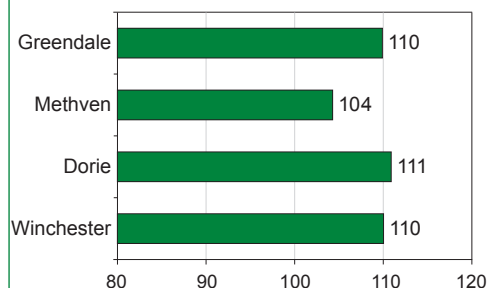
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## WHOPPER<sup>PVR</sup>

YEAR 3

An above average to high yielding early season medium grade wheat cultivar. Cv. Whopper also features in the autumn sown feed wheat trials. Has varying levels of resistance to most diseases, with the exception of leaf rust. A stiff strawed variety, with late maturity and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance**
Stripe rust	Mostly resistant
Leaf rust	Mostly susceptible
Powdery mildew	Mostly resistant
Fusarium head blight	Moderately resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Late
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	51
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	10.3
Falling number (sec)	369
Screenings (%)	0.6

### END USE Medium grade milling

### BACKGROUND

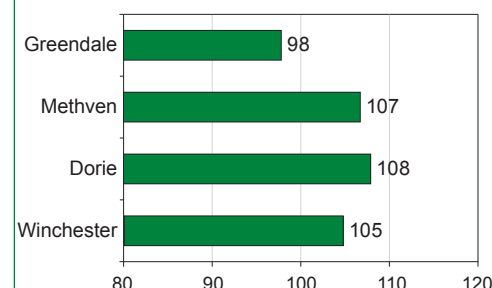
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## ZYATT

YEAR 3

Mostly above average to high yielding medium grade variety. Good grain weight with low falling number. Has varying levels of resistance to most diseases, but is moderately susceptible to FHB. A stiff, short to medium strawed variety with early maturity and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance
Stripe rust	Mostly resistant
Leaf rust	Intermediate resistance
Powdery mildew	Resistant
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short-medium
Maturity	Early
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	56
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	10.8
Falling number (sec)	297
Screenings (%)	0.9

### END USE Medium grade milling

### BACKGROUND

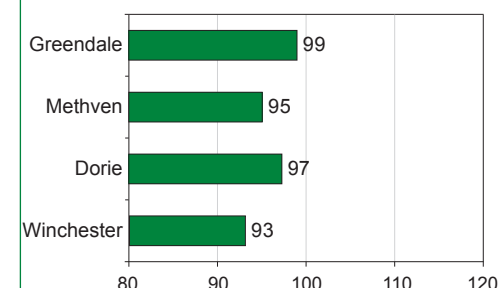
Breeder	KWS UK
Agent	Carrfields Grain & Seed

## CRWT247

YEAR 4

A premium milling cultivar with yields and protein similar to cv. Duchess, but with heavier grain weight. Moderately susceptible to stripe rust and FHB, with varying resistance to other diseases. A medium height cultivar with a stiff straw and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance**
Stripe rust	Moderately susceptible
Leaf rust	Intermediate resistance
Powdery mildew	Moderately resistant
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means) Canterbury

TGW (g)	52
Test weight (kg/hl)	78
Protein (%) (N% x 5.7)	12.6
Falling number (sec)	350
Screenings (%)	0.3

### END USE Premium milling

### BACKGROUND

Breeder	Plant & Food Research
Agent	Luisetti Seeds

Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22). \*\* Resistance is affected by pathotypes present (score is an average).

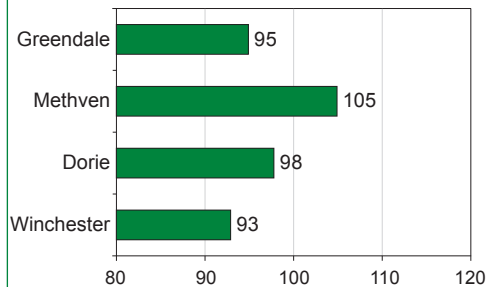
Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22). \*\* Resistance is affected by pathotypes present (score is an average).

## CRWT263

YEAR 2

A medium grade milling cultivar producing mixed results in its first year of CPT 2 trials. Lower grain weight with average proteins. Has good resistance to stripe rust and powdery mildew, but is susceptible to STB. A medium height cultivar with a moderate straw strength and low to moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Susceptible
Stripe rust	Resistant
Leaf rust	Intermediate resistance
Powdery mildew	Resistant
Fusarium head blight	Moderately susceptible

### FIELD CHARACTERISTICS

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

### GRAIN QUALITY (4-year means)

Canterbury

TGW (g)	43
Test weight (kg/hl)	79
Protein (%) (N% x 5.7)	11.8
Falling number (sec)	361
Screenings (%)	1.6

### END USE

Medium grade milling

### BACKGROUND

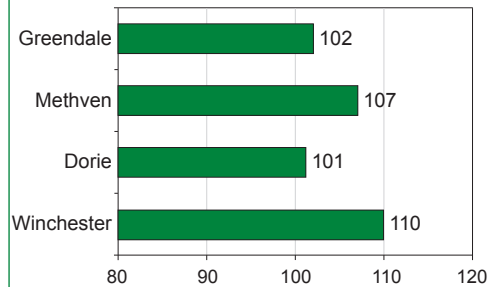
Breeder	Plant & Food Research
Agent	Luisetti Seeds

## SY115666

YEAR 1

An average to high yielding medium grade milling cultivar in its first year of CPT 2 trials. Average grain weight and falling number. Has varying resistance to most wheat diseases, with the exception of leaf rust. A medium height cultivar with early maturity and moderate sprouting risk.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Septoria tritici blotch	Intermediate resistance
Stripe rust	Resistant
Leaf rust	Mostly susceptible
Powdery mildew	Resistant
Fusarium head blight	Intermediate resistance

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Early
Sprouting risk	Moderate

### GRAIN QUALITY (4-year means)

Canterbury

TGW (g)	52
Test weight (kg/hl)	77
Protein (%) (N% x 5.7)	11.1
Falling number (sec)	364
Screenings (%)	0.2

### END USE

Medium grade milling

### BACKGROUND

Breeder	Syngenta
Agent	Not yet assigned

Yields are relative to other milling wheats only. \* 3-year means for Winchester (no data for 2021-22).



2022/2023 trial site location map.

## GORE, NORTHERN SOUTHLAND

Longridge and Makarewa loam, Dryland  
**Trial operator:** Stewart Armstrong, Plant & Food Research  
**Host farmer:** Earl and Scott Dillon (Dillon Grain Ltd)

This dryland trial was established on 28 April 2022 into a paddock drilled in cv. Sanette following cereal. Background soil N measured 38 kg/ha (0-60 cm), with an additional 185 kg N/ha applied in two applications. Crop management consisted of a pre-emergent and post-emergent herbicide, two fungicide applications and a plant growth regulator (PGR). The trial was harvested on 30 January 2023.

## CHERTSEY, MID CANTERBURY

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

The trial was sown on 4 May 2022 into a paddock drilled in cv. RGT Planet following wheat. Background soil N measured 27 kg/ha (0-60 cm) with a further 214 kg N/ha applied. Three fungicide applications and two applications each of herbicide, PGR and insecticide were applied during the growing season. This irrigated trial was harvested on 10 January 2023.

## ST ANDREWS, SOUTH CANTERBURY

Waimakariri silt loam, Dryland  
**Trial operator:** Matt Hicks, Cropmark Seeds  
**Host farmer:** Peter Hewson

This dryland trial was established on 4 May 2022 into a paddock sown in cv. SY Transformer, following wheat. Background soil N measured 91 kg/ha (0-60 cm), with an additional 158 kg N/ha applied as urea. Three fungicide and PGR applications plus two herbicides and insecticides were applied during the growing season. Above average rainfall in July and August resulting in some waterlogging. The trial was harvested on 10 January 2023.

### Autumn Sown Barley Agronomic Comment 2022/2023 Season

CULTIVAR	Years in CPT2 trials	Scald	Net blotch (net form)	Leaf rust	Powdery mildew	Straw strength	Crop height	Maturity
Buttress	4	<b>(MSS)</b>	MR	MS	MRR	Moderate	Med-tall	Intermediate
Fortitude	9	MR	MR	MS*	MRR	Moderate	Medium	Intermediate
Jimpy	15	MR	MRMS	S	MS	Moderate-stiff	Medium	Int-late
Laureate	7	MRMS	MR	MS*	MRR	Moderate	Medium	Early-int
RGT Planet	7	MR	MS	MS	MRR	Moderate	Medium	Early-int
SY Dolomite (SYN415-584)	5	MRMS	<b>(MRMS)</b>	MS	(R)	Moderate-stiff	Medium	Intermediate
SY Silhouette	5	<b>(MRMS)</b>	MR	MS	(R)	Stiff	Medium	Late
SY Solar (SYN417-021)	3	<b>(S)</b>	<b>(MRMS)</b>	<b>(MSS)</b>	(R)	Stiff	Medium	Intermediate
SY Transformer	4	MRMS	MR	MS	(R)	Moderate-stiff	Medium	Intermediate
Tavern	19	<b>(MRMS)</b>	MS	MSS	MR*	Stiff	Short-med	Int-late
CRBA164	3	<b>S</b>	MR	<b>(MSS)</b>	(R)	Moderate-stiff	Medium	Intermediate
CRBA170	2	<b>(MRMS)</b>	<b>(MRMS)</b>	<b>(MS)</b>	(R)	Stiff	Medium	Intermediate
SY418-336	1	(MRR)	<b>(MRMS)</b>	(MS)	(Unknown)	Stiff	Short-med	Intermediate

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

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).  
 (brackets) indicate there is limited New Zealand trial data to assess resistance (i.e. the cultivar has either been in trials for less than three years and/or disease pressure has been low).  
 Bold text indicates there is a change in rating.

### Autumn Sown Barley Cultivar Evaluation 2022/2023 Season - yield (t/ha) - Canterbury and Southland

CULTIVAR	Chertsey	St Andrews	Balfour	Years in CPT2 trials (Autumn sown)	
Region	Mid Canterbury	South Canterbury	Southland		
Soil Type	Lismore silt loam	Waimakariri silt loam	Longridge & Makarewa		
Previous crop	Wheat	Wheat	Cereal		
Sowing date	4 May	4 May	28 Apr		
Harvest date	10 Jan	10 Jan	30 Jan		
Dryland/Irrigated	Irrigated	Dryland	Dryland		
Buttress	11.7	<b>10.6</b>	7.9		4
Fortitude	10.8	<b>10.6</b>	7.9		9
Jimpy	9.2	8.3	6.5	15	
Laureate	12.0	<b>10.6</b>	8.3	7	
RGT Planet	11.0	9.9	6.4	7	
SY Dolomite (SYN415-584)	<b>12.2</b>	<b>10.4</b>	8.0	5	
SY Silhouette	<b>12.4</b>	<b>10.2</b>	<b>8.5</b>	5	
SY Solar (SYN417-021)	10.7	10.1	6.4	3	
SY Transformer	11.6	<b>10.7</b>	<b>9.1</b>	4	
Tavern	10.8	9.5	7.5	19	
CRBA164	11.5	9.7	7.4	3	
CRBA170	11.7	<b>10.5</b>	7.6	2	
SY418-336	<b>12.4</b>	<b>10.5</b>	7.6	1	
Site mean yield	11.4	10.1	7.6		
LSD (p=0.05)	0.4	0.6	0.7		
CV (%)	2.7	4.0	6.1		

Bold text indicates the cultivar was amongst the highest yielding group of cultivars.

### Canterbury

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Buttress	50	65	11.7	3.4
Fortitude	48	65	11.7	3.7
Jimpy	47	63	12.3	14.8
Laureate	51	63	11.3	4.2
RGT Planet	52	64	11.2	4.1
SY Dolomite (SYN415-584)	53	61	10.9	4.6
SY Silhouette	53	60	11.2	5.6
SY Solar (SYN417-021)	51	63	11.0	3.7
SY Transformer	50	62	11.4	4.4
Tavern	46	65	11.5	5.9
CRBA164	50	60	11.6	3.3
CRBA170	47	61	11.5	5.6
SY418-336	52	62	11.1	4.1
Mean	50	62	11.4	5.2
LSD (p=0.05)	3	2	0.9	7.5

Mean of two trials.

### Southland

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Buttress	48	65	12.5	6.6
Fortitude	44	64	12.6	7.4
Jimpy	40	61	13.5	20.6
Laureate	46	60	12.6	11.9
RGT Planet	44	61	13.1	15.2
SY Dolomite (SYN415-584)	49	61	12.8	10.4
SY Silhouette	49	59	13.4	11.3
SY Solar (SYN417-021)	45	62	12.7	14.8
SY Transformer	47	60	12.6	9.0
Tavern	45	63	13.6	13.4
CRBA164	45	59	12.9	10.6
CRBA170	45	60	12.5	12.5
SY418-336	45	61	12.6	13.0
Mean	46	61	12.9	12.1
LSD (p=0.05)	-	-	-	-

Single trial - no LSD available.

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 - Canterbury and Southland

CULTIVAR	Chertsey		St Andrews		Canterbury mean yield	Balfour		Seasons in CPT2 trials (Autumn sown)
	Mid Canterbury	Irrigated	South Canterbury	Dryland		Southland	Dryland	
Region	Mid Canterbury		South Canterbury			Southland		
Dryland/Irrigated	Irrigated		Dryland			Dryland		
No. of trials	3		4		7	4		
Buttress	99	<b>102</b>	<b>102</b>	<b>102</b>	101	101		4
Fortitude	101	99	99	99	100	99		9
Jimpy	82	85	85	85	84	91		15
Laureate	<b>103</b>	<b>102</b>	<b>102</b>	<b>102</b>	<b>102</b>	99		7
RGT Planet	98	97	97	97	97	91		7
SY Dolomite (SYN415-584)	<b>102</b>	<b>104</b>	<b>104</b>	<b>104</b>	<b>103</b>	<b>105</b>		5
SY Silhouette	<b>103</b>	<b>102</b>	<b>102</b>	<b>102</b>	<b>103</b>	<b>110</b>		5
SY Solar (SYN417-021)	99	<b>100</b>	<b>100</b>	<b>100</b>	100	96		3
SY Transformer	<b>104</b>	<b>105</b>	<b>105</b>	<b>105</b>	<b>105</b>	<b>112</b>		4
Tavern	97	95	95	95	96	94		19
CRBA164	99	<b>102</b>	<b>102</b>	<b>102</b>	101	99		3
CRBA170	<b>103</b>	<b>103</b>	<b>103</b>	<b>103</b>	<b>103</b>	<b>104</b>		2
SY418-336	<b>(110)</b>	<b>(103)</b>	<b>(103)</b>	<b>(103)</b>	<b>(107)</b>	<b>(99)</b>		1
Site mean yield (t/ha)	10.0		11.0		10.5	8.0		
LSD (estab. cv) (p=0.05)	9		5		5	9		
LSD (new vs estab.) (p=0.05)	12		9		7	14		

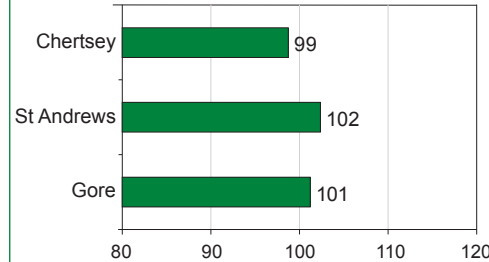
No data for Chertsey in 2019-20 (data is a 3-year mean).  
 LSD (estab. cv) is for comparing two "established" cultivars (that have both been in all trials).  
 LSD (new vs estab.) is for comparing a "new" (first year) cultivar with an "established" cultivar.  
 Bold text indicates the cultivar was amongst the highest yielding group of cultivars (based on estab. cv LSD).  
 Figures in brackets are less robust as they are only based on one year of data.

## BUTTRESS<sup>PVR</sup>

YEAR 4

An average to above average yielding feed cultivar, with malting potential. Moderately susceptible to scald and leaf rust. A medium to tall variety with moderate straw strength.

### RELATIVE YIELDS - 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Mostly susceptible
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium-tall
Maturity	Intermediate

### GRAIN QUALITY (4-year means)

	Canty	Sthld
TGW (g)	49	49
Test weight (kg/hl)	64	65
Protein (%) (N% x 6.25)	11.6	12.1
Screenings (%)	4.9	4.5

END USE: Feed, malting potential

### BACKGROUND

Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

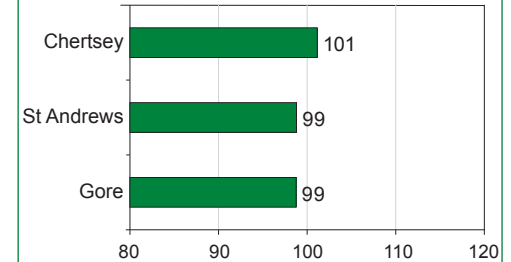
\* 3-year means for Chertsey (no data for 2019-20). \*\* Resistance is affected by pathotypes present (score is an average).

## FORTITUDE<sup>PVR</sup>

YEAR 9

Average yielding feed variety. Has varying levels of resistance to most diseases with the exception of certain leaf rust pathotypes. A medium height feed variety with intermediate maturity.

### RELATIVE YIELDS - 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

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

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

### GRAIN QUALITY (4-year means)

	Canty	Sthld
TGW (g)	48	48
Test weight (kg/hl)	64	64
Protein (%) (N% x 6.25)	11.5	12.1
Screenings (%)	4.1	4.4

END USE: Feed

### BACKGROUND

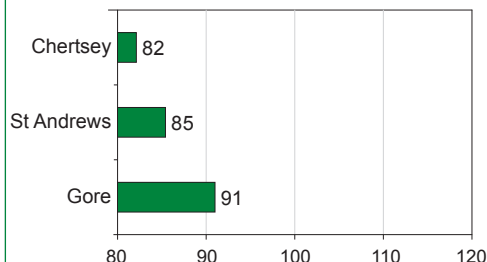
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

## JIMPY<sup>PVR</sup>

YEAR 15

A malting cultivar approved by New Zealand brewers. Produces lower yields compared to other malting varieties. Moderate resistance to scald, but monitor for other diseases, especially leaf rust. A moderate to stiff strawed cultivar with intermediate to late maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Moderately resistant
Net blotch	Intermediate resistance
Leaf rust	Susceptible
Powdery mildew	Moderately susceptible

### FIELD CHARACTERISTICS

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

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	45	44
Test weight (kg/hl)	62	64
Protein (%) (N% x 6.25)	12.3	12.7
Screenings (%)	11.7	9.1

END USE	Malting
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### BACKGROUND

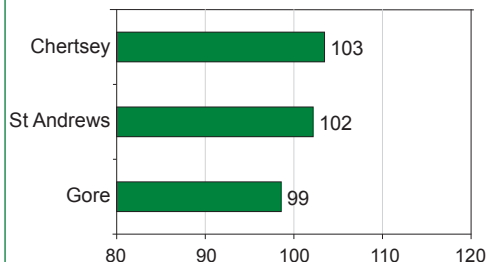
Breeder	Malteurop
Head Licensee	Malteurop
Agent	Malteurop

## LAUREATE<sup>PVR</sup>

YEAR 7

A malting, distilling and feed barley producing average to above average yields. Moderately susceptible to some leaf rust pathotypes, but has resistance to other diseases. Medium height with moderate straw strength, which will benefit from a good PGR programme in high yielding situations.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible**
Powdery mildew	Mostly resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	49	50
Test weight (kg/hl)	62	61
Protein (%) (N% x 6.25)	11.6	11.9
Screenings (%)	5.5	6.1

END USE	Malting/Feed
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### BACKGROUND

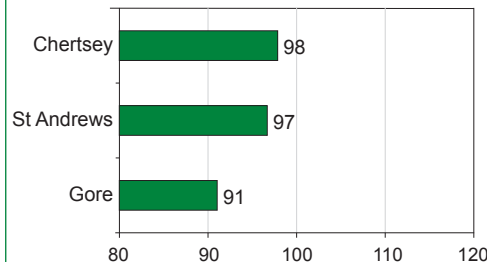
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

## RGT PLANET<sup>PVR</sup>

YEAR 7

A malting and feed variety producing below average yields. Moderately susceptible to net blotch and leaf rust. A medium height variety with moderate straw strength and early to intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Moderately resistant
Net blotch	Moderately susceptible
Leaf rust	Moderately susceptible
Powdery mildew	Mostly resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate
Crop height	Medium
Maturity	Early-intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	51	50
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	11.3	12.7
Screenings (%)	4.5	6.3

END USE	Malting/Feed
---------	--------------

### BACKGROUND

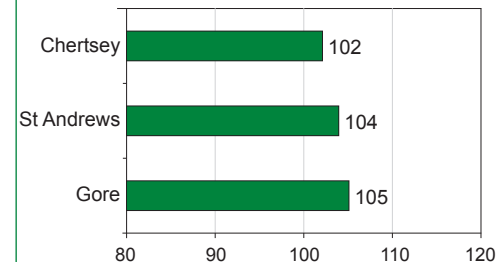
Breeder	RAGT
Head Licensee	RAGT New Zealand
Agent	PGG Wrightson Grain

## SY DOLOMITE

YEAR 5

Above average feed cultivar. Moderately susceptible to leaf rust, but shows resistance to other diseases, especially powdery mildew. A moderate to stiff strawed cultivar with intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Intermediate resistance
Leaf rust	Moderately susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	50	51
Test weight (kg/hl)	61	61
Protein (%) (N% x 6.25)	11.3	11.4
Screenings (%)	6.2	5.5

END USE	Feed
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### BACKGROUND

Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Wholesale Seeds

\* 3-year means for Chertsey (no data for 2019-20). \*\* Resistance is affected by pathotypes present (score is an average).

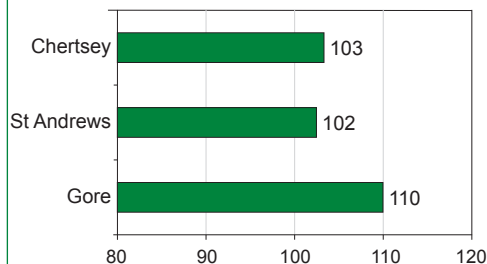
\* 3-year means for Chertsey (no data for 2019-20).

## SY SILHOUETTE<sup>PVR</sup>

YEAR 5

An above average to high yielding feed barley. Shows varying levels of resistance to the most common barley diseases, with the exception of leaf rust. A later maturing, medium height cultivar with a stiff straw.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Late

GRAIN QUALITY (4-year means)*	Canty	Sthld
TGW (g)	50	52
Test weight (kg/hl)	60	61
Protein (%) (N% x 6.25)	11.2	11.7
Screenings (%)	6.4	5.8

END USE	Feed
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### BACKGROUND

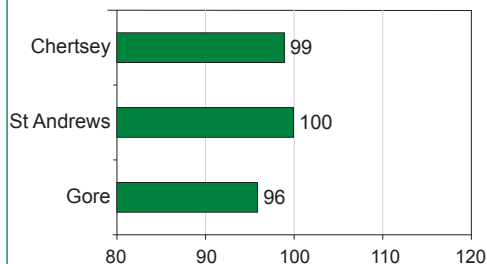
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Advance Agriculture, Cates Grain & Seed

## SY SOLAR

YEAR 3

A feed variety with malting potential that produces average yields in Canterbury and below average in Southland. Monitor for scald and leaf rust. A medium height, stiff strawed variety with intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Susceptible
Net blotch	Intermediate resistance
Leaf rust	Mostly susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	50	50
Test weight (kg/hl)	62	63
Protein (%) (N% x 6.25)	11.1	11.6
Screenings (%)	4.7	7.0

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

### BACKGROUND

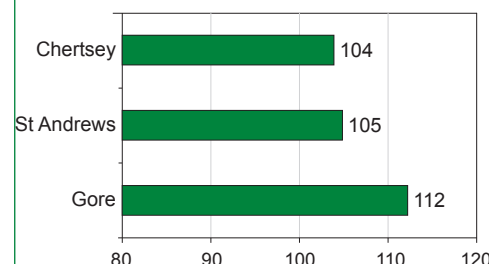
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

## SY TRANSFORMER<sup>PVR</sup>

YEAR 4

Above average in Canterbury and high yielding in Southland. Varying levels of resistance to the most common barley diseases, with the exception of leaf rust. A medium height cultivar with moderate to stiff straw strength.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)*	Canty	Sthld
TGW (g)	49	50
Test weight (kg/hl)	61	60
Protein (%) (N% x 6.25)	11.3	12.2
Screenings (%)	5.3	5.2

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

### BACKGROUND

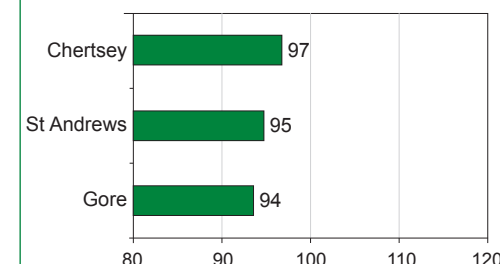
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

## TAVERN<sup>PVR</sup>

YEAR 19

A feed cultivar producing below average yields. Monitor for net blotch and leaf rust. Excellent straw strength combined with short to moderate crop height.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Moderately susceptible
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant**

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short-medium
Maturity	Intermediate-late

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	47	47
Test weight (kg/hl)	63	63
Protein (%) (N% x 6.25)	11.5	12.9
Screenings (%)	5.9	7.6

END USE	Feed
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### BACKGROUND

Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

\* 3-year means for Chertsey (no data for 2019-20).

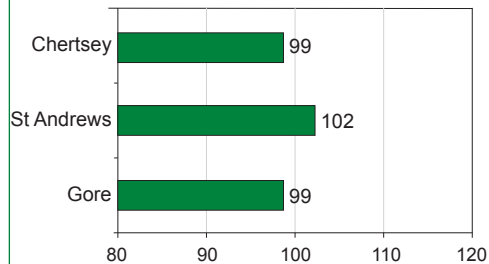
\* 3-year means for Chertsey (no data for 2019-20). \*\* Resistance is affected by pathotypes present (score is an average).

## CRBA164

YEAR 3

Mostly average yielding feed cultivar. Susceptible to scald and leaf rust. A medium variety with moderate to stiff straw strength.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Susceptible
Net blotch	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Moderate-stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	48	50
Test weight (kg/hl)	61	60
Protein (%) (N% x 6.25)	11.5	12.5
Screenings (%)	3.8	5.5

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

### BACKGROUND

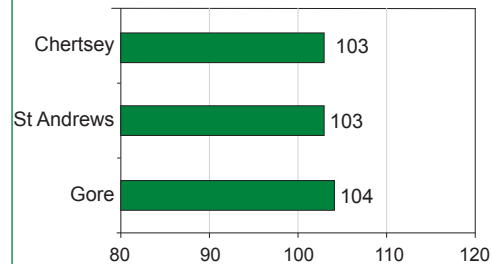
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

## CRBA170

YEAR 2

Above average feed variety in its first year of CPT 2 trials. Moderately susceptible to leaf rust. Medium height with intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

Scald	Intermediate resistance
Net blotch	Intermediate resistance
Leaf rust	Moderately susceptible
Powdery mildew	Resistant

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	47	50
Test weight (kg/hl)	61	61
Protein (%) (N% x 6.25)	11.4	11.8
Screenings (%)	6.4	6.5

END USE	Feed
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### BACKGROUND

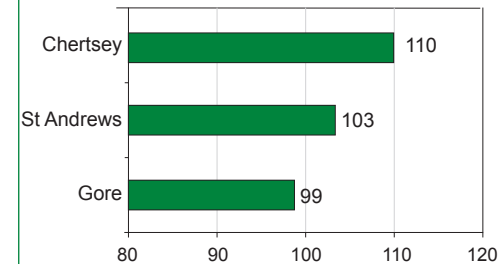
Breeder	Sejet
Head Licensee	Plant & Food Research
Agent	Luisetti Seeds

## SY418-336

YEAR 1

Above average to high yielding feed variety in Canterbury, with average yields in Southland. Moderately susceptible to leaf rust, but has resistance to other diseases. A stiff strawed short to medium height cultivar with intermediate maturity.

### RELATIVE YIELDS – 4-year\* adjusted mean (% of site mean yield)



### DISEASE RESISTANCE

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

### FIELD CHARACTERISTICS

Straw strength	Stiff
Crop height	Short-medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Canty	Sthld
TGW (g)	50	48
Test weight (kg/hl)	62	62
Protein (%) (N% x 6.25)	11.2	11.8
Screenings (%)	4.6	7.2

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

### BACKGROUND

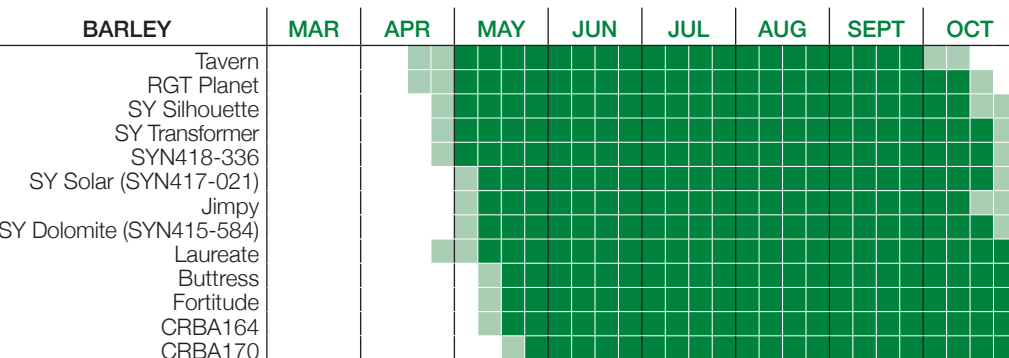
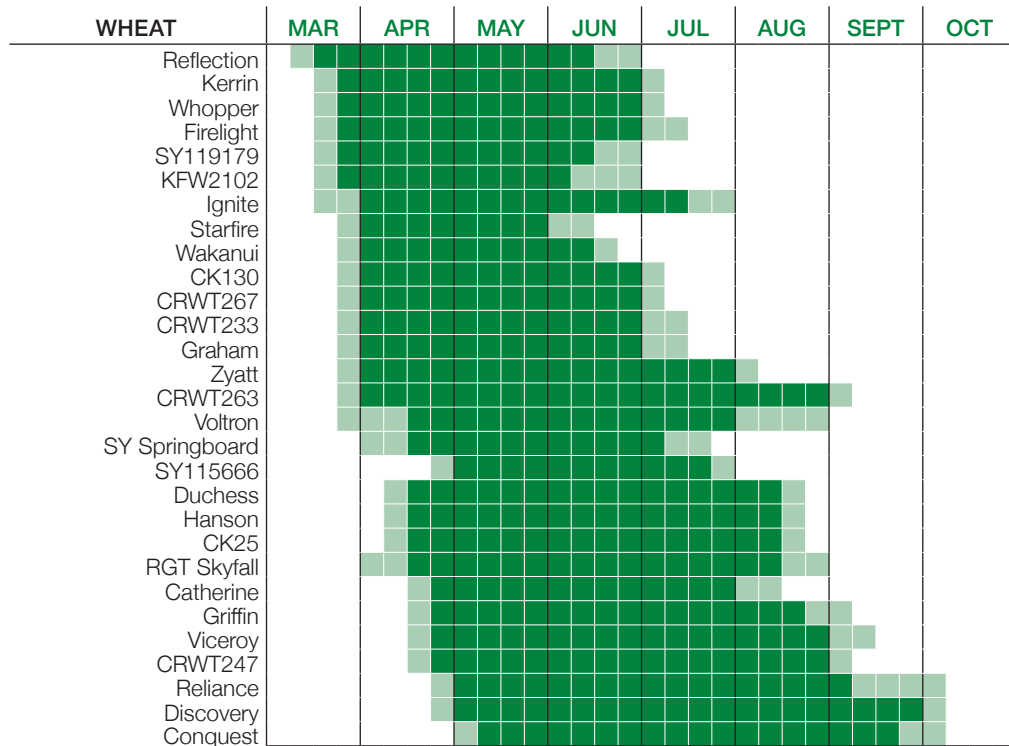
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

\* 3-year means for Chertsey (no data for 2019-20).

## Autumn sown wheat and barley – Sowing date guidelines 2023

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

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



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

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 0.1 g, 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 available on request. A purity & 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 supplied, but may be available 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 = 45 g
- B % germination = 95%
- C % emergence = 90%
- D target plant population = 125 pl/m<sup>2</sup>
- E required sowing rate is 66 kg/ha

### SPRING BARLEY

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

**MOISTURE:** 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.

**NUTRITION:** 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.

**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:** Sowing crops 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. 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**

Generally establishment targets are:

- April 125 plants/m<sup>2</sup>
- May 125-175 plants/m<sup>2</sup>
- June 200 plants/m<sup>2</sup>

Usually, there is no real advantage of sowing more than 200 plants/m<sup>2</sup>.

**SEED QUALITY**

High quality seed has:

- 90% germination or higher
- less than 10% *Fusarium/Microdochium*
- a thousand seed weight (TSW) of 40g or more

Attributes of example lines

Seed lot	Germination <sup>1</sup> (%)	Abnormal <sup>2</sup> seedlings (%)	Remainder <sup>3</sup> (%)	<i>Fusarium</i> <sup>4</sup> (%)
A	98	1	1	3
B	80	14	6	14
C	91	7	2	4

<sup>1</sup> Percentage of normal seedlings (no defects) reported from the germination test.

<sup>2</sup> Percentage of abnormal seedlings (defects such as twisted shoots or stunted roots; such seedlings will not usually emerge).

<sup>3</sup> Seeds which have not germinated, either because they are dormant or more usually dead.

<sup>4</sup> Seed-borne plant pathogen present after fungicide seed treatment.

Note:

- Seed lot A – high quality seed lot.
- Seed lot B – reject because of poor germination; the presence of abnormal seedlings and dead seeds indicates the seed lot has undergone physiological deterioration and will struggle to perform once sown; *Fusarium* level may also contribute to emergence problems.
- Seed lot C – germination acceptable but some evidence of deterioration.

**PATHOGEN THRESHOLDS**

- European (UK, Denmark) guidelines suggest that if less than 10% *Fusarium/Microdochium* or 5% *Drechslera* infection, untreated seed can be sown in early autumn or late spring, however no New Zealand thresholds have been established.
- Seed-borne pathogen data for New Zealand cereal seed lots usually not available.
- Advisable to sow fungicide treated seed at all times because of the risk from soil-borne *Fusarium*.
- A zero threshold exists for loose smut and seed-borne barley stripe mosaic virus. Seed lines with loose smut will be rejected from certification and uncertified seed must be treated.

Seed quality details will be freely available from a reputable seed merchant upon request.

**FUNGICIDE SEED TREATMENT STRATEGIES**

1. Consider using Kinto®Duo, Raxil® Star, Rancona® Dimension or Vitaflo® for protection from soil or seed-borne *Fusarium*.
2. Consider using Systiva® for protection from rusts and powdery mildew.
3. All of those products plus Capri® provide control of loose smut and bunt.

Note: Any chemical (fungicide or insecticide) has the potential to reduce germination/establishment if applied to a physically damaged seed lot (e.g. seed coat cracked). Cracking may allow the chemical access to the embryo; this may either kill the seed, or result in the production of abnormal seedlings.

**INSECTICIDE SEED TREATMENT STRATEGIES**

Products based on imidacloprid (e.g. Gaucho®) and clothianidin (e.g. Poncho®) are the only registered insecticide seed treatments providing some control of aphids, grass grub larvae and Argentine stem weevil. 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, insecticide seed treatments can be used for grass grub control, but not aphids, as seedling growth occurs too rapidly.

Considerations for insecticide seed treatment use:

- For sowings before 1 May, the need for a foliar aphicide should be monitored after GS13/21
- For sowings after 1 May, the need for a foliar aphicide should be monitored after GS12/13.
- 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 should consider the economics of insecticide seed treatment versus foliar insecticides when only aphid pressure is high, especially if seed is sown early and further foliar aphicide applications may be necessary.

<b>4-year adjusted mean</b>	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.
<b>CPT</b>	Cereal performance trials (CPT) comprise of two stages, administered jointly through a single management committee.  CPT 1: Pre-commercial. Assesses performance of advanced breeding lines within a series of collaborative breeder/seed company operated trials. Stage 1 trials only operate in Canterbury.  CPT 2: Focus on performance of close to market pre-commercial and commercial cultivars. Milling and malting cultivars must do a minimum of 2 years in CPT 1 and feed cultivars a minimum of 1 year in CPT 1 before being eligible for promotion into CPT 2.
<b>CV (%)</b>	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.
<b>Falling number</b>	Low falling number scores are an indicator of sprouting. Falling number (FN) is an indirect measure of alpha-amylase levels in the grain with low FN indicating high alpha-amylase activity. FN is tested three weeks after harvest and only on milling wheats.
<b>Limited data</b>	For newer cultivars that 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 ( ).
<b>LSD</b>	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.  Any cultivar falling within one LSD of the highest yielding cultivar has been highlighted in the yield tables as part of the highest yielding group. Note that some cultivars with the same yield may not appear in the top yielding group due to rounding figures to zero or one decimal place.
<b>Protein (%)</b>	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 (%).



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

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