FAR

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FAR CULTIVAR EVALUATION

FOUNDATION FOR ARABLE RESEARCH

FAR

spring sown wheat and barley 2024/2025

contents

introduction and welcome

High rainfall across most regions created challenges throughout the growing season, with sowing in some cases delayed until late November. Weather conditions also impacted crop management during the season.

Despite this, spring wheat yields were strong, with Canterbury trials averaging 8.7 t/ha and Feilding 8.4 t/ha, both similar to their respective 4-year averages of 8.6 t/ha and 8.1 t/ha. Notable changes were observed in disease ratings, particularly for Fusarium head blight (FHB).

Barley yields were generally in line with the 4-year regional averages, although a few trials recorded lower results. Changes in disease ratings were noted for scald, leaf rust, and powdery mildew.

Trial-specific yields are available in the evaluations, and individual cultivar disease ratings can be found in the agronomic comments section of this book. For more information on seasonal weather at each trial site, visit FAR's weather platform via the FAR website (www.far.org.nz) and search for the weather station nearest the trial locations.

NZ Grown Grains

New Zealand consumers of grain-based goods can now learn whether products are made from locally grown ingredients.

A certification trademark has been developed by FAR and industry, with support from EatNZ, that allows end-users to use the NZ Grown Grains Logo under licence. This will heighten consumer awareness with the aim of increasing the volume of grains produced in our country and reducing the reliance on imports."

Joanne Drummond
Senior Researcher - Cereals

Jacqueline Straathof
CPT Manager

wheat - trial site details

2024/2025 trial site location map

CHELTENHAM - MANAWATU

Kiwitea silt loam, Dryland
Trial operator: Kevin Sinclair, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: John Ridd

This trial was sown on 23 October 2024 in a surrounding crop of cv. Sensas, following pasture. The trial received 127 kg N/ha in the form of DAP® pre-drill, Sustain® late October and urea in mid-November. During the season the trial received two herbicides and one insecticide application. The fungicide programme consisted of a Kestrel® and Phoenix® mix followed by an Amistar® and Aviator Xpro® mix in November. The trial was harvested on 28 February 2025.

SHEFFIELD - CENTRAL CANTERBURY

Eyre shallow silt loam, Irrigated
Trial operator: Russell Kirk, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: Marty Skurr

This trial was sown into a crop of cv. Reliance on 10 October 2024, following kale. The trial received 136 kg N/ha split across two applications. An herbicide mix and an insecticide were applied mid-November. The trial received 20 mm irrigation early November. Management data after mid-November have not been received. The trial was harvested on 17 March 2025.

METHVEN - MID CANTERBURY

Moderately deep silt loam, Irrigated
Trial operator: Ashley Harrison, PGG Wrightson Grain
Host farmer: Johnny Royston

This trial was sown on 30 August 2024 in a crop of cv. Discovery, following kale. The trial was harvested on the 1 March 2025. Further management data have not been received.

SEAFIELD - MID CANTERBURY

Lismore soil, Irrigated
Trial operator: Russell Kirk, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: Simon Bonifant

This trial was sown into a crop of cv. Discovery on 14 August 2024, following clover. One application of Urea and three applications of N Protect® provided 241 kg N/ha. The trial received one herbicide, two applications of Karate® insecticide plus a PGR mix of Moddus® and Cycocel®. The fungicide programme consisted of an Amistar® and Kestrel® mix late October. Irrigation totalling 40 mm was applied over two applications. The trial was harvested on 17 March 2025.

Spring Sown Wheat Agronomic Comment 2024/2025 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
Cochise	5	**(MS)**	MR	MSS	MR	MRMS	Stiff	Medium	Early	**Low-moderate**
Conquest	22	MS	MS	S	MS	**(MSS)**	Moderate-stiff	Medium	Early-int	Very low
Discovery	12	MSS	MRMS	MR*	**(MR)**	MSS	Stiff	Tall	Intermediate	**Moderate**
Raffles	23	MSS	MSS	S*	MR	MSS	Moderate	Tall	Intermediate	Low
Reliance	13	MS	MR	S	MS	**(S)**	Moderate-stiff	Short-medium	Early-int	Low
Sensas	15	MS	MRMS*	S	MR	S	Stiff	Medium	Early	Low
Viceroy	15	S	MR	S*	MS	S	Stiff	Medium-tall	Intermediate	Low-moderate
CRWT278	2	MS	MRR	**MRMS**	MRR	**(MS)**	Moderate	Medium	Early-int	**Moderate**

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 or the rating has changed this season)

Disease susceptibility sourced from FAR-funded Disease Nurseries (assessments carried out by New Zealand Institute for Bioeconomy Science).

Sprouting susceptibility scores are an indication of susceptibility to preharvest sprouting. Data sourced from FAR-funded Sprouting Nurseries (assessments carried out by New Zealand Institute for Bioeconomy Science).

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

Spring Sown Wheat Cultivar Evaluation 2024/2025 Season - yield (t/ha)

CULTIVAR	Grade	Cheltenham	Sheffield	Methven	Seafield	Canterbury mean yield	Seasons in FAR trials (Spring sown)
Region		Manawatu	Central Canterbury	Mid Canterbury	Mid Canterbury		
Soil type		Kiwitea silt loam	Eyre shallow silt loam	Moderately deep silt loam	Lismore		
Dryland/Irrigated		Dryland	Irrigated	Irrigated	Irrigated		
Previous crop		Pasture	Kale	Kale	Clover		
Sow date		23 Oct	10 Oct	30 Aug	14 Aug		
Harvest date		28 Feb	17 Mar	1 Mar	17 Mar		
Raffles	Gristing	**8.5**	7.3	10.2	9.8	9.1	23
Cochise	Medium	**9.0**	**7.8**	**10.7**	**10.7**	**9.7**	5
Discovery	Medium	8.5	7.2	10.3	**10.2**	**9.2**	12
Viceroy	Medium	8.0	6.9	8.6	9.0	8.2	15
CRWT278	Medium	**9.0**	**7.9**	10.0	9.6	9.2	2
Sensas	Med/Prem	**8.9**	6.5	8.5	8.3	7.8	15
Conquest	Premium	7.8	6.0	7.8	8.2	7.3	22
Reliance	Premium	7.9	6.2	8.0	7.4	7.2	13
Site mean yield (t/ha)		8.4	7.2	9.4	9.5	8.7	
P-value		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
LSD (p= 0.05)		0.5	0.2	0.4	0.6	0.5	
CV (%)		3.9	1.8	2.6	4.1	-	

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

Grade has been provided by the Agent/Breeder and does not guarantee a contract will be issued for that cultivar.

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

Spring Sown Wheat Grain Quality Data 2024/2025 Season

Canterbury

CULTIVAR	Grade	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Raffles	Gristing	44	76	12.2	0.6	436
Cochise	Medium	46	76	11.5	0.5	380
Discovery	Medium	46	75	12.4	0.5	388
Viceroy	Medium	38	79	12.8	1.1	403
CRWT278	Medium	44	75	12.4	0.8	272
Sensas	Med/Prem	40	79	13.1	0.7	345
Conquest	Premium	35	76	13.1	1.0	459
Reliance	Premium	37	74	13.1	1.2	392
Site mean yield		41	76	12.6	0.8	385
P-value		<0.001	0.001	<0.001	0.009	0.002
LSD (p=0.05)		4	2	0.5	0.4	70

Southern North Island

CULTIVAR	Grade	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 5.7)	Screenings (%)	Falling No. (seconds)
Raffles	Gristing	50	76	9.9	0.4	398
Cochise	Medium	54	76	8.9	0.4	312
Discovery	Medium	52	76	10.4	0.3	356
Viceroy	Medium	46	80	10.9	0.5	412
CRWT278	Medium	51	76	10.1	0.7	312
Sensas	Med/Prem	49	82	10.7	0.2	404
Conquest	Premium	41	78	11.2	0.5	423
Reliance	Premium	44	74	10.6	0.8	376
Site mean yield		49	77	10.3	0.4	374
P-value		-	-	-	-	-
LSD (p=0.05)		-	-	-	-	-

Southern North Island only: Single trial - no P-value or LSD available.

All trials: Gris - Gristing, Med - Medium, Prem - Premium.

Grade has been provided by the Agent/Breeder and does not guarantee a contract will be issued for that cultivar.

The quality data for each region are also presented as a 4-year mean on the individual cultivar description pages.

Spring Sown Wheat - 4-year adjusted mean - relative yield by site

CULTIVAR	Grade	Feilding	Sheffield	Methven	Seafield	Canterbury mean yield	Seasons in CPT2 trials (Spring sown)
Region		Manawatu	Central Canterbury	Mid Canterbury	Mid Canterbury		
Dryland/Irrigated		Dryland	Irrigated	Irrigated	Irrigated		
No. of trials		4	4	4	4	16	
Raffles	Gristing	98	106	102	105	**104**	23
Cochise	Medium	**106**	105	102	**113**	**107**	5
Discovery	Medium	**103**	102	108	106	**106**	12
Viceroy	Medium	93	102	93	98	97	15
CRWT278	Medium	**108**	111	111	103	**108**	2
Sensas	Med/Prem	101	99	93	95	95	15
Conquest	Premium	94	88	95	93	92	22
Reliance	Premium	96	88	96	87	91	13
Site mean yield (t/ha)		8.1	7.2	8.7	9.9	8.6	
P-value		0.003	0.073	0.303	<0.001	0.003	
LSD (estab. cv) (p=0.05)		7	NS	NS	7	-	
LSD (new vs estab.) (p=0.05)		10	NS	NS	11	-	

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

Grade has been provided by the Agent/Breeder and does not guarantee a contract will be issued for that cultivar.

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.

NS, LSD not calculated as P-value not significant

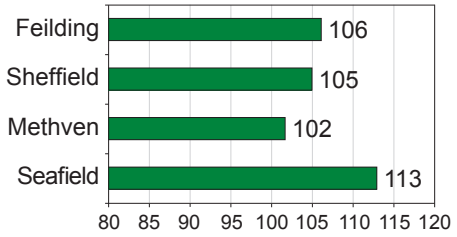
Bold text indicates the cultivar was amongst the highest yielding group of cultivars (based on estab. cv LSD).

COCHISE

YEAR 5

A mostly above average to high yielding, medium grade milling and feed variety. Has some degree of resistance to disease, with the exception of STB and leaf rust. Below average falling number. A medium height variety with stiff straw and early maturity.

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



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

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	48	48
Test weight (kg/hl)	73	75
Protein (%) (N% x 5.7)	11.0	11.9
Screenings (%)	0.7	0.9
Falling number (sec)	256	301

END USE	
	Medium grade milling, feed

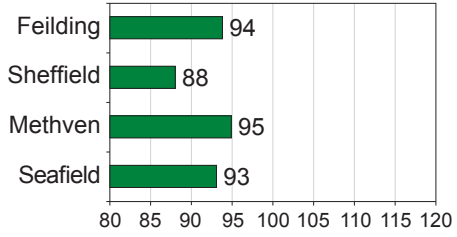
BACKGROUND	
Breeder	KWS, UK
Head licensee	Carrfields Grain & Seed
Agent	Carrfields Grain & Seed

CONQUEST PVR

YEAR 22

A high protein content, premium milling cultivar, with a similar yield to cv. Reliance. Shows varying levels of susceptibility to the common wheat diseases. Early to intermediate maturity with high test weights and falling numbers and very low risk of sprouting.

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	Mostly susceptible

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	39	41
Test weight (kg/hl)	76	77
Protein (%) (N% x 5.7)	12.7	13.0
Screenings (%)	1.1	1.4
Falling number (sec)	381	384

END USE	
	Premium milling

BACKGROUND	
Breeder	BSI
Agent	Luisetti Seeds

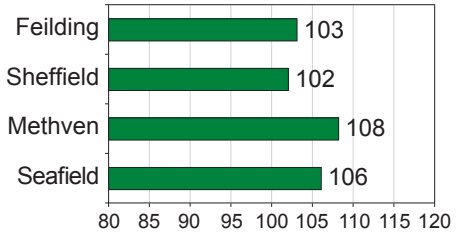
Sth Nth Is (Southern North Island).

DISCOVERY PVR

YEAR 12

Medium grade milling cultivar producing above average to high yields. Mostly susceptible to STB and FHB, but has some degree of resistance to other common wheat diseases. A strong plant growth regulator programme is recommended to reduce both lodging and shattering risk. High grain weights and moderate sprout risk.

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	Moderately resistant
Fusarium head blight	Mostly susceptible

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	46	47
Test weight (kg/hl)	74	75
Protein (%) (N% x 5.7)	11.8	12.3
Screenings (%)	0.4	0.8
Falling number (sec)	347	336

END USE	
	Medium grade milling

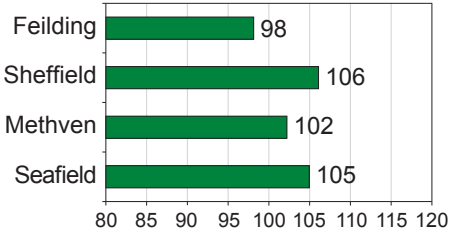
BACKGROUND	
Breeder	Limagrain Europe S.A.
Agent	PGG Wrightson Grain

RAFFLES

YEAR 23

A below average to high yielding feed and gristing wheat depending on location. Watch for disease, as cv. Raffles is susceptible to most diseases, with the exception of powdery mildew. Low sprouting risk and a high falling number. A tall variety with intermediate maturity.

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



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

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	45	44
Test weight (kg/hl)	75	75
Protein (%) (N% x 5.7)	11.6	12.3
Screenings (%)	0.4	1.0
Falling number (sec)	394	412

END USE	
	Feed, gristing

BACKGROUND	
Breeder	KWS, UK
Head licensee	Carrfields Grain & Seed
Agent	Carrfields Grain & Seed

Sth Nth Is (Southern North Island).

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

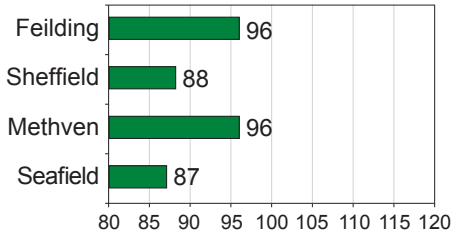
wheat cultivar descriptions

RELIANCE PVR

YEAR 13

A New Zealand bred, premium milling cultivar with yields similar to cv. Conquest. Monitor for disease, as cv. Reliance shows varying levels of susceptibility to most diseases, with the exception of stripe rust. A moderate to stiff strawed cultivar producing high proteins and good falling numbers, with low 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	Susceptible
Powdery mildew	Moderately susceptible
Fusarium head blight	Susceptible

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	41	41
Test weight (kg/hl)	74	75
Protein (%) (N% x 5.7)	12.4	13.2
Screenings (%)	0.9	1.9
Falling number (sec)	384	368

END USE	
	Premium milling

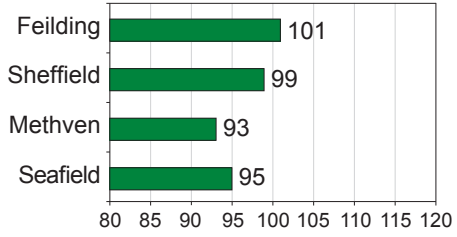
BACKGROUND	
Breeder	BSI
Agent	Luisetti Seeds

SENSAS

YEAR 15

A premium and medium grade milling wheat. Cv. Sensas is the only true spring wheat cultivar in New Zealand. It is well suited to late spring sowings because of its true spring character and early maturity. Should not be planted before July to avoid frost risk at flowering. Has some level of resistance to stripe rust and powdery mildew, but a degree of susceptibility to other common wheat diseases. A stiff strawed cultivar with low sprouting risk and high proteins.

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



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

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	44	43
Test weight (kg/hl)	81	79
Protein (%) (N% x 5.7)	12.1	12.9
Screenings (%)	0.3	0.7
Falling number (sec)	369	376

END USE	
	Premium and medium grade milling

BACKGROUND	
Breeder	RAGT, France
Agent	PGG Wrightson Grain

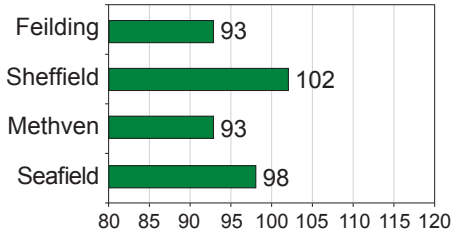
Sth Nth Is (Southern North Island).
* Resistance is affected by pathotypes present (score is an average).

VICEROY PVR

YEAR 15

A New Zealand bred, medium grade milling wheat with below average to average yields depending on location. Monitor for disease, as cv. Viceroy shows susceptibility to the common wheat diseases, with the exception of stripe rust. Good test weight and falling number. This variety has a stiff straw with 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)	Sth Nth Island	Canterbury
TGW (g)	41	40
Test weight (kg/hl)	79	79
Protein (%) (N% x 5.7)	12.2	12.5
Screenings (%)	1.0	1.5
Falling number (sec)	368	379

END USE	
	Medium grade milling

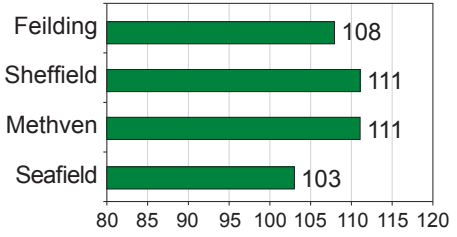
BACKGROUND	
Breeder	BSI
Agent	Luisetti Seeds

CRWT278

YEAR 2

A mostly high yielding medium grade milling wheat. Moderately susceptible to STB and FHB, but shows varying levels of resistance to other common cereal diseases. Protein levels similar to cv. Viceroy with a lower falling number. A medium height variety with moderate sprouting risk.

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



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

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

GRAIN QUALITY (4-year means)	Sth Nth Island	Canterbury
TGW (g)	45	47
Test weight (kg/hl)	74	75
Protein (%) (N% x 5.7)	11.7	12.4
Screenings (%)	1.1	1.1
Falling number (sec)	320	278

END USE	
	Medium grade milling

BACKGROUND	
Breeder	BSI
Agent	Luisetti Seeds

Sth Nth Is (Southern North Island).
* Resistance is affected by pathotypes present (score is an average).

barley - trial site details

2024/2025 trial site location map

WHANGANUI - MANAWATU

Marton clay loam, Dryland
Trial operator: Kevin Sinclair, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: James Campbell

This dryland trial was sown on 23 October 2024 into a field of cv. SY Transformer following pasture. N was applied in the form of SOA (20 kg N/ha) and organic fertilisers. The trial received two herbicides. A mix of Revystar® and Phoenix® fungicide went on at the end of December. Lodging was recorded but the crop was harvested successfully on 11 March 2025.

MARTON - MANAWATU

Kiwitea loam, Dryland
Trial operator: Kevin Sinclair, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: Murray and Brenton Knox

This dryland trial was sown on 25 November 2024 in a paddock of cv. 14007-026 following pasture. 60 kg N/ha came from Sustain® (pre-sowing) and YaraMila® Actyva. One herbicide mix was applied in December. The fungicide programme consisted of Proline® in December followed by a Phoenix® and Revystar® mix in January. Lodging was recorded but the crop was combined successfully on 3 March 2025.

DUNSANDEL - CENTRAL CANTERBURY

Templeton silt loam, Irrigated
Trial operator: Matt Hicks, Cropmark Seeds Ltd
Host farmer: Nigel and Simon Barnett

The trial was sown on 20 September 2024 in a paddock of cv. SY Transformer following grass. A total of 106 kg N/ha had been applied in two applications. Two herbicides, one insecticide, and two PGRs were applied during the growing season. The two-spray fungicide programme consisted of a Comet®, Kestrel® and Phoenix® mix in November at growth stage 31, followed by a Miravis® Flexi, Proline® and Phoenix® mix in early December at growth stage 49. Three irrigations supplied 115 mm of water. The trial was harvested on 27 February 2025.

METHVEN - MID CANTERBURY

Lyndhurst silt loam, Irrigated
Trial operator: Matt Hicks, Cropmark Seeds Ltd
Host farmer: Brendon Moore

The trial was sown on 22 August 2024 in a paddock of cv. SY Transformer following grass. The trial received 210 kg N/ha of which 40 kg N/ha pre-sowing. Two herbicides, two insecticides and two PGRs were applied during the growing season. The three-spray fungicide programme consisted of a Comet®, Kestrel® and Phoenix® mix late October at growth stage 31, followed by a Revylution®, Proline®, Phoenix® and Acanto® mix mid-November at growth stage 39 and an Acanto® and Proline® mix mid-December at growth stage 55. The trial was harvested on 25 February 2025.

SEAFIELD - MID CANTERBURY

Lismore silt loam, Irrigated
Trial operator: Russell Kirk, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: Simon Bonifant

The trial was sown on 22 August 2024 in a paddock of cv. Planet. A total of 150 kg N/ha was applied in two applications. One herbicide, two Karate® insecticides and a PGR mix of Moddus® and Cycocel® were applied during the growing season. A Kestrel®, Comet® and Phoenix® fungicide mix went on late October. Two irrigation passes supplied 40 mm water. The trial was harvested on 8 February 2025.

ST ANDREWS – SOUTH CANTERBURY

Claremont silt loam, Dryland
Trial operator: Matt Hicks, Cropmark Seeds Ltd
Host farmer: Shawn Miller

This dryland trial was sown on 18 September 2024 in a paddock of cv. Sanette following oats. The trial received a total of 123 kg N/ha divided over two applications. One herbicide application was applied. The fungicide programme consisted of a Comet® and Kestrel® mix early November at growth stage 31, followed by a mix of Comet® and Revystar® early December at growth stage 49. The trial was harvested on 28 February 2025.

BALFOUR – NORTHERN SOUTHLAND

Wendonside silt loam, Dryland
Trial operator: Chetan Parab, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: Sean Wilkins

This dryland trial was sown on 20 November 2024 into a field of cv. Sanette following kale. The trial received 89 kg N/ha at sowing, 115 kg N/ha at growth stage 13 and 46 a kg N/ha at growth stage 25. A herbicide and an insecticide were applied at growth stage 22. A two spray-fungicide programme consisted of Proline®, Acanto® and Phoenix® at growth stage 23 to 30, and a mix of Revistar® and Phoenix® at growth stage 39 to 49. The trial also received a PGR application at growth stage 39 to 49. Lodging was recorded but the crop was combined successfully on 20 March 2025.

CHATTON – CENTRAL SOUTHLAND

Waikoikoi silt loam, Dryland
Trial operator: Chetan Parab, New Zealand Institute for Bioeconomy Science (BSI)
Host farmer: John Gardyne

This dryland trial was sown on 22 October 2024 into a field of cv. SY Silhouette following wheat. The trial received 243 kg N/ha divided over two applications. Three applications of herbicides, one insecticide, three fungicides and two PGRs were applied during the growing season. Lodging was recorded but the crop was harvested successfully on 21 March 2025.

Spring Sown Barley Agronomic Comment 2024/2025 Season

CULTIVAR	Years in CPT2 trials	Scald	Net blotch (net form)	Leaf rust	Powdery mildew	Straw strength	Crop height	Maturity
Baxter (CRBA173)	3	**(MSS)**	MRMS	**(S)**	MR	Moderate	Medium	Early-int
Buttress	10	MSS	MR	MS	MRR	Moderate	Med-tall	Intermediate
Fortitude	11	**(MRMS)**	MR	MS*	MRR	Moderate	Medium	Intermediate
Laureate	9	MRMS	MR	**(MSS*)**	MRR	Moderate	Medium	Intermediate
Milford	12	MS	MS	MS*	**MS***	Stiff	Short	Intermediate
RGT Planet	11	**(MRMS)**	MS	MS	**(MRMS)**	Moderate	Medium	Early-int
SY Dolomite	7	MRMS	MRMS	**(MSS)**	**(MRR)**	Moderate-stiff	Medium	Intermediate
SY Silhouette	8	**(MSS)**	MR	MS	**(MR)**	Stiff	Medium	Late
SY Solar	5	S*	MRMS	**(S)**	**(MR)**	Stiff	Medium	Early-int
SY Transformer	6	MRMS	MR	**(MSS)**	**(MR)**	Moderate-stiff	Medium	Intermediate
CRBA180	2	**(MSS)**	MRMS	**(S)**	(MR)	Moderate	Medium	Intermediate
KSB2210	1	(MR)	MRMS	(MS)	(MR)	Moderate	Medium	Intermediate
SY418-250	3	**(MS)**	MRMS	**(S)**	(MR)	Moderate-stiff	Medium	Intermediate
SY418-336	3	**(MSS)**	MRMS	MS	(MRMS)	Stiff	Short-med	Intermediate

Disease susceptibility sourced from FAR-funded Disease Nurseries and CPT trials (assessments carried out by New Zealand Institute for Bioeconomy Science).

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 a change in rating.

Key

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

Spring Sown Barley Cultivar Evaluation 2024/2025 Season - yield (t/ha)

CULTIVAR	Whanganui	Marton	Southern NI mean	Dunsandel	Methven		Seafield*	St Andrews	Canterbury mean	Balfour	Chatton	Southland mean	Seasons in CPT2 trials (Spring sown)
Region	Manawatu	Manawatu		Central Canterbury	Mid Canterbury		Mid Canterbury	South Canterbury		Northern Southland	Central Southland		
Soil Type	Marton clay loam	Kiwitea loam		Templeton silt loam	Lyndhurst silt loam		Lismore	Claremont silt loam		Wendonside silt loam	Woikiokio silt loam		
Dryland/Irrigated	Dryland	Dryland		Irrigated	Irrigated		Irrigated	Dryland		Dryland	Dryland		
Previous crop	Pasture	Pasture		Grass	Grass		-	Oats		Kale	Wheat		
Sowing date	23 Oct	25 Nov		20 Sep	22 Aug		22 Aug	18 Sep		20 Nov	22 Oct		
Harvest date	11 Mar	3 Mar		27 Feb	25 Feb		8 Feb	28 Feb		20 Mar	21 Mar		
Baxter (CBRA173)	**8.9**	8.9	**8.9**	**11.0**	10.9		11.1	**8.1**	**10.3**	**9.3**	**10.9**	**10.1**	3
Buttress	8.7	8.9	**8.8**	10.3	10.1		10.7	7.8	9.7	**9.0**	**11.0**	**10.0**	10
Fortitude	8.1	8.6	8.4	9.0	10.0		10.4	7.5	9.2	**8.9**	10.6	**9.8**	11
Laureate	8.7	9.0	**8.8**	**10.8**	11.2		**11.3**	**8.3**	**10.4**	7.5	10.3	8.9	9
Milford	8.4	8.9	8.6	8.8	9.8		9.9	7.0	8.9	7.8	9.9	8.8	12
RGT Planet	7.5	8.0	7.8	9.1	9.6		10.5	6.8	9.0	**9.0**	10.0	9.5	11
SY Dolomite	**9.0**	8.9	**9.0**	**11.2**	11.2		10.5	7.8	**10.2**	**9.3**	**11.0**	**10.1**	7
SY Silhouette	8.7	8.8	**8.8**	**10.8**	**11.4**		10.9	**8.5**	**10.4**	**9.0**	**11.1**	**10.1**	8
SY Solar	7.6	8.5	8.1	9.8	10.0		10.7	6.8	9.3	8.5	10.5	9.5	5
SY Transformer	8.6	9.0	**8.8**	10.5	10.9		10.9	**8.5**	**10.2**	**9.2**	**11.4**	**10.3**	6
CRBA180	**9.1**	**9.1**	**9.1**	10.5	**11.6**		**11.4**	**8.3**	**10.5**	**9.3**	**11.3**	**10.3**	2
KSB2210	**9.0**	**9.3**	**9.1**	9.8	10.7		10.8	**8.2**	9.9	7.8	**10.9**	9.4	1
SY418-250	8.6	8.6	8.6	**10.9**	11.2		10.8	7.6	**10.1**	**9.0**	**11.4**	**10.2**	3
SY418-336	**8.9**	8.9	**8.9**	**11.1**	11.1		10.9	**8.1**	**10.3**	**8.8**	**11.4**	**10.1**	3
Site mean yield (t/ha)	8.6	8.8	8.7	10.3	10.7		10.8	7.8	9.9	8.7	10.8	9.8	
P-Value	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.014	
LSD (p=0.05)	0.3	0.3	0.4	0.5	0.3		0.3	0.6	0.5	0.8	0.8	0.8	
CV (%)	2.6	2.1	-	3.5	1.8		1.9	5.6	-	6.4	4.8	-	

* Pendarves in previous years.

Figures in bold indicate the cultivar was amongst the highest yielding group of cultivars.

Spring Sown Barley Grain Quality Data 2024/2025 Season

Southern North Island

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Baxter (CBRA173)	56	62	10.5	2.1
Buttress	52	66	11.6	3.1
Fortitude	53	66	11.5	2.3
Laureate	57	63	11.2	1.9
Milford	53	66	11.4	3.2
RGT Planet	54	63	10.9	3.4
SY Dolomite	58	63	11.2	2.3
SY Silhouette	55	62	10.6	3.6
SY Solar	58	63	11.1	2.5
SY Transformer	57	63	10.9	2.2
CRBA180	59	62	11.3	1.7
KSB2210	58	65	11.3	1.1
SY418-250	55	62	11.1	2.4
SY418-336	57	64	10.9	1.6
Mean	56	64	11.1	2.4
P-value	0.028	0.001	0.109	0.248
LSD (p=0.05)	4	2	NS	NS

Mean of 2 trials.
NS, LSD not calculated as P-value not significant.

Canterbury

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Baxter (CBRA173)	57	63	11.1	1.9
Buttress	53	65	12.4	1.4
Fortitude	54	65	12.5	1.2
Laureate	59	63	12.0	1.5
Milford	53	64	12.2	2.2
RGT Planet	58	65	12.2	1.4
SY Dolomite	60	63	12.0	1.8
SY Silhouette	59	64	11.8	1.2
SY Solar	59	64	11.9	1.3
SY Transformer	59	65	11.5	0.9
CRBA180	61	64	11.8	1.0
KSB2210	57	66	12.0	1.3
SY418-250	57	63	11.2	1.1
SY418-336	59	63	11.7	1.2
Mean	57	64	11.9	1.4
P-value	<0.001	0.003	<0.001	0.004
LSD (p=0.05)	2	1	0.6	0.6

Mean of 4 trials.
The quality data for each region are also presented as a 4-year mean on the individual cultivar description pages.

Southland

CULTIVAR	T.G.W. (g)	Test Weight (kg/hl)	Protein (%) (N% x 6.25)	Screenings (%)
Baxter (CBRA173)	56	61	11.6	4.6
Buttress	55	66	12.9	2.6
Fortitude	56	66	11.9	2.1
Laureate	57	63	12.3	3.4
Milford	52	63	11.8	7.2
RGT Planet	57	64	12.2	4.5
SY Dolomite	58	62	11.8	4.4
SY Silhouette	58	61	11.9	4.7
SY Solar	58	61	12.3	5.5
SY Transformer	58	62	12.4	3.2
CRBA180	60	62	12.4	3.6
KSB2210	56	64	11.9	4.4
SY418-250	58	63	11.1	3.1
SY418-336	59	62	12.4	3.6
Mean	57	63	12.0	4.0
P-value	0.010	0.001	0.059	0.251
LSD (p=0.05)	3	2	NS	NS

Mean of 2 trials.
NS, LSD not calculated as P-value not significant.
The quality data for each region are also presented as a 4-year mean on the individual cultivar description pages.

barley - 4-year adjusted mean

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

CULTIVAR	Whanganui	Marton*	Southern NI mean	Dunsandel*	Methven*		Pendarves	St Andrews	Canterbury mean	Balfour	Chatton*	Southland mean	Seasons in CPT2 trials
Region	Manawatu	Manawatu		Central Canterbury	Mid Canterbury		Mid Canterbury	South Canterbury		Northern Southland	Central Southland		(Spring sown)
Dryland/Irrigated	Dryland	Dryland		Irrigated	Irrigated		Irrigated	Dryland		Dryland	Dryland		
No. of trials	4	3	7	3	3		4	4	14	4	2	6	
Baxter (CBRA173)	**104**	100	**102**	**105**	**104**		**100**	**102**	**103**	107	**(101)**	103	3
Buttress	**101**	98	99	98	98		**102**	96	99	103	**100**	102	10
Fortitude	97	97	97	94	98		**101**	98	98	103	**98**	100	11
Laureate	**100**	100	100	**104**	101		**102**	101	**102**	98	**99**	98	9
Milford	93	98	96	91	91		**100**	92	93	92	95	93	12
RGT Planet	93	93	93	92	95		92	88	92	99	90	94	11
SY Dolomite	**103**	**103**	**103**	**105**	101		98	**103**	**102**	102	**102**	102	7
SY Silhouette	**102**	101	**102**	**104**	101		**102**	**105**	**103**	102	**103**	103	8
SY Solar	97	97	97	98	97		97	91	96	96	95	95	5
SY Transformer	98	**102**	100	**102**	101		**102**	**103**	**102**	102	**102**	102	6
CRBA180	**104**	**104**	**104**	**103**	**(109)**		**103**	**107**	**105**	108	**(104)**	106	2
KSB2210	**(105)**	**(105)**	**(105)**	(95)	(100)		**(100)**	**(105)**	(100)	(89)	**(100)**	(96)	1
SY418-250	**100**	98	99	**105**	**102**		**98**	**101**	**102**	101	**(105)**	103	3
SY418-336	**102**	**103**	**102**	**104**	101		**104**	**108**	**104**	98	**(105)**	102	3
Site mean yield (t/ha)	7.9	8.9	8.4	10.9	10.4		9.8	7.8	9.6	8.4	11.7	10.0	
P-value	0.001	<0.001	<0.001	<0.001	0.005		<0.001	<0.001	<0.001	0.211	0.014	0.183	
LSD (estab. cv) (p=0.05)	6	3	4	5	7		6	7	4	NS	7	NS	
LSD (new vs estab.) (p=0.05)	9	5	6	7	9		9	11	7	NS	9	NS	

*No results for Dunsandel (2021-22), Marton (2022-23) and Methven (2023-24) so data are 3-year means. No result from Chatton (2022-23, 2023-24) so data are 2-year means.

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.

NS, LSD not calculated as P-value not significant

Figures in bold indicate the cultivar was amongst the highest yielding group (based on estab. cv LSD).

Figures in brackets are less robust as they are only based on one year of data.

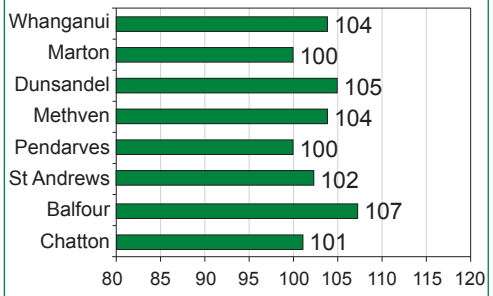
barley cultivar descriptions

BAXTER (CRBA173) PVR

YEAR 3

A mostly average to high yielding feed cultivar. Has some resistance to net blotch and powdery mildew, but shows a level of susceptibility to other common barley diseases. A medium height cultivar with moderate straw strength and early to intermediate maturity.

RELATIVE YIELDS – 3-year* adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
Scald	Mostly susceptible
Net form of net blotch	Intermediate resistance
Leaf rust	Susceptible
Powdery mildew	Moderately resistant

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	57	55	57
Test weight (kg/hl)	61	61	61
Protein (%) (N% x 6.25)	10.6	10.4	11.4
Screenings (%)	1.5	2.8	3.2

END USE	
	Feed

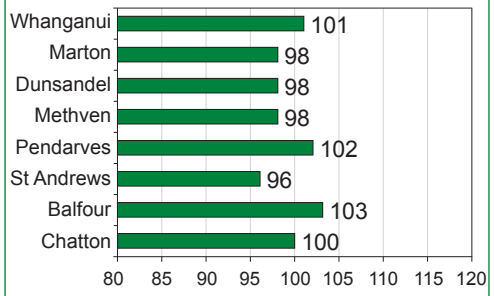
BACKGROUND	
Breeder	Sejet
Head Licensee	BSI
Agent	Luisetti Seeds

BUTTRESS PVR

YEAR 10

A feed variety with mostly average yields depending on location. Has some resistance to net blotch and powdery mildew, but shows a level of susceptibility to other common barley diseases. A medium to tall cultivar with moderate straw strength and intermediate maturity.

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



DISEASE RESISTANCE	
Scald	Mostly susceptible
Net form of 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)	Sth Nth Is	Cant	Sthld
TGW (g)	54	53	55
Test weight (kg/hl)	66	65	66
Protein (%) (N% x 6.25)	11.5	11.5	12.7
Screenings (%)	1.6	1.8	2.3

END USE	
	Feed

BACKGROUND	
Breeder	Sejet
Head Licensee	BSI
Agent	Luisetti Seeds

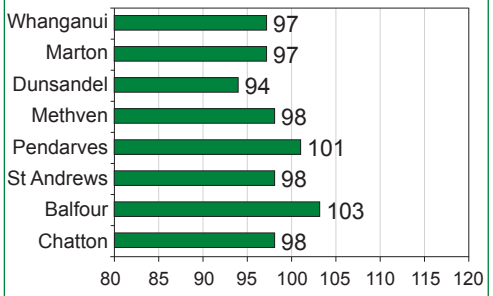
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
*Marton is a 2-year means (no data from 2022-23). Chatton is a 1-year mean (no data from 2022-23 and 2023-24).
**No results for Marton (2022-23) and Dunsandel (2021-22) so data are 3-year means. Chatton is a 2-year mean (no data from 2022-23 and 2023-24).

FORTITUDE PVR

YEAR 11

Below to average yielding feed variety. Shows resistance to most diseases, with the exception of leaf rust. A medium height cultivar with moderate straw strength and intermediate maturity.

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



DISEASE RESISTANCE	
Scald	Intermediate resistance
Net form of 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)	Sth Nth Is	Cant	Sthld
TGW (g)	54	52	54
Test weight (kg/hl)	65	65	66
Protein (%) (N% x 6.25)	11.5	11.5	12.5
Screenings (%)	1.4	2.0	1.8

END USE	
	Feed

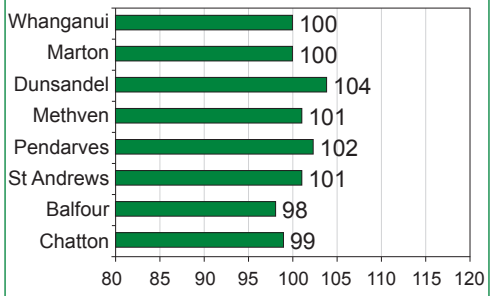
BACKGROUND	
Breeder	Sejet
Head Licensee	BSI
Agent	Luisetti Seeds

LAUREATE PVR

YEAR 9

An average to above average yielding feed and malting variety. Mostly susceptible to some leaf rust pathotypes, but shows resistance to other common barley diseases. Medium height cultivar with a moderate straw strength that requires a robust plant growth regulator programme to capitalise on yield potential.

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



DISEASE RESISTANCE	
Scald	Intermediate resistance
Net form of net blotch	Moderately resistant
Leaf rust	Mostly susceptible***
Powdery mildew	Mostly resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	56	55	56
Test weight (kg/hl)	63	62	63
Protein (%) (N% x 6.25)	11.3	11.2	12.2
Screenings (%)	1.2	2.6	2.7

END USE	
	Malting, feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

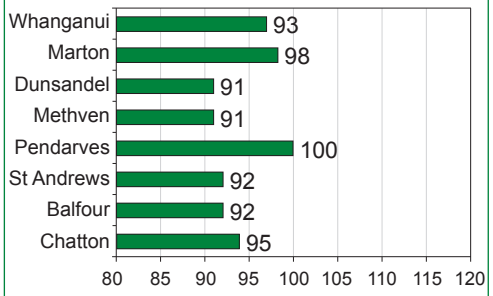
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
**No results for Marton (2022-23) and Dunsandel (2021-22) so data are 3-year means. Chatton is a 2-year mean (no data from 2022-23 and 2023-24).
***Resistance is affected by pathotypes present (score is an average).

MILFORD

YEAR 12

A feed cultivar with below average to average yields. Moderately susceptible to all common barley diseases. A short, stiff strawed variety with intermediate maturity.

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



DISEASE RESISTANCE	
Scald	Moderately susceptible
Net form of net blotch	Moderately susceptible
Leaf rust	Moderately susceptible**
Powdery mildew	Moderately susceptible**

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Short
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	54	51	52
Test weight (kg/hl)	65	62	63
Protein (%) (N% x 6.25)	11.2	11.2	12.0
Screenings (%)	2.3	5.0	6.1

END USE	
	Feed

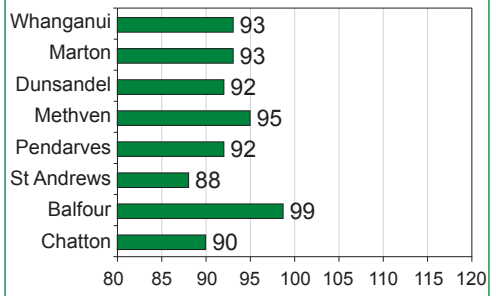
BACKGROUND	
Breeder	Breun, Germany
Head Licensee	Carrfields Grain & Seed
Agent	Carrfields Grain & Seed

RGT PLANET PVR

YEAR 11

A malting and feed cultivar producing mostly below average yields. Shows intermediate resistance to scald and powdery mildew, but moderately susceptible to net blotch and leaf rust. Medium height with moderate straw strength.

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



DISEASE RESISTANCE	
Scald	Intermediate resistance
Net form of net blotch	Moderately susceptible
Leaf rust	Moderately susceptible
Powdery mildew	Intermediate resistance

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	56	54	55
Test weight (kg/hl)	63	63	65
Protein (%) (N% x 6.25)	11.1	11.2	12.1
Screenings (%)	1.9	3.1	3.4

END USE	
	Malting, feed

BACKGROUND	
Breeder	RAGT
Head Licensee	RAGT New Zealand
Agent	PGG Wrightson Grain

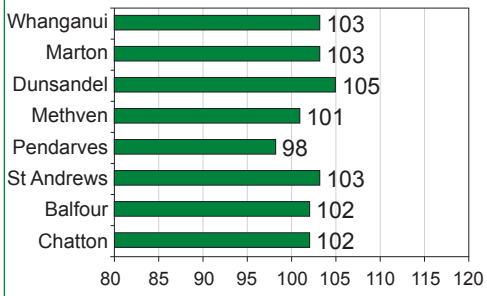
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
*No results for Marton (2022-23) and Dunsandel (2021-22) so data are 3-year means. Chatton is a 2-year mean (no data from 2022-23 and 2023-24).
** Resistance is affected by pathotypes present (score is an average).

SY DOLOMITE PVR

YEAR 7

Average to above average yielding feed variety. Has varying levels of resistance to most common barley diseases, but is mostly susceptible to leaf rust. A medium height variety with moderate to stiff straw strength

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



DISEASE RESISTANCE	
Scald	Intermediate resistance
Net form of net blotch	Intermediate resistance
Leaf rust	Mostly susceptible
Powdery mildew	Mostly resistant

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	59	57	56
Test weight (kg/hl)	63	62	62
Protein (%) (N% x 6.25)	11.0	11.1	12.1
Screenings (%)	1.3	2.9	3.0

END USE	
	Feed

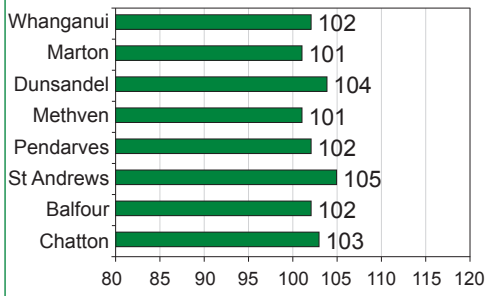
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Wholesale Seeds

SY SILHOUETTE PVR

YEAR 8

Mostly average to above average yielding feed variety. Moderately resistant to net blotch and powdery mildew but shows varying levels of susceptibly to other common barley diseases. A late maturing, medium height variety with a stiff straw.

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



DISEASE RESISTANCE	
Scald	Mostly susceptible
Net form of net blotch	Moderately resistant
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Stiff
Crop height	Medium
Maturity	Late

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	56	55	57
Test weight (kg/hl)	62	62	62
Protein (%) (N% x 6.25)	10.8	11.0	12.1
Screenings (%)	2.0	2.9	3.3

END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Cates, Advance Agriculture

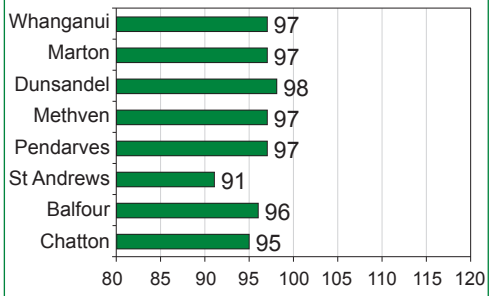
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
*No results for Marton (2022-23) and Dunsandel (2021-22) so data are 3-year means. Chatton is a 2-year mean (no data from 2022-23 and 2023-24).

SY SOLAR

YEAR 5

A below average feed variety with malting potential. Susceptible to scald and leaf rust, but shows varying levels of resistance to net blotch and powdery mildew. A medium height cultivar with a stiff straw and early to intermediate maturity.

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



DISEASE RESISTANCE	
Scald	Susceptible**
Net form of net blotch	Intermediate resistance
Leaf rust	Susceptible
Powdery mildew	Moderately resistant

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	59	56	56
Test weight (kg/hl)	64	62	63
Protein (%) (N% x 6.25)	11.3	10.8	12.1
Screenings (%)	1.3	2.5	4.2

END USE	
	Feed, malting potential

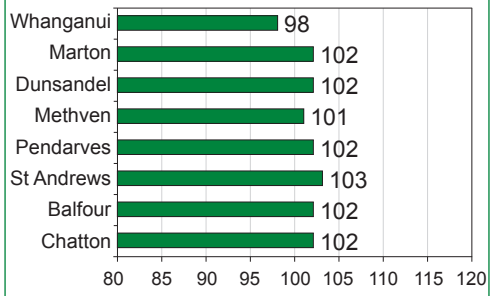
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	H&T Agronomics

SY TRANSFORMER PVR

YEAR 6

Average to slightly above average yielding feed variety. Has varying levels of resistance to the most common diseases, but is mostly susceptible to leaf rust. Medium height with moderate to stiff straw strength and intermediate maturity.

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



DISEASE RESISTANCE	
Scald	Intermediate resistance
Net form of net blotch	Moderately resistant
Leaf rust	Mostly susceptible
Powdery mildew	Moderately resistant

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	57	55	57
Test weight (kg/hl)	64	62	63
Protein (%) (N% x 6.25)	11.1	11.0	12.2
Screenings (%)	1.1	2.4	2.6

END USE	
	Feed, malting potential

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	PGG Wrightson Grain

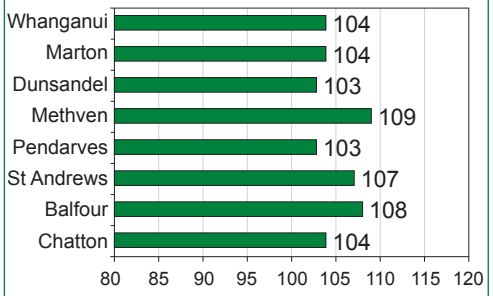
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
*No results for Marton (2022-23) and Dunsandel (2021-22) so data are 3-year means. Chatton is a 2-year mean (no data from 2022-23 and 2023-24).
**Resistance is affected by pathotypes present (score is an average).

CRBA180

YEAR 2

An above average to high yielding feed cultivar. Has some resistance to net blotch and powdery mildew, but shows a level of susceptibility to other common barley diseases. A medium height cultivar with moderate straw strength and intermediate maturity.

RELATIVE YIELDS – 2-year* adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
Scald	Mostly susceptible
Net form of net blotch	Intermediate resistance
Leaf rust	Susceptible
Powdery mildew	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	59	57	59
Test weight (kg/hl)	61	62	62
Protein (%) (N% x 6.25)	11.1	11.0	12.7
Screenings (%)	1.1	2.2	2.8

END USE	
	Feed

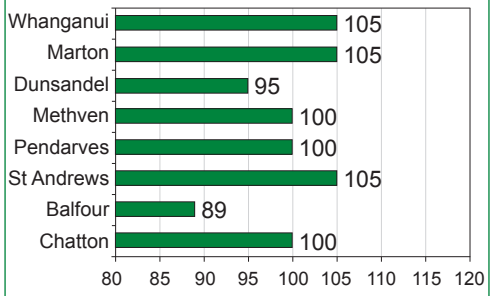
BACKGROUND	
Breeder	Sejet
Head Licensee	BSI
Agent	Luisetti Seeds

KSB2210

YEAR 1

A variable yielding feed cultivar, depending on location. Has varying levels of resistance to most common barley diseases, but is moderately susceptible to leaf rust. A medium height cultivar with moderate straw strength and intermediate maturity.

RELATIVE YIELDS – 1-year adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
Scald	Moderately resistant
Net form of net blotch	Intermediate resistance
Leaf rust	Moderately susceptible
Powdery mildew	Moderately resistant

FIELD CHARACTERISTICS	
Straw strength	Moderate
Crop height	Medium
Maturity	Intermediate

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	59	54	55
Test weight (kg/hl)	65	64	64
Protein (%) (N% x 6.25)	11.3	11.1	12.0
Screenings (%)	0.1	2.6	3.5

END USE	
	Feed

BACKGROUND	
Breeder	Secobra Research
Head Licensee	PGG Wrightson Grain
Agent	PGG Wrightson Grain

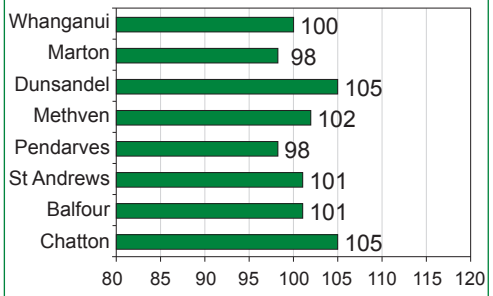
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).
* Chatton is a 1-year mean (no data from 2023-24).

SYN418-250

YEAR 3

A feed variety with yields ranging from mostly average to above average. Shows some resistance to net blotch and powdery mildew, but has varying levels of susceptibility to leaf rust and scald. A medium height cultivar with moderate to stiff straw strength and intermediate maturity.

RELATIVE YIELDS – 3-year* adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
Scald	Moderately susceptible
Net form of net blotch	Intermediate resistance
Leaf rust	Susceptible
Powdery mildew	Moderately resistant

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	56	55	55
Test weight (kg/hl)	62	62	63
Protein (%) (N% x 6.25)	10.8	10.4	11.5
Screenings (%)	1.4	2.2	2.6

END USE	
	Feed

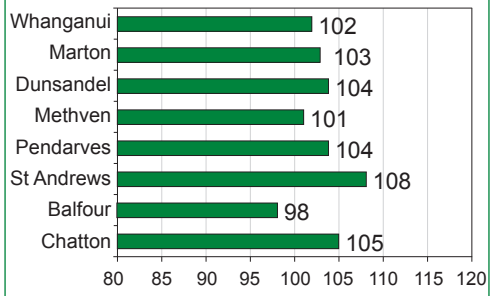
BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

SYN418-336

YEAR 3

A feed variety with malting potential, yields mostly average to high. Has some resistance to net blotch and powdery mildew, but shows a level of susceptibility to other common barley diseases. A short to medium height cultivar with stiff straw strength and intermediate maturity.

RELATIVE YIELDS – 3-year* adjusted mean (% of site mean yield)



DISEASE RESISTANCE	
Scald	Mostly susceptible
Net form of net blotch	Intermediate resistance
Leaf rust	Moderately susceptible
Powdery mildew	Intermediate resistance

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

GRAIN QUALITY (4-year means)	Sth Nth Is	Cant	Sthld
TGW (g)	57	56	58
Test weight (kg/hl)	62	62	63
Protein (%) (N% x 6.25)	11.1	10.9	12.4
Screenings (%)	1.1	2.6	2.6

END USE	
	Feed

BACKGROUND	
Breeder	Syngenta
Head Licensee	Cropmark Seeds
Agent	Not yet assigned

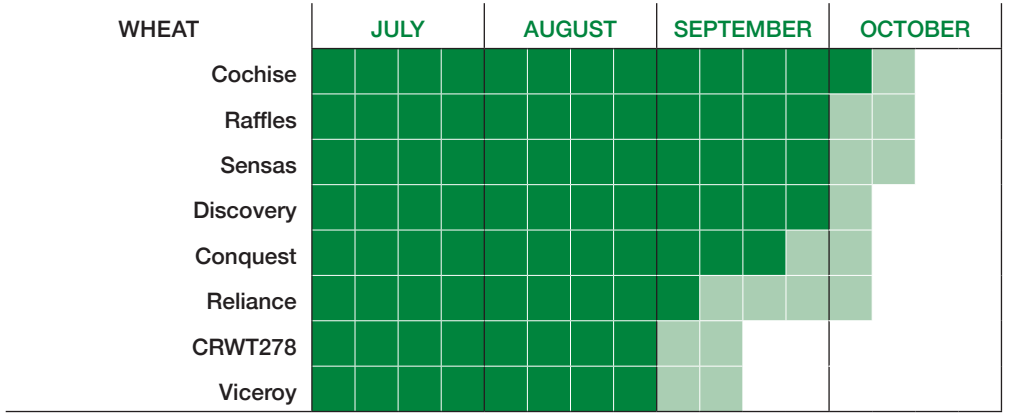
Sth Nth Is (Southern North Island), Cant (Canterbury), Sthld (Southland).

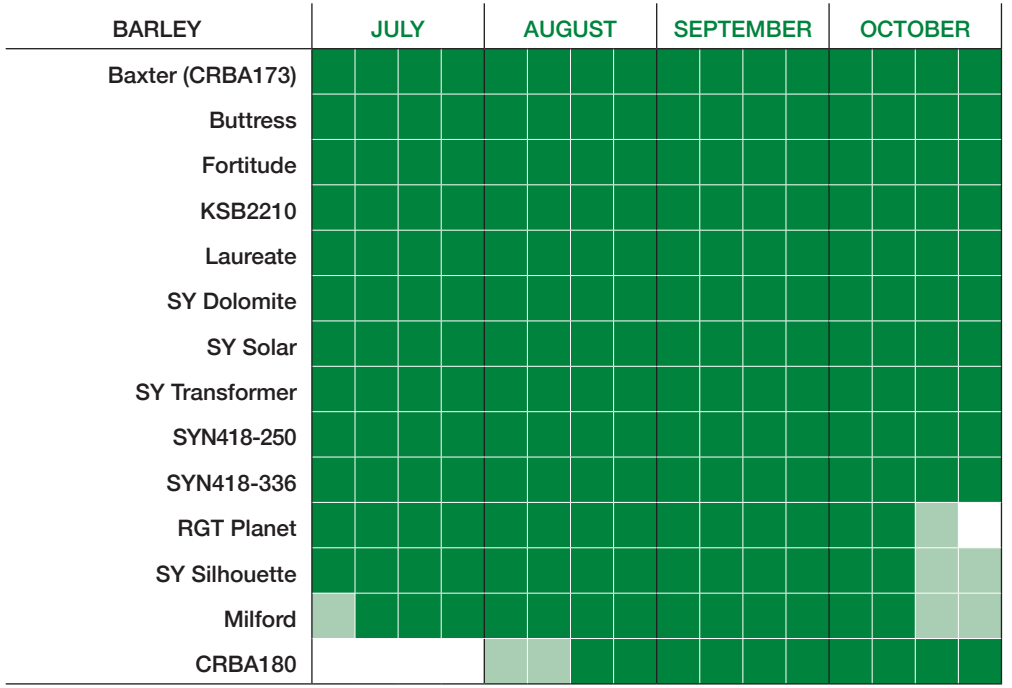
* Marton is a 2-year means (no data from 2022-23). Chatton is a 1-year mean (no data from 2022-23 and 2023-24).

Spring sown wheat and barley

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

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





Less information available for new cultivars.

Crops sown at the early window could be at risk from late frosts during flowering and grainfill.

Barley cultivars at the late sowing window are more suited to irrigated, higher fertility sites.

sowing rate calculation

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

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

- the plant population you want to establish for your crop,
- the thousand grain weight (TGW) of the seed,
- the germination rate (%) 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.

i. 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
ii. If not, count and weigh 1000 seeds.

GERMINATION PERCENTAGE (%)

This should also be on the bag label or available on request. A purity and germination (P&G) test figure is usually quoted. Germination tests determine the maximum germination potential of a given seed line. Some caution is advised as the germination figure does not always equate to the percentage of seeds expected to emerge in the field. This can be due to conditions in the field as well as the physiological quality of a particular seed line and its tolerance to stress.

EMERGENCE PERCENTAGE (%)

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

Examples of emergence percentage (%) could be:

- June sown: 80% emergence.
- July sown: 75% emergence (assumes may be a poorer quality seedbed, sown too deep, cold soil conditions).
- August – October sown: 80-90% emergence (assumes soil moisture availability and increasing soil temperatures).

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

Examples:

SPRING WHEAT

A wheat sample TGW = 45 g
B germination rate = 90%
C emergence rate = 90%
D target plant population = 250 pl/m^2
E required sowing rate is 139 kg/ha

SPRING BARLEY

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

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

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

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.

establishment

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. This is also important when considering residual herbicides since some products require a minimum planting depth.

WEEDS, DISEASES AND PESTS: Weeds will compete with the crop for light, moisture and nutrients. Weeds may 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.

ESTABLISHMENT TARGETS FOR WINTER/SPRING SOWINGS

- June 200 plants/m^2
- July 200 plants/m^2
- August 200 plants/m^2
- September 250 plants/m^2
- October 300 plants/m^2

Use the sowing rate calculation on the previous page to achieve your establishment target.

seed quality and seed treatments

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 seed lots

Seed lot	Germination[1] (%)	Abnormal[2] seedlings (%)	Remainder[3] (%)	Fusarium[4] (%)
A	98	1	1	3
B	80	14	6	14
C	91	7	2	4

[1] percentage of normal seedlings (no defects) reported from the germination test.

[2] percentage of abnormal seedlings (defects such as twisted shoots or stunted roots; such seedlings will not usually emerge).

[3] seeds which have not germinated, either because they are dormant, or more commonly, dead.

[4] 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.

SPRING WHEAT AND BARLEY SEED TREATMENT STRATEGIES

FUNGICIDES

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 the products above plus Capri™ provide control of loose smut and bunt.

Current fungicides available for treatment of seeds

Product name	Active ingredient	Mode of Action group
Kinto™ Duo	20 g/L triticonazole + 60 g/L prochloraz	DMI(Triazole); Group 3 Fungicide + DMI(Triazole); Group 3 Fungicide
Raxil® Star	20 g/L fluopyram + 100 g/L prothioconazole + 60 g/L tebuconazole	SDHI; Group 7 Fungicide + DMI(Triazole); Group 3 Fungicide + DMI(Triazole); Group 3 Fungicide
Rancona® Dimension	25 g/L ipconazole + 20 g/L metalaxyl	DMI(Triazole); Group 3 Fungicide PhenylAmide; Group 4 Fungicide
Vitaflo®	200 g/L carboxin + 200 g/L thiram	SDHI; Group 7 Fungicide + Multi-site; Group M3 Fungicide
Systiva®	333 g/L fluxapyroxad	SDHI; Group 7 Fungicide
Capri™	25 g/L tebuconazole	DMI(Triazole); Group 3 Fungicide

Source: Novachem 21/07/2025.

INSECTICIDES

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 GS 21, or as the first tiller is appearing. At this time, the plant has grown enough that a dilution effect occurs.

Current products containing either Imidacloprid or Clothianidin for treatment of seed against insect pests

Imidacloprid (Group 4a)	Clothianidin (Group 4a)
Acclaim™	Endow® 600
Gaucho®	Keyrole pro™
Punto™	Nipsit inside®
Radicle 600FS	Patrol™
Senator® 600	Poncho®
Starlan®	

Source: Novachem 18/07/2025.

CONSIDERATIONS FOR INSECTICIDE SEED TREATMENT IN SPRING CROPS:

- Insecticide seed treatments can be used for grass grub control, but will be less effective on aphids, as seedling growth occurs too rapidly, increasing the rate of product breakdown. The need for a foliar aphicide should be monitored after GS12/13.
- Growers should consider the economics of insecticide seed treatment versus foliar insecticides if aphid pressure, only, is high; especially if the seed is sown early and further foliar aphicide applications may be necessary.
- Insecticide seed treatments are likely to be most useful when both grass grub and early aphid protection are needed, when spraying is difficult or inconvenient, or to provide management flexibility.

Note: Any chemical (fungicide or insecticide) has the potential to reduce germination and/or establishment if applied to a physically damaged seed (e.g. seed coat cracked). Cracking may allow the chemical access to the embryo; either killing the seed or resulting in abnormal seedlings.

4-year adjusted mean	A “4-year adjusted mean” is a mean over trials in the last 4 years. This mean has been adjusted statistically to take account of the absence of some cultivars in some trials (for example, if a cultivar was missing from an especially high yielding trial, it would otherwise be unfairly disadvantaged). This adjustment enables fair comparisons between cultivars within each site and region.
CPT	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 one year in CPT 1 before being eligible for promotion into CPT 2.
CV%	The “Coefficient of Variation”, or CV (%), is another measure of the variability in a trial. If the differences between cultivars are similar across all replicates, the trial CV is low (<10%) and the LSD is low (both desirable). If the trial CV is high (>10%), there is a high level of unexplained variation, and the trial results are less accurate.
Falling number	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.
Limited data	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 ( ).
LSD	The “Least Significant Difference” 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. An LSD is not provided if the P-value is not significant at the p=0.05 level.
Protein %	The protein content is obtained by measuring the nitrogen (N) content and using a conversion factor to calculate the protein (%). The conversion factors in this booklet are N x 5.7 for all wheat and N x 6.25 for all barley. Some feed wheat users choose to use N x 6.25. To convert the wheat protein from 5.7 to 6.25 use a conversion factor of 1.096 x protein (%).

glossary of terms

P-Value The "P-value" helps determine whether the observed differences are likely due to differences between varieties or due to chance.
A P-value of <0.05 indicates that there is a strong likelihood that the observed differences are repeatable.
A P-value of >0.05, indicates differences may have occurred by chance, so it is not considered statistically significant.
Where the P-value for a trial is not statistically significant, the LSD (where appropriate) has not been reported in the tables. In these cases, no statistical differences between cultivars have been observed.

PVR Plant Variety Rights (PVRs) grant plant breeders the exclusive right to commercialise propagating material of a new plant variety. The term of protection for cereals is 20 years. It is illegal to produce and sell seed from the new variety without the express permission of the licence holder for the term of protection. PVR status is recorded in the cultivar descriptions pages, after the cultivar's name, and denotes varieties which have been granted PVR or have filed for PVR (provisional).

Relative yield Yields relative to a base 100 are given where 100 is the average yield across all cultivars. These relative yields make it easier to compare sites and seasons which may differ widely in mean yields. Yields are given rankings in the cultivar description pages based on this relative yield:
Below average: 98 or less,
Average: 99 – 101,
Above average: 102 – 105,
High yielding: 106 and above.

Screenings % Percentage of small grains, weed seeds and foreign matter which pass through a 2.0 mm rotoscreen.

Test weight Measured in kilograms per hectolitre (kg/hl), test weight is an indication of grain density. Test weight is reported at a standard grain moisture of 14%.

TGW or TSW Thousand grain (or seed) weight, reported in grams (g). Grain weight is needed both as a measure of grain quality and for calculating sowing rates.

Weather data Weather data summaries from the nearest weather station can be found on the FAR website. Search for Harvest Snippets.

Fusarium head blight Disease caused by *Fusarium* spp.

Leaf rust Disease caused by *Puccinia recondite* f.sp. *tritici.*

Powdery mildew Disease caused by *Erysiphe graminis* f.sp. *tritici.*

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

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

paddock sowing record

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

An example is provided.

Paddock	Cultivar name	Sowing rate (kg/ha)	Seed treatment	Area sown (ha)	Fertiliser (kg/ha)	Sowing date
Bluegum	Laureate	96 kg/ha	Raxil®Star	10 ha	DAP 200	3 Sept

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