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# 2018 Barley variety fact sheets for Western Australia



WESTERN AUSTRALIA



National  
Variety  
Trials  
A GRDC INITIATIVE

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# 2018 **Barley variety fact sheets for Western Australia**

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# Introduction

This bulletin is designed as a reference to help determine which barley variety to grow in your region. It provides market feedback, relative grain yield comparisons, disease ratings, agronomic information and herbicide tolerance ratings for all malt barley varieties segregated in Western Australia (WA) and selected feed varieties.

The decision whether to grow barley with a malt or feed classification depends on five main factors:

- (1) Premium paid for different varieties when segregated.
- (2) Relative grain yield of malt and feed grade barley varieties.
- (3) Differences in input costs due to their agronomic and disease characteristics.
- (4) Likelihood that grain of a malt variety will meet malt barley receival specifications.
- (5) Location of receival segregations for malt barley varieties.

Identifying which option will lead to the greatest returns for a grower is complex. In some instances, the price premium paid for malt will offset the yield difference between malt and feed

varieties. In other situations, the substantially higher yield of feed varieties, the low likelihood of a malt variety being segregated as malt or the higher costs of growing a malt barley, may justify the choice to grow a feed variety.

There is greater market demand for some malt varieties in some port zones and lesser demand in other port zones. That demand will influence the choice of malt variety that is sown regionally. No one malt, or feed variety matches all the different farming systems in which barley is grown or the brewing and shochu markets we service.

In 2017, four varieties, La Trobe, Scope CL, Spartacus CL and Bass (in order of decreasing popularity) occupied three in every four hectares sown to barley. In 2018, the area sown to RGT Planet and Spartacus CL is expected to increase significantly. Between them they could occupy nearly half the barley acreage. This will result in decreasing area sown to the market preferred malt varieties Bass, La Trobe and Scope CL. Market signals will influence the planted area of Compass, whilst the production of Banks will be limited by seed availability.

Growers should be watchful for increasing net type net blotch (NTNB) with a new aggressive pathotype, named Oxford virulent, being detected across the south coast. Efforts are underway to determine the adult resistance of commercial varieties in the presence of this new pathotype. Seedling resistance data suggests most varieties are susceptible, with the exception Banks, LG Maltstar and Granger. Growers finding higher than expected levels of NTNB on varieties with good resistance to the Beecher virulent and avirulent pathotype should collect leaf samples (placed into paper envelopes) and send them to the Department of Primary Industries and Regional Development (DPIRD), Locked Bag 4, Bentley Delivery Centre WA 6983, marked attention Simon Rogers. For more information contact Simon Rogers via email at [simon.rogers@dpird.wa.gov.au](mailto:simon.rogers@dpird.wa.gov.au) or phone +61 (0)8 9368 3445. See the disease surveillance section of this document for more information on barley diseases and reporting.



# Introduction

## What's new?

Banks (IGB1305) and RGT Planet (SFR85-104) are the next barley varieties to be considered for malt accreditation by Barley Australia. Both varieties have passed Stage 1 and will undergo Stage 2 testing during 2018 and into 2019 with a decision due in March 2019.

Why consider the new varieties Banks and RGT Planet?

### Banks

Banks (WABAR2312/WABAR2332) was bred by InterGrain and registered in February 2018. It has been sown in the WA barley NVT since 2015 and is a competitor to Bass, Flinders, Granger, La Trobe and RGT Planet in medium to higher rainfall areas of Western Australia. It has a similar plant type and phenology to Flinders, being 1-2cm taller than Bass at maturity. As a seedling it has good tolerance to all leaf diseases except barley leaf rust. As an adult plant, scald, spot type net blotch (STNB) and barley leaf rust may need management. WA barley NVT (2015-2017) suggests that Banks has a similar grain yield to La Trobe and is higher yielding than Bass, Flinders and Granger.

Relative to RGT Planet, Banks is shorter (7-10cm), later to flower (around 4-5 days later with April and May sowing and similar with June and July sowing), has improved tolerance to Oxford virulent NTNB as a seedling (MRMS vs S) and has improved tolerance to Beecher virulent NTNB as an adult (MS vs SVSp). It has poorer resistance to scald (S vs MRMSp) and barley leaf rust as an adult (S vs MRMS). In head to head grain yield NVT comparisons with RGT Planet, Banks was similar in one out of every two trials and lower in two in every five trials. Banks appears to have a yield advantage over RGT Planet at sites yielding below 3t/ha, but more data is needed to confirm this.

Limited seed of Banks is available from InterGrain. As with any new variety being evaluated by Barley Australia we recommend caution in adopting them or sowing large areas to them unless there is a clear agronomic or grain yield advantage.

### RGT Planet

RGT Planet (Tamtam/Concerto) has been introduced into Australia by SeedForce and was bred by RAGT Semences, an agricultural company founded in 1919 by Aveyronnais farmers in France. It has been sown in the WA barley NVT since 2016 and is a competitor to Banks, Bass, Flinders, Granger and La Trobe in medium to higher rainfall areas of Western Australia. It is a semi-dwarf variety that is taller than La Trobe with a phenology pattern like that of Bass except for April sowing. In late April it appears to be earlier to flower than Bass and around 4 days later than La Trobe. As a seedling it is susceptible to the new Oxford virulent NTNB pathotype and barley leaf rust. As an adult plant NTNB (Beecher virulent) and STNB will need management, with spraying required under high barley leaf rust disease pressure. WA barley NVT (2016-2017) suggests that RGT Planet is the new yield benchmark at environments where La Trobe yields at least 4t/ha. Below 4t/ha RGT Planet is similar to or lower yielding than La Trobe and Rosalind.

Growers should not grow RGT Planet with an expectation that malt segregations will be available if they grow enough. The WA barley industry places value on the Barley Australia accreditation process, just like many of our customers, and common segregations should not be expected until it is an accredited variety. Some segregations may however be strategically placed around WA in 2018 for market development and commercial trials. Market feedback indicates that Chinese maltsters and brewers are aware of RGT Planet. They have sourced small quantities from France, but they have not yet extensively tested it.

## What should I grow?

The following varieties should be high on the list of what to grow – Bass, Flinders, Granger, La Trobe, Scope CL and Spartacus CL. There are also other options for specific agronomic situations like the sowing of Litmus on soils with a sub-soil pH<sub>Ca</sub> below 4.8 or Fathom where stubble-borne STNB is a high risk. Subject to market signals, Compass is a future option for lower rainfall areas where plumper grain would assist growers to deliver a malt variety. Oxford was previously suggested as a variety to consider

but the increased prevalence of NTN B and powdery mildew infection plus its susceptibility to STNB mean Oxford is now a higher cost option for the south coast. Why consider Bass, Compass, Fathom, Flinders, Granger, La Trobe, Litmus, Scope CL and Spartacus CL?

## Bass

Bass is an established malt variety with strong market demand due to its high malt quality profile. From a grower's perspective, Bass has had a higher selection rate as malt over the last three seasons than any other malt variety. The development of a new barley leaf rust pathotype (from 5453P- to 5457P-) has meant Bass is now susceptible to very susceptible (SVS) to that disease. The prevalence of powdery mildew infection on Bass is also increasing and as a seedling it is rated as VS to the new Oxford virulent pathotype of NTN B that is increasing in its prevalence on the south coast. Whilst future opportunities may be limited if Banks and RGT Planet are successful in their Barley Australia accreditation, market demand for Bass will still be very positive in the short term. Bass's overall physical grain quality, especially grain plumpness, is better than that displayed by both Banks and RGT Planet.

Best suited:

- To environments with a potential above 3 tonnes per hectare (t/ha).
- Where crown rot is a low risk.
- Where barley leaf rust is a low risk.
- Rotations in which low grain protein may be a problem.
- Where high grain plumpness is important.

## Compass

Compass is a recently accredited malt variety with a yield potential similar to La Trobe when grown in WA. Compass has shown good physical grain quality with high grain plumpness (similar to Bass) and good grain brightness, but has a lower grain protein and lower hectolitre weight than current malt varieties. Like La Trobe it is susceptible to germ end staining. There has been mixed grower feedback in WA with most negative comments relating to its susceptibility to lodging (in higher yielding years) and its reaction

to the new barley leaf rust pathotype to which Compass (and Bass) are both susceptible. It has better tolerance of STNB than La Trobe. Growers should be cautious in planting large areas of Compass in WA until there is clarity in the market demand for this variety, especially from the domestic customers of WA malt barley. It is worth noting that SA, in particular, has exported large volumes of Compass in the past few years (before its accreditation), but not into premium paying markets where WA grown Bass, Flinders, Scope CL and even La Trobe have been exported.

Best suited:

- To environments with a yield potential below 3t/ha where grain plumpness is important for delivery into malt segregations.
- To paddocks with a higher weed burden as it is one of the more competitive barley varieties.
- Where crown rot is a low risk.
- Where barley leaf rust is a low risk.

## Fathom

Fathom is a feed barley with the best tolerance to STNB of the currently grown barley varieties but is rated as MSS or below to both Beecher pathotypes of NTN B and VS to the new Oxford pathotype of NTN B (as a seedling). Fathom is up to 0.2t/ha lower yielding than La Trobe and up to 0.5t/ha lower than Rosalind across a range of environments. Overall the grain yield of Fathom was lower than Rosalind in one in three WA barley NVT (2014-2017) and similar in the rest.

Best suited:

- To environments with a yield potential below 3t/ha where there is a high risk of STNB.
- To paddocks with a higher weed burden as it is one of the more competitive barley varieties.

## Flinders

Flinders is slowly gaining traction with growers, especially in southern, high rainfall regions. It has a positive outlook from Australian maltsters and international users who have been using Flinders

# Introduction

grain and malt, especially those who have customers wanting gibberellic acid-free malt. Whilst Flinders displays adult plant resistance (APR) to barley leaf rust, it will still need spraying when infection occurs before early grain fill. As production of this variety is still building, limited segregation opportunities are to be expected at the 2018/19 harvest. Future opportunities for Flinders may be limited if Banks and RGT Planet are successful in their Barley Australia accreditation, largely driven by growers phasing out Flinders in favour of those two emerging and higher yielding varieties.

Best suited:

- To environments with a potential above 3t/ha.
- Where crown rot is a low risk.
- Where both late season barley leaf rust and powdery mildew are a risk.
- Where short, stiff straw and good head retention are important.

## Granger

Granger is still a new malt variety and is being evaluated for its suitability in international brewing markets. Limited segregation opportunities are to be expected at the 2018/19 harvest until full market acceptance is achieved. Granger (along with Banks) has the best seedling tolerance (rated as MRMS) to the new Oxford virulent pathotype of NTNB that is increasing in its prevalence on the south coast and the only malt variety we grow in WA with durable resistance to powdery mildew (due to *mlo* gene). Future opportunities for Granger may be limited if Banks and RGT Planet are successful in their Barley Australia accreditation, largely driven by growers phasing out Granger in favour of those two emerging and higher yielding varieties.

Best suited:

- To environments with a potential above 3t/ha.
- Where crown rot and frost is a low risk.
- Where both barley leaf rust in spring and powdery mildew are a risk.
- Away from the coast to reduce the risk of kernel discolouration at harvest (if targeting malt).

## La Trobe

La Trobe is now recognised in international malting and brewing markets and is the only variety received in Japan (aside from Baudin) for the manufacture of shochu. Whilst La Trobe has good market demand, it is not recognised as a premium variety and in years of adequate supply is likely to be priced below varieties like Bass and Baudin. The area sown to La Trobe will come under pressure from Banks (if it becomes accredited), Spartacus CL and RGT Planet (especially in environments which can yield more than 4t/ha) over coming seasons.

Best suited:

- To environments with a potential below 4t/ha.
- Where STNB and barley leaf rust are not a risk.
- Where frost is a low risk.
- If every seed is treated with a good quality smuticide.

## Litmus

Litmus is a feed barley with enhanced tolerance to soil acidity and aluminium toxicity. Litmus is proving popular with growers in the Geraldton and Kwinana Port Zones who have acidic soils, as Litmus allows them an alternative cereal in the rotation. Litmus has also performed well when crown rot is present, having the lowest yield loss of the commercial barley varieties evaluated. On non-acidic soils the yield of Litmus is inferior to La Trobe and Rosalind. InterGrain has withdrawn Litmus from Barley Australia's malt and brewing accreditation process, meaning it can only be received as a feed barley where active stack management of blue aleurone in feed barley is occurring.

Best suited:

- To environments with a yield potential below 2t/ha where the sub-soil (10-30cm) has a  $pH_{Ca}$  below 4.8.
- Where leaf diseases are a low risk or can be easily managed.

## Rosalind

Rosalind is a feed barley released in 2015 with broad adaptation that was developed from a cross between the feed varieties Dash and Lockyer. It has a La Trobe type plant architecture and flowers at a similar time to La Trobe. It is the yield benchmark for barley in WA based on its overall agronomic performance from 2014 to 2017. In that period (2014-2017) the state-wide grain yield of Rosalind was 9% (~0.3t/ha) higher than La Trobe in the WA barley NVT. Rosalind appears to be better suited than RGT Planet to the less than 3t/ha environments whilst RGT Planet appears to be better suited than Rosalind in the greater than 4t/ha environments, but more data is needed.

Best suited:

- To environments where there is a low probability of delivering malt grade barley.
- Where STNB and Oxford virulent NTN B are not a risk.
- If every seed is treated with a good quality smuticide.

## Scope CL

Scope CL is an established malt variety with good market demand. In 2017 the popularity of Scope CL decreased due to the emergence of Spartacus CL. Scope CL's heartland however is the Geraldton and Kwinana Port Zones where it accounted for just over one in every four barley hectares. The area sown to Scope CL will be challenged further in 2018 by the new imidazolinone tolerant barley Spartacus CL, which has shown an overall grain yield advantage over Scope CL of 12% (~0.35t/ha) in WA barley NVT (2014-2017). It is worth noting that Spartacus CL has not shown the same advantage relative to Scope CL over the past two seasons.

Best suited:

- To environments with a potential below 3t/ha.
- To April sowing opportunities when sowing into non-Clearfield® wheat stubble.
- Where crown rot is a low risk.
- Where an imidazolinone herbicide was used last year or Sentry® / Intervix® is required this year.

- When sowing in April and/or in paddocks with a higher frost risk as an alternative to sowing the shorter season Spartacus CL.
- Where prompt harvesting once the crop is mature is possible (due to a high head loss risk).

## Spartacus CL

Spartacus CL is a new imidazolinone tolerant, malt barley with a similar grain yield, improved grain quality (slightly plumper grain, higher grain protein and slightly brighter grain), similar phenology and some improved agronomic features (largely stiffer straw and lower head loss risk) relative to La Trobe. It lacks the anthocyanin pigment present in La Trobe and Hindmarsh. Like Scope CL, Spartacus CL can be sprayed with a registered imidazolinone herbicide (Intervix® and Sentry®) to control barley grass and brome in-crop.

Best suited:

- To environments where Scope CL does not meet grain quality targets allowing it be delivered as malt.
- Where an imidazolinone herbicide was used last year or Sentry® / Intervix® is required this year.
- Where STNB and barley leaf rust are not a risk.
- To May plantings in areas with a reduced frost risk due to early phenology.
- If every seed is treated with a good quality smuticide.



# Disease surveillance

## Disease surveillance

Foliar disease abbreviations:

- NTNB = net-type net blotch.
- STNB = spot-type net blotch.
- APR = adult plant resistance.

Disease resistance abbreviations:

- VS = very susceptible.
- SVS = susceptible to very susceptible.
- S = susceptible.
- MSS = moderately susceptible to susceptible.
- MS = moderately susceptible.
- MRMS = moderately resistant to moderately susceptible.
- MR = moderately resistant.
- RMR = resistant to moderately resistant.
- R = resistant.
- $p$  = provisional rating.

Growers and consultants observing barley varieties rated as MRMS, MR or R to scald, NTNB, STNB, powdery mildew or barley leaf rust carrying significantly greater levels of disease than expected should collect infected material for pathotype identification. Samples should be collected before spraying the crop to ensure sample viability.

Infected scald, NTNB, STNB and barley leaf rust leaf material must be sent in paper envelopes marked with location, variety, disease and date collected. Fold leaf in half so infected area is on the inside. Please do not wrap leaf material in plastic or send in plastic lined envelopes. Unlike other leaf diseases, powdery mildew infected leaves need to be placed into agar to maintain a live culture for pathotyping. This means sample collection kits for powdery mildew need to be arranged before sampling and therefore before spraying can be done.

Scald, NTNB and STNB infected leaf material (sent in paper envelopes) should be sent to the Department of Primary Industries and Regional Development, Locked Bag 4, Bentley Delivery Centre WA 6983 and marked attention Simon Rogers. For more information contact Simon Rogers via email at [simon.rogers@dpird.wa.gov.au](mailto:simon.rogers@dpird.wa.gov.au) or phone +61 (0)8 9368 3445.

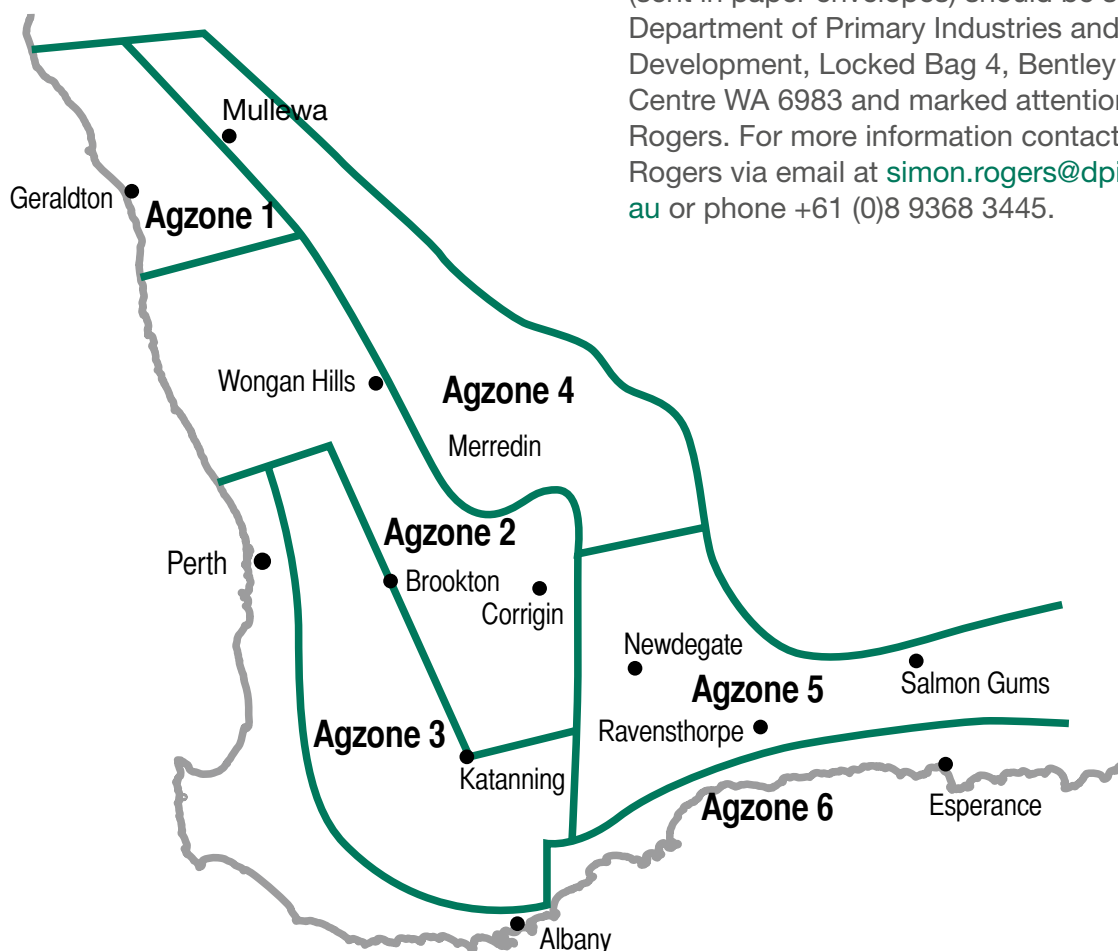


Figure 1 Agzone map of the south west corner of Western Australia

# Disease surveillance

Samples of powdery mildew infected leaf material (placed into agar) should be forwarded to the Centre for Crop and Disease Management at Curtin University. To arrange sample collection kits contact Simon Ellwood via email at [simon.ellwood@curtin.edu.au](mailto:simon.ellwood@curtin.edu.au) or phone +61 (0)8 9266 9915.

Barley leaf rust samples should be sent in paper envelopes directly to the ACRCP Annual Cereal Rust Survey, Plant Breeding Institute, Reply Paid 88076 Narellan NSW 2567. For more information contact Professor Robert Park via email at [robert.park@sydney.edu.au](mailto:robert.park@sydney.edu.au) or phone +61 (0)2 9351 8800.

Fungicide resistant isolates of NTN, STN and powdery mildew have been detected in Western Australia. In situations of concern over disease response to fungicide control in barley crops, samples can be sent to the Centre for Crop and Disease Management at Curtin University, contact Fran Lopez-Ruiz via email at [fran.lopezruiz@curtin.edu.au](mailto:fran.lopezruiz@curtin.edu.au) or phone +61 (0)8 9266 3061.

# Barley variety descriptions

<b>Bass</b> <sup>Ⓛ</sup>					
<b>Malt variety</b>					
<b>Comments</b>					
Bass is a medium spring, semi-dwarf, malt barley acceptable for export as grain and as malt but not for shochu. Best suited to environments with a yield potential above 3t/ha. It has a moderate yield potential combined with good hectolitre weight, high grain plumpness and a high probability of receival as malt barley. Its grain is generally 0.5% higher in grain protein than varieties such as Baudin and La Trobe at the same yield. Can show a moderate head loss risk in the Esperance Port Zone, but not in other Port Zones. Fungicides may be required to manage STNB, powdery mildew and barley leaf rust. As a seedling it is VS to the new Oxford virulent NTN. Weed competitiveness similar to other semi-dwarf varieties. Market demand exists for the malt quality profile of Bass. Target production zones in 2018 are Kwinana and Albany Port Zones.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	81	91	84	92	88
Agzone 2	85	94	82	92	94
Agzone 3	98	94	91	91	89
Agzone 4	87	64	85	-	79
Agzone 5	93	92	88	93	92
Agzone 6	91	95	93	91	108
<b>Disease resistance</b>		<b>Seedling</b>	<b>Adult</b>		
Scald		-	<b>MRMS</b>		
NTNB (Beecher virulent)		<b>MR</b>	<b>MRMS</b>		
NTNB (Beecher avirulent)		S	MSS		
STNB		<b>MRMS</b>	S		
Powdery mildew		MSS	MSS		
Leaf rust (5457P-)		SVS	SVS		
BYD and CYD		MS	MS		
RLN ( <i>P. neglectus</i> )		MSS	MSS		
RLN ( <i>P. quasitereoides</i> )		MS	MS		
CCN		S	S		
Crown rot		High yield loss (>20%)			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>	<b>rel. La Trobe</b>		
late April		-6 to -4	+4 to +7		
late May		-3 to -2	+4 to +6		
early July		0 to +1	+7 to +8		
<b>Agronomic traits</b>					
Coleoptile length		Medium			
Target plant density		150-180 plants/m <sup>2</sup>			
Plant height		Short			
Straw strength		Very good			
Head loss risk		Medium			
<b>Herbicide tolerance</b>					
Has shown no sensitivity to a range of herbicides / herbicide mixtures at label rates in herbicide tolerance trials conducted in WA.					
<b>Variety information</b>					
Pedigree		WABAR2023/Alexis			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		\$3.50			

<b>Baudin</b> <sup>Ⓛ</sup>					
<b>Malt variety</b>					
<b>Comments</b>					
Baudin is a medium spring, semi-dwarf, malt barley that is acceptable for export as grain, as malt and as a shochu barley. Baudin is still the 'market leader' for the Chinese, south-east Asian and Japanese brewing markets. Best suited to environments with a yield potential above 3t/ha and where leaf diseases can be promptly sprayed before they reach 5% of leaf area affected. When growing Baudin, an integrated disease management plan needs to be implemented as it is susceptible to all forms of NTN, STNB, powdery mildew and barley leaf rust. Vigorous Baudin crops have reasonable weed competitiveness despite their short height. Target production zone in 2018 is the Esperance Port Zone, whilst niche segregations may be available in Kwinana-West and Albany-North.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	92	91	79	97	95
Agzone 2	88	89	78	104	93
Agzone 3	92	88	81	91	96
Agzone 4	88	40	80	-	68
Agzone 5	92	89	79	96	92
Agzone 6	77	97	88	91	99
<b>Disease resistance</b>		<b>Seedling</b>	<b>Adult</b>		
Scald		-	MSS		
NTNB (Beecher virulent)		S	S		
NTNB (Beecher avirulent)		S	S		
STNB		<b>MRMS</b>	MSS		
Powdery mildew		VS	VS		
Leaf rust (5457P-)		SVS	SVS		
BYD and CYD		<b>MRMS</b>	<b>MRMS</b>		
RLN ( <i>P. neglectus</i> )		MSS	MSS		
RLN ( <i>P. quasitereoides</i> )		S	S		
CCN		S	S		
Crown rot		Moderate yield loss (10-20%)			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>	<b>rel. La Trobe</b>		
late April		+3 to +5	+12 to +17		
late May		+2 to +3	+9 to +11		
early July		-4 to -2	+3 to +4		
<b>Agronomic traits</b>					
Coleoptile length		Medium			
Target plant density		110-130 plants/m <sup>2</sup>			
Plant height		Short			
Straw strength		Very good			
Head loss risk		Low			
<b>Herbicide tolerance</b>					
May be sensitive to label rate applications of Paragon <sup>®</sup> (picolinafen + MCPA) and Tigrex <sup>®</sup> (diflufenican + MCPA) sprayed at Z13-Z14.					
<b>Variety information</b>					
Pedigree		Stirling/Franklin			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		\$3.00 - malt/\$1.00 - feed			

# Barley variety descriptions

<b>Compass <sup>(b)</sup></b>					
<b>Malt variety</b>					
<b>Comments</b>					
Compass is a medium spring, medium height, CCN resistant, malt barley derived from Commander, but with a higher yield potential. Best suited to environments with a yield potential below 4t/ha. Compass has a similar grain yield potential to La Trobe and Spartacus CL in Western Australia. Compass is susceptible to lodging, particularly in high yielding situations. Compass has shown good physical grain quality with high grain plumpness (similar to Bass) but has a lower grain protein for its yield and a lower hectolitre weight than current malt varieties. Fungicides will be required to manage barley leaf rust. As a seedling it is SVS to the new Oxford virulent NTN. Compass is one of the more weed competitive barley varieties. Accredited as a malt variety by Barley Australia in March 2018. Limited segregations (if any) are to be expected.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	107	107	100	106	108
Agzone 2	102	100	102	108	100
Agzone 3	98	98	95	100	105
Agzone 4	106	108	103	-	106
Agzone 5	101	104	100	97	103
Agzone 6	87	100	96	96	81
<b>Disease resistance</b>		<b>Seedling</b>	<b>Adult</b>		
Scald		-	MS		
NTNB (Beecher virulent)		<b>MRMS</b>	<b>MRMS</b>		
NTNB (Beecher avirulent)		S	MS		
STNB		<b>MRMS</b>	MSS		
Powdery mildew		MS	<b>MRMS</b>		
Leaf rust (5457P-)		S	S		
BYD and CYD		MSS	MSS		
RLN ( <i>P. neglectus</i> )		-	-		
RLN ( <i>P. quasitereoides</i> )		MSS	MSS		
CCN		<b>R</b>	<b>R</b>		
Crown rot		High yield loss (>20%)			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>	<b>rel. La Trobe</b>		
late April		-4 to -5	+2 to +5		
late May		-6 to -4	+2 to +4		
early July		-2 to -1	+5 to +7		
<b>Agonomic traits</b>					
Coleoptile length		Medium			
Target plant density		150-180 plants/m <sup>2</sup>			
Plant height		Medium			
Straw strength		Fair			
Head loss risk		Medium			
<b>Herbicide tolerance</b>					
May be sensitive to label rate split application of Boxer Gold <sup>®</sup> (s-metolachlor + prosulfocarb) at 1.75L/ha IBS and 0.75L/ha PSPE, Talinor <sup>®</sup> (bicyclopyrone + bromoxynil) at 1.2 L/ha sprayed at Z13-Z15 and label rate application of Howitzer <sup>®</sup> (diflufenican + bromoxynil + MCPA) sprayed at Z13-Z15.					
<b>Variety information</b>					
Pedigree		County/Commander//Commander			
Breeder / Seed licensee		University of Adelaide / SeedNet			
Access to seed		SeedNet			
EPR (\$/t, excl GST)		\$3.80			

<b>Flinders <sup>(b)</sup></b>					
<b>Malt variety</b>					
<b>Comments</b>					
Flinders is a medium spring, semi-dwarf, malt barley derived from Baudin with improved powdery mildew (non- <i>mlo</i> ) and barley leaf rust (due to APR, <i>Rph20</i> ) resistance. Flinders is being exported as grain and as malt, with positive market feedback to date. Best suited to environments with a yield potential above 3t/ha. Grain plumpness of Flinders is an improvement over Baudin, La Trobe and Scope CL with a grain brightness between Bass and Baudin. Fungicides may be required to manage STNB and barley leaf rust, despite having APR to barley leaf rust. As a seedling it is SVS to the new Oxford virulent NTN. Weed competitiveness is similar to other semi-dwarf varieties. Target production zones in 2018 are Kwinana-West, Albany and Esperance Port Zones.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	100	94	92	-	94
Agzone 2	99	97	92	100	97
Agzone 3	98	98	96	99	101
Agzone 4	93	65	90	-	80
Agzone 5	99	96	92	-	98
Agzone 6	103	105	102	104	116
<b>Disease resistance</b>		<b>Seedling</b>	<b>Adult</b>		
Scald		-	MSS		
NTNB (Beecher virulent)		<b>MRMS</b>	<b>MRMS</b>		
NTNB (Beecher avirulent)		MSS	MS		
STNB		MS	S		
Powdery mildew		<b>R</b>	<b>R</b>		
Leaf rust (5457P-)		MS	<b>MRMS</b> (late APR)		
BYD and CYD		<b>MRMS</b>	<b>MRMS</b>		
RLN ( <i>P. neglectus</i> )		MSP	MSP		
RLN ( <i>P. quasitereoides</i> )		MSS	MSS		
CCN		S	S		
Crown rot		High yield loss (>20%)			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>	<b>rel. La Trobe</b>		
late April		-3 to 0	+7 to +9		
late May		0 to +2	+8 to +10		
early July		+2 to +3	+8 to +10		
<b>Agonomic traits</b>					
Coleoptile length		Short			
Target plant density		150-180 plants/m <sup>2</sup>			
Plant height		Short			
Straw strength		Very good			
Head loss risk		Low			
<b>Herbicide tolerance</b>					
May be sensitive to a label rate application of Achieve <sup>®</sup> (tralkoxydim) sprayed at Z13-Z15.					
<b>Variety information</b>					
Pedigree		Baudin/Cooper			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		\$3.80			

# Barley variety descriptions

<b>Granger <sup>Ⓛ</sup></b>					
<b>Malt variety</b>					
<b>Comments</b>					
Granger is a medium spring, semi-dwarf, malt variety being assessed for export as grain but not as malt or for shochu. Feedback from the Granger grain shipments to international customers has yet to filter through from the trade. Best suited to environments with a yield potential above 3t/ha. Granger is a competitive option for environments with a yield potential above 5t/ha (i.e. Agzone 6). Granger appears to be sensitive to frost during flowering and grain filling. Granger's grain is plumper than that of Baudin, but not as plump as Bass. Grain brightness is expected to be an issue in coastal areas as it has a naturally darker kernel than other malt varieties. Has durable resistance to powdery mildew ( <i>mlo</i> resistance) and APR to barley leaf rust. Fungicides may be required to manage scald, STNB and early infections of barley leaf rust. As a seedling it is MRMS to the new Oxford virulent NTNB. Target production zones in 2018 are Albany and Esperance Port Zones.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	104	90	94	-	92
Agzone 2	104	96	94	99	97
Agzone 3	98	100	99	101	103
Agzone 4	92	58	90	-	76
Agzone 5	100	94	92	114	98
Agzone 6	114	108	107	112	130
Disease resistance	Seedling		Adult		
Scald	-		MSS		
NTNB (Beecher virulent)	<b>MRMS</b>		MS		
NTNB (Beecher avirulent)	<b>MRMS</b>		<b>MRMS</b>		
STNB	MSS		S		
Powdery mildew	<b>R</b>		<b>R</b>		
Leaf rust (5457P-)	MS		<b>MRMS (APR)</b>		
BYD and CYD	MS		MS		
RLN ( <i>P. neglectus</i> )	MS		MS		
RLN ( <i>P. quasitereoides</i> )	MSS		MSS		
CCN	<b>R</b>		<b>R</b>		
Crown rot	High yield loss (>20%)				
Flowering (days to Z49)	rel. Scope CL		rel. La Trobe		
late April	-2 to +2		+7 to +13		
late May	-2 to 0		+6 to +8		
early July	+1 to +3		+7 to +9		
<b>Agronomic traits</b>					
Coleoptile length	Medium				
Target plant density	110-130 plants/m <sup>2</sup>				
Plant height	Medium				
Straw strength	Good				
Head loss risk	Low				
<b>Herbicide tolerance</b>					
Has shown no sensitivity to a range of herbicides / herbicide mixtures at label rates in herbicide tolerance trials conducted in WA					
<b>Variety information</b>					
Pedigree	Braemar/Adonis				
Breeder / Seed licensee	Limagrain				
Access to seed	Free to trade				
EPR (\$/t, excl GST)	\$2.95				

<b>La Trobe <sup>Ⓛ</sup></b>					
<b>Malt variety</b>					
<b>Comments</b>					
La Trobe is an early spring, semi-dwarf, CCN resistant, malt barley. It is suitable for export as grain, as malt and for use in the manufacture of shochu in Japan. La Trobe and Spartacus CL are the most yield responsive malt varieties to nitrogen. Whilst the National Frost Initiative trials suggest La Trobe is sensitive to flowering frost, it appears to yield similarly to other varieties when frosted where compensation can occur. Every La Trobe seed should be treated with a good quality smuticide before sowing. Fungicides may be required to manage STNB and barley leaf rust. As a seedling it is S to the new Oxford virulent NTNB. Do not ruin the integrity of La Trobe malt stacks by contaminating them with Hindmarsh or Spartacus CL barley. Target production zones in 2018 are Geraldton, Kwinana, Albany and Esperance Port Zones.					
Yield (% Scope CL)	2013	2014	2015	2016	2017
Agzone 1	104	114	107	101	98
Agzone 2	107	116	113	95	103
Agzone 3	107	112	116	104	105
Agzone 4	109	144	113	-	121
Agzone 5	111	116	123	106	111
Agzone 6	132	113	118	111	107
Disease resistance	Seedling		Adult		
Scald	-		<b>MR</b>		
NTNB (Beecher virulent)	MS		MS		
NTNB (Beecher avirulent)	<b>MRMS</b>		<b>MRMS</b>		
STNB	S		SVS		
Powdery mildew	MSS		MS		
Leaf rust (5457P-)	MS		S		
BYD and CYD	S		S		
RLN ( <i>P. neglectus</i> )	MS		MS		
RLN ( <i>P. quasitereoides</i> )	MSS		MSS		
CCN	<b>R</b>		<b>R</b>		
Crown rot	Moderate yield loss (10-20%)				
Flowering (days to Z49)	rel. Scope CL		rel. Hindmarsh		
late April	-12 to -7		0 to +1		
late May	-8 to -7		0 to +1		
early July	-7 to -5		0 to +1		
<b>Agronomic traits</b>					
Coleoptile length	Short				
Target plant density	150-180 plants/m <sup>2</sup>				
Plant height	Medium				
Straw strength	Moderately good				
Head loss risk	Medium				
<b>Herbicide tolerance</b>					
May be sensitive to a label rate application of Diuron + MCPA (diuron + MCPA) sprayed at Z13-Z14.					
<b>Variety information</b>					
Pedigree	Dash/VB9409				
Breeder / Seed licensee	InterGrain				
Access to seed	Free to trade				
EPR (\$/t, excl GST)	\$4.00				

# Barley variety descriptions

Scope CL <sup>Ⓛ</sup>					
Malt variety					
Comments					
Scope CL is a medium spring, tall height, malt variety suitable for export as grain and as malt but not for shochu. Scope CL is best suited to environments where brome and barley grass are a problem or where there is imidazolinone residues. Fungicides will be required to manage STNB and barley leaf rust. As a seedling it is S to the new Oxford virulent NTNB. It should be harvested when ripe due to a high head loss risk. Scope CL is registered for use with the imidazolinone chemistry herbicides Intervix <sup>®</sup> and Sentry <sup>®</sup> . Do not use other imidazolinone herbicides on Scope CL. Do not ruin the integrity of Scope CL malt stacks by contaminating them with Buloke or Spartacus CL barley. Target production zones in 2018 are Geraldton, Kwinana and Albany Port Zones.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	96	88	94	99	102
Agzone 2	94	86	89	106	97
Agzone 3	93	89	86	96	96
Agzone 4	92	70	88	-	82
Agzone 5	90	86	82	94	90
Agzone 6	76	88	85	90	93
Disease resistance	Seedling		Adult		
Scald	-		MS		
NTNB (Beecher virulent)	<b>MR</b>		<b>MRMS</b>		
NTNB (Beecher avirulent)	<b>MR</b>		<b>MRMS</b>		
STNB	MS		S		
Powdery mildew	<b>R</b>		<b>R</b>		
Leaf rust (5457P-)	S		S		
BYD and CYD	<b>MRMS</b>		<b>MRMS</b>		
RLN ( <i>P. neglectus</i> )	MSS		MSS		
RLN ( <i>P. quasitereoides</i> )	MS		MS		
CCN	S		S		
Crown rot	High yield loss (>20%)				
Flowering (days to Z49)	rel. Baudin		rel. La Trobe		
late April	-5 to -3		+8 to +12		
late May	-3 to -2		+7 to +8		
early July	+2 to +4		+6 to +7		
Agronomic traits					
Coleoptile length	Short				
Target plant density	110-130 plants/m <sup>2</sup>				
Plant height	Tall				
Straw strength	Fair				
Head loss risk	High				
Herbicide tolerance					
Has shown no sensitivity to a range of herbicides / herbicide mixtures at label rates in herbicide tolerance trials conducted in WA.					
Variety information					
Pedigree	Franklin/VB9104/VB9104				
Breeder / Seed licensee	AgVic Services / SeedNet				
Access to seed	SeedNet				
EPR (\$/t, excl GST)	\$3.50				

Spartacus CL <sup>Ⓛ</sup>					
Malt variety					
Comments					
Spartacus CL is an early spring, imidazolinone tolerant malt barley based on the genetics of the La Trobe family. Agronomically similar to La Trobe but lacking its red anthocyanin pigmentation. Appears to be an improvement over La Trobe for straw strength and head retention as well as producing slightly plumper grain. Has a similar grain yield to Compass and La Trobe and is higher yielding than Scope CL in WA. Spartacus CL is registered for use with the imidazolinone chemistry herbicides Intervix <sup>®</sup> and Sentry <sup>®</sup> . Do not ruin the integrity of Spartacus CL malt stacks by contaminating them with La Trobe barley. Every seed should be treated with a good quality smuticide before sowing. Fungicides may be required to manage STNB and barley leaf rust. As a seedling it is S to the new Oxford virulent NTNB. Weed competition trials in eastern Australia suggest that Spartacus CL is like La Trobe and not as good as Compass in the presence of weeds. Accredited as a malt variety by Barley Australia in March 2018. Segregations are to be likely to be offered in all four port zones.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	-	104	102	98	98
Agzone 2	-	102	103	96	99
Agzone 3	-	102	102	99	99
Agzone 4	-	117	104	-	107
Agzone 5	-	102	105	99	101
Agzone 6	-	98	102	98	98
Disease resistance	Seedling		Adult		
Scald	-		<b>MR</b>		
NTNB (Beecher virulent)	MS		<b>MRMS</b>		
NTNB (Beecher avirulent)	MSS		<b>MRMS</b>		
STNB	SVS		SVS		
Powdery mildew	MS		<b>MR</b>		
Leaf rust (5457P-)	MS		S		
BYD and CYD	MSS		MSS		
RLN ( <i>P. neglectus</i> )	-		-		
RLN ( <i>P. quasitereoides</i> )	-		-		
CCN	<b>R</b>		<b>R</b>		
Crown rot	Moderate yield loss (10-20%)				
Flowering (days to Z49)	rel. Scope CL		rel. La Trobe		
late April	-12 to -7		-1 to +1		
late May	-9 to -7		-2 to 0		
early July	-7 to -5		0 to +1		
Agronomic traits					
Coleoptile length	Short				
Target plant density	150-180 plants/m <sup>2</sup>				
Plant height	Medium				
Straw strength	Good				
Head loss risk	Low				
Herbicide tolerance					
May be sensitive to a label rate application of Terbyne <sup>®</sup> Xtreme <sup>®</sup> + Triflur <sup>®</sup> X + Avadex <sup>®</sup> (terbutylazine + trifluralin + tri-allate) sprayed before crop seeding, Boxer Gold <sup>®</sup> sprayed at Z12-Z13 and Ally <sup>®</sup> sprayed at Z13-Z14.					
Variety information					
Pedigree	Scope/4*Hindmarsh/HMV0325-106				
Breeder / Seed licensee	InterGrain				
Access to seed	InterGrain				
EPR (\$/t, excl GST)	\$4.25				

# Barley variety descriptions

## Banks <sup>(b)</sup>

### Stage 2 malt accreditation

#### Comments

Banks (tested as IGB1305) is a new short height, longer season, semi-dwarf barley competing with RGT Planet for grower and market attention. Banks does not have the top end yield potential of RGT Planet but appears to yield similarly between 3-4t/ha and may be higher yielding below 3t/ha (more data needed). Fungicides may be required to manage scald, STNB and barley leaf rust. Like Granger, Banks has a higher level of resistance than other varieties to the new Oxford virulent NTNB as a seedling. Its reaction to weed competition is unknown. Banks has passed Stage 1 of the Barley Australia malting and brewing accreditation process and is currently on track to complete Stage 2 in March 2019. The bulk of the seed of Banks released will be used for tonnage for international market development purposes (if it becomes accredited as a malt variety).

Banks <sup>(b)</sup>	2013	2014	2015	2016	2017
Agzone 1	-	-	102	102	101
Agzone 2	-	-	101	104	101
Agzone 3	-	-	101	104	105
Agzone 4	-	-	98	-	92
Agzone 5	-	-	97	110	101
Agzone 6	-	-	104	109	112

Disease resistance	Seedling	Adult
Scald	-	S
NTNB (Beecher virulent)	MRMS	MS
NTNB (Beecher avirulent)	MRMS	MS
STNB	MS	S
Powdery mildew	MRMS	MR
Leaf rust (5457P-)	S	S
BYD and CYD	MS	MS
RLN ( <i>P. neglectus</i> )	-	-
RLN ( <i>P. quasitereoides</i> )	-	-
CCN	-	-
Crown rot	-	-

Flowering (days to Z49)	rel. Scope CL	rel. La Trobe
late April	0 to +1	+8 to +10
late May	-1 to +1	+8 to +10
early July	-1 to +1	+7 to +9

#### Agronomic traits

Coleoptile length	-
Target plant density	-
Plant height	Short
Straw strength	Moderately good
Head loss risk	-

#### Herbicide tolerance

Has not been tested for its sensitivity to label rate applications of herbicides registered for use in Western Australia.

#### Variety information

Pedigree	WABAR2312/WABAR2332
Breeder / Seed licensee	InterGrain
Access to seed	InterGrain
EPR (\$/t, excl GST)	To be advised

## RGT Planet <sup>(b)</sup>

### Stage 2 malt accreditation

#### Comments

RGT Planet (tested as SFR85-014) is a new medium height, medium spring, semi-dwarf introduction from Europe. Appears to be well suited to environments with a yield potential above 4t/ha. In those environments RGT Planet is likely to be the highest yielding variety, out-yielding even the current benchmark Rosalind barley. RGT Planet however, does not appear to carry the same yield advantage below 3t/ha. Carries *m/o* gene, conferring resistance to powdery mildew and APR to barley leaf rust. Fungicides may be required to manage NTNB (including Beecher virulent and new Oxford virulent NTNB), STNB and barley leaf rust when under high pressure. Research from eastern Australia suggests RGT Planet has a similar level of weed competitiveness (against oats) to Compass and Fathom. RGT Planet has passed Stage 1 of the Barley Australia malting and brewing accreditation process and is currently on track to complete Stage 2 in March 2019. Market development segregations may be offered at harvest to facilitate the international development of RGT Planet (if it becomes accredited as a malt variety).

Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	-	-	-	103	97
Agzone 2	-	-	-	109	101
Agzone 3	-	-	-	108	115
Agzone 4	-	-	-	-	72
Agzone 5	-	-	-	128	108
Agzone 6	-	-	-	128	138

Disease resistance	Seedling	Adult
Scald	-	MRMS <sub>p</sub>
NTNB (Beecher virulent)	MRMS	SVSp
NTNB (Beecher avirulent)	MRMS	MRMS
STNB	MSS	S
Powdery mildew	R	R
Leaf rust (5457P-)	S	MRMS (late APR)
BYD and CYD	MS	MS
RLN ( <i>P. neglectus</i> )	-	-
RLN ( <i>P. quasitereoides</i> )	-	-
CCN	R <sub>p</sub>	R <sub>p</sub>
Crown rot	-	-

Flowering (days to Z49)	rel. Scope CL	rel. La Trobe
late April	-5 to -7	+3 to +5
late May	-3 to -5	+4 to +6
early July	-1 to +1	+6 to +8

#### Agronomic traits

Coleoptile length	-
Target plant density	-
Plant height	Medium
Straw strength	Moderately good
Head loss risk	-

#### Herbicide tolerance

Has not been tested for its sensitivity to label rate applications of herbicides registered for use in Western Australia.

#### Variety information

Pedigree	Tamtam/Concerto
Breeder / Seed licensee	RAGT Semences / Seed Force
Access to seed	Seed Force
EPR (\$/t, excl GST)	\$4.00

# Barley variety descriptions

Fathom <sup>(b)</sup>					
Feed variety					
Comments					
Fathom is a medium spring, tall height, CCN resistant feed barley. Best suited to environments with a yield potential below 3t/ha and where there is a high risk of STNB. Similar to or slightly below the grain yield of Compass, La Trobe and Spartacus CL. Fungicides may be required to manage early infections of NTNB and barley leaf rust. As a seedling, VS to the new Oxford virulent NTNB. Fathom has the highest level of resistance to STNB of current varieties. It is mixed for its head colour, having green and waxy green heads. Fathom is one of the more weed competitive barley varieties being similar to Compass and RGT Planet in eastern state weed competition trials.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	101	94	96	107	109
Agzone 2	96	97	93	111	105
Agzone 3	100	95	96	100	98
Agzone 4	101	79	92	-	98
Agzone 5	99	99	91	92	97
Agzone 6	85	101	89	96	84
Disease resistance		Seedling	Adult		
Scald		-	MR		
NTNB (Beecher virulent)		S	MSS		
NTNB (Beecher avirulent)		S	MSS		
STNB		MR	MRMS		
Powdery mildew		MS	MRMS		
Leaf rust (5457P-)		S	MRMS (late APR)		
BYD and CYD		MRMS	MRMS		
RLN ( <i>P. neglectus</i> )		MSP	MSP		
RLN ( <i>P. quasitereoides</i> )		MSSP	MSSP		
CCN		R	R		
Crown rot		Moderate yield loss (10-20%)			
Flowering (days to Z49)	rel. Scope CL	rel. La Trobe			
late April	-3 to +1	+7 to +12			
late May	-3 to -2	+5 to +6			
early July	-6 to -4	0 to +2			
Agronomic traits					
Coleoptile length	Medium				
Target plant density	180-220 plants/m <sup>2</sup>				
Plant height	Tall				
Straw strength	Fair				
Head loss risk	Low				
Herbicide tolerance					
May be sensitive to a label rate application of Diuron + MCPA (diuron + MCPA) sprayed at Z13-Z14					
Variety information					
Pedigree	JE013D-020/WI3806-1				
Breeder / Seed licensee	University of Adelaide / SeedNet				
Access to seed	SeedNet				
EPR (\$/t, excl GST)	\$2.00				

LG Maltstar <sup>(b)</sup>					
Feed variety					
Comments					
LG Maltstar (tested as SMBA11-1771) is a medium spring, medium height, semi-dwarf barley from the same breeding company as Granger and Oxford. LG Maltstar is reported to be a white aleurone variety unlike one of its parents Henley which has a blue aleurone. Like Granger, LG Maltstar carries the <i>mlo</i> gene (conferring resistance to powdery mildew) and the APR barley leaf rust gene <i>Rph20</i> . Fungicides may be required to manage scald, STNB and early infections of barley leaf rust. LG Maltstar has shown variable reactions in WA disease nurseries to barley leaf rust despite carrying the APR gene <i>Rph20</i> . As a seedling it is MS to the new Oxford virulent NTNB. Its reaction to weed competition is unknown. In 2017 LG Maltstar was accepted into malt accreditation trials with Barley Australia and will enter Stage 1 in 2018. The earliest possible accreditation date is autumn 2020.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	-	-	-	-	88
Agzone 2	100	96	86	99	94
Agzone 3	96	97	93	98	104
Agzone 4	89	-	-	-	64
Agzone 5	100	94	88	115	99
Agzone 6	110	112	107	111	132
Disease resistance		Seedling	Adult		
Scald		-	S		
NTNB (Beecher virulent)		MR	MRMSp		
NTNB (Beecher avirulent)		MR	MR		
STNB		MS	S		
Powdery mildew		R	R		
Leaf rust (5457P-)		S	MSS (late APR?)		
BYD and CYD		MS	MS		
RLN ( <i>P. neglectus</i> )		-	-		
RLN ( <i>P. quasitereoides</i> )		-	-		
CCN		-	-		
Crown rot		-	-		
Flowering (days to Z49)	rel. Scope CL	rel. La Trobe			
late April	-1 to +1	+9 to +11			
late May	-3 to -1	+6 to +7			
early July	+3 to +5	+11 to +13			
Agronomic traits					
Coleoptile length	-				
Target plant density	180-220 plants/m <sup>2</sup>				
Plant height	Short				
Straw strength	-				
Head loss risk	-				
Herbicide tolerance					
Has not been tested for its sensitivity to label rate applications of herbicides registered for use in Western Australia.					
Variety information					
Pedigree	Henley/Sebastian				
Breeder / Seed licensee	Limagrain / Elders				
Access to seed	Elders				
EPR (\$/t, excl GST)	\$3.00				



# Barley variety descriptions

## Litmus <sup>Ⓛ</sup>

### Feed variety

#### Comments

Litmus is an early spring, tall height, feed barley with improved tolerance to low soil pH and high soil Al. Best suited to environments with a yield potential below 2t/ha where the sub-soil (10-30cm) has a pH<sub>Ca</sub> below 4.8. Carries *Alt1* gene which allows its roots to excrete citrate reducing the toxicity of Al in the soil, resulting in increased grain yield relative to traditional barley varieties on acidic soils. Litmus provides growers with an option to diversify their wheat phase on acidic soils, but does not ameliorate the soil as lime is required to ameliorate soil with a low pH. Litmus has poor straw strength, is susceptible to all leaf diseases but has the lowest yield loss in the presence of crown rot. As a seedling it is S to the new Oxford virulent NTNB. Its reaction to weed competition is unknown. Litmus has been withdrawn by its breeder InterGrain from Barley Australia's malt accreditation process. Due to the presence of blue aleurone in its grain it can only be delivered to sites where active management of blue aleurone in feed barley stacks is occurring.

Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	109	80	116	102	113
Agzone 2	108	75	105	111	99
Agzone 3	89	88	88	104	100
Agzone 4	94	101	99	-	93
Agzone 5	85	75	79	99	84
Agzone 6	72	72	81	91	92

Disease resistance	Seedling	Adult
Scald	-	SVS
NTNB (Beecher virulent)	MSS	S
NTNB (Beecher avirulent)	S	S
STNB	S	S
Powdery mildew	MS	MR
Leaf rust (5457P-)	S	S
BYD and CYD	S	S
RLN ( <i>P. neglectus</i> )	-	-
RLN ( <i>P. quasitereoides</i> )	-	-
CCN	MS	MS
Crown rot	Low yield loss (<10%)	

Flowering (days to Z49)	rel. Scope CL	rel. La Trobe
late April	-15 to -10	-4 to -1
late May	-11 to -8	-3 to 0
early July	-8 to -6	-1 to +1

Agronomic traits	
Coleoptile length	Short
Target plant density	180-220 plants/m <sup>2</sup>
Plant height	Tall
Straw strength	Fair
Head loss risk	Medium

**Herbicide tolerance**  
Has shown no sensitivity to a range of herbicides / herbicide mixtures at label rates in herbicide tolerance trials conducted in WA.

Variety information	
Pedigree	WB229/2*Baudin//WABAR2238
Breeder / Seed licensee	InterGrain
Access to seed	Free to trade
EPR (\$/t, excl GST)	\$3.80

## Lockyer <sup>Ⓛ</sup>

### Feed variety

#### Comments

Lockyer is a longer seasoned, semi-dwarf, short height, high yielding, feed barley. Best suited to environments with a yield potential above 3t/ha. Lockyer is higher yielding than Compass and La Trobe in Agzone 6 and in environments with a yield potential above 4t/ha. Rosalind out-yields Lockyer in all Agzones except Agzone 6. Relative to Oxford, Lockyer can maintain its grain yield as seeding is delayed into June and July. With April planting, Lockyer has one of the longest durations to awn peep of commercial varieties. Fungicides may be required to manage STNB and barley leaf rust. As a seedling it is S to the new Oxford virulent NTNB. Its reaction to weed competition is unknown.

Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	113	103	88	-	108
Agzone 2	101	101	91	-	103
Agzone 3	98	96	92	-	108
Agzone 4	104	60	90	-	88
Agzone 5	104	105	91	102	105
Agzone 6	88	114	96	103	88

Disease resistance	Seedling	Adult
Scald	-	MRMS
NTNB (Beecher virulent)	MR	MS
NTNB (Beecher avirulent)	MR	MRMS
STNB	S	S
Powdery mildew	MS	MS
Leaf rust (5457P-)	S	S
BYD and CYD	MS	MS
RLN ( <i>P. neglectus</i> )	-	-
RLN ( <i>P. quasitereoides</i> )	-	-
CCN	-	-
Crown rot	-	-

Flowering (days to Z49)	rel. Scope CL	rel. La Trobe
late April	+3 to +5	+13 to +15
late May	+2 to +4	+10 to +11
early July	-1 to 0	+5 to +6

Agronomic traits	
Coleoptile length	Medium
Target plant density	180-220 plants/m <sup>2</sup>
Plant height	Short
Straw strength	Moderately good
Head loss risk	Low

**Herbicide tolerance**  
May be sensitive to label rate applications of Achieve<sup>®</sup> (tralkoxydim), Eclipse<sup>®</sup> + MCPA LVE (metosulam + MCPA) and Hoegrass<sup>®</sup> (diclofop-methyl) sprayed at Z13-Z14; and to 2,4-D Amine 625 sprayed at Z15-Z16.

Variety information	
Pedigree	Tantangara/VB9104
Breeder / Seed licensee	InterGrain
Access to seed	Free to trade
EPR (\$/t, excl GST)	\$1.50

# Barley variety descriptions

Mundah					
Feed variety					
Comments					
Mundah is a very early spring, medium height, feed barley. Best suited to environments with a yield potential below 2t/ha and later sowing systems where early season weed control is necessary. Lower yielding than all the newer varieties including Compass, Fathom, La Trobe, Lockyer, Rosalind and Spartacus CL. Mundah can suffer from head loss and lodging. Fungicides may be required to manage scald, NTN (Beecher virulent and Oxford virulent), STNB, powdery mildew and barley leaf rust. Mundah is one of the more weed competitive barley varieties and would be as competitive as Compass and Fathom (but has not been tested side by side against those varieties).					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	97	93	100	-	100
Agzone 2	96	79	96	-	89
Agzone 3	85	86	78	-	98
Agzone 4	91	100	97	-	86
Agzone 5	83	80	82	-	88
Agzone 6	64	73	83	-	87
Disease resistance		Seedling		Adult	
Scald		-		S	
NTN (Beecher virulent)		S		S	
NTN (Beecher avirulent)		MS		MS	
STNB		MSS		S	
Powdery mildew		SVS		MSS	
Leaf rust (5457P-)		S		S	
BYD and CYD		MS		MS	
RLN ( <i>P. neglectus</i> )		-		-	
RLN ( <i>P. quasitereoides</i> )		MRMSp		MRMSp	
CCN		S		S	
Crown rot		Moderate yield loss (10-20%)			
Flowering (days to Z49)		rel. Scope CL		rel. La Trobe	
late April		-19 to -17		-10 to -7	
late May		-15 to -13		-8 to -5	
early July		-9 to -6		-2 to 0	
Agronomic traits					
Coleoptile length		Medium			
Target plant density		180-220 plants/m <sup>2</sup>			
Plant height		Medium			
Straw strength		Fair			
Head loss risk		Medium			
Herbicide tolerance					
May be sensitive to a label rate application of Wildcat <sup>®</sup> (fenoxaprop-P-ethyl) sprayed at Z13-Z14.					
Variety information					
Pedigree		Yagan/O'Connor			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		No EPR payable			

Oxford					
Feed variety					
Comments					
Oxford is a long seasoned, semi-dwarf, short height, feed barley. Best suited to environments with a yield potential above 4t/ha (i.e. Agzone 6). Oxford performs best with late April or early May planting but its yield potential falls rapidly as seeding is delayed. In those situations Oxford is often higher yielding than Compass and La Trobe but appears to be inferior to RGT Planet. Rosalind out-yields Oxford in all Agzones except Agzone 6. Oxford appears to be sensitive to flowering frost. Fungicides may be required to manage STNB and early season barley leaf rust. There is evidence of increasing virulence of NTN and powdery mildew on Oxford barley, mainly on the south coast. As a seedling it is S to the new Oxford virulent NTN. Growers should collect infected NTN and powdery mildew leaf samples from unsprayed crops and send to DPIRD for pathotyping. Weed competitiveness is similar to other semi-dwarf varieties.					
Yield (% La Trobe)	2013	2014	2015	2016	2017
Agzone 1	102	93	80	95	87
Agzone 2	98	99	83	-	94
Agzone 3	97	98	94	98	104
Agzone 4	89	25	81	-	61
Agzone 5	103	98	88	-	101
Agzone 6	114	119	109	114	134
Disease resistance		Seedling		Adult	
Scald		-		MS	
NTN (Beecher virulent)		RMR		MRMS	
NTN (Beecher avirulent)		MR		MR	
STNB		S		S	
Powdery mildew		R*		MR*	
Leaf rust (5457P-)		S		MR (APR)	
BYD and CYD		MRMS		MRMS	
RLN ( <i>P. neglectus</i> )		-		-	
RLN ( <i>P. quasitereoides</i> )		-		-	
CCN		S		S	
Crown rot		-			
Flowering (days to Z49)		rel. Scope CL		rel. La Trobe	
late April		-1 to +3		+9 to +13	
late May		+2 to +3		+10 to +11	
early July		+2 to +4		+9 to +10	
Agronomic traits					
Coleoptile length		Medium			
Target plant density		180-220 plants/m <sup>2</sup>			
Plant height		Short			
Straw strength		Very good			
Head loss risk		Low			
Herbicide tolerance					
Has shown no sensitivity to a range of herbicides / herbicide mixtures at label rates in herbicide tolerance trials conducted in WA.					
Variety information					
Pedigree		Tavern/Chime			
Breeder / Seed licensee		Limagrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		\$2.50			

# Barley variety descriptions

<b>Rosalind</b> <sup>(b)</sup>					
<b>Feed variety</b>					
<b>Comments</b>					
Rosalind is an early spring, medium height, CCN resistant, feed barley derived from Dash and Lockyer with a high grain yield potential. Suited to all environments where there is a low probability of delivering malt grade barley. Rosalind, first tested in NVT in 2014, is the yield benchmark for barley in WA, regularly out-yielding La Trobe depending on year and Agzone. Rosalind appears to be inferior to RGT Planet at yields above 4t/ha and better below 3t/ha. Has good straw strength and head retention. Fungicides will be required to manage STNB. There is evidence of increased virulence of NTNB on Rosalind barley growing on the south coast and as a seedling it is rated as S to the new Oxford virulent NTNB. Based on its plant architecture (particularly larger leaf size) Rosalind is expected to have a good level of weed competitiveness, but it has not been tested.					
<b>Yield (% La Trobe)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Agzone 1	-	108	110	108	110
Agzone 2	-	105	113	110	104
Agzone 3	-	105	106	109	112
Agzone 4	-	116	109	-	111
Agzone 5	-	108	107	110	109
Agzone 6	-	109	108	111	97
<b>Disease resistance</b>		<b>Seedling</b>		<b>Adult</b>	
Scald		-		MSS	
NTNB (Beecher virulent)		<b>MR</b>		MS	
NTNB (Beecher avirulent)		<b>MR</b>		<b>MR</b>	
STNB		MS		S	
Powdery mildew		MS		<b>MRMS</b>	
Leaf rust (5457P-)		<b>MRMS</b>		<b>MR</b>	
BYD and CYD		MSS		MSS	
RLN ( <i>P. neglectus</i> )		-		-	
RLN ( <i>P. quasitereoides</i> )		-		-	
CCN		<b>R</b>		<b>R</b>	
Crown rot		Moderate yield loss (10-20%)			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>		<b>rel. La Trobe</b>	
late April		-12 to -7		-2 to +2	
late May		-9 to -3		-2 to +2	
early July		-5 to -3		-1 to +2	
<b>Agronomic traits</b>					
Coleoptile length		Short			
Target plant density		180-220 plants/m <sup>2</sup>			
Plant height		Medium			
Straw strength		Good			
Head loss risk		Low			
<b>Herbicide tolerance</b>					
Showed no sensitivity to a range of herbicides / herbicide mixtures at label rates in a herbicide tolerance trial conducted in WA during 2015.					
<b>Variety information</b>					
Pedigree		Lockyer/Dash			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		\$3.50			

<b>Yagan</b>					
<b>Feed variety</b>					
<b>Comments</b>					
Yagan is a very early spring, medium height, feed barley. Best suited to environments with a yield potential below 2t/ha or in weed management situations for late sowing or short seasons. Reaches awn peep 12-16 days earlier than Mundah and 14-20 days earlier than La Trobe with late May sowing. As Yagan has not been sown in NVT trials since 2003 there is no current NVT MET data available. Fungicides may be required to manage scald, STNB and barley leaf rust. Weed competitiveness not tested.					
<b>Yield (% La Trobe)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Agzone 1	-	-	-	-	-
Agzone 2	-	-	-	-	-
Agzone 3	-	-	-	-	-
Agzone 4	-	-	-	-	-
Agzone 5	-	-	-	-	-
Agzone 6	-	-	-	-	-
<b>Disease resistance</b>		<b>Seedling</b>		<b>Adult</b>	
Scald		-		VS	
NTNB (Beecher virulent)		<b>MRMS</b>		MSS	
NTNB (Beecher avirulent)		<b>MRMS</b>		<b>MRMS</b>	
STNB		<b>MRMS</b>		S	
Powdery mildew		<b>MRMS</b>		<b>MRMS</b>	
Leaf rust (5457P-)		S		S	
BYD and CYD		S		S	
RLN ( <i>P. neglectus</i> )		-		-	
RLN ( <i>P. quasitereoides</i> )		-		-	
CCN		S		S	
Crown rot		-			
<b>Flowering (days to Z49)</b>		<b>rel. Scope CL</b>		<b>rel. La Trobe</b>	
late April		-33 to -29		-22 to -16	
late May		-26 to -21		-20 to -14	
early July		-16 to -12		-11 to -7	
<b>Agronomic traits</b>					
Coleoptile length		Medium			
Target plant density		180-220 plants/m <sup>2</sup>			
Plant height		Medium			
Straw strength		Fair			
Head loss risk		Medium			
<b>Herbicide tolerance</b>					
May be sensitive to a label rate application of Eclipse <sup>®</sup> (metosulam + MCPA) and Glean <sup>®</sup> (chlorsulfuron) sprayed at Z13-Z14.					
<b>Variety information</b>					
Pedigree		Unknown pedigree			
Breeder / Seed licensee		InterGrain			
Access to seed		Free to trade			
EPR (\$/t, excl GST)		No EPR payable			

# Seed distribution information

## Seed distributors

### **Australian Seed and Grain**

Moora +61 (0)8 9651 1069  
[info@austseedgrain.com.au](mailto:info@austseedgrain.com.au)

### **Coorow Seeds**

Coorow +61 (0)8 9952 1088  
[admin@coorowseeds.com.au](mailto:admin@coorowseeds.com.au)

### **EDSCO (Eastern Districts Seed Cleaning Co)**

Kellerberrin +61 (0)8 9045 4036  
[edsco@wn.com.au](mailto:edsco@wn.com.au)

### **Melchiorre Seeds**

Narrogin +61 (0)8 9881 1155  
[melchiorreseeds@westnet.com.au](mailto:melchiorreseeds@westnet.com.au)

### **multiSEED Productions**

Esperance +61 (0)8 9071 1053  
[multiseed@westnet.com.au](mailto:multiseed@westnet.com.au)

When purchasing barley varieties that are listed as free to trade, growers may need to complete a seed sale declaration form. For more information on this, please contact the seed licensee listed in the factsheet section of this document.

