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Barley variety guide for WA 2006

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This variety guide is designed as a quick reference to help growers determine which barley to grow in their region. It provides yield, disease ratings and agronomic information for all of the current malting barley varieties and some feed varieties (Tables 1, 2, 3 and 4). New eastern states varieties are also profiled. More detailed information is available in the 2006 Crop Variety Sowing Guide or the web pages – The Barley Site: a guide to barley production in Western Australia, both at www.agric.wa.gov.au

The decision whether to grow barley for the malting or feed grade depends on four main factors:

- the premium paid for grain that is acceptable as malting grade;
- the relative yields of malting and feed grade barley;
- agronomic and disease constraints of the different varieties; and
- the likelihood that grain of a malting barley will be acceptable for inclusion into the malting grade.

Identifying which option will lead to the greatest returns for a grower is a complex problem. In some instances, the price premium paid for malting will more than offset the lower yields of some malting varieties when compared to a suggested feed variety. In other situations, the substantially higher yield of feed varieties, or the low likelihood of a malting variety being included in the malting grade, may justify the choice of a feed variety.

Malting barley varieties

Stirling remains the most widely sown variety in WA, accounting for 27% of the area sown to barley in 2005. Whilst Stirling remains the preferred WA variety for the Shochu market in Japan, the status of Stirling as a malting variety is being reviewed as the area sown to Hamelin ⓟ increases and its suitability for Shochu production is confirmed. WA growers now export barley varieties like Baudin ⓟ and Hamelin ⓟ that have superior malting quality to Stirling.

Gairdner ⓟ remains the second most popular barley variety in WA; however its production is also showing a gradual decline (making up only 23% of the area sown to barley in 2005). Gairdner ⓟ is suitable for both domestic and export barley and malt markets.

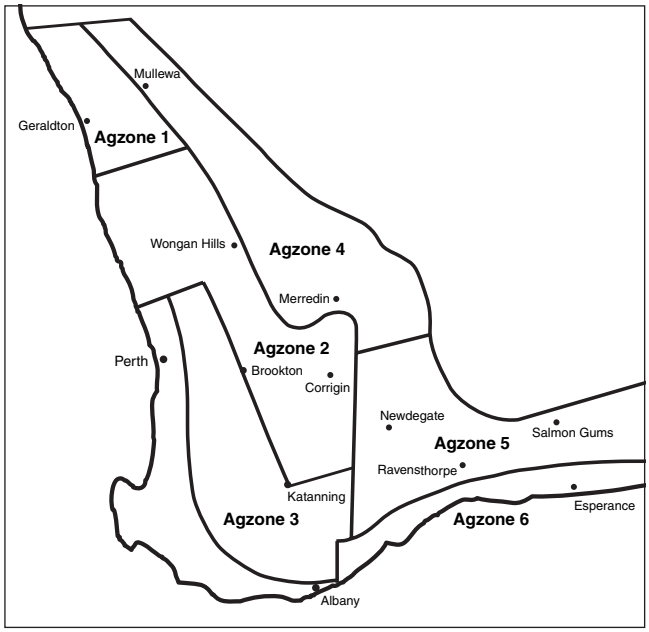

Figure 1. Map showing Agzones in Western Australia.

The malting quality of Gairdner ⓟ is more competitive than either Stirling or Schooner in most international markets, but does not meet the needs of all export brewers. Gairdner ⓟ is suited to the domestic brewing market however, whilst Baudin ⓟ and Hamelin ⓟ are not.

Baudin ⓟ, released in 2003, now makes up 21% of the area sown to barley in WA. Baudin ⓟ offers growers in the high rainfall areas an alternative to Gairdner ⓟ where straw length, straw strength, head loss and grain plumpness are an issue. Baudin ⓟ may not be suited to areas where swathing is a general practice due to the shortness of its straw. Baudin ⓟ is susceptible to most leaf diseases and requires a disease management strategy to be put into place to optimise its yield and grain plumpness. Deliveries of Baudin ⓟ are subject to the following Crop Improvement Royalties; $3/t for grain delivered as malting and $1/t for feed. For more information see Farmnote 21/2004 Options for growing Baudin ⓟ barley.

Hamelin ⓟ was released for General Malting in 2004 and made up 7% of the area sown to barley in 2005. In the low to medium rainfall zones it offers growers an alternative to Stirling due to its enhanced grain yield

Table 1. Yields (as a % of Stirling) when sown in either May or June, for malt and feed barley varieties for each Agzone. Where yield values are in bold font indicates that this variety is recommended for that particular Agzone. Data is from the seasons of 2003, 2004 and 2005 and is provided by the CVT Group, DAFWA. Only data where 4 or more trials for a sowing date are presented. A comparison between May and June data for an Agzone is not recommended as the data is not from time of sowing (TOS) trials.

	Agzone 1		Agzone 2		Agzone 3		Agzone 4		Agzone 5		Agzone 6	
	May	June	May	June	May	June	May	June	May	June	May	June
Malting varieties												
Stirling (t/ha)	**2.89**	**2.29**	**3.13**	**2.43**	3.37	2.78	**2.50**	**2.26**	**2.30**	**2.26**	2.65	2.94
Baudin ⏀	110	110	115	105	**112**	**114**	109	99	**120**	**107**	112	105
Gairdner ⏀	116	102	113	105	**110**	**114**	107	95	114	109	**109**	**106**
Hamelin ⏀	104	106	**108**	**99**	105	105	**104**	**103**	**108**	**102**	105	102
Schooner	105	106	107	101	106	104	104	106	**100**	**101**	**107**	98
Provisional malting varieties												
Vlamingh ⏀	121	115	120	112	111	118	110	104	124	109	120	119
Suggested feed varieties												
Barque ⏀	**107**	**115**	111	111	113	116	114	105	**128**	**109**	**129**	**107**
Capstan ⏀	-	-	-	106	-	116	-	-	136	112	142	116
Dash ⏀	-	-	-	112	**121**	**122**	-	-	**138**	**120**	**134**	-
Doolup ⏀	**108**	**119**	**106**	**109**	109	110	**103**	**111**	112	111	117	115
Molloy	**113**	**113**	**117**	**109**	**117**	**104**	**112**	**104**	**126**	**110**	119	108
Mundah	**119**	**109**	**114**	**109**	108	106	**111**	**119**	**109**	**109**	111	103

and superior malting quality. Hamelin ⏀ has the same plant appearance, lack of disease resistance and response to agronomy and climate as Stirling. The leaves of Hamelin ⏀ are prone to physiological leaf spotting. Hamelin ⏀ is susceptible to pre-harvest sprouting in coastal areas. Deliveries of Hamelin ⏀ are subject to the following Crop Improvement Royalties; $3/t for grain delivered as malting and $1/t for grain delivered as feed. For more information see Farmnote 62/2005 Hamelin ⏀: a new barley variety with superior malting quality for medium to low rainfall zones.

Schooner will be received as malting for the 2006/07 harvest in the Esperance port zone only. Schooner grain is only sold to export markets. In 2005 Schooner was sown on just 2.5% of the area sown to barley. Schooner is well adapted to the mallee soils on the south coast. With the release of newer malting varieties like Vlamingh ⏀, it is expected that Schooner will be downgraded to feed in two seasons.

Vlamingh ⏀ is a new malting variety bred by DAFWA. It was tested as WABAR2175 ⏀. Vlamingh ⏀ is suitable for high to medium rainfall zones. It combines a high yield potential with good resistance to scald and net type net blotch. Grain plumpness is similar to Hamelin ⏀. Vlamingh ⏀ has an erect early growth habit and maturity between Schooner and Gairdner ⏀. It has a different malt profile to either Hamelin ⏀ or Baudin ⏀ and suitable markets are being developed. Vlamingh ⏀ has a Provisional Malting classification which is expected to be upgraded to General Malting in October 2006 by the Western Malting Barley Council. Seed of Vlamingh ⏀ will be available at the end of 2006 for the 2007 season.

Suggested feed varieties

Barque ⏀ is suitable for high disease pressure environments where spot type net blotch, powdery mildew and scald may be a problem. At harvest Barque ⏀ tends to hold onto its awns making it difficult to thresh. Barque ⏀ is very sensitive to manganese deficient soils and manganese enriched fertiliser or foliar sprays may be required on deficient soils.

Capstan ⏀ has very short straw (shorter than Baudin ⏀), excellent head retention and intermediate resistance to all leaf diseases. Recommended for high rainfall areas where harvest is delayed or where head loss risk is severe and swathing is a not a preferred option. May be subject to high screenings and low hectolitre weight in lower rainfall years.

Dash ⏀ is a high yielding feed variety which is resistant to scald, powdery mildew and barley leaf rust. Being an erectoides type variety it can produce small grains. The breeder advises Dash ⏀ can be expected to show a small percentage of red awned and taller off types.

Doolup ⏀ is suited to the low and medium rainfall zones and the northern high rainfall wheatbelt. It is susceptible to most leaf diseases.

Molloy shows good tolerance to high levels of boron. It has short, strong straw and demonstrates good lodging resistance. It has good tolerance to powdery mildew and barley leaf rust. Hectolitre weight is greater than Mundah. Suited to earlier sowing than either Doolup ⏀ or Mundah.

Mundah is the most popular feed variety grown in WA and is sown on 10% of the area sown to barley. Straw length is shorter than Stirling and it is less prone to lodging, but can suffer from severe head loss. Demonstrates tolerance to high levels of boron but is moderately susceptible to most diseases. Performs well on both sandy soils and heavy soils.

Yagan is a very early maturing variety that may be considered as an alternative to Unicorn in weed management situations. Short stiff straw and good barley head retention in adverse conditions relative to Stirling. No yield data is available for Yagan due to it not being widely sown in CVT trials since 2003.

Table 2. Market preferences for malting barley varieties grown in Western Australia. In 2006, all malting varieties will be received in each port zone, with the exception of Schooner which will only be received in the Esperance port zone.

Variety	Classification	Export grain	Export malt	Domestic brewing	Shochu	Comments
Baudin ⓑ	General	✓	✓			Increasing demand from domestic malting, and export malting and brewing markets
Gairdner ⓑ	General	✓	✓	✓		Important variety for domestic malting, and for domestic and export brewing markets.
Hamelin ⓑ	General	✓	✓			Developing demand from domestic malting, and export malting and brewing markets. Expected to replace Stirling in export markets.
Schooner	General	✓				Limited export market. Declining demand.
Stirling	General	✓	✓	✓	✓	Established variety, but declining demand from export malting and brewing markets.
Vlamingh ⓑ	Provisional	✓	✓	✓		New to market. Seed available to growers for 2007 season.

New eastern state varieties

Buloke ⓑ is a high yielding tall variety with fair straw strength. Produces grain with similar plumpness to Baudin ⓑ. Buloke ⓑ has good tolerance to boron toxicity, similar to Schooner. Buloke ⓑ was released in 2005 in VIC and is being commercially evaluated for malting in eastern Australia. It is currently classified as feed in WA.

Cowabbie ⓑ is a NSW variety with grain yields similar to Gairdner ⓑ. Cowabbie ⓑ is being grown under contract as a malting variety in eastern Australia but is classified as feed in WA.

Dhow ⓑ is being grown in SA for the domestic brewing market. Dhow ⓑ is resistant to cereal cyst nematodes and is a semi-dwarf variety with short stiff straw. It is classified as feed in WA.

Flagship™ (WI3408 ⓑ) is a high yielding tall barley with fair straw strength and fair head retention. Flagship™ has similar grain plumpness to Baudin ⓑ but is susceptible to pre-harvest sprouting. Flagship™ has been released as a malting variety in eastern Australia and currently has a feed classification in WA.

Fleet™ (WI3804 ⓑ) is a new SA feed variety as a replacement for Barque ⓑ and Mundah in SA. It is derived from Mundah, Keel and Barque ⓑ. In WA it has better resistance to scald, powdery mildew and leaf rust than Mundah, but is not as good against net blotch. In CVT trials in 2005 it yielded 9% higher than Mundah across 16 sites.

Fitzroy ⓑ has been released as a malting variety for growing in NSW. In WA the Western Malting Barley Council has classified it as a feed variety. Fitzroy ⓑ is a variety with short straw that is lower yielding than Gairdner ⓑ when grown in WA. Grain plumpness is between Baudin ⓑ and Gairdner ⓑ.

Gairdner Plus™ (WI3586 ⓑ) is closely related to Gairdner ⓑ and shares many of its agronomic and malting quality characteristics. The primary difference is that GairdnerPlus™ is tolerant to cereal cyst nematode and has a slight improvement in tolerance to spot type net blotch. GairdnerPlus™ is being commercially evaluated for release as a malting variety in eastern Australia and is currently classified as feed in WA.

Table 3. Plant characteristics for malting, provisional malting and suggested feed barley varieties.

	Maturity	Height	Straw strength	Head retention	Grain plumpness	Boron tolerance
Malting						
Baudin ⓑ	Medium	Short	Very good	Very good	Mod. good	Mod. intolerant
Gairdner ⓑ	Medium	Medium	Mod. good	Mod. good	Fair	Intolerant
Hamelin ⓑ	Early	Tall	Fair	Fair	Good	Intolerant
Schooner	Medium	Tall	Mod. good	Fair	Good	Mod. intolerant
Stirling	Early	Tall	Fair	Mod. poor	Very good	Intolerant
Provisional malting						
Vlamingh ⓑ	Medium	Tall	Good	Good	Good	Intolerant
Suggested feed						
Barque ⓑ	Early	Medium	Mod. good	Mod. good	Mod. good	Mod. intolerant
Capstan ⓑ	Medium	Very short	Very good	Very good	Poor	Mod. intolerant
Dash ⓑ	Medium	Medium	Very good	Very good	Poor	-
Doolup ⓑ	Early	Medium	Mod. good	Mod. good	Very good	Intolerant
Molloy	Medium	Medium	Very good	Good	Mod. good	Mod. intolerant
Mundah	Early	Medium	Mod. good	Mod. poor	Very good	Mod. intolerant
Yagan	Very early	Medium	Mod. good	Mod. good	Very good	Mod. intolerant

Table 4. Disease resistance profiles for malting, provisional malting and suggested feed barley varieties. Bold font indicates resistance levels are intermediate or above.

	Scald	Net type net blotch	Spot type net blotch	Powdery mildew	BYDV	Barley leaf rust	Cereal cyst nematode
Malting							
Baudin ◊	I	S	S	S	**MR**	S	S
Gairdner ◊	I	I	S	MS	**R**	S	S
Hamelin ◊	S	S	MS	S	VS	S	-
Schooner	MS	I	MS	S	MS	S	S
Stirling	S	S	MS	S	I	S	S
Provisional malting							
Vlamingh ◊	**MR**	I	S	S	MS	MS	S
Suggested feed							
Barque ◊	**MR**	MS	**I**	**R**	**I**	S	**R**
Capstan ◊	**I**p	**I**p	**I**p	**I**p	S	**I**p	**R**
Dash ◊	**R**	**I**	S	**R**	S	**R**	-
Doolup ◊	VS	S	MS	S	**I**	S	**R**
Molloy	S	MS	MS	**I**	**I**	**R**	S
Mundah	S	MS	MS	MS	MS	S	S
Yagan	ES	**I**	S	MS	-	S	-

ES = extremely susceptible, VS = very susceptible, S = susceptible, MS = moderately susceptible, I = intermediate, MR = moderately resistant, R = resistant, HR = highly resistant, p = provisional rating only. Data provided by the barley pathology group, DAFWA.

Grout ◊ is registered as a high yielding feed variety for QLD and northern NSW. Grout ◊ has good early vigour with a high tillering ability and an erect early growth habit. It has medium maturity and is tall in height with good straw strength. It exhibits an ability to maintain green leaf during grain fill ensuring good grain size and indicating a level of drought tolerance. Grout ◊ is resistant to net type net blotch, powdery mildew and leaf rust in QLD.

Mackay ◊ is registered as a high yielding feed variety with strong straw strength and high levels of resistance to disease strains present in QLD and NSW (particularly net type net blotch, barley leaf rust and powdery mildew). Recommended for southern, central and western QLD and northern NSW.

Maritime ◊ is registered in SA as a high yielding feed variety with resistance to cereal cyst nematode and good tolerance to soils with low manganese levels. In SA it is moderately resistant to net type net blotch, moderately susceptible to scald, spot type net blotch and barley leaf rust; and susceptible to powdery mildew.

Milby ◊ is a sister line to Cowabbie ◊ and has many similar agronomic traits. Milby ◊ has better resistance to net type net blotch than Cowabbie ◊, but has poorer resistance to spot type net blotch and scald. Milby ◊ did not pass commercial malting and brewing trials and is classified as a feed variety.

Quasar ◊ is a two row barley with moderate early seeding vigour and an erect early growth habit. At maturity it has short straw with excellent strength. Quasar ◊ is being grown in VIC as a contract only malting variety for Barrett Burston Malting.

Sloop SA ◊ **and Sloop Vic** ◊ are both backcross lines derived from Sloop ◊, but with improved agronomic traits. Sloop SA ◊ is better suited to lighter soils in SA, while Sloop Vic ◊ is better suited to heavier soils due to its enhanced tolerance to boron. Sloop SA ◊ is resistant to cereal cyst nematode and susceptible to scald, powdery mildew and barley leaf rust in SA. Sloop Vic ◊ is resistant to cereal cyst nematode and susceptible to scald and barley leaf rust in SA. It is resistant to net type net blotch and has intermediate resistance to powdery mildew. All the Sloop varieties (Sloop ◊, Sloop SA ◊ and Sloop Vic ◊) are registered as malting in eastern Australia, but can only be delivered as feed in WA.

Torrens ◊ is a hull-less feed barley aimed at for use in the non-ruminant feed market (pigs and poultry). Torrens ◊ has an erect early growth habit, straw length slightly shorter than Stirling and susceptibility for head loss at maturity. Torrens ◊ is rated as moderately susceptible to the strains of scald, powdery mildew and barley leaf rust found in SA and resistant to cereal cyst nematode. Torrens ◊ is lower yielding than most hulled varieties.

Tulla ◊ is registered as high yielding feed variety for soil with low soil pH and/or aluminium toxicity in NSW. Currently being evaluated in WA as a potential feed variety for aluminium toxic soils. CVT trials suggest that Tulla ◊ is higher yielding than Molloy, Mundah, Skiff and Stirling on acid soils.

Yambla ◊ is an acid soil tolerant feed barley from NSW that is suited to earlier sowing, but with similar yield to Stirling. Has a medium height with moderately good straw strength and good head retention. Susceptible to powdery mildew and moderately resistant to barley yellow dwarf virus.

Yarra ◊ is a high yielding feed variety from VIC that has similar tolerance to boron toxic soils as Schooner. Yarra ◊ is a medium spring variety with short straw and very good head retention. It is susceptible to most barley leaf diseases.

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