

Barley Variety On-Farm Demonstrations

Summary

Two on-farm variety demonstrations were used to compare new malting barley varieties to the standard Wimmera variety Gairdner. The two new varieties for 2006 are: Buloke and Flagship. In a season with late spring rain, neither of these two new varieties were higher yielding or produced better grain quality than Gairdner at the two on-farm variety demonstrations in the Wimmera.

Background

Two barley variety demonstration sites were established in the Wimmera to assess the suitability and quality characteristics of some new barley varieties against the widely grown variety Gairdner. Gairdner has excellent yield potential but can have problems with grain size that can downgrade it out of malt quality, particularly when sown late or in years with a dry spring.

These demonstrations were run as part of the annual activities for the Wimmera Farming Systems group – a subgroup of the BCG based in the eastern Wimmera.

Methods

Demonstration sites were established on two Wimmera farms at Kalkee and Lubeck using farmer machinery to sow, harvest and maintain the sites during the season. A grain weigh bin was used to ascertain the yield of each plot. Grain samples were collected from each plot for quality analysis.

A nearest neighbour design was employed with each of the two sites using Gairdner as a control variety every third plot.

Six new varieties were tested at each site: Quasar, WI3586, WI3408, VB0325, VB0229. The Kalkee site also included Schooner and Sloop Vic.

<p>Location Peter and Tim Deutscher Lubeck</p> <p>Growing Season Rainfall (April-Oct.) Ave: 350mm 2005: 290mm</p> <p>Soil Type: Grey clay pH (H2O): 7</p> <p>Sowing Date & Rate 70kg/ha</p> <p>Fertiliser MAP: 60kg Urea: Top dressed 60kg/ha</p> <p>Paddock History 2004: Field peas 2003: Wheat 2002: Lentils</p>	<p>Location David Jochinke Blue Ribbon Rd, Kalkee</p> <p>Growing Season Rainfall (April-Oct.) Ave: 280mm 2005: 255mm</p> <p>Soil Type: Wimmera grey clay pH (H2O): 8.4</p> <p>Sowing Date & Rate 28th June at 45kg/ha</p> <p>Fertiliser MAP: 35kg/ha Urea: none at sowing</p> <p>Paddock History 2004: wheat (cut for hay) 2003: medic 2002: wheat</p>
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Results

Site 1: Lubeck

- Yields at the site were equivalent to the average for the district ranging from 4.84t/ha in Gairdner to 2.96 in Flagship.
VB0229 and Flagship were the lowest yielding varieties. Lodging affected the yields of both of the Waite Institute lines: Flagship and, to a lesser extent, WI3586.
- Earlier maturing varieties such as Buloke and Flagship were unable to take advantage of the late rains.
- All varieties grown at the Lubeck site achieved malting quality. The site had protein content: 10.3-10.9%, retention greater than 70% and screenings well below 5% for all varieties.
- The low protein line VB0229 had superior grain size to all varieties except Flagship.

Table 1: Yield (t/ha) and quality data for the Lubeck barley variety demonstration.

	Yield (t/ha)	Protein (%)	Screenings (%)	Retention (%)	Grade
Gairdner ⁺	4.84	10.9	3.1	74.9	Malt1
VB0325	4.48	10.5	3.2	76.0	Malt1
WI3586-1747	4.31*	10.8	2.8	73.8	Malt1
Quasar	4.14	10.4	3.9	71.1	Malt1
Buloke (VB0105)	4.08	10.3	2.6	76.3	Malt1
VB0229	3.42	10.7	1.4	90.7	Malt1
Flagship (WI3408)	2.96*	10.9	2.3	85.6	Malt1
LSD p≤0.05	0.7	NS	0.8	13.9	
CV%	3.7				

* Lodging affected these varieties.

⁺ Average of control plots

Site 2: Kalkee

- Due to seasonal conditions (very dry winter) this site was lower yielding than the Lubeck site. Yields at this site ranged from 3.25t/ha (Flagship) to 2.62t/ha (Quasar).
- Flagship, Gairdner, Buloke and Sloop Vic were the highest yielding varieties. Flagship was not affected by lodging and performed a lot better than at Lubeck, although high protein downgraded it to feed quality.
- Surprisingly, VB0229 was amongst the higher protein varieties.
- Sloop Vic and WI3586 were the only varieties to make malt1 quality.

Table 2: Yield (t/ha) and quality data for the Kalkee barley variety demonstration.

	Yield (t/ha)	Protein (%)	Screenings (%)	Retention (%)	Grade
Flagship (WI3408)	3.25	13.1	1.3	66.2	Feed1
Gairdner ⁺	3.10	12.7	3.1	63.1	Malt3
Buloke (VB0105)	3.02	12.8	1.6	66.7	Malt3
Sloop Vic	3.01	11.7	1.3	85.9	Malt1
Schooner	2.96	11.5	1.4	65.3	Malt2
VB0325	2.92	12.5	1.4	84.3	Malt3
WI3586-1747	2.76	11.4	1.9	79.7	Malt1
VB0229	2.71	13.3	1.4	87.5	Feed1
Quasar	2.62	13.2	1.5	76.9	Feed1
LSD $p \leq 0.05$	0.27	1.1	1.0	9.1	
CV%	3.0				

⁺ Average of control plots

Interpretation

Flagship is a new malting variety released from South Australia (tested as WI3408) suited to the Mallee. It is a tall variety with similar maturity to Schooner and Sloop, with CCN resistance and is rated moderately resistant to Spot Form of Net Blotch (SFNB) and scald. It is susceptible-moderately susceptible to leaf rust. It has grain plumpness similar to Buloke: larger than Gairdner but not as good as Sloop or Schooner. A small amount of seed is available in 2006.

→ Flagship was amongst the highest yielding varieties in the drier Kalkee trial, however lodging caused problems at Lubeck. It has had variable yield results in Victorian trials. It is unlikely to offer any extra advantage over Sloop SA in the Mallee. In the Wimmera WI3596-1747 is more suited than Flagship.

WI3586-1747 is a reselected line from WI3586. It has also been bred in South Australia and exhibits the same agronomic characteristics as Gairdner, with improvements in resistance to SNFB and CCN. A call for tenders has occurred for this variety with seed to go out to seed companies in 2006. A small amount may be available directly to growers.

- WI3586-1747 was equivalent in yield to Gairdner at Lubeck but lower yielding than Gairdner and Flagship at Kalkee. WI3586-1747 produced the lowest retention in the Wimmera on farm demonstrations in 2003, but grain size was equivalent to other varieties at each site in 2004.

VB0325 is likely to be released in 2007 (tendered out in 2006) subject to good malting and brewing trials from the 2005 commercial crop.

- It was equivalent in yield to Gairdner at Kalkee but lower than Flagship. At Lubeck it was amongst the highest yielding varieties.

VB0229 is an experimental low protein line developed in Victoria for production of malting quality barley in paddocks generally deemed too high in nitrogen to be suitable for malt barley production. Unfortunately it does not seem that this line will progress any further.

- It was one of the lower yielding lines at Lubeck with grain protein the same as other varieties tested at that site. At the high protein Kalkee site, VB0229 was again one of the lower yielding varieties but unexpectedly and produced high grain protein. Prior trials of this variety have shown it to achieve lower protein and good yields on high nitrogen paddocks.

Buloke (VB0105) is a high yielding malt variety with early-mid season maturity (similar to Schooner) suited to low-medium rainfall areas released in 2005. It has larger grain size than Gairdner but smaller than Schooner and the Sloops. Buloke is susceptible to CCN (eelworm), MR-MS for scald, MS-S for leaf rust & SNFB.

- Buloke was lower yielding than Gairdner at Lubeck but was amongst the top yielding varieties at Kalkee. Buloke also was one of the highest yielding varieties when tested at Kalkee in 2004, although had smaller grain size than Sloop Vic in what was a tough year for grain size. Buloke is a good variety for those in the northern Wimmera and southern Mallee who are looking to replace Gairdner to achieve greater consistency in grain quality.

Quasar is only available under license through Barrett Burston maltsters. It is a barley with early-midseason maturity. Quasar is best suited to medium-high rainfall and/or mid-late season environments. Little is known about its disease resistance.

- Quasar was one of the lowest yielding varieties at Kalkee in 2005 but was equivalent in yield to Gairdner at Lubeck. In WFS trials at Lubeck and Kalkee in 2004, Quasar performed well but not significantly different from other mainstream varieties.

Commercial Practice

Best bets:

- **Wimmera:** Gairdner, Buloke, SloopVic (Boron, CCN) or Flagship (CCN)
- **Southern Mallee northern Wimmera:** Buloke, Flagship, Sloopvic (Boron, CCN), SloopSA (CCN)