

## Barley agronomy, row spacing

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### Key findings

- Crop establishment was not affected by row spacing, regardless of barley variety or row width.
- Barley grain yield and quality were unresponsive to row spacing at Hart in 2009.

### Why do the trial?

This trial was conducted to investigate barley varietal performance across two row spacings, 225mm (9 inch) and 350mm (14 inch). Characteristics measured included differences in early vigour, grain yield and grain quality.

### How was it done?

A replicated trial was conducted at the Hart field site to assess four barley varieties; Maritime, Fleet, Hindmarsh and Flagship, which differ in their growth rate and habit. They were compared across two row spacings, 225mm (9 inch) and 350mm (14 inch).

Seeding rates were adjusted according to grain weight and germination percentages to produce target plant populations of 145 plants/m<sup>2</sup>. The trial was sown using chisel points and press wheels.

**Plot size** 1.5m x 10m      **Fertiliser rate** DAP @ 70 kg/ha + 2% Zn

**Sowing date** 12<sup>th</sup> May 2009

Plant counts were carried out four weeks after sowing to determine crop establishment. Trials were harvested on the 9<sup>th</sup> of November. Grain quality was assessed for retention with a 2.5 mm screen, protein (% dry basis), screenings with a 2.2 mm screen and test weight (kg/hL).

### Results

The average barley grain yield was 2.43 t/ha and row spacing had no significant impact on this. Similarly, no difference was recorded in barley plant densities (Table 1).

Table 1. Grain yield and plant density averaged across variety for row spacing at Hart in 2009.

<b>Row Spacing</b>	<b>Grain yield (t/ha)</b>	<b>Plant density (plants/m<sup>2</sup>)</b>
225mm (9")	2.47	127
350mm (14")	2.39	142
LSD (0.05)	ns	ns

Maritime was the highest yielding variety, 2.78 t/ha (Table 2), with no significant difference between the other varieties. There was no significant difference in crop establishment across varieties.

Table 2. Grain yield averaged across row spacing for variety at Hart in 2009.

<b>Variety</b>	<b>Grain yield (t/ha)</b>	<b>Plant density (plants/m<sup>2</sup>)</b>
Flagship	2.62	129
Fleet	2.05	141
Hindmarsh	2.28	145
Maritime	2.78	124
LSD (0.05)	ns	ns

No differences in grain quality characteristics were measured across the two row spacing treatments. Grain protein levels were all high, above the malt receival standard of 12%. No significant difference was identified for screenings, retention and test weight between the two row spacings, with an overall receival grade of Feed 1 (Table 3).

Table 3. Protein, screenings, retention, test weight and receival grade averaged across variety for row spacing at Hart in 2009.

<b>Row spacing</b>	<b>Protein (%)</b>	<b>Screenings (%)</b>	<b>Retention (%)</b>	<b>Test weight (kg/hL)</b>	<b>Receival grade</b>
225mm (9")	13.0	1.5	87.3	70.1	Feed 1
350mm (14")	13.8	1.5	87.1	70.5	Feed 1
LSD (0.05)	ns	ns	ns	ns	

There was no grain quality characteristic measured that produced significantly different results in relation to variety. All varieties produced high grain protein, averaging 13.4%. Fleet had the lowest screenings (0.9%) and Hindmarsh produced the highest (2.2%), however these results were not significant. All varieties produced good retention and test weights. All varieties achieved the same receival classification, Feed 1 (Table 4).

Table 4. Protein, screenings, retention, test weight and receival grade averaged across row spacing for variety at Hart in 2009.

<b>Variety</b>	<b>Protein (%)</b>	<b>Screenings (%)</b>	<b>Retention (%)</b>	<b>Test weight (kg/hL)</b>	<b>Receival grade</b>
Flagship	13.1	1.4	87.1	70.3	Feed 1
Fleet	13.6	0.9	90.7	70.2	Feed 1
Hindmarsh	14.1	2.2	84.1	69.5	Feed 1
Maritime	12.8	1.4	86.9	71.2	Feed 1
LSD (0.05)	ns	ns	ns	ns	

## Discussion

Early rainfall enabled good crop establishment at Hart. Rains throughout winter allowed outstanding biomass production with crops setting high grain yield potential. These beneficial conditions were followed with a dry spell in August, but late rains enabled good grain yields.

Plant counts confirmed that both row spacings produced the same barley plant establishment. A corresponding lack of difference in grain yield between the two spacings suggests that the growth habit of the trialled varieties enabled adaptation to these treatments. Considering no barley variety by row spacing interaction was recorded in either grain yield or quality; it is suggested all barley varieties respond alike to changes in row spacing.

The results from this trial indicate that all varieties tested respond alike to row spacing for grain yield and grain quality. These data support two years of previous results established at Hart in drought affected seasonal conditions, suggesting there is no grain yield, or quality penalty in increasing row spacing from 225mm (9 inch) to 350mm (14 inch).

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