



# 2008 VICC trial block results

Damian Jones

Research Agronomist, DPI Victoria, Kerang

## IN A NUTSHELL

- Pre irrigation was vital to the success of the irrigated cropping trials in 2008
- The move to sow canola in April has paid off again with the trial averaging over 4.0 t/ha
- Cereals can be sown for grazing without impacting on grain yields if managed correctly and all cereals can produce similar quantities of fodder

*Most, if not all, commercial varieties of cereals and canola are developed and released on their dryland performance. The Irrigated Trial Block at Kerang enables irrigated croppers to see how broadacre crops perform under irrigated conditions. Irrigation brings its own set of varietal demands that are not tested in other environments.*

Despite low allocations, sufficient water was able to be purchased to ensure the trials in 2008 were successful and demonstrate the potential of currently available varieties as well as experimental lines and new technology.

### The block & the season

The Irrigated Trial Block is situated just east of Kerang in northern Victoria. The trials are conducted in a partnership between VICC and DPI Victoria. The trial block was established in 2002 and concentrates on variety evaluation and development of best practice management guidelines for irrigated cropping. The site is flood irrigated grey clay soils, suffering from the usual sodic subsoils and shallow saline watertables that are common to many areas in the irrigation districts of southern NSW and northern Victoria.

Autumn 2008 saw the block with only enough water to irrigate where the trials were to be sown. Normally we aim to pre irrigate in the first week of April but the rainfall outlook for April was poor and so we delayed pre irrigation for a week. This meant we were able to start sowing canola on 23 April and the cereals from 2 May.

The rain that did fall in late April wasn't enough to get the canola trials underway and we had to irrigate them up just before the season closed (13 May). A small rainfall event predicted shortly after this irrigation turned out to be one of the better falls for the season making the canola trials very wet, but this didn't affect establishment dramatically. This rain however allowed the rest of the trial block to be sown to barley. Unfortunately follow-up rains were few and far between and the areas not pre irrigated established poorly and struggled to survive, finally being sprayed out in September.

The canola and oaten hay trials were irrigated twice in spring and the cereals and faba beans three times. The first irrigation was delayed by two weeks (the soil moisture monitoring equipment indicated that we should have irrigated at the end of

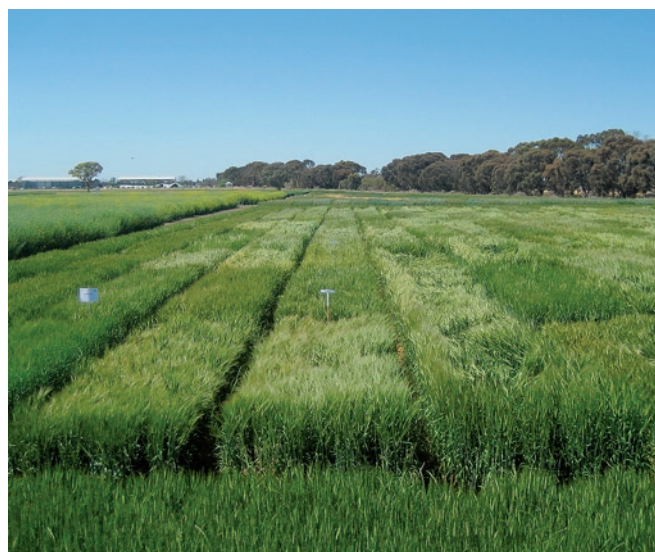
August) but there was insufficient water in the irrigation system to allow the season to commence, despite having carryover. Pre-irrigation plus three spring irrigations meant a total water use of 5.3 ML/ha for the site.

The highlights for each trial are summarised in this article, as well as the performance of some of the commercial varieties from the previous trials at the trial block.

### Barley

This season we increased our participation in the project *High yielding genotypes of winter cereals for irrigated regions of south east Australia*, funded by GRDC and managed by ICF, by hosting a barley trial as well as the wheat. A total of 101 breeding lines and commercial varieties were sown. The sowing rate may have been a little high, with shoot counts around the 1000 shoots/m<sup>2</sup>, hence many plots lodged.

Trial yield average was 5.59 t/ha, with the higher yielding varieties being Capstan (7.37 t/ha), Vlamingh (6.79 t/ha) and Lockyer (6.67 t/ha). Gairdner went 5.89 t/ha, Hindmarsh 6.11 t/ha and Baudin 5.27 t/ha. The best performing lines were WABAR2411 (8.32 t/ha) and WABAR2458 (7.37 t/ha).



**Figure 1.** The VICC Trial Block at Kerang hosted a barley trial for the 'High yielding winter cereals' project, with 101 breeding lines and commercial varieties evaluated.



Table 1. Average yield (t/ha) for selected barley varieties at the VICC Trial Block 2002–08

Variety	2002	2003	2004	2005	2006	2007	2008	Average
Schooner	3.8	4.9		6.3	5.1		4.5	4.9
Franklin	3.5	5.9	6.7	5.8	6.1			5.6
Gairdner	5.5	5.7	6.4	6.2	5.4	6.7	5.9	6.0
Baudin		6.3		6.6	5.4	7.3	5.3	6.2
Fitzroy	4.2	7.1	7.3	6.6	6.5	6.9	5.2	6.3
Yambla	5.5	6.6	6.7	6.4				6.3
Capstan				6.5	7.1	8.4	7.4	7.3

Table 2. Average yield (t/ha) for selected canola varieties at the VICC Trial Block 2003–08

Variety	2003	2004	2005	2006	2007	2008	Average
TornadoTT	3.2	2.4	2.3	1.6	3.7		2.6
ATRSIGNAL	3.2	2.5	2.7	1.9	3.7		2.8
ThunderTT	3.3	2.6	2.8	1.8	4.0		2.9
ATRCobbler	3.3	2.6	2.9	1.9	3.9		2.9
RocketCL	3.3	2.6	2.5	1.6	4.0	3.6	2.9
46C76	3.2	2.5	3.2	2.3	3.8	3.7	3.1
Skipton	3.7	2.8	3.4	2.2	4.2		3.2
WarriorCL	3.4	2.9	3.5	2.2	4.4	3.5	3.3
44C11	3.3	2.7	3.8	2.6	4.2		3.3
AGSpectrum	3.4	2.9	3.3	2.0	4.4	4.2	3.4
AVGarnet	3.3	2.7	3.7	2.5	4.2	4.2	3.5
AVSapphire	3.4	3.0	3.7	2.2	4.6	4.0	3.5
46C04	3.6	3.1	3.4	2.0	4.7	4.6	3.5
Hyola75	3.5	3.2	4.3	2.6	4.9		3.7

## Canola trials

This season saw four canola trials sown on the block.

### 1. Variety trial

A mix of commercially available varieties, including TTs and Clearfields, our variety trial was sown on 23 April, predicted rainfall failed to eventuate and the plant establishment was low (approximately 25 plants/m<sup>2</sup>). The trial was then irrigated and this got the plant numbers up to 34 plants/m<sup>2</sup>, down a little from our target of 50 plants/m<sup>2</sup>.

The trial average yield was 4.0 t/ha, which was a good result given the less than ideal start and late spring irrigation. As usual, the conventionals topped the yields, with Hyola 76 averaging 4.9 t/ha and Hyola 50 4.6 t/ha. Best Clearfield variety was 46Y78 (4.4 t/ha) and best TT was Tawriffic TT at 3.9 t/ha. Once again the TTs were placed in the lower performers.

### 2. Better canola trial

The 'Better Canola' trial looked at the effect of nitrogen and phosphorus rates and timing on dry matter and grain yields. This trial was funded through the Irrigated Cropping Forum's oilseed industry development project.

Sown 30 May, this trial had similar problems to the variety trial and had very poor establishment prior to irrigation. After irrigation, plant establishment was 38 plants/m<sup>2</sup>. Trial average yields were 13.2 t/ha of dry matter at late flowering and 3.5 t/ha for grain.

There was no response to phosphorus due to existing high levels of soil phosphorus (43 ppm) and no grain yield response to increasing nitrogen rates (60, 80 and 100 kg N/t of expected yield) or timing (upfront or topdressed). However dry matter at late flowering was increased by topdressing nitrogen compared with similar amounts of nitrogen applied upfront.

### 3. Herbicide trial

The 'Herbicide Trial' compared the yields of the new Roundup Ready varieties with the existing herbicide tolerant and conventional varieties. Sown 13 May, establishment was 38 plants/m<sup>2</sup>. Highest yielding variety was AV Garnet (4.6 t/ha). Average yields as herbicide groupings were conventional 4.0 t/ha, Roundup Ready 3.7 t/ha, Clearfield 3.3 t/ha and Triazine 3.3 t/ha.

### 4. Specialty types

The fourth trial was conducted on behalf of the DPI Victoria oilseed program looking at the performance of the specialty types of canola. It was sown 18 May, which was later than we would have liked, and yield average was 2.8 t/ha, with no significant differences between varieties. Due to the late sowing and warm October, the earlier maturing lines may have been favoured.

## Faba beans

This season saw a repeat of the virus problems that affected yields in 2007. Sown 8 May, the trial had little ascochyta or



Table 3. Average yield (t/ha) for selected oat hay varieties at the VICC Trial Block 2004–08

Variety	2004	2005	2006	2007	2008	Average
Glider	12.7	15.1	14.5	11.3	13.1	13.3
Tungoo	14.5	14.6	10.6	11.6	15.7	13.4
Riel		15.7	11.5	10.4	17.7	13.8
Eurabbie	15.0	14.4	11.1	12.0	17.4	14.0
Targa		13.5	14.2	12.6	15.9	14.0
Kangaroo	15.9	15.3	12.1	11.5	16.9	14.3
Sv97200-3		15.9	12.1	12.1	18.6	14.7

chocolate spot. The viral problems started to become apparent in early October, causing the plants to appear moisture stressed. Reps 2 and 3 of the trial were badly affected but rep 1 was visually unaffected. The trial yield averaged 5.3 t/ha, with rep 1 averaging 6.3 t/ha.

Using results from rep 1 (hence not replicated data but as an indicator of the performance without the virus issues), Fiesta (7.2 t/ha) topped the yields, with Fiord (6.6 t/ha), Nura (6.4 t/ha) and Farah (5.9 t/ha) the best of the commercial varieties. Two lines that are being bulked for release are 1269\*483/6 (6.3 t/ha) and 974\*(611\*974)/15-1 (5.2 t/ha).

### Oaten hay

Sown 28 May, cutting started 23 October and continued until 5 November. Trial average was 15.6 t/ha. Best varieties were Riel (17.7 t/ha), Eurabbie (17.4 t/ha) and Kangaroo (16.9 t/ha).

### Wheat

A total of 34 varieties were included in the trial, consisting of predominantly mid-season varieties, with a few of the late to very late varieties.

The trial was sown 5 May. In an effort to gauge the effect of stripe rust on the variety performances, reps 1 and 3 were sprayed to control stripe rust on 12 August and 8 September with Bumper® at 250 mL/ha. Stripe rust was first noticed in the unsprayed Chara on 3 September, and the other moderately susceptible (MS) variety and some of the moderately resistant-moderately susceptible (MR-MS) varieties had stripe rust by 19 September. While there was a negative effect on the yield of Chara from stripe rust (7.06 t/ha sprayed vs 6.01 t/ha unsprayed) this was not a consistent response, eg Ventura (5.0 t/ha sprayed vs 7.16 t/ha unsprayed).

The trial average of the sprayed reps was 6.5 t/ha, with Derrimut (8.5 t/ha), LR1078 (8.3 t/ha), Peake (7.9 t/ha), Carinya (7.8 t/ha), Yenda (7.7 t/ha) and Amarok (7.5 t/ha). The late to very late varieties did not do as well as in 2007, probably due to the hotter grain filling period in 2008.

### GRDC Irrigated Wheat Evaluation

This was the second year that wheat trials were conducted at the Kerang for the *High yielding genotypes of winter cereals for irrigated regions of south east Australia* – funded by GRDC and managed by ICF. The trial had 160 wheat lines, which includes commercially available varieties and lines submitted by the breeding companies. Although the criteria for entry into the trial was for bread wheats that would flower in the last week of September from a first week of May sowing, there was a range

of maturities from short to very late and feed types. The trial was sprayed to control aphids and stripe rust.

As was the case in 2007, initial yield data shows many of the currently available varieties outperformed many of the breeders' lines, with yields over 7.0 t/ha. There are a few lines that seem to have some potential, yielding above 9.0 t/ha. Best commercial performers were Derrimut (9.2 t/ha), Wyuna and Yenda (7.7 t/ha). Best of the lines were VW0404 (10 t/ha) and VW4071 (9.1 t/ha). Trial average was 6.8 t/ha.

### Spelt wheat

Spelt wheat was an important staple in parts of Europe from the Bronze Age to medieval times but has found a new market in modern times as a health food. Spelt is sometimes considered a subspecies of the closely related bread wheat.

The trial was sown 23 May and included Chara as a comparison. The three spelt varieties yielded less than Chara – 3.3, 4.0 and 4.2 t/ha compared with 7.1 t/ha for Chara.

### Triticale

A range of triticales were sown, including the variety Falcon which is considered a fodder rather than a grain type, on 9 May. The trial averaged 7.2 t/ha (not including Falcon) with Hawkeye (8.7 t/ha) and Jaywick (8.6 t/ha) topping the yields.

### Cereal fodder trial

This trial was sown in response to enquiries from the dairy industry for information on cereals for fodder rather than grain. Oats, wheat, barley and triticale were represented by varieties with differing maturities ranging from mid season to winter types. Tetila ryegrass was also included as a comparison. The trial was sown on 9 April and watered up.

Half of each plot was sprayed to control grasses to see the effect of weed competition on total plot yields.

Plots were "grazed" when a majority had grown sufficient feed. This occurred on 28 May and 24 June. Some plots were harvested at the beginning of stem elongation while others were not sampled for dry matter until late booting and then again at the milky dough stage of grain filling.

Generally, early growth was better in the shorter season varieties, with the longer season varieties having the best total dry matter production. The best performers from each cereal type were similar in total production – McKellar wheat (16.2 t/ha), Urambie

Table 4. Average yield (t/ha) for selected wheat varieties at the VICC Trial Block 2003–08

Variety	2003	2004	2006	2007	2008	Average
Ventura			3.9	6.1	5.0	5.0
Diamondbird		4.7	4.8		5.8	5.1
Yitpi	4.0		5.1	6.0	6.2	5.3
Rosella	5.4	5.3	5.5		6.9	5.8
Chara	5.5	5.3	6.6	5.8	7.1	6.0
Sentinel		5.4	6.0	6.4	6.5	6.1
Wedgetail	5.6	5.4	6.6	7.0	5.8	6.1
Ruby	7.3	5.9	5.7		5.8	6.2
Yenda		6.6	5.6	5.6	7.7	6.4
Arrivato		5.6	6.8		7.0	6.4



barley (12.7 t/ha), Graza 80 oats (15.2 t/ha), Endeavour triticales (15.7 t/ha) and Tetila ryegrass (12.6 t/ha).

The dry matter production present at booting was two to three times that present at the milky dough stage.

If the cereal crop is to be grazed, it is vital to check the growth stage in the paddock, particularly from early sowings as early season (quick maturing) varieties develop quite quickly in the warm autumn months. This was illustrated in the trial by the triticales varieties Rufus and Yukuri that had reached the stem elongation phase by 24 June and the "grazing" resulted in the developing heads of the plants being removed, severely decreasing the subsequent dry matter production.

Weed competition had mixed results with some plots having higher yields with the weeds (mainly ryegrass) and others yielding less.

Grain yields were comparable with the grain only trials, and cutting at the beginning of stem elongation had little if any effect on grain yields.


Some of the red (winter) wheats were also sown next to this trial at the same time, with yields being lower than the similar varieties sown in May. Unless they are needed for grazing, sowing these varieties early does not increase grain yields.

### Seed dressing

This trial was conducted on behalf of the Independent Associated Seed Graders. The trial looked at a range of seed treatments on Sloop SA barley and Yitpi wheat (both varieties wouldn't be irrigation varieties of choice but this trial is conducted over two other dryland sites using the same seed).

The seed treatments had no effect on foliar disease control or yield on barley, but the products Zorro® (6.5 t/ha), Dividend® (6.4 t/ha) and Hombre® (6.3 t/ha) had a statistically significant yield increase over the control (5.9 t/ha) in wheat. No product had any influence on the level of stripe rust that occurred in the wheat trial.

### 2009 plans at Kerang

Planning for 2009 is underway, with a focus on fodder crops such as vetch and early sown cereals, as well as the usual variety evaluations. We are always wanting to hear from irrigation croppers who have ideas for trials, issues that need investigating or for particular varieties to be included. Feel free to contact me to discuss these results or ideas. 

### Further information

*Damian Jones*  
*DPI Victoria, Kerang*  
*T: 03 5450 9525*  
*M: 0409 181099*  
*E: [Damian.Jones@dpi.vic.gov.au](mailto:Damian.Jones@dpi.vic.gov.au)*