

Northern agronomy team 2006 irrigated trial block results



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Victorian Irrigated Cropping Council Trial Block 2006 Report

Key Findings from the 2006 Trials

Pre-irrigation still is best management practice

Pre-irrigation gave us the opportunity to sow on time again. In the last 5 years of trials, pre-irrigation has been the only way we have been able to sow on time.

Watering up canola

Sowing canola into a pre-irrigated soil has the slight risk that if there is no follow up rain, the shallow seed depth of canola exposes it to poor germination and patchy emergence. Canola has been successfully irrigated up providing the layout is adequate for efficient irrigation. Canola may be the crop where irrigating up is BMP(best management practice) and not pre-irrigation.

Oaten hay does pay

The oaten hay crop has the potential to fit in a crop rotation and also make money in doing so. There are market options with oaten hay (export, domestic) depending on your location and source of possible buyers. The crop of oats, cut before weed seed set and sprayed when the hay is removed will lower the weed numbers

Weed seed reduction

High weed numbers reduce yield, increase costs with the use of chemicals and increase the chances of herbicide resistance. There are many options to lower weed number and all these strategies should be considered. Hay cutting was the option selected for the block to lower grass numbers.

Long or short season varieties? Time of sowing. Where do the varieties fit?

Know your variety and its correct planting window. There is a variety for every purpose you can think of. Long season varieties generally perform in irrigation/high rainfall years or high rainfall environments. At Kerang mid season varieties generally perform best, due to the temperatures in late spring. Short season varieties may find a fit where paddocks cannot be pre irrigated and rely on rainfall to emerge. The late germinating crop may benefit from being early maturing and reduce the chances of grain filling in the warmer temperatures of late spring.

Faba beans and viruses

Integrated pest management will need to be adopted if faba beans are to be grown successfully in the irrigated environment

Alternatives to Gairdner

The long term yield performance shows that Gairdner remains the preferred option on irrigation despite its relatively poor performance in trials in 2005, 2006. Potential Gairdner replacements (WI3416-1572, VB0432) will be trialed in 2007 under irrigation to see if substantial yield improvements are consistent and to examine if their tolerance to spot form of net blotch and grain size is an improvement on Gairdner. Comment on Fitzroy??

Grazing cereals

Grazing cereals is becoming successful in a mixed farming practice with the use of winter types. There are options of wheat, oats and triticale and the winter feed that they can produce is important. It can also be advantageous with crops that are sown early as it can reduce the chance of frost by delaying flowering and grazed correctly it has shown not be detrimental on yield. I don't think that this statement is justified based on the results. Perhaps you could say, that good grazing management gives the least chance of yield reduction.

Seed dressings?

Is rust going to be present after the drought and no green host? Is there going to be a breakdown with resistance in varieties that have displayed no yield reductions in the presence of stripe rust? These are questions only, what is the finding??

Increasing WUE

Monitor soil moisture and match key plant growth stages with adequate moisture through irrigation events This is not just WUE , but yield

One year's outstanding performance does not make a variety

Look at a variety's performance over a number of seasons to ensure you are choosing a reliable variety. A majority of varietal data is generated under dryland conditions, whereas irrigation brings along its own unique characteristics that can affect how a variety may perform.

Varieties should never be chosen on yield alone, particularly on one season's performance. Marketability, disease rating and maturity are important factors that must be considered.

Most of the trials are either replicated (each variety or treatment is sown three times in a small 15 x 2 m plot) or **nearest neighbour** (Every third plot is the same treatment and usually on large plots). This allows some sort of statistical analysis to assess whether differences between treatments are due to the treatment or simply due to chance or site variability.

On some of the trial graphs there is a "□" with the letters LSD = This is the **Least Significant Difference**. Unless two varieties or treatments have a yield difference of greater than the LSD, the difference could simply be by chance.

Many of the timing of operations are given a Z value, such as Z30. This is an accurate description of the growth stage of the cereal crop as described by the **Zadoks decimal growth scale**. It can also be written as DC or GS. Many of the nitrogen applications are before the stem belongs to elongate or Z30 (stem elongation stage of development, but before the first node is detectable). See the end pages of this booklet for a complete summary of the Zadoks growth scale.

If you are interested in any of the trials and would like to discuss the trials further, please feel free to contact any of the Northern Agronomy Team at Cobram or Kerang.

Likewise, if you have an issue that you think needs investigation, please contact NAT (54521266) to see if there is a possibility of a trial being conducted in 2007.

Introduction

This report contains the results of the trials and demonstrations conducted at the VICC trial block at Kerang in 2006. The aim of the VICC and Northern Irrigation Agronomy Team Trial Block is demonstrating what we believe are best management practices for irrigation. Trial work began in March 2002. The block has a water right on the Murray system of 47ML.

Block Summary 2006

Growing Season Rainfall: Ave: 232mm, 2006: 142mm

Soil Type: Heavy Grey Clay (Meran, Kerang and Koroop Clays) pH_(H2O): 6.7

Paddock History

2005 Canola (2-2.5t/ha)
2004 Faba Beans (2.2 t/ha)
2003: Triticale (5.5 t/ha)
2002: Wheat (5.5 – 7 t/ha)
2001: Sub-Pasture for hay
2000: Sub-Pasture for hay

2006 Preparation

Cropping Operations – Oaten Hay, Glider

January Grazed canola stubble

April Pre irrigated trial site. Knockdown herbicide applied

May Sowing of the trials started on May 5th. As sowing progressed, soil moisture levels declined, which resulted in patchy emergence in some trials (5 mm of rain after sowing would have been great)

June Last of the trials sown.

August Weed control
Topdressed with nitrogen
Irrigation began on August 24th.

October Second irrigation began on October 2nd.
Oats cut (Oct 24th) and baled into hay
Third irrigation began on October 25th for the cereal trials

Barley Variety Trial

Why do the trial:

To assess the ability of different barley varieties to perform under a flood irrigated environment.

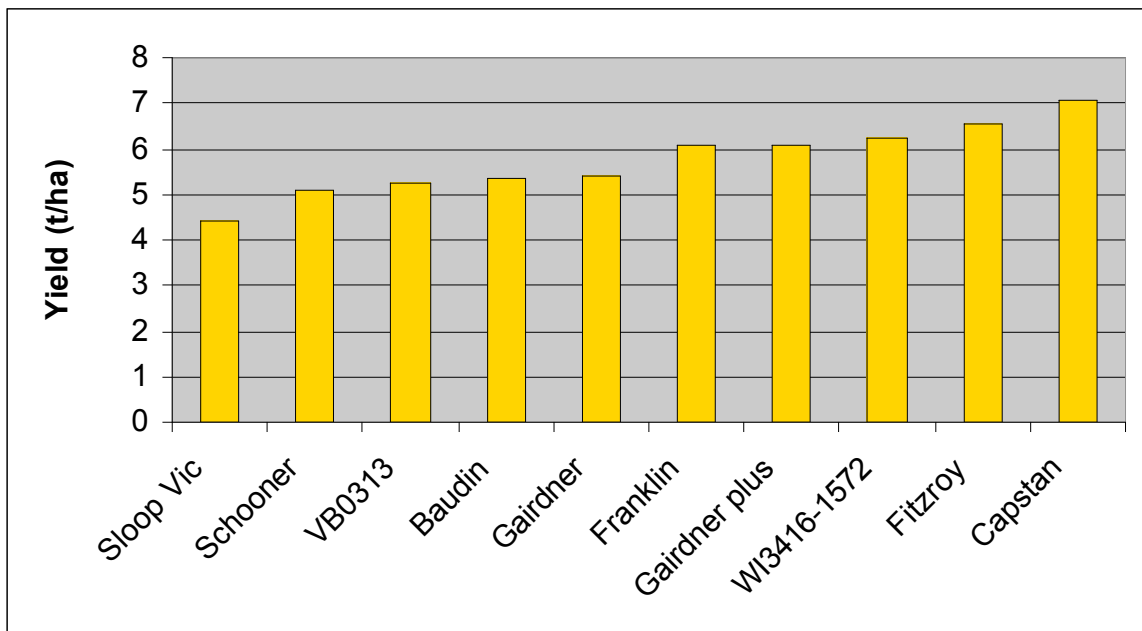
How was it done:

8 commercial varieties and 2 advanced breeding lines were sown in randomised replicated plots.

What was done:

- 2005 crop was Canola (2.5 t/ha)
- Stubble was grazed
- Pre-irrigated (approximately 2.5 MI/ha) early April
- 1 knockdown spray applications to control annual weeds
- Production target of 6 t/ha malting barley
- Sown into moisture May 18th, with variable rates to achieve 160 plants per square metre. Varied between a sowing rate of 59 – 107 kg/ha, with 120 kg/ha DAP
- Achieved 102 pl/m². Establishment rate was 45%
- Topdressed @ 110 kg/ha of urea at Z32 on August 23rd.
- First spring irrigation started on August 24th
- Second irrigation started on October 2nd
- Third irrigation started on October 25th. Total water use of 5 MI/ha.
- Harvested November 21st. Trial average was 5.75 t/ha.

Results:



Graph 1: Barley Variety Yield

LSD = 1.18 t

%CV = 12

What does it mean:

- ◆ Short season varieties generally grown in the mallee didn't yield as well as mid to late season varieties. Sparrow damage was seen in the trials this year and the early maturing varieties were initially targeted by the birds and this could have affected the yields.
- ◆ Capstan (feed barley) yielded the highest. It has a prostrate (close to the ground) growing habit similar to Gairdner. Keel is the other feed variety that has performed well in high input environments but was not included in this trial.
- ◆ Gairdner was again in the middle of the field with its grain yield but despite this the long-term averages still show Gairdner as the preferred option for an irrigated/high rainfall environment. The CCN resistant Gairdner Plus will not be released due to potential marketing issues. Other alternatives will be further tested this year with some varieties earmarked with yield potential but the malting quality characteristics will require further evaluation.
- ◆ Applying sufficient Nitrogen for 6 t/ha via topdressing made achieving that target yield essential, particularly due to the late (Z32) application. To ensure top-dressed N does not potentially affect protein, it should be applied by around Z30. This result does highlight the potential problems with a topdressing strategy in that you need rainfall to wash the urea in. With no rainfall events to help topdressing, N application was held up until irrigation was scheduled.

Table 1: Quality Assessment

Variety	Yield t/ha	Protein %	Screenings		Retention %	Test Wt kg/hl	Moisture %
			<2.2mm	<2.5mm			
Sloop Vic	4.44	13.4	1.4	2.4	96.2	74	9.6
Schooner	5.08	13.1	1.7	3.9	94.4	72	10.3
VB0313	5.26	11.5	1.7	4.5	93.8	72	10
Baudin	5.35	12.5	1.2	2.2	96.6	71	10.4
Gairdner	5.38	12.9	1.9	3.7	94.4	74	9.8
Franklin	6.09	12.6	2.3	13.0	84.7	75	10
Gairdner Plus	6.09	11.4	1.1	3.9	95	73	10.1
WI3416-1572	6.24	10.7	1.2	2.2	96.6	72	10.2
Fitzroy	6.53	11.4	1.1	2.7	96.2	71	10.5
Capstan	7.05	10.9	2.8	5.7	91.5	70	10
p	0.007						
lsd	1.183						
%cv	12						

Canola Variety Trial

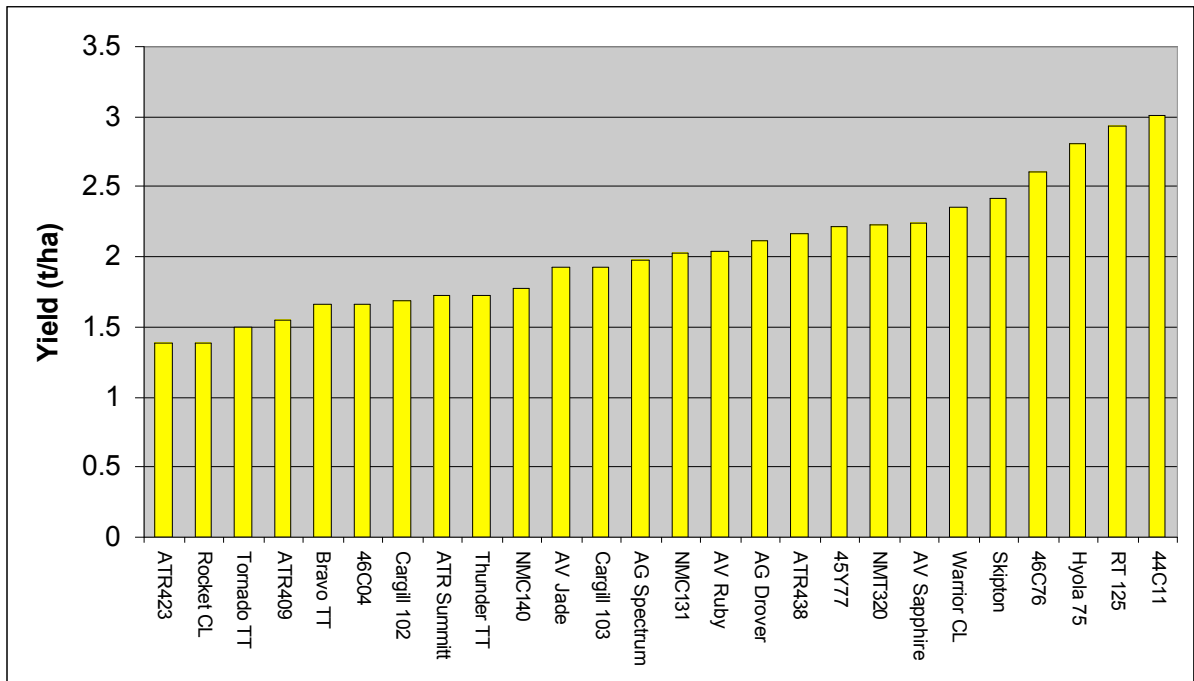
Why do the trial:

To assess yield and agronomic characteristics of commercial and varietal lines under a flood irrigated environment.

How was it done:

- 2005 crop was canola (2.4 t/ha)
- Deep N soil tested (72 kg/ha N)
- Production target of 3.0 t/ha.
- Pre-irrigated early April (2 MI/ha)
- Target population of 50 plants/m²
- Sown at 3.5 kg/ha with 125 kg/ha DAP on May 10th into moisture.
- Achieved 26 plants/m².
- Lemat @ 100 ml/ha to control RLEM on May 22nd.
- Verdict® @ 100 ml/ha to control grass weeds on July 10th.
- Lontrel @ 300 ml/ha on July 17th. To control what?
- Topdressed at early bolting at 170 kg/ha of urea.
- First spring irrigation began on August 25th
- Flowering began in most varieties by September 1st, and finished by October 2nd
- Second irrigation began on October 3rd.
- Windrowed 2nd November
- Harvested 17th November. Trial average was 2.1 t/ha.

Results:



Graph 2 – Canola Variety Yield

LSD = 0.81 t

%cv = 24

What does it mean:

- Staggered patchy emergence didn't allow the trial to have a uniform plant density in the plots. Targeted plant densities (50 pl/m²) were generally not meet.
- Average yields were down across the site (site average 2.1 t/ha).
- **%CV was 24, so interpretation of the trial result should be done with caution.**
- Canola on canola is not a recommended practice and was only done through lack of alternative sites on the trial block. Most stubble was removed from the trial area before sowing, and blackleg lesions did develop on many seedlings.
- The early maturing 44C11 was the highest yielder. Generally the mid season varieties have been the better performers. Flowering was cut short in October by hot windy weather that may have affected the mids.
- Once again, TT varieties tended to be the lower yielding varieties. This has been a consistent result since we have been including TTs in the trial.
- Sapphire was again up in the top end of yields., with Skipton, similar in maturity to sapphire continuing stage 4 trial performances with good yields in the trial. A 4 year yield analysis of the irrigated trial site has Sapphire topping the table.

Faba Bean Variety Trial

Why do the trial:

To assess the ability of different faba bean varieties to perform under a flood irrigated environment.

How was it done:

Commercial varieties and advanced lines were sown in randomised replicated plots on beds.

What was done:

2005 Crop: Canola

Pre irrigated early April with 2.0 MI/ha

Knockdown applied late April

Faba bean variety trial sown May 11th

Patchy emergence

Verdict @ 100ml on the July 10th to control what

Mancozeb applied on September 5th.

Virus observed about a week later affecting first rep – small plants didn't respond to the irrigation and plants appeared water stressed .

First spring irrigation on August 24th (1.25 MI/ha)

Second spring irrigation on October 3rd (1.0 MI/ha)

Results

Bean leaf roll virus affected the trial. The trial was abandoned due to the virus affecting the plants, resulting in death and stunting.

What does it mean:

- ◆ Bean Leaf Roll Virus is not seed borne. It is transmitted by aphids from a host such as lucerne, clovers and can affect many pulse crops.
- ◆ Sowing early with plants emerging when warm and moist conditions that favour aphid flights are still occurring may increase the risk of being infected.
- ◆ Delayed sowing, narrow rows or sowing into stubble may help prevent infection.

Triticale – Short and Long Season Varieties

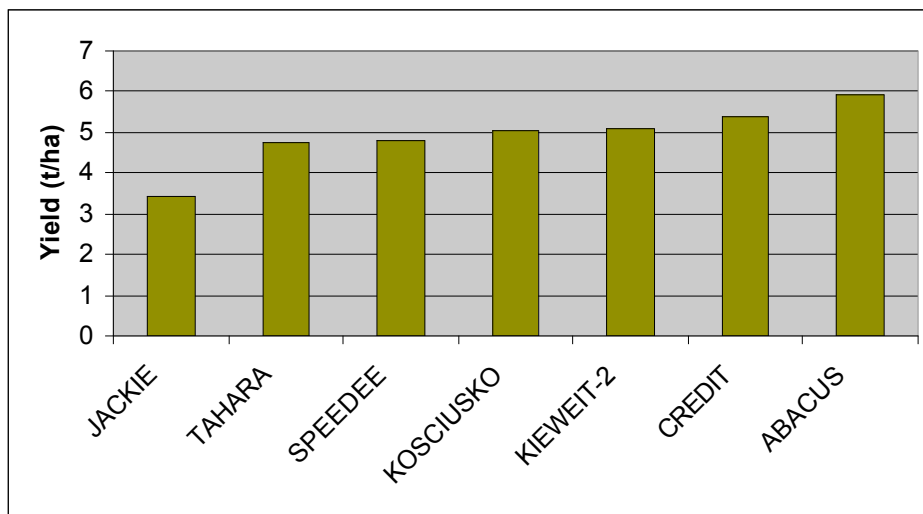
Why do the trial

To assess different varieties of triticale under an irrigated environment.

How was it done

- 2005 crop was Canola (2.5 t/ha)
- Stubble was grazed
- Pre-irrigated (approximately 2.5 MI/ha) early April
- 1 knockdown spray applications to control annual weeds
- Production target of 6 t/ha
- Sown into moisture May 18th, with variable rates to achieve 160 plants per square metre. Varied between a sowing rate of 59 – 107 kg/ha, with 120 kg/ha DAP
- Topped @ 170 kg/ha of urea at Z30-2 on August 23rd.
- First spring irrigation started on August 24th
- Second irrigation started on October 2nd
- Third irrigation started on October 25th. Total Water used was 5 MI/ha.
- Harvested on December 11th. Trial average was 4.9 t/ha.

Results



LSD = 0.86t

%cv = 9.7

What does it mean

- The two long season varieties are on each side of the yield scale. Jackie, a dual-purpose grazing/grain variety yielded poorly, while Abacus yielded the highest in the trial.
- Long season variety Abacus would have benefited from the 3rd irrigation while it probably was not required for the short season varieties. Perhaps a comment about the frost window?
- Depending on the availability of water in the spring, the cost of water Vs the yield increases from long season varieties may see better gross margins with the shorter season varieties with 2 spring irrigations.

Wheat Variety Trial

Why do the trial:

To assess the ability of different wheat varieties to perform under a flood irrigated environment.

How was it done:

18 commercial varieties were sown in randomised replicated plots.

What was done:

- 2005 crop was canola.
- Deep N soil tested (74 kg/ha Nitrate N)
- Pre-irrigated (approximately 2.0 MI/ha) early April.
- Knockdown spray applications to control annual weeds mid April
- Sown into moisture on May 17th, with variable rates to achieve 160 plants per square metre. Sowing rate varied between 75 – 105 kg/ha with 120 kg/ha DAP.
- Achieved 105 plants per square metre - establishment rate was 46% due to the dry conditions following sowing.
- Sprayed with Achieve @ 450 g/ha on August 7th to control ryegrass.
- Sprayed with MCPA @ 1.0 l/ha on August 7th to control broadleaf weeds.
- Topdressed at 170 kg/ha urea at Z32 on August 24th
- .Total N applied and from the soil was enough for a 6.5 t/ha crop.
- First spring irrigation was on August 24th (1 MI/ha).
- Second spring irrigation started on October 2nd (1 MI/ha).
- Third spring irrigation began on October 25th. Total water use was 5 MI/ha
- Harvested 7th December. Average yield was 5.66 t/ha

Results:

Graph : Yield Results

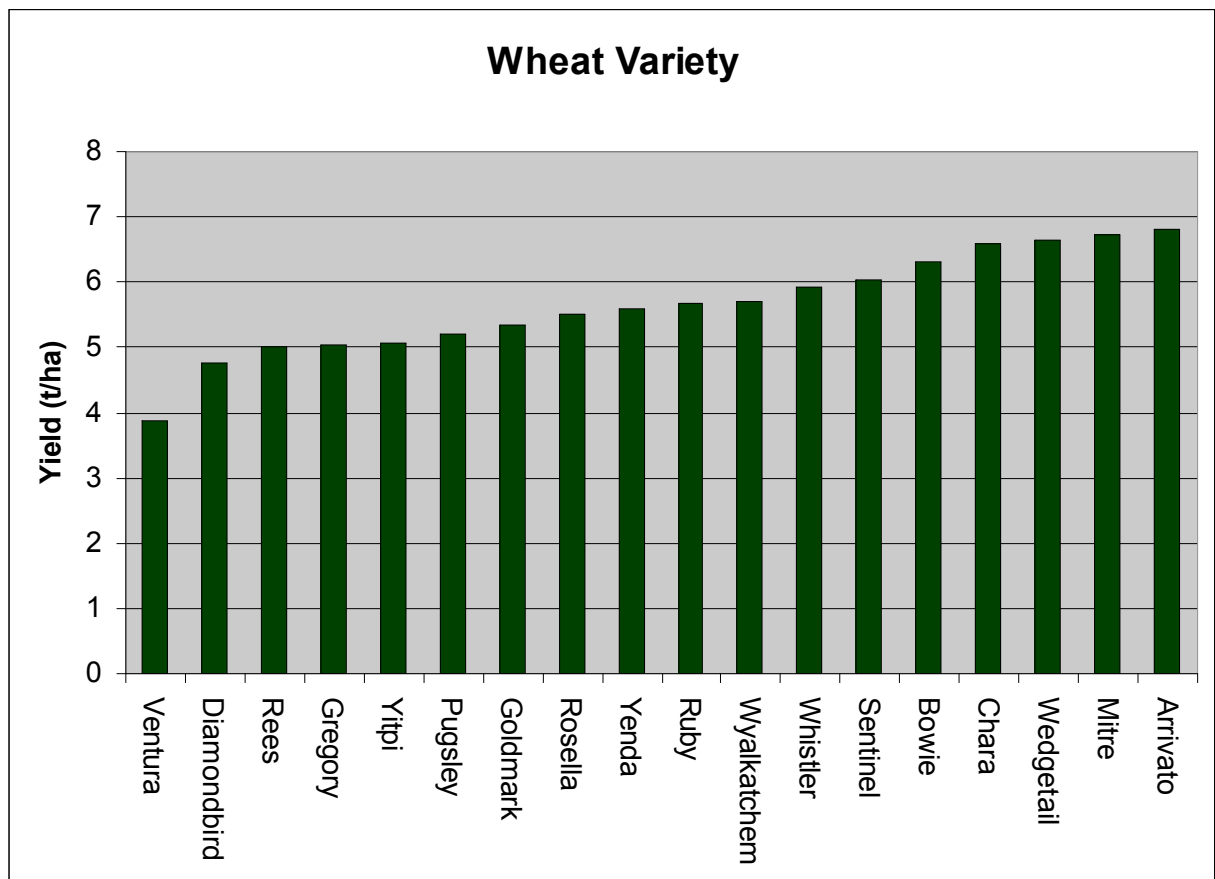


Table 2: Grain Quality

Variety	Yield	Screenings	Protein	Weight	Moisture
	t/ha	%	%	kg/hl	%
Ventura	3.87	5.7	10.0	85	9.4
Diamondbird	4.77	3.3	10.7	85	9.4
Rees	5.00	6.8	10.0	84	9.5
Gregory	5.03	4.9	10.9	85	9.4
Yitpi	5.07	4.7	10.8	85	9.5
Pugsley	5.21	5.7	10.7	85	9.5
Goldmark	5.35	4.0	10.3	85	9.5
Rosella	5.51	4.4	10.5	83	9.3
Yenda	5.59	5.8	10.0	83	9.5
Ruby	5.68	4.6	11.0	85	9.4
Wyalkatchem	5.70	2.5	10.4	85	9.4
Whistler	5.93	4.8	10.4	84	9.4
Sentinel	6.04	3.0	10.6	85	9.4
Bowie	6.32	6.0	10.2	84	9.4
Chara	6.59	3.3	10.1	85	9.3
Wedgetail	6.64	2.3	10.2	84	9.5
Mitre	6.74	3.3	10.2	85	9.4
Arrivato	6.80	2.5	11.4	85	9.3
p	<0.001				
lsd	1.054				
cv%	11.1				

What does it mean:

- AH quality can be difficult under high yielding irrigated conditions as there is a considerable demand for N. Carefully examine the economics of a higher yielding APW variety (or even a feed type) rather than an AH variety.
- Although stripe rust and other disease resistance is a consideration when choosing a variety, some diseases can be overcome by the use of chemical control. However these come at a cost and may have critical application timings to be effective. In the example of stripe rust, a variety with a MS rating may have sufficient resistance in a majority of years, as proven in our 2003 and 2004 and 2006 trials. In the bad years, the cost of chemical control may still make that variety more profitable compared with a more resistant variety.
- A new race of stripe rust was detected in 2006 that may impact on the resistance ratings of some varieties such as Carinya, Ellison, Pugsley, Ventura and Young. The reaction in the field will depend on what other genes the varieties carry for their resistance.

- Ventura has performed well up to 2006, where its early maturity resulted in it flowering late September coinciding with severe frosts.
- Yenda, tested as VN0870R, has been a consistent performer in our trials over several years. It is a soft wheat and will be released in 2007.

Oaten Hay Variety Trial

Why do the trial:

To assess the ability of different oaten hay varieties to perform under a flood irrigated environment.

How was it done:

experimental lines and commercial mid to long season varieties were sown in randomised replicated plots.

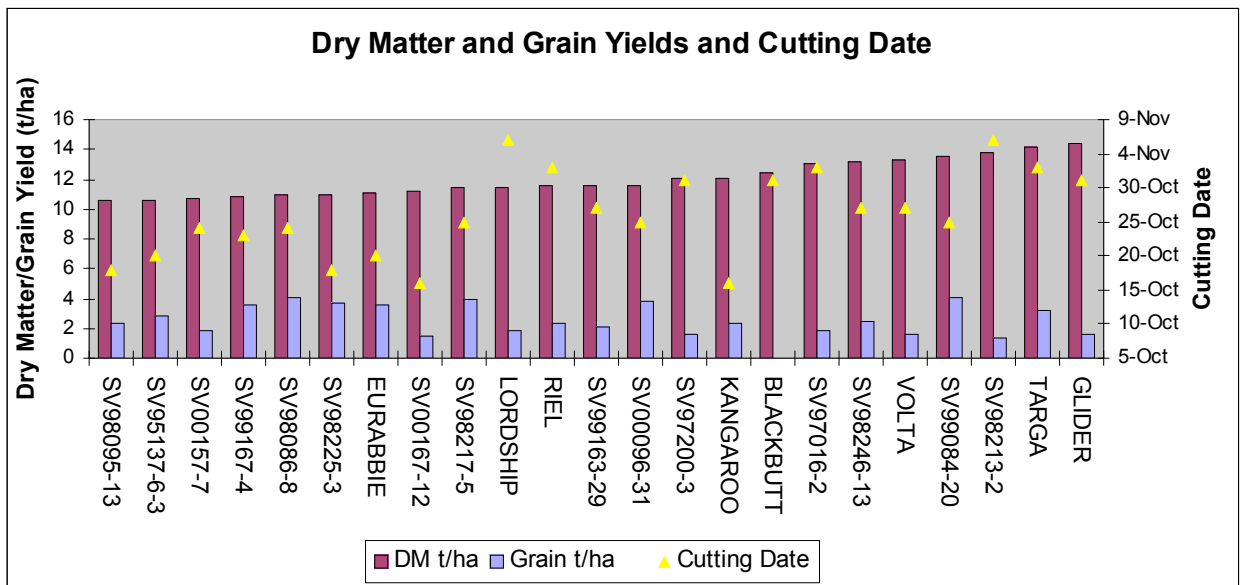
What was done:

2005 Crop: Canola (2.5 t/ha)

- Production target of 12 t/ha
- Deep N soil tested (74 kg/ha Nitrate N)
- Pre-irrigated (approximately 2.5 Ml/ha) early April
- 1 knockdown spray applications to control annual weeds
- Direct seeded on May 23rd with 125 kg/ha DAP
- Target plant population was 180 pl/m²
- Topdressed with 87 kg/ha urea early stem elongation on 24th August
- Glean @ 20g/ha on August 7th to control ryegrass
- MCPA @ 1l/ha to control broadleaf weeds
- First spring irrigation on August 25th
- Second spring irrigation on October 3rd
- All varieties harvested at milky (Z75) stage. Trial averaged 12 t/ha Dry Matter and

Results:

Graph : Yield Results



Management trials Graze, Grain and Fodder Trial

Why do the trial:

To evaluate the potential of grazing and then taking a crop through to either fodder or grain.

How was it done:

McKellar and Whistler (winter wheats), and Ventura wheat were sown into a pre-irrigated trial on May 5th, targeting a plant population of 250 plants/m². The grazing treatments were as follows:

1. Not grazed and taken through to harvest
2. Grazed once when sufficient feed was present

Grazing was achieved with the use of a mower.

The trial was irrigated twice in spring, a total water use of 3.75 MI/ha.

Results:

	MacKellar		Ventura		Whistler	
	Grazed	Not Grazed	Grazed	Not Grazed	Grazed	Not Grazed
Grazing t/ha	4.98		1.90		1.36	
Grain t/ha	3.51	7.6	4.28	3.87	6.4	5.98
Screenings %	5.7	10.7	2.8	3.6	2.4	3
Protein %	10.8	9.8	11.8	12	11.2	12

What it means

- MacKellar and Whistler are winter wheats. Winter wheats have the advantage of adaptability of a wide range of sowing times which makes them suitable for grazing. Maturity varies once cold requirements are met. This winter habit delays maturity in the early sowing, giving the opportunity to graze and reducing the risk of frost at the end of the season.
- 5 t/ha dry matter was harvested in the simulated grazing for MacKellar but this was too late (growth stage Z 32). The late harvest resulted in poor regrowth from growing points being removed and caused a reduction in head numbers and grain yield. It did show an excellent winter habit which delayed the (correct) cutting date approximately 3 weeks after the other varieties.
- Grazing delays maturity (sometimes up to 1-2 weeks).
- Ventura is an early season spring wheat and the non grazed plots matured earlier than everything on the site. These plots sustained considerable sparrow damage and would have contributed to the low grain yields. The grazed plots with maturity delayed by 10 days meant that birds only randomly ate grain from these plots as there was grain everywhere to be selected. Was frost also a factor?
- However previous trial work has seen no grain penalty as long as grazing was completed before stem elongation started (Z 31). Spring varieties begin their stem elongation earlier, making the development of the ear vulnerable to grazing at an early age.

- Grazing has also reduced lodging in previous trials. There is a possibility of using grazing as a means to control lodging where crops have grown too dense prior to stem elongation.
- The trial simulates grazing by one pass with the mower. Actual field grazing may see reduced recovery from stock taking longer to graze down the crop and damage from trampling. Grazing cereals also encourages weed growth.

Sowing Rate by Date Trial

Why do the trial:

To assess the effect of sowing date on tiller production and the subsequent canopy development and yields of Ventura wheat. This is the fourth year of canopy management but the first time using the variety Ventura. The aim is create the optimum canopy, or sufficient shoots and leaves, to turn sunlight into grain, without wasting inputs on excessive vegetative growth or risk lodging. We are targeting 500-600 heads/m², and have found 100 plants m² can achieve this with an early/mid May sowing and as the sowing date gets later, a higher sowing rate is required.

How was it done:

- 2005 crop was canola.
 - Deep N soil tested (74 kg/ha Nitrate N)
 - Pre-irrigated (approximately 2.5 MI/ha) early April.
 - knockdown spray applications to control annual weeds mid April
 - Ventura wheat was sown at variable rates for target populations of 80, 160 240 and 320 plants/m² (47, 94, 141 and 200 kg/ha) at the first sowing dates, 5th May and 30th May and 10th July. The later date included higher rate of 320 plants/m² and the lowest sowing rate was not included. 120 kg/ha DAP.
 - Sprayed with Achieve @ 450 g/ha on August 7th to control ryegrass.
 - Sprayed with MCPA @ 1.0 l/ha on August 7th to control broadleaf weeds.
 - Topdressed at 170 kg/ha urea at Z32
 - Total N applied and from the soil was enough for a 6.5 t/ha crop.
 - First spring irrigation was on August 24th (1.0 MI/ha).
 - Second spring irrigation started on October 2nd (1.0 MI/ha).
- Harvested 11th December.

Results:

		Rep 1	Rep 2	Rep 3	Av
early	80	3.31	4.69	6.08	4.7
early	160	4.52	5.94	6.27	5.6
early	240	3.68	6.12	5.16	5.0
Mid	80	3.61	5.09	5.08	4.6
Mid	160	4.45	4.42	4.37	4.4
Mid	240	4.02	5.13	5.08	4.7
Late	160	4.38	4.72	3.52	4.2
Late	240	3.70	4.82	5.70	4.7

Late	320	4.12	4.82	5.41	4.8
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Table 11: Grain Yield

What does it mean:

- Optimum sowing rates early on the season (early may) would target 100-160 plants
- Middle of the sowing window (mid may) the target plant density is increased to 200-250 plants
- Late in the season increase sowing rates to target a plant density of over 300 plants as there is reduced time for vegetative growth (tillers). If there is less than optimum tillers (target 600-800) it makes it difficult to obtain targeted head numbers on irrigation of 600 heads.

Nitrogen Management of Wheat

To focus on strategic nitrogen use and canopy management by:

- Nitrogen budgeting and soil sampling to reach targeted potential yields
- Identifying the best nitrogen strategy for each paddock by using the correct amount for the crop/paddock and by timing applications for maximum effect eg. topdressing, climate and cost (cost/return ratio) evaluations.
- Investigating the effects of nitrogen application timings on canopy density, at recommended sowing rates.
- Use buffer treatments in between each N treatments to reduce the effects of contamination around the plots

TRIAL INFORMATION

Irrigation

- Pre-Irrigated 2/4/2005 , approximate water use 2.5 MI/ha
- 1st Spring Irrigation - 24th August 1.25 MI/ha
- 2nd Spring irrigation - 3rd October 1.25 MI/ha

Weed Control

- 1 knockdown spray application 27th April.
- Grasses and broadleaves sprayed out of wheat with Achieve 450g/ha and MCPA @ 1 l/ha.

Sowing

Ventura sown at 90kg/ha with 120kg DAP on the 1st June

Topdressing

As per nitrogen strategies

NITROGEN BUDGET

- Target 6t/ha @ 40kg N/ha per ton = 240kg N total crop requirement
- Soil test shows 78kg N/ha , mineralisation estimated to be 60 kg N/ha, therefore 78+60 = 138 kg N/ha already in the paddock.
- This leaves (240-138 = 102 kg N/ha) to be applied through fertiliser.

Very Roughly:

$$\boxed{\text{Potential Yield (ka/ha)}} = \boxed{\text{mm Growing Season Rainfall}} - \boxed{110 \text{ mm (evaporation)}} \times \boxed{20 \text{ (wheat water use efficiency factor)}}$$

* water use efficiency factor varies depending on crop type

$$\boxed{\text{In Crop Nitrogen}} = \boxed{\text{Soil Nitrate (from soil test)}} \times \boxed{\text{Mineralisation}}$$

NITROGEN STRATEGIES

Nitrogen rates	Strategy				Application date
Treatment	None	UF- (Upfront)	Split UF TD	Split TD	
Starter	0	25	25	25	
UF/pre drill		80	40		
TD1- Topdress			40	40	23-Aug
TD2- Topdress				40	5-Sep
N supplied	138	243	243	243	
Balance	0	3	3	3	

RESULTS

Summary	Ventura wheat t/ha
No fertiliser	3.59
Upfront/predrilled	4.26
Top-dressed	4.59
Split UF TD	5.19
p	0.033
lsd	0.933
%cv	10.1

What does this mean:

- There was up to a 1.6 t/ha increase in yield by treatments applying nitrogen to wheat with no nitrogen applied.
- The preferred method and strategy used by the DPI to apply nitrogen was shown in the trial to have the highest yield. Having some starter N by pre-drilling half the nitrogen requirements for a 6 ton crop and then topdressing the remaining N at the growth stage Z32 we were able to maximise yields.
- Pre-drilling all your nitrogen requirements can generate too much vegetative growth and exposes the crop to possible lodging. Spilt applications and topdressing allows canopy manipulation so tiller and head numbers are more likely to be achieved.
- The applied nitrogen was added to reach yields of 6 t/ha but this was not achieved in any treatment. Nitrogen uptake efficiencies could be low or other yield restrictions didn't allow the crop (Ventura) to reach its potential. Again a comment re frost

Seed Dressing Trial

On behalf of the Independent Associated Seed Graders

2005 Crop: Canola (2.5 t/ha)

Yield target of 6 t/ha

Deep N soil tested (74 kg/ha Nitrate N)

Pre-irrigated (approximately 2.5 MI/ha) early April

1 knockdown spray applications to control annual weeds

Direct seeded on June 1st with 125 kg/ha DAP

Target plant population was 180 pl/m²

Topdressed with 87 kg/ha urea early stem elongation on 24th August

Glean @ 20g/ha on August 7th to control ryegrass

MCPA @ 1l/ha to control broadleaf weeds

First spring irrigation on August 25th

Second spring irrigation on October 3rd

Results:

Impact	5.68		
Vincit	5.49		
lsd	0.583		
Foliar None	5.53		
Foliar 32&39	5.3		
Foliar 39	5.93		
lsd	0.714		
	None	32&39	39
Impact	5.4	5.4	6.25
Vincit	5.66	5.19	5.62
lsd	1.01		
cv%	9.9		

What does this mean:

- No stripe rust present in trials.
- No benefit from the Z32 and Z39 fungicide treatment to the control but yield increase from just Z39. ???
- No significant differences between Impact and Vincit.
- Combining both a seed treatment protectant and foliar sprays didn't significantly increase yield.