3. VARIETY TESTING

3.1 NON RANDOMISED DEMONSTRATION TRIALS

Location: Gnarwarre

Researchers: Colin Hacking, Wes Arnott and Gary Sheppard

Growing Season Rainfall:
376 mm (April – November)

Aim:
To provide the opportunity to observe a number of commercial or near commercial barley, wheat and canola varieties on a relatively large scale.

Background:
Given the many new commercial varieties to choose from, it is important to compare their performance side by side on a relatively large scale. Small plots whilst providing valuable data, do not provide sufficient opportunity to have a proper "look" at the varieties. These demonstration blocks aim to take the small plots to the next stage, prior to the farmer making the final decision on what variety should be grown.

	Barley G2000-1	Wheat G-2002	NT Canola G2000-3	Triazine Canola G2000-4
Varieties	Franklin	Kellalac	Rainbow	Drum
	Gairdner	Tennant	Charlton	Pinnacle
	Yambla	Janz	Oscar	Surpass 600TT
	Tantangara	Brennan	Dunkeld	Clancy
	82SM:505	Dennis	Insignia	TM4
	VB9948	Declic	Trooper	AGA99-27
Sowing Date	13th June	13th June	15th June	15th June
Sowing Rate kg/ha	100	100	6	6
Seed Treatment	100 ml Baytan CFC/100 kg seed on 22/5/00	100 ml Baytan CFC/100 kg seed on 22/5/00	10 g Mesurol + 15ml water/kg seed	10 g Mesurol + 15ml water/kg seed
Fertiliser	100 kg/ha MAP	100 kg/ha MAP	100 kg/ha MAP 100 kg/ha Urea 12/9	100 kg/ha MAP 100 kg/ha Urea 12/9
Slug Treatment	5 kg/ha bait	5 kg/ha bait	5 kg/ha bait	5 kg/ha bait
Herbicide	800 ml/ha Tigrex 28/9	800 ml/ha Tigrex 28/9	250 ml/ha Lontrel + 100 ml/ha Verdict	2 l/ha atrazine + 2 lt/ha simazine
Harvest Date	18/12/00	3/1/01	20/12/00	20/12/00

Trial Layout:

Each variety was sown in 6 beds (1.7 m wide) with row length of 40 metres (barley & wheat) and 60 metres for canola. In the case of barley and wheat, the inside 3 beds were harvested with each bed representing 1 replication. For the canola, each variety was windrowed with a commercial machine (width 7.6 m) on 5/12/00. This windrow was harvested using the DNRE plot harvester.
Results for Barley, Wheat, NT Canola and Triazine Canola follow.

3.1.1 Barley

Variety	Yield (kg/ha)	Protein %	Screenings %	Height (cm)
Yambla	5496	12.0	17	80
Tantangara	5430	12.1	39	60
Gairdner	5042	11.3	26	90
82SM:505	4656	11.1	29	65
Franklin	4141	11.6	50	80
VB9948	3456	11.4	60	70

Significant difference between varieties at 5% level
LSD = 416 kg/ha

NB. Any variety that yielded 416 kg/ha higher than another, can be taken as being significantly higher yielding.

There was no significant difference between replications.

Conclusions:

There was no significant yield difference between Yambla and Tantangara, however Yambla was significantly higher yielding than Gairdner. From a standability viewpoint, both Franklin and Gairdner were starting to lodge significantly at harvest, whereas Yambla was standing very well.

Yambla was also relatively free from leaf disease throughout the season, although in some areas and in some years it has shown significant leaf scald as it carries similar resistance as Skiff (which has broken down). Both Gairdner and Franklin were carrying higher levels of leaf disease. Yambla does possess acid soil tolerance, so may have good adaptability across a wide area of the Western Districts.

It must be stressed that Yambla is only a feed variety and therefore does not have the same marketing options as are available to Franklin and Gairdner.

Tantangara, 82SM:505 and VB9948 are all feed lines and do not warrant further testing based on their results this year. Yambla had much better grain size than Tantangara and was slightly higher in yield.

For growers deciding between Franklin and Gairdner it would appear that Gairdner possesses superior performance. It significantly outyielded Franklin in this trial. The same appears to be happening at a number of other sites. Gairdner also produced much better grain than Franklin with lower screenings.

3.1.2 Wheat

Variety	Yield kg/ha	Protein %	Screenings	Crop Height (cm)
Janz	5187	11.4	3.1	90
Kellalac	5070	10.1	2.3	100
Brennan	4739	11.2	2.6	95
Tennant	4637	9.5	2.6	110
Dennis	4418	11.2	2.7	85
Declic	4281	10.1	3.5	95

Significant difference at 5% level between varieties for yield (T-Test) **LSD 264 kg/ha**

There was no significant difference between replications.

Conclusions:

Janz was the top yielding variety, although not significantly better than Kellalac. Janz and Kellalac were however higher yielding than the other varieties.

Janz is a QLD variety that has shown very good potential over the last 3 years. It has the ability to satisfy the milling market and therefore could offer some strong marketing opportunities. It is however susceptible to grain black tip. It would appear that it could be a useful replacement for Kellalac, with perhaps better rust resistance. Kellalac has shown some reasonably high levels of susceptibility to leaf rust over the last 2 years in this environment, with many farmers spraying to control leaf rust.

Both Brennan and Tennant looked exceptionally good in the trial, however their yield was disappointing. Brennan is a white grained, awnless, feed quality winter wheat, resistant to stem, stripe and leaf rust. Its flowering time is shorter than varieties such as Paterson and Lawson.

Tennant is a red grained winter wheat that was released in limited tonnage this season. It has excellent rust resistance and is significantly higher yielding than Lawson in long season environments. Both varieties suffered from the dry finish to the season. Tennant appears to have dropped heads prior to harvest in many commercial sites.

Dennis is a white grained winter wheat variety that yielded well in our trials last year, however disappointing in this trial. It is approximately 10 days earlier to flower than Lawson with resistance to all 3 rusts. Straw strength may be lacking.

Declic is normally a high yielding red grained winter wheat that has proven itself over a number of years. Resistant to stripe rust but it is susceptible to stem and leaf rust. Declic suffered in this trial through waterlogging of 50% of the plot, however only the non waterlogged section was harvested. I would not discount Declic on the basis if this result.

3.1.3 Canola

TT Varieties	Harvest Loss %	Adjusted Yield (kg/ha)	Lodging % (30/11/00)	Oil %
Clancy	15	1929	10	37.6
Drum	15	1768	5	36.7
TM4	15	1756	5	39.7
Pinnacle	15	1742	30	38.6
AGA99-27	15	1629	15	38.9
Surpass 600 TT	15	1312	80	36.7
	Average Yield	**1689**		38.0

Non - TT Varieties	Harvest Loss %	Adjusted Yield (kg/ha)	Lodging % (30/11/00)	Oil %
Oscar	20	1899	5	39.4
Rainbow	15	1692	5	38.6
Trooper	15	1603	30	42.6
Dunkeld	15	1206	60	38.5
Insignia	15	1154	0	40.8
Charlton	15	952	80	42.6
	Average Yield	**1418**		40.4

Thanks go to Bob Evans and Cargill for their assistance in analysing the varieties for oil%.

Conclusions:

The Triazine resistant varieties outyielded the non triazine resistant varieties in this particular trial. Overall however, the yield results were very disappointing, with no variety yielding in excess of 2000 kg/ha.

There are some explanations for this overall poor yield result. Firstly, November rainfall of 21.6 mm was extremely low. This followed high rainfall of 116 mm in October, where some waterlogging took place, despite the plots being on raised beds. Unfortunately the main collector drain could not remove the excess water quickly enough. This resulted in the plant roots being severely pruned in October, along with the plants being unable to regenerate the roots fast enough to catch up with the rapidly retreating soil moisture front in November. This resulted in many plants actually dying, with some varieties being more affected than others. As a result, lodging of some varieties was excessive. The lodging column indicates the percentage of plants within the plot that were less than 45 degrees to the horizontal. As a result of this excessive lodging, the windrower and subsequently the plot harvester could not capture all the seed. There is a suggestion that this lodging could have been caused through disease, although this needs to be verified.

The harvest loss column is an estimation of the amount of grain shattering that took place prior to windrowing and between windrowing and harvest. Due to the fact that plants actually died prior to reaching maturity, the amount of pod shattering was excessive. This was repeated in many commercial crops this season.

I would not place too much emphasis on the results from this particular trial.

Background Variety Information

Triazine Resistant Varieties

Drum
An early season triazine resistant canola variety with only moderate blackleg resistance. It is comparable with Karoo although it does have 1-2 % lower oil content than Karoo.

Pinnacle
A high yielding triazine variety. It has excellent blackleg resistance (7) and reasonable oil content. It is suited to normal sowing's in the South West.

Surpass 600TT
A mid maturity TT canola with a high oil content and excellent blackleg resistance.

Clancy
A mid season triazine herbicide resistant variety with excellent blackleg resistance. Its oil content is lower than some other TT varieties however. Its maturity is similar to Pinnacle (and Oscar) and is suited for normal sowing's throughout the South West.

ATR-Grace (TM4)
Mid late variety with higher oil% than Pinnacle. No rating on blackleg.

ATR –Hyden (AGA 99-27)
Similar maturity to rainbow and oscar. Good seedling vigour. Performed well in our trials last year.

Non Triazine Resistant Varieties

Rainbow
An early to mid maturing variety that is suited for late winter/early spring sowing's. It has good blackleg resistance (7) although its oil content is lower than Dunkeld

Charlton
Charlton is a Dunkeld reselection with higher oil content (approx 2%), higher protein and higher yield than Dunkeld. It has the same blackleg resistance (7) as Dunkeld. Slightly less seedling vigour than Dunkeld.

Oscar
An early to mid season line that has reasonable blackleg resistance (7). Its oil content is generally lower than Dunkeld by about 2 -3%. Very even flowering variety with even drydown from windrowing to harvest

Dunkeld
Proven mid season line with good blackleg resistance and high oil and protein content. It has excellent early vigour and vegetative growth and it is normally a reasonable yielder.

Insignia
A mid to late variety that possesses the yield potential of Oscar and the oil content of Charlton. Excellent seedling vigour and blackleg resistance (7.5) and excellent lodging resistance

Trooper
Similar maturity to Dunkeld. Excellent blackleg resistance (7.5). Slightly higher oil content than Dunkeld. Good early seedling vigour