Mallee Wheat Variety Experiments - Trial Results from 2000

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SUMMARY - WHEATS FOR THE MALLEE

Yitpi - Watch out for stem and leaf rust and yellow leaf spot - otherwise an excellent wheat for the Mallee.
Mitre - Smaller grain size than Yitpi, but higher yields - an excellent wheat for the Mallee.
Camm - Possibly at risk because of a new race of stripe rust, a good wheat for the Mallee where CCN is controlled in other ways.
Chara - An option to achieve a Prime Hard premium, if markets are available.
H45 - An alternative very early maturity wheat to Silverstar with improved grain size, but lacking CCN resistance.

Seasonal conditions and limitations in the Mallee in 2000.

An excellent seasonal break in May resulted in ideal conditions for sowing at the optimum time. Crops emerged well and didn't look back although some areas were too wet which delayed the sowing process. The usual disease symptoms emerged during winter with the yellowing of crops on the lighter soil types attributed to Cereal Cyst Nematode (CCN), nitrogen deficiency and some herbicide damage. Yellow leaf spot was very common and will continue to be a serious disease, particularly with the wide spread adoption of varieties susceptible to the disease. Leaf rust was evident late in the season on susceptible varieties such as Frame and Yitpi and is likely to have had a minor effect of grain yield of these varieties.

Generally, protein levels in wheat were above the 10% minimum level although protein levels were below 10% in some areas. The humid and showery weather leading up to harvest caused some down grading due to staining and sprouting of grain, but the majority of harvest was conducted under ideal conditions. A dry period from early September to mid October pressured some 'heavy' crops and may have contributed to higher than expected screenings in smaller grained AH quality varieties such as Ouyen, Meering and Silverstar. The grain size was again good in Frame, and the grain size of Yitpi seems similar to Frame. With record wheat yields being recorded in many areas of the Mallee, consistent yields and valid results were obtained at most experiments conducted by the Mallee Research Station.

2000 Mallee trials.

The wheat variety experiment located at Birchip was one of ten similar experiments located throughout the Mallee in 2000. A dry period during September reduced the yield potential at Birchip and some other sites, but overall yields were excellent. Site means ranged from 2.19 t/ha at Robinvale, up to 4.30 t/ha at Walpeup. Sowing rates in kg/ha were adjusted to ensure all varieties were sown at similar plant numbers per metre square (150), thus good even plant establishment was achieved at all sites. Agriculture Victoria's wheat experiments provide assessment of variety performance over a range of soil types and environmental conditions throughout the Mallee. The performance of new commercial varieties, Yitpi, Mitre and Chara were excellent, while the early maturing variety Krichauff, continues to perform well in the Mallee. The mean yield of H45 and Silverstar were down slightly, but they were effected by mice damage at Merrinee and Robinvale.

Notes on wheat varieties.

Camm: A Spear type that was released from WA in 1998 and has improved rust resistance (see rusts section below) over the old variety Spear. Camm appears suited to the Mallee, yielding well at the majority of experimental variety sites in 2000. Its average yield across all sites was very encouraging and as an Australian Premium White (APW) quality wheat, grown on soils where CCN has been controlled, is worth considering.

Chara: As a CCN resistant, Australian Hard (AH) and potential Prime Hard (PH) quality wheat, Chara's yields were above the long term trend in 2000. With CCN and good rust resistance, Chara is displaying

broad adaptability, also yielding well in trials throughout the North East of Victoria. Chara is the only variety currently grown in this area with resistance and tolerance to both species of root lesion nematodes.

Silverstar: Silverstar suffered less from the leaf disease, yellow leaf spot, than the more susceptible varieties such as Yitpi and Frame but its small grain size and subsequent higher screening levels were again evident in 2000.

H45: Is similar in maturity to Silverstar with more consistent grain size and is worth considering as a replacement to Silverstar. It has good early vigour and suffers less from yellow leaf spot than the most varieties. H45 is not CCN resistant and therefore should only be grown where suitable rotations and sound management practices have been undertaken. It has adequate rust resistance.

Frame in comparison to Yitpi: The yield of Yitpi in 2000 was slightly higher than Frame in the Victorian Mallee, which reinforced results from 1999, indicating that Yitpi has a yield advantage. Combined with its large grain size, boron tolerance and AH classification it makes Yitpi a good replacement for Frame. However Yitpi carried high levels of leaf rust and in some areas, stem rust in 2000, so growers should be aware of Yitpi's relatively poor rust resistance and no grow it outside of the low to medium rainfall zone. Those growers who grew Yitpi in 2000 were very pleased in its performance and the 2001 season will see a large increase in the area sown to Yitpi.

Mitre: A new AH quality variety to replace Meering. It was released from the Victorian Institute for Dryland Agriculture in 1999 and is a broadly adapted, high yielding variety with CCN and rust resistance. Mitre's yield performance was good in 2000 and commercial quantities of seed are available for the 2001cropping season. Mitre is the main competitor with Yitpi for AH in the Mallee, where it has an advantage in yield and rust resistance, but lacks boron tolerance and has smaller grain size.

Mira and Kukri: Mira (APW) benefited from the above average rainfall in 2000. It has rust (see rusts section below) and CCN resistance but may be a more reliable option in the medium to higher rainfall areas. Kukri is a PH quality wheat aimed at the export market due to its very high dough strength. Kukri is not CCN resistant and its main competitor Chara, averaged higher in yield across the Mallee variety experiments in 2000.

VL lines: In Table 1 a number of VL lines are listed, these are the crossbreds which are being considered for release during 2000. Of these VM931 is clearly the highest yielding wheat in low rainfall environments and appears to be adapted in Victoria and South Australia. It is potentially of AH quality, but at least APW quality and combines triple rust and CCN resistance.

Disease management - Rusts

Two new races of rust have significant implications for southern region growers. In 1999 a race of stripe rust which attacks the 'VPM' source of resistance was found in NSW. The varieties Camm and Bowie have this source of resistance and so when this race appears in the southern region Camm and Bowie are likely to become susceptible. In 2000 a crop of Camm near Kaniva was found with high levels of stripe rust in 2000. Samples of this rust are currently being evaluated to determine if they are the new 'VPM' race.

In 2000 a race of leaf rust which attacks the Lr24 gene was found in South Australia and New South Wales. The varieties Krichauff, Worrakatta, Babbler, Anlace, Janz, Goroke, Mira and Mitre have the Lr24 gene. On the limited data available, Krichauff and Warrakatta are now susceptible, Janz, Babbler and Mira appear to be intermediate and Mitre remains resistant. The reaction of Goroke is unknown. More information on the effect of these rusts on the above varieties will become available over the next few months.

Growers should ensure they know the good or the bad news about these varieties and their reaction to the new rusts before sowing in 2001.

RESULTS

Table 1. Wheat grain yield (% of Meering) in the Victorian Mallee in 2000 and the mean for 1996-2000.

Variety	Birchip	Hopetoun	Mananga-tang	Merrinee	Murray-ville	Robinvale	Ultima	Walpeup	Woom-elang	Mean 2000	Mean 1996-2000
Meering t/ha	*2.34*	*3.84*	*3.44*	*2.23*	*3.74*	*2.17*	*2.87*	*4.06*	*3.23*	***3.02***	
Camm	103	103	104	97	103	92	96	108	105	**102**	**105**
Chara	99	96	104	106	107	105	100	105	106	**102**	**101**
Diamondbird	97	91	99	106	98	100	98	95	102	**98**	**100**
Frame	104	99	99	97	99	100	104	97	106	**100**	**102**
H45	106	101	102	94	101	87	98	95	103	**99**	**104**
Janz	99	106	107	99	102	106	99	106	103	**103**	**102**
Krichauff	107	101	111	105	102	105	102	108	107	**104**	**105**
Kukri	94	96	97	99	100	94	96	99	101	**98**	**100**
Meering	100	100	100	100	100	100	100	100	100	**100**	**100**
Mira	104	104	105	98	107	105	92	108	98	**103**	**104**
Mitre	97	103	107	110	102	109	102	107	102	**103**	**105**
Rosella	94	95	93	117	93	99	96	97	98	**97**	**96**
Silverstar	104	106	105	89	100	88	99	102	105	**101**	**104**
Yitpi	104	100	102	97	107	100	99	104	106	**102**	**103**
VL709	97	105	112	106	104	107	99	106	105	**104**	**104**
VM506	102	110	109	118	108	109	99	107	109	**106**	**105**
VM716	98	95	102	97	98	100	93	102	100	**99**	**102**
VM824	108	101	103	99	102	105	99	104	111	**103**	**104**
VM931	109	118	121	105	112	102	106	116	112	**111**	**108**
VM940	102	112	114	99	112	108	97	108	107	**107**	**104**
CV	*3*	*3.2*	*3.6*	*5.0*	*2.9*	*5.8*	*2.4*	*2.8*	*2.6*		
LSD	*5.4*	*6.4*	*7.5*	*9.1*	*8.7*	*10.1*	*3.9*	*5.0*	*5.3*		