Wheat varieties

Russell Eastwood, Wheat Breeder. NRE Horsham

Summary
Best options for the 2002 season are:
- Yitpi for low rainfall, sodic or light textured soils, particularly where boron levels are high.
- Mitre for medium rainfall, alkaline to slightly acid soils
- Chara for medium to high rainfall and irrigation on neutral to acid soils
- H45 as a late sowing option where CCN is controlled

The incentive to grow AH over APW varieties is small when wheat is pooled under the golden rewards payment system

Disease management - Rusts
The new races of leaf (*Lr24* virulent) and stripe (*Yr17* virulent) rust were not significant constraints to production in Victoria in 2001. However the *Lr24* race was prevalent in South Australia and caused significant damage to susceptible varieties such as Krichauff. The varieties Mitre, Mira, Annuello and Janz which all have resistance genes in addition to *Lr24* were either not damaged or significantly less damaged than Krichauff. Of these varieties Janz is the most susceptible and should be grown with caution in the medium to high rainfall zones. The new variety Annuello remains highly resistant. Mitre and Mira are now of intermediate resistance and in most cases will not suffer significant damage from leaf rust.

The *Yr17* virulent race of stripe rust was detected late in the season in nurseries at Horsham designed to evaluated stripe rust resistance. The new variety Stylet is very susceptible to this race and as a result should not be grown in Victoria. Camm is also susceptible to this race and should not be grown in the medium or high rainfall areas of Victoria.

New varieties:

Annuello (VL709) – Will be commercially available for the 2003 season, AH quality suitable for the domestic and export markets, good rust and CCN resistance and marketed by Grainstrust.

Babbler (WW2455) – Released from NSW Agriculture as a Prime Hard quality wheat with resistance to stem, stripe and leaf rust. A seed mix up in 2001 has meant there is no data from 2001 in Victoria. 2000 data suggests it is lower yielding than current varieties. Marketed by SGB

Stylet (RAC892) – Released from University of Adelaide, Roseworthy as an APW wheat with excellent yield potential in low and medium rainfall environments. It combines boron tolerance with large grain size/low screenings, CCN resistance and tolerance, leaf and stem rust resistance, **but** is very susceptible to the Yr17 virulent race of stripe rust and as a result is unsuitable for Victoria.

Current varieties:

Yitpi – Released from the Waite Institute program in 1998, Yitpi has proven to be well adapted in Victoria and yields were excellent in 2001. Classified as AH export. Yitpi is resistant and moderately tolerant to CCN, moderately resistant to stripe and stem rust but susceptible to leaf rust. Yitpi also has moderate tolerance to boron and has large grain resulting in low screenings, however where leaf rust occurs at high levels, Yitpi has been prone to screenings. It is relatively hard to thresh. Best suited to low and medium rainfall areas. AWB Seeds have the rights to Yitpi.

Mira – Released in 1998 from VIDA. It is of APW quality and has resistance to stripe, stem and leaf rust and CCN. Mira has a tendency to highest relative yields under low stress conditions. Under stress conditions it can produce high levels of screenings similar to Ouyen, but not as high as Silverstar. AWB Seeds have the rights to Mira. It is best adapted to the Wimmera and Western districts medium rainfall environments.

Chara – (VI341) Released in 1998 from VIDA, Chara is of Prime Hard quality, but is accepted into AH export in Victoria. Chara combines triple rust resistance with CCN resistance and resistance to RLN *Pratylenchus thornei* and tolerant to *P. thornei* and *P. neglectus*. It has been of consistent high yield in the moderately acidic soils of central and north eastern Victoria and southern New South Wales. AWB Seeds have the rights to Chara.

Wylah – Released from NSW in 1999, Wylah is a winter wheat which will be accepted into the AH export grade in Victoria, although it is not a preferred variety in this grade. Maturity is similar to Rosella. It is resistant to stem rust, moderately resistant to stripe rust and moderately susceptible to leaf rust but susceptible to CCN. It is suited to early sowing, as is Rosella. SGB have the rights to commercialise Wylah. Best suited to medium rainfall regions for mid April to late May sowing.

Mitre – Mitre is a broadly adapted and high yielding AH export with triple rust and CCN resistance. In 2001 yields were below long term trends in low rainfall areas. SGB have the commercial rights to Mitre.

H45 - An early maturing alternative to Silverstar, with larger grain size and lower screenings. It is susceptible to CCN and has adequate resistance to the three rusts. An advantage of H45 is its improved resistance (moderately resistant) to yellow leaf spot over most alternative varieties, however it is very susceptible to Septoria tritici, so growers in medium and high rainfall areas should be wary and avoid early sowing of H45. H45 has yielded well across the state. It is best adapted to low rainfall and acid soil areas.

Lorikeet (M5631) – Released from NSW Agriculture. It is an alternative to Rosella, which can be sold into the white salted noodle market. It has similar yield and quality to Rosella, but improved stem rust resistance. AWB seeds are the commercial partners.

Issues

Black point

In the last few seasons black point appears to have become more severe, or perhaps the marketing organisations have imposed the receival standards. There are two schools of thought as to the cause of black point, that it is caused by fungal infection and that it is caused by enzymatic reaction in the seed. Most of the evidence points toward it being an enzymatic reaction triggered by moist conditions during grain filling. As a result it is more prevalent in high rainfall areas. There is genetic variation for resistance. The varieties Janz, Rosella and Mitre are susceptible to this while Goldmark, Diamondbird and Silverstar are resistant. Most other varieties we commonly grow are intermediate in reaction.

Economic Return from wheat varieties in the 2001 season

Tables 1 and 2 show the return ($/ha) delivered to Horsham or Ouyen of a range of wheat varieties based on their relative yield, grain protein, screenings and quality classification. The data is derived from the 2000 and 2001 seasons. These tables show that Mira and Mitre have elevated screenings levels over most of the other varieties and that Frame, Yitpi and Annuello have good protein achievement. When wheat is delivered into the AWB pool under ‘golden rewards’ this effects the price a grower receives on delivery. However the major determinate of returns to a grower is yield. Taking these factors into account the variety Yitpi was the most profitable variety to grow in the Mallee during 2001, followed by Frame and then Annuello. In the Wimmera Yitpi and Mitre were the most profitable crops to grow. Longer term yield data would suggest that Yitpi, is a good choice for Mallee growers, but that Mitre and Camm would in many years be more profitable. In the Wimmera Mitre is likely to be the most profitable variety to grow.

This analysis also shows that under the golden rewards payment system the incentive to grow AH varieties over APW varieties is low. At 11.5% protein content an AH variety would return only $1.25/t more than an APW variety and at 10.5% protein an AH variety would be only $0.5/t more valuable. If the base rate offered by marketing organisations remain at their current ratios and grain is sold into the pool system, then growers should first consider relative yield in selecting a variety and then quality classification, relative screenings and protein achievement.

Table 1. Return to growers delivering wheat into the AWB pool at Ouyen 2001, compared to Meering delivered at 1.6% screenings, 11.5% protein and yielding 2.5t/ha.

Variety	% Screenings relative to Meering (00/01)	% Grain protein relative to Meering (00)	Quality grade	$/t base price	$/t (Adjusted for screenings and protein) less site deduction ($49.08)	Yield relative to Meering 2001	Return to grower ($/ha)
Meering	**1.6%**	**11.50%**	**AH**	**$256.00**	**$206.92**	**2.5 t/ha**	**$517.30**
Yitpi	0.4	0.4	AH	$256.00	$210.52	1.15	**$605.25**
Frame	-0.3	0.6	APW	$254.75	$212.87	1.1	**$585.39**
Annuello	-0.2	0.3	AH	$256.00	$210.62	1.06	**$558.14**
H45	-0.5	=	APW	$254.75	$206.67	1.06	**$547.68**
Mitre	0.9	0.2	AH	$256.00	$207.32	1.05	**$544.22**
Janz	-0.5	-0.1	AH	$256.00	$206.82	1.05	**$542.90**
Mira	1.3	-0.2	APW	$254.75	$200.87	1.02	**$512.22**
Chara	-0.1	=	AH	$256.00	$207.12	0.98	**$507.44**

Table 2. Return to growers delivering wheat into the AWB pool at Horsham 2001, compared to Meering delivered at 1.6% screenings, 10.5% protein and yielding 3.2t/ha.

Variety	% Screenings relative to Meering (00/01)	% Grain protein relative to Meering (00)	Quality grade	$/t base price	$/t (Adjusted for screenings and protein) less site deduction ($40.85)	Yield relative to Meering 2001	Return to grower ($/ha)
Meering	**1.6%**	**10.50%**	**AH**	**$246.50**	**$206.300**	**3.2**	**$660.16**
Yitpi	0.4	0.4	AH	$246.50	$209.90	1.03	**$691.83**
Mitre	0.9	0.2	AH	$246.50	$206.70	1.03	**$681.28**
Frame	-0.3	0.6	APW	$246.00	$213.00	0.99	**$674.78**
Annuello	-0.2	0.3	AH	$246.50	$210.00	1	**$672.00**
Janz	-0.5	-0.1	AH	$246.50	$206.20	0.99	**$653.24**
Chara	-0.1	=	AH	$246.50	$206.50	0.98	**$647.58**
Mira	1.3	-0.2	APW	$246.00	$201.00	1	**$643.20**
H45	-0.5	=	APW	$246.00	$206.80	0.94	**$622.05**
Rosella	=	0.3	ASW	$238.00	$201.10	0.95	$611.34