

Barley Breeding Progress

David Moody, VIDA

Lines present in the Birchip Barley Demonstration site were present in the Victorian Stage 4 trials conducted by staff of the Mallee Research Station. Key results from these trials are as follows:

A boron tolerant, CCN resistant potential malting variety, VB9953, from the VIDA breeding program has been fast-tracked into commercial evaluation trials. Commercial production of 300 – 500 tonnes of VB9953 will occur during 2001 for brewing trials in 2002. VB9953 is a backcross derivative of Sloop with CCN resistance and boron tolerance incorporated from the exotic 6-row landrace “Sahara3771”. Yields have been similar to Sloop in the absence of boron toxicity, but 10 – 15% higher than Sloop when boron toxicity occurs during floral development; the Woomelang site in Table 1 provides an example of this effect. VB9953 is also moderately resistant to powdery mildew, compared to Sloop, which is susceptible. Malting quality of VB9953 is slightly superior to Sloop, with VB9953 having slightly higher malt extract and 15% higher diastase levels. Grain plumpness is similar or slightly superior to Sloop. Due to quality similarities to Sloop, it is anticipated only a single year of satisfactory commercial brewing trials will be required prior to endorsement by the Malting and Brewing Industry Barley Technical Committee (MBIBTC).

The potential Arapiles replacement, VB9524, has been withdrawn from further assessment due to blue pigmentation of the aleurone layer detected during commercial steeping trials. VB9524 was scheduled for release in 2002 but lack of domestic industry support would make the marketing of this variety difficult. The new malting variety Gairdner represents an alternative for those Arapiles growers seeking to change varieties.

CCN resistant, potential malting varieties (VB9935, VB9937) have been higher yielding than current CCN resistant feed varieties in the Victorian Stage 4 trials in the Mallee regions, and up to 15% higher yielding than current CCN susceptible malting varieties. Further quality evaluation is required to determine the market opportunities for these lines.

VB9926 has been identified as a possible replacement variety for Gairdner, possessing superior yield, grain size and resistance to the Spot Form of Net Blotch in the 2000 Victorian Stage 4 trials. Malting quality of VB9926 appears very similar to Gairdner, with the advantage of having slightly low wort β -glucan and viscosity levels.

Table 1: Grain yield, as percentage of site mean yield, for entries in Victorian Stage 4 trials relative to control varieties when grown at eight sites in the Victorian Mallee during 2000.

| Variety | Hopet' | Manta' | Merri' | M'ville | Pira | Rainb' | Walpe' | Woom' | BLUP* |
|------------|--------|--------|--------|---------|-------|--------|--------|-------|--------------|
| VB9935 | 109.9 | 106.3 | 108.6 | 113.1 | 107.0 | 110.3 | 109.2 | 99.1 | 111.0 |
| VB9933 | 107.1 | 105.4 | 103.1 | 109.8 | 105.2 | 110.2 | 105.5 | 101.9 | 108.5 |
| Barque | 108.3 | 105.6 | 103.2 | 109.1 | 105.4 | 104.3 | 107.7 | 109.5 | 108.1 |
| Tantangara | 103.2 | 102.7 | 120.4 | 111.0 | 103.6 | 110.1 | 101.4 | 114.8 | 107.9 |
| Keel | 110.1 | 107.9 | 69.2 | 104.5 | 111.1 | 111.1 | 104.7 | 104.9 | 107.3 |
| VB9936 | 106.1 | 105.0 | 91.0 | 105.4 | 111.2 | 107.9 | 103.6 | 100.5 | 106.2 |
| VB9937 | 105.7 | 102.4 | 93.5 | 105.2 | 106.7 | 107.9 | 103.7 | 105.9 | 105.4 |
| Franklin | 101.2 | 98.3 | 118.6 | 104.4 | 99.9 | 103.3 | 104.7 | 107.7 | 102.9 |
| VB9909 | 98.9 | 100.8 | 104.3 | 99.2 | 101.0 | 96.8 | 100.9 | 100.7 | 99.5 |
| Schooner | 94.3 | 99.4 | 94.1 | 96.4 | 100.7 | 100.1 | 99.8 | 94.2 | 97.3 |
| VB9953 | 96.5 | 98.6 | 100.7 | 96.2 | 92.9 | 92.1 | 95.9 | 102.6 | 95.8 |
| Sloop | 98.0 | 97.8 | 92.2 | 95.7 | 95.7 | 94.2 | 95.4 | 90.8 | 95.7 |
| WI3167 | 95.3 | 97.8 | 99.9 | 95.1 | 94.4 | 96.5 | 94.8 | 84.5 | 95.1 |
| WI3175 | 95.5 | 96.9 | 97.4 | 92.8 | 98.2 | 92.5 | 89.7 | 90.3 | 93.4 |
| SBWI-1 | 98.4 | 97.3 | 77.2 | 88.5 | 98.8 | 92.9 | 94.2 | 85.5 | 92.3 |
| Picola | 92.1 | 94.5 | 92.5 | 87.7 | 93.8 | 88.2 | 93.1 | 100.9 | 89.9 |
| Arapiles | 87.7 | 93.6 | 99.5 | 87.0 | 94.0 | 87.5 | 93.5 | 96.1 | 88.7 |

* Best Linear Unbiased Predictor of yield

Please note that BLUP's do not represent mean yields. BLUP's are statistically weighted estimates of yield after taking into account individual site variability and the correlation of varietal ranking between sites. Sites with high error (ie were extremely variable) and sites in which variety ranking is poorly correlated with varietal ranking at other sites will receive a low weighting.