

## **Irrigated Winter Cereals Project**

Andrew Milgate, NSW DPI

We managed to harvest all trials at the Yanco site and Kerang in 2007, unfortunately the Mayrung site was lost due to lack of water for irrigation.

All trials have now been analysed that were harvested in 2007 and the analysed means are in the attached Xcel spreadsheets.

The analysis I am sending out now is of the predicted means for all the genotypes in the trials. We will do further analysis during the year.

Below are a few comments on the results, most of you will draw your own conclusions I am sure.

The timing of lodging in the 2007 trials was well after flowering and this is likely to be why it has had little impact on yield for the Triticale, Durum and smaller Bread Wheat trial at Yanco (W9B07YANA). However in the main Bread wheat trial at Yanco (W9A07YANA) the lodging that occurred early (Ldg1) did have a significant negative effect on yield. At the Kerang site higher levels of lodging were actually positively correlated with yield. The reason for this is due to the overall lower yield potential of the trial due to poor establishment.

The apparent low impact of maturity on yield points to our belief that the trials at Yanco did not suffer significant moisture stress during the growing season. The trend of the maturity correlations with yield suggests that for Barley, Bread Wheat and Durum slower maturing lines were slightly higher yielding. This correlation became significant only in the main bread wheat trial at Yanco. Where as for Triticale the trend was the reverse situation with early maturing lines having a yield advantage. This was also the case for the Kerang bread wheat trial where early maturing lines showed a weak but significant correlation with higher yields.

### **Results Summary 2007**

Please see the Agronomy sheet in each file for an explanation of the variables recorded.

#### **Barley-Yanco**

Main points

Variables impacting on yield;

- Yield overall lower than other crops which may be due to later planting of trial. Site mean yield of 8.869 (t/ha).
- Strongest negative correlation with yield was with height. Height is also correlated with lodging (See Spearman's Correl sheet).
- Maturity appears to be involved in the initial lodging event (ldg1 and Zad2) but less so with the final lodging score (ldg3 and ZAD1 or ZAD2).
- Overall the effects of maturity and lodging have not had particularly strong impacts on yield in the trial.
- Highest yielding variety – Capstan, 10.152 (t/ha)

- Highest yielding breeding line – WB261, 10.832 (t/ha)
- Best variety for low lodging – Capstan, 0.94 (Mean ldg score)
- Best breeding line for low lodging – VB0608, 0.45 (Mean ldg score)

### **Triticale-Yanco**

#### Main points

#### Variables impacting on yield;

- Yield, overall the highest number of lines exceeding 11 (t/ha). Site mean yield of 10.164 (t/ha). However triticale displayed the worst level of lodging overall. Lodging however did not show a correlation with yield in the genotypes included in the trial. I believe this is largely due to low variation for lodging within the material tested and the timing of the lodging.
- There appears to be an interaction occurring within this group of lines between height, maturity and yield. Height was negatively correlated with yield and positively with maturity (ZAD). That is the slower maturing lines were the tallest and the lower yielding.
- Highest yielding variety – Kosciusko, 10.524 (t/ha)
- Highest yielding breeding line – TSA0222, 12.982 (t/ha)
- Best variety for low lodging – Speedee, 6.8 (Mean ldg score)
- Best breeding line for low lodging – AT616, 2 (Mean ldg score)

### **Durum-Yanco**

#### Main points

#### Variables impacting on yield;

- Site mean yield of 10.27 (t/ha).
- None of the variables recorded (lodging, maturity, height) were correlated with yield.
- Highest yielding variety – Arivato, 10.895 (t/ha)
- Highest yielding breeding line – WI22221, 11.518 (t/ha)
- Best variety for low lodging – Arivato, 1.5 (Mean ldg score)
- Best breeding line for low lodging – 27A19, 0.99 (Mean ldg score)

### **Bread Wheat trials**

There is two analyses of the bread wheat trials (W9A07YANA, W9B07YANA, W9A07KERA) an across sites analysis and an individual experiment analysis. The across sites analysis is for yield and lodging only and was carried out by Chris Lisle (Biometrician NSW DPI).

#### **Across Sites Analysis – W907\_acrosssites**

##### Main Points

##### Yield

- High correlation between experiments despite lower yield of Kerang site.
- Highest yielding Australian variety Chara, 8.929 (t/ha)
- Highest yielding International variety Super Seri 1, 9.961 (t/ha)
- Highest yielding breeding line HRZ03\_0065, 9.89 (t/ha)

##### Lodging

- High correlation between experiments despite lower yield of Kerang site.

- Best variety for low lodging – Yenda (Soft wheat), 1.19 (Mean ldg score)  
– EGA\_Wedgetail (Hard wheat), 1.67 (Mean ldg score)
- Best breeding line for low lodging – VW4076, 0.42 (Mean ldg score)

### **Small Bread Wheat trial –Yanco - W9B07YANA**

#### Main points

#### Variables impacting on yield;

- Site mean yield of 10.04 (t/ha).
- There was a weak negative correlation of lodging with yield. Maturity was not correlated with yield.
- Highest yielding variety – Yenda (Soft wheat), 11.804 (t/ha)
- – EGA\_Wedgetail (Hard wheat), 10.938 (t/ha)
- Highest yielding breeding line – WW13602, 11.976 (t/ha)
- Best variety for low lodging – Yenda (Soft wheat), 1.01 (Mean ldg score)  
– EGA\_Wedgetail (Hard wheat), 1.08 (Mean ldg score)
- Best breeding line for low lodging – WW18829, 0.72 (Mean ldg score)

### **Large Bread Wheat trial –Yanco - W9A07YANA**

#### Main points

#### Variables impacting on yield;

- Site mean yield of 9.107 (t/ha).
- There was a negative correlation of early lodging with yield. Maturity was not strongly negatively correlated with yield however it was significant..
- Highest yielding variety – Currawong (Feed wheat), 10.476 (t/ha)
- – Chara (Hard wheat), 10.129 (t/ha)
- Highest yielding International variety Super Seri 1, 11.632 (t/ha)
- Highest yielding breeding line – VW1193, 11.828 (t/ha)
- Best variety for low lodging – Yenda (Soft wheat), 2.4 (Mean ldg score)  
– EGA\_Wedgetail (Hard wheat), 2.8 (Mean ldg score)
- Best breeding line for low lodging – HRZ03\_0033, 0.4 (Mean ldg score)

### **Bread Wheat trial –Kerang - W9A07KERA**

#### Main points

#### Variables impacting on yield;

- Site mean yield of 5.628 (t/ha).
- The trial suffered water logging shortly after sowing which significantly impacted on establishment. The trial was also affected by weeds and bird damage. Fortunately the spatial analysis has allowed adjusted for these covariates. And the ranking of varieties is highly correlated with the Yanco trials.
- There was a positive correlation of lodging and maturity with yield.
- Highest yielding variety – Rosella (Soft wheat), 6.548 (t/ha)
- – Gladius (Hard wheat), 6.855 (t/ha)
- Highest yielding breeding line – HRZ03.0065, 7.967 (t/ha)
- Best variety for low lodging – Yenda (Soft wheat), -1.3\* (Mean ldg score)

– Tamarin rock (Hard wheat), -0.4 (Mean ldg score)

- Best breeding line for low lodging – VT1036, -1.4 (Mean ldg score)

\*Note negative values predicted values are possible from analysis.