

Wheat Time of Sowing, Cowra

The earlier the sowing time and the earlier the variety reached anthesis, the higher the yield.

The trial

The aim was to determine the response of recently released varieties to sowing time. A trial was established to measure flowering time, yield and grain quality of 30 wheat varieties.

Site details

Location: Cowra

Soil type: red chromosol

Soil test: 0–10 cm, late February

| | |
|--------------------------------|---------------|
| pH _{CaCl2} | 4.9 |
| Aluminium | <0.1% |
| Colwell phosphorus | 29 mg/kg |
| Organic carbon | 0.75% |
| Cation Exchange Capacity (CEC) | 5.2 Meq/100 g |

Rainfall: 497 mm annual total 2007.

| Sowing time | Growing season rainfall* |
|--|--------------------------|
| 1 | 216 |
| 2 | 184 |
| 3 | 177 |
| *30% fallow rainfall from April onwards+in-crop rainfall to harvest date | |

Management

Sowing rate: 75 kg/ha

Fertiliser: 100 kg/ha DAP and 25 kg/ha urea

Row spacing: 25 cm

Herbicides: 10 May–1 L/ha Roundup PowerMAX™

15 June–1 L/ha Roundup PowerMAX™ and 75 ml/ha Goal® (Sowing Time 3 only)

13 July–300 ml/ha Axial®

Fungicide: 8 September–500 ml/ha Opus®125.

Harvest date: 21 November

Treatments

Sowing times:

| Sowing time | | | Emergence | |
|-------------|---------|----------|-----------|------------------|
| Number | Date | Year-day | Date | Days from sowing |
| 1 | 10 May | 130 | 21 May | 11 |
| 2 | 29 May | 149 | 15 June | 17 |
| 3 | 15 June | 166 | 6 July | 22 |

Varieties: 30 varieties of wheat with a range of flowering/maturity from early to late.

Seasonal review

The season began with two good rainfall events. The first at the end of April with 28 mm over 4 days, followed by 35 mm two weeks later. Good rain fell during June and July (85 mm) although temperatures were cold and frosty delaying emergence of later sown treatments. August, September, October and November were very dry.

Sowing Time 1 received 32 mm more rainfall than Sowing Time 2, and 39 mm more than Sowing Time 3. There was also a number of heavy frosts during September.

Results

Grain yield

The trial mean yield was 2450 kg/ha (Table 1). There were statistically significant effects of variety, sowing time and variety by sowing time interaction.

Delaying sowing time (and flowering date) significantly reduced yield (Table 1). The earlier maturing or short-season varieties reached anthesis (flowering) 17 days earlier than the later maturing varieties in Sowing Time 1, 14 days earlier in Sowing Time 2 and 11 days earlier in Sowing Time 3 (Table 1).

Later sown treatments were severely drought affected during spring. The impact of this on grain yield was greater in the later Sowing Times and

2007



the varieties which flowered later (Figure 1). The very early maturing breeding line WW12410 was the highest yielding variety at each Sowing Time.

Grain quality

Grain protein, 1000 grain weight and screenings were each affected by variety, sowing time and a variety x sowing time interaction (Table 3). There were significant effects of variety and sowing time but non significant interaction of variety by sowing time for test weight.



Table 1 Grain yield (kg/ha) and year-day of anthesis of 30 wheat varieties sown at three sowing times at Cowra.

| Variety | Grain yield (kg/ha) and rank (within sowing time) | | | | | | Anthesis (year day) | | |
|-----------------------------------|---|----|---------------|----|---------------|----|---------------------|---------------|---------------|
| | Sowing Time 1 | | Sowing Time 2 | | Sowing Time 3 | | Sowing Time 1 | Sowing Time 2 | Sowing Time 3 |
| Axe [Ⓛ] | 3411 | 13 | 2611 | 8 | 1738 | 18 | 263 | 273 | 279 |
| Bolac [Ⓛ] | 2622 | 28 | 1997 | 26 | 1627 | 21 | 274 | 279 | 284 |
| Carinya [Ⓛ] | 3332 | 16 | 2274 | 18 | 1777 | 16 | 268 | 274 | 280 |
| Catalina [Ⓛ] | 3654 | 2 | 2192 | 21 | 2082 | 3 | 262 | 274 | 279 |
| Drysdale [Ⓛ] | 3537 | 8 | 2788 | 4 | 1945 | 7 | 264 | 273 | 281 |
| EGA_Eaglehawk (C25) | 2577 | 29 | 1998 | 25 | 1556 | 26 | 278 | 283 | 284 |
| EGA_Gregory [Ⓛ] | 3486 | 10 | 2448 | 12 | 2036 | 4 | 271 | 277 | 281 |
| EGA_Jaeger [Ⓛ] (C643) | 3140 | 19 | 2217 | 20 | 1630 | 20 | 266 | 273 | 280 |
| EGA_Wedgetail [Ⓛ] | 2045 | 30 | 1528 | 30 | 1354 | 29 | 276 | 281 | 285 |
| Ellison [Ⓛ] | 2893 | 25 | 2266 | 19 | 1806 | 14 | 270 | 274 | 280 |
| Gladius [Ⓛ] | 3596 | 4 | 2481 | 10 | 2151 | 2 | 267 | 274 | 280 |
| Guardian [Ⓛ] | 3568 | 7 | 2476 | 11 | 1818 | 13 | 268 | 274 | 280 |
| H46 [Ⓛ] | 3602 | 3 | 2623 | 7 | 1977 | 6 | 261 | 269 | 276 |
| Janz | 3150 | 18 | 2153 | 23 | 1570 | 24 | 269 | 275 | 282 |
| Lang [Ⓛ] | 2980 | 24 | 2327 | 16 | 1508 | 27 | 270 | 276 | 281 |
| Livingston [Ⓛ] (SUN389A) | 3450 | 12 | 2340 | 15 | 1733 | 19 | 263 | 271 | 280 |
| Merinda [Ⓛ] (SUN435D) | 3593 | 5 | 2446 | 13 | 1796 | 15 | 266 | 274 | 280 |
| Pugsley [Ⓛ] | 3093 | 21 | 2724 | 5 | 1986 | 5 | 270 | 275 | 280 |
| Sentinel 3R [Ⓛ] | 3120 | 20 | 2033 | 24 | 1088 | 30 | 272 | 283 | 284 |
| Strzelecki [Ⓛ] | 2821 | 26 | 1864 | 28 | 1616 | 23 | 272 | 280 | 282 |
| SUN434H | 3072 | 23 | 1822 | 29 | 1568 | 25 | 271 | 276 | 281 |
| Sunvale [Ⓛ] | 2703 | 27 | 1888 | 27 | 1503 | 28 | 271 | 277 | 284 |
| Sunzell [Ⓛ] | 3082 | 22 | 2281 | 17 | 1932 | 9 | 272 | 276 | 280 |
| Ventura [Ⓛ] | 3490 | 9 | 2932 | 2 | 1921 | 12 | 266 | 273 | 278 |
| VS0039 | 3579 | 6 | 2538 | 9 | 1931 | 10 | 262 | 270 | 279 |
| WW12410 | 3992 | 1 | 2984 | 1 | 2284 | 1 | 261 | 270 | 274 |
| WW21570 | 3349 | 14 | 2348 | 14 | 1927 | 11 | 261 | 270 | 274 |
| WW21571 | 3304 | 17 | 2183 | 22 | 1740 | 17 | 264 | 274 | 280 |
| WW3028-4 | 3347 | 15 | 2693 | 6 | 1623 | 22 | 270 | 275 | 281 |
| Young [Ⓛ] | 3481 | 11 | 2812 | 3 | 1944 | 8 | 261 | 270 | 280 |
| Mean of sowing time | 3236 | | 2342 | | 1772 | | | | |
| Site Mean | 2450 | | | | | | 274 | | |
| lsd p=0.05 (variety) | 506.5 | | | | | | 2.2 | | |
| lsd p=0.05 (Sowing Time) | 580 | | | | | | | | |

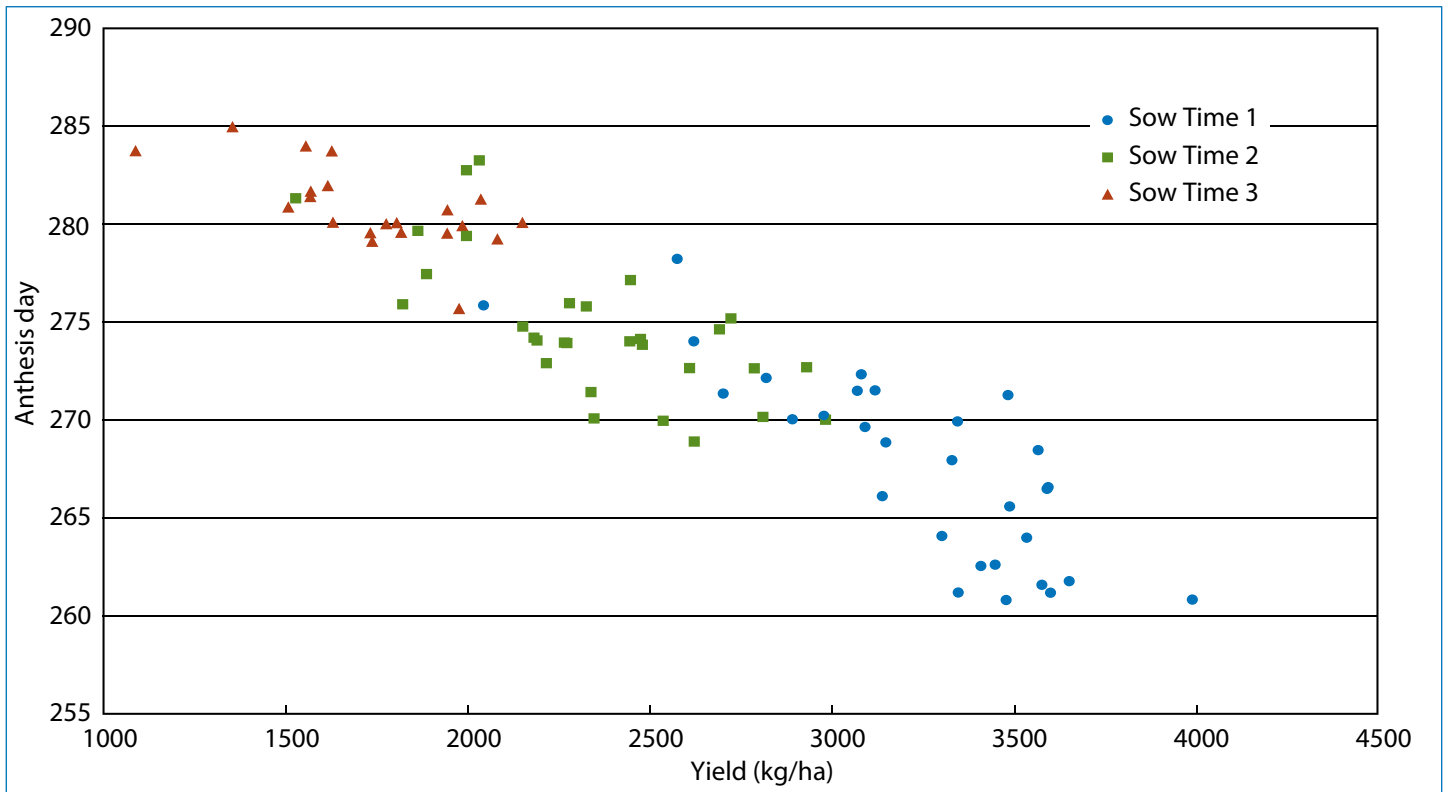


Figure 1 The relationship between grain anthesis year day and grain yield of 30 varieties of wheat sown at three sowing times at Cowra

Discussion of results

The drought conditions in the period August to November make drawing conclusions from a single experiment difficult.

The very dry spring favoured earlier flowering varieties and the early sowing time. This explains the low yield of EGA_Wedgetail and EGA_Eaglehawk in particular. The analysis of yield by flowering day (Figure 1) however showed that flowering date did not explain all of the variation in yield.

Sentinel performed very badly in the later sowings. Janz, Livingston and Merinda also appeared to yield relatively less with later sowing.



Photo: Matt Newell

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (March 2008). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

**Variety Specific
AGRONOMY
Packages**