

The date of anthesis is not important for South Australian wheat crops

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The environmental conditions at anthesis are thought to have a large impact on the yield of wheat. If anthesis is late, during hot, dry conditions, the grains do not fill, but if it is too early, the heads may suffer damage from frosts. If there is an optimum anthesis date in South Australia, then early and late flowering cultivars will need to be sown on different dates in order to reach anthesis at the correct time and produce their best yields.

Methods

Three wheat cultivars (Takari, Oxley and Timmo) were sown on five dates (April 28, May 29, June 16, August 1 and September 5) at Tanunda, near the Barossa Valley in South Australia in 1986. Takari is an early flowering cultivar, Oxley flowers one week later than Takari and Timmo has a photoperiod requirement, causing it to flower 12-20 days later than Oxley. The trial was sown in small plots (8.3m*1.44m) at a seed rate of 100 seeds/m. The soil was a deep, black, cracking clay (>1m in depth), with a pH of 8.2. The April-November rainfall was 477mm and most of this fell in winter.

Results and discussion

The three cultivars all produced their highest yields when sown at the third sowing date (June 16); see figure 1(a). Prior to this, yields increased by 0.75 t/ha for every week's delay in sowing and after this optimum time, yields decreased by 0.17 t/ha per week.

The cultivars reached anthesis on different dates and these are shown in figure 1(b). The anthesis dates from the third sowing date (the one which had the best yields) ranged over 18 days; ie. October 27 for Takari, October 30 for Oxley and November 14 for Timmo. The first two sowings of Timmo also reached anthesis within this 18 day range, but were *la^g* yielding.

If there was an optimum anthesis date and it was centred around October 27/30, then the first sowing date of Timmo should have yielded the best. If an optimum anthesis date was centred around November 14, then the fourth sowing date of Takari and Oxley should have produced the highest yields. It is obvious that there was not an optimum anthesis date and that some other factor was causing the large differences in yield observed between sowing dates.

Figure 1 The relationship of a) sowing date and b) anthesis date with the yield of three wheat cultivars sown on different dates.

