

Acknowledgements

Time of canola sowing to optimise yields in the Northern Agricultural Region of WA

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Key messages

- Early sowing is the key to maximise canola yield in your area.
- Maximum canola yields are achieved with April sowing.
- If sowing opportunity is late, assess the risk of achieving a certain yield.
- Use canola opportunistically in your crop rotation.

Background

In the last decade there has been a trend of earlier and earlier sowing of canola by farmers in Western Australia. Sowing canola in mid-April has become standard practice in most of the north of the WA cropping zone. However, there is a lack of experimental data on very early sowings before mid-April. This computer modelling study was designed to establish the optimum sowing window to maximise grain yield accounting for frost and heat stress for different locations in Western Australia. The simulation of the effects of frost and heat on yield is still work in progress.

Optimum sowing window

The optimum sowing windows to maximise grain yield of canola, for Mullewa on a light soil and 3 canola cultivars were obtained from a computer simulation analysis using the APSIM-Canola model (Table 1). Yields were simulated for the period 1976-2016 using 41 years of local rainfall and temperature data and accounting for the yield penalty due to frost and heat (frost and heat effect on yield is still work in progress). A light soil, with a plant available water content (bucket size) of 57 mm was used in the simulations. The canola cultivars were long, medium (Bonito) and short season. The sowing dates assume wet sowing with crop emergence around 7 to 10 days after sowing. Dry sowing, with an uncertain time period between sowing and emergence, is a different story.

The optimum sowing window was defined as the sowing period that achieves on average more than 95% of the maximum yield for each cultivar studied (Table 1). The yield versus time of sowing relationship has a bell shape (Figure 1). Even though there is a lack of experimental data for very early sowings, the simulation results suggest that very early sowing such as March, would have a yield penalty compared to the optimum sowing period. There is a big year to year variability and the results are average of last 41 years.

Table 1. Optimum sowing window (expressed as the sowing period that achieves on average more than 95% of the maximum yield) and duration of the window for Mullewa on a light soil, for 3 canola cultivars. Average of 41 years (1976-2016).

	Sowing Period		Duration
Long cv (Hyola 650 TT)	21-Mar	14-Apr	24
Medium cv (Bonito)	3-Apr	27-Apr	24
Short cv (Stingray)	9-Apr	5-May	26

In your area, maximum yields would be achieved on average with sowing a mid maturity cultivar such as Bonito from beginning to end of April or sowing a longer maturity cultivar from end of March to mid April. This is based on 41 years of climatology.

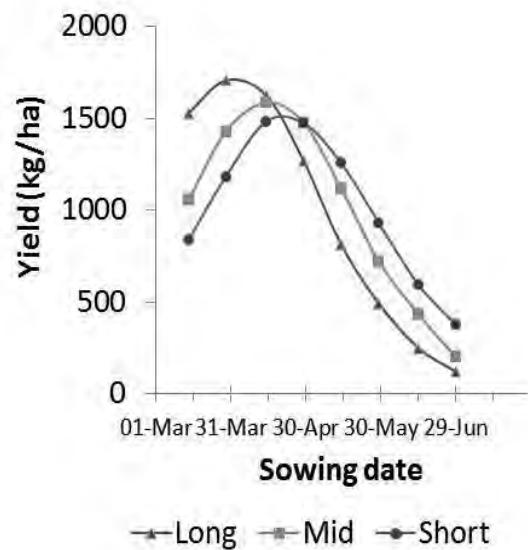


Figure 1. Canola yield versus time of sowing relationship for Mullewa on a sandy soil, for 3 maturity cultivars (long, medium and short). Average simulated yields for the period 1976-2016.

Risk

If dry sowing with uncertainty of when the crop will germinate or if wet sowing at a late date, it is important to assess the probability of achieving a certain yield at each sowing date (Figure 2). In a particular year, sowing outside the optimum period, may yield reasonably well if the rainfall amount and distribution is better than on average year. If you have information that the season is looking to be better than average, this should be considered as the information above is a guide based on average climatology. But keep in mind that in your area there is a steep yield decline for sowing dates after the optimum sowing period. Use canola opportunistically in your crop rotation.

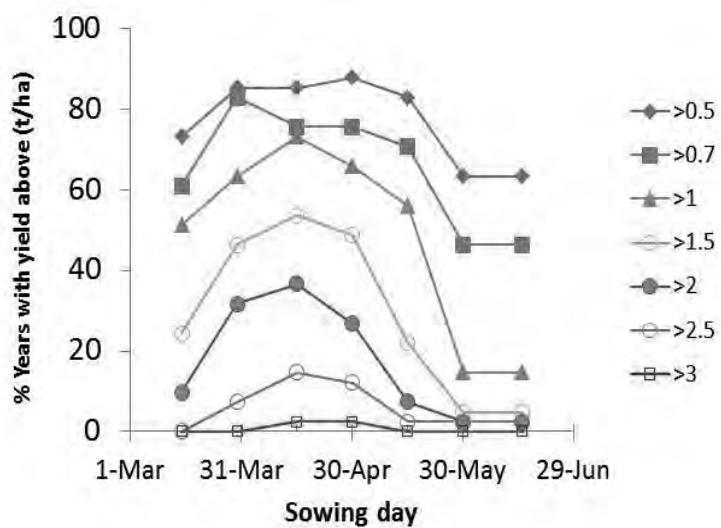


Figure 2. Percentage of years (%) with yield above certain thresholds for the period 1976-2016 for Mullewa on a sandy soil, sowing Bonito (mid maturity cultivar) for the different sowing dates studied. Threshold yields were 0.5, 0.7, 1, 1.5, 2, 2.5 and 3 t/ha.

Acknowledgements