

# Time of sowing for wheat

## Time of sowing in the Holbrook area of southern NSW

### Key messages

- The optimal time for sowing is a balance between getting the most from the growing season whilst minimising the risk of the crop being damaged at flowering due to frost or heat stress.
- The risk of damage at flowering is minimised by choosing a sowing date that causes flowering to occur when the risk of frost and heat stress are low.
- Mid-season and long season wheat types can be sown at Holbrook at a time that maximises grain yield potential and has a low risk of climatic stress.
- The best time of sowing varies with wheat type.

### Different wheat types need different sowing times

Every wheat type (short, mid-season and long season) has a maximum potential grain yield that it is capable of achieving.

Achieving maximum potential grain yield requires the resources of light, water and nutrients to be used by plants at the right time without any adverse events like crop disease, including Wheat Streak Mosaic Virus.

Some wheats are also sensitive to day length (ie photoperiod) and some long-season types also need a cold period before they will flower (ie vernalisation).

The graphs (Figure 1) show the grain yields that can be achieved for 3 cultivar types when they are sown at Holbrook every 2 weeks from 15<sup>th</sup> February to 1<sup>st</sup> September. The grain yields given for each sowing time are the median achieved when the growth of wheat is modelled for 124 years (1889 – 2012) using soil data from a farm on Ralvona Lane near Holbrook and long-term climate data from Holbrook sourced from Bureau of Meteorology.

The highest chance of achieving maximum potential grain yield (green squares for >90% maximum potential grain yield) in this area are:

15 June - 15 July for short season type

15 February – 1 July for mid-season type

15 February – 15 March for long season type

Times of sowing with lower chances of achieving maximum grain yields are shown with yellow squares (80 – 90%) and red squares (< 80%).

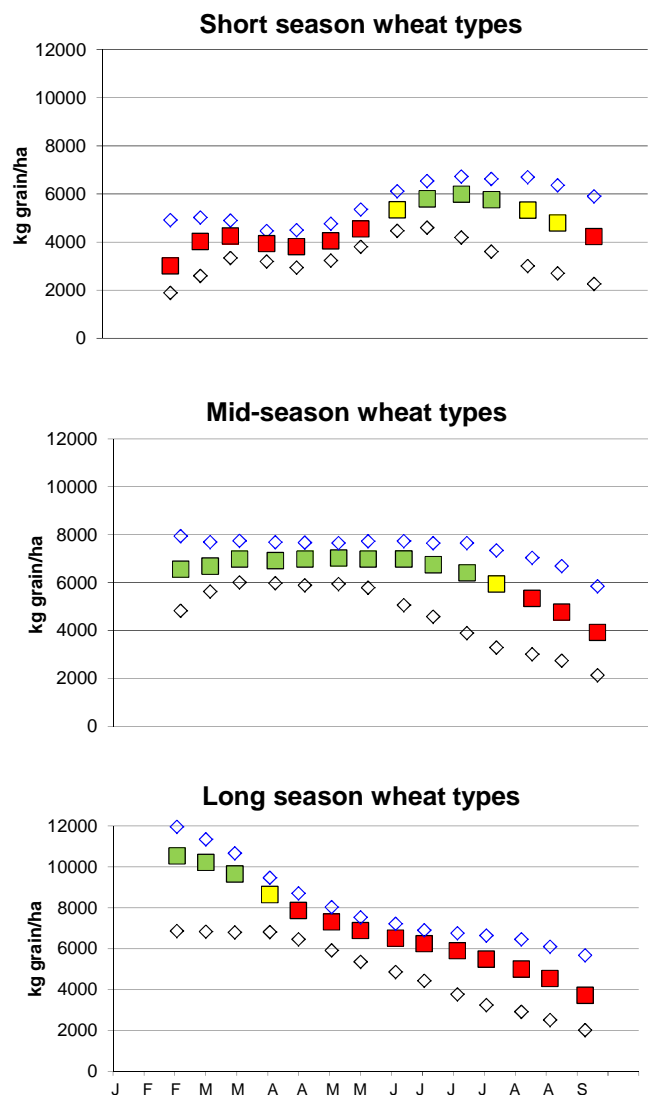


Figure 1: The median grain yield as simulated over 124 years (squares) using APSIM Version 7.3 for 3 wheat types using soil data and climate data from Holbrook. The top 10% of grain yields are above the blue diamonds. The bottom 10% of grain yields are below the black diamonds.

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## Avoiding climatic risks

Frost (temp. less than 0°C) and heat stress (temp. over 30°C) can damage wheat during flowering and reduce grain yield. Wheat has the greatest chance of avoiding these risks if it flowers when there are few incidences of both frost and heat stress. In the Holbrook area, the optimal time for flowering is:

**26 September to 12 October.**

This period is when the combined risk of frost and heat stress is less than 1%.

Fortunately, the flowering time for wheat is quite predictable, as growth is controlled by temperature and day length. The amount of temperature (known as day degrees) and the day length requirements are known for each wheat type presented in this fact sheet.

The graphs (Figure 2) show how the optimal flowering period can be targeted by carefully choosing a wheat type and a sowing date.

## Balancing maximum potential grain yield with minimal damage from frost and heat

Ideally, the sowing time that gives the highest chance of attaining maximum potential grain yield (green circles, Figure 2) will be the same as the sowing time needed to ensure flowering occurs when the risk of frost and heat stress are very low (26<sup>th</sup> September to 12<sup>th</sup> October).

This ideal combination of maximum potential grain yield and low climatic risk occurs:

**1 May for mid-season types**

**15 February to 15 March for long season types**

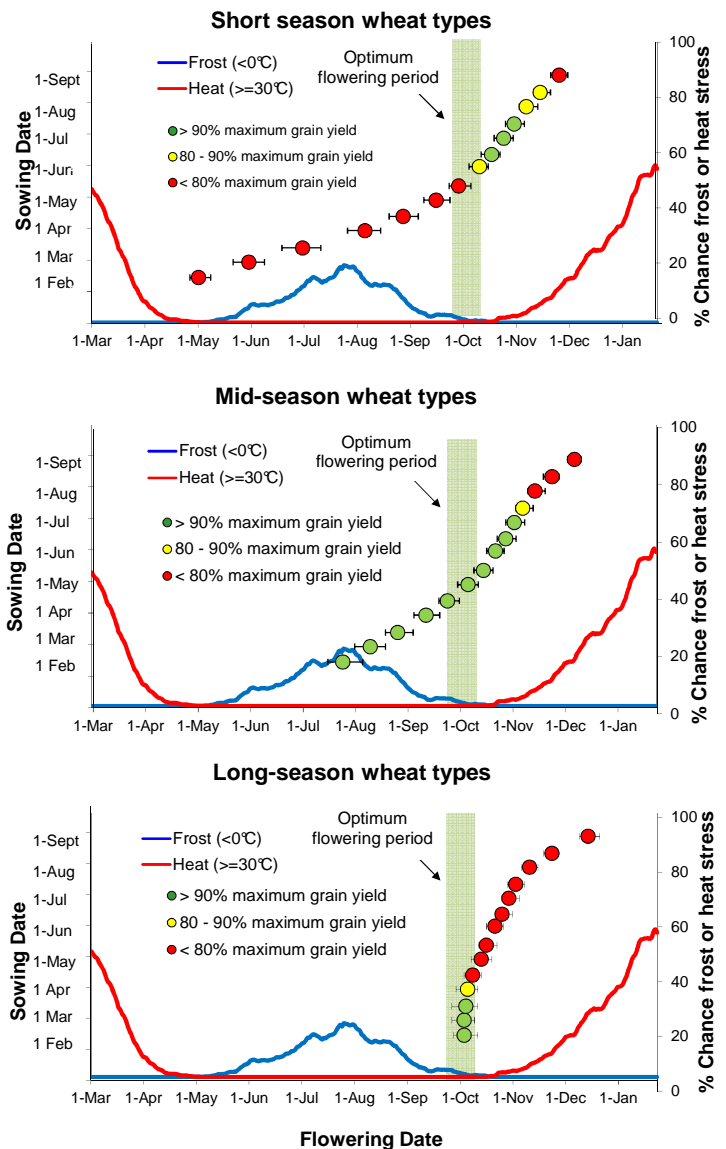


Figure 2: Timing of flowering (circles) for various sowing times for 3 wheat types represented by Crusader (short season), Gregory (mid-season) and Wedgetail (long season). Chance of frost (blue line) or heat (red line) risk for the different sowing dates. The green bar indicates the optimum flowering period to minimise climatic risk. Green, yellow and red dots indicate > 90%, 80-90% and < 80% of grain yield potential in the absence of climatic risk (refer to Figure 1).

Funded by Grains Research and Development Corporation and Department of Environment and Primary Industries Victoria

Published by the Victorian Government Department of Environment and Primary Industries Melbourne, October 2013

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ISBN 978-1-74326-566-6 (Print)

ISBN 978-1-74326-567-3 (pdf)

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