

Time of sowing for wheat

Time of sowing in the Woomargama 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 around Woomargama 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).

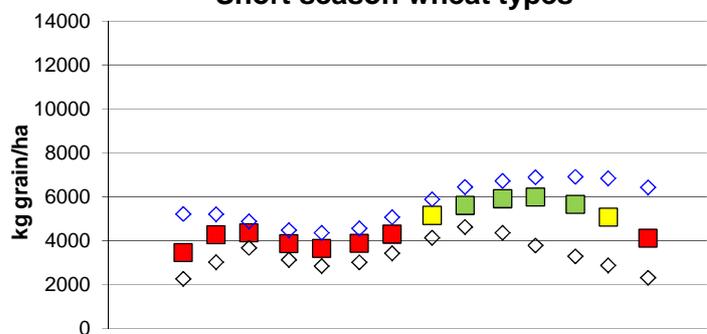
The graphs (Figure 1) show the grain yields that can be achieved for 3 cultivar types when they are sown at Woomargama every 2 weeks from 15th February to 1st September. The grain yields given for each sowing time are the median achieved when the growth of wheat is modelled for 124 years (1889 – 2012) using soil data from a farm at Woomargama and long-term climate data from Holbrook as 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 – 1 August for short season type
- 15 February – 15 June 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%).

Short season wheat types



Mid-season wheat types



Long season wheat types

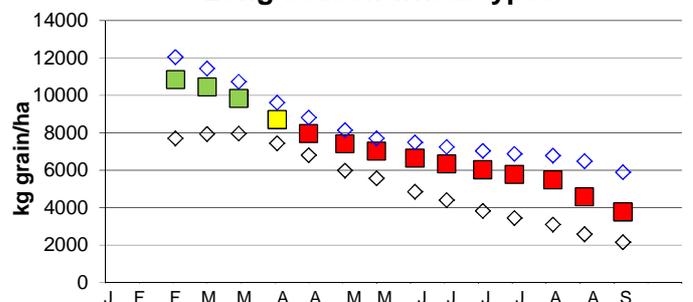


Figure 1: The median grain yield as simulated over 124 years (squares) using APSIM Version 7.3 for 3 wheat types using climate data from Holbrook and soil data from Woomargama. The top 10% of grain yields are above the blue diamonds. The bottom 10% of grain yields are below the black diamonds.

Time of sowing for wheat in the Woomargama area of southern NSW

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 frost and heat stress. In the Woomargama 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 (26th September to 12th October).

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

15 April – 1 May for mid-season types

15 February – 15 March for long season types

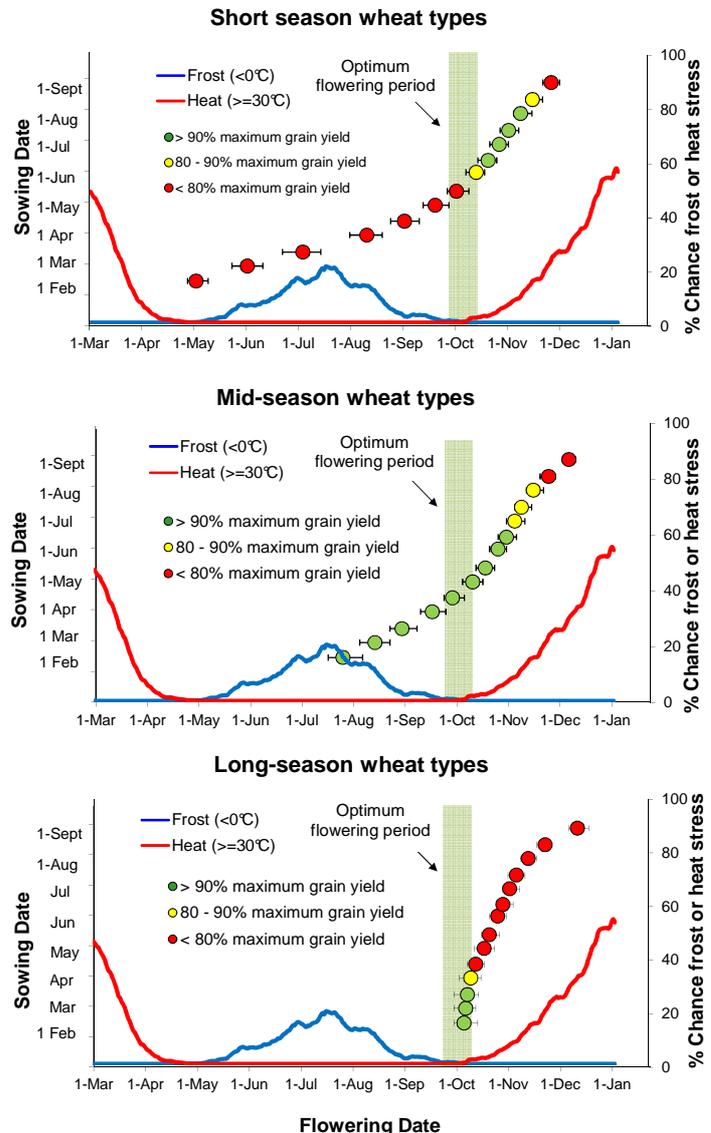


Figure 2: Timing of flowering (circles) for various sowing times for 3 wheat types represented by Crusader (short season), Gregory (mid-season) and Wedgetail (long season). Chance of frost (blue line) or heat (red line) risk for the different sowing dates. The green bar indicates the optimum flowering 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

Authors: A. Clough, R. Harris, P. Riffkin, G. O'Leary

© The State of Victoria Department of Environment and Primary Industries Melbourne, 2013

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the *Copyright Act 1968*.

ISBN 978-1-74326-568-0 (Print)

ISBN 978-1-74326-569-7 (pdf)

Accessibility

If you would like to receive this publication in an alternative format, please telephone DEPI Customer Service Centre 136 186, email customer.service@dse.vic.gov.au, via the National Relay Service on 133 677 www.relayservice.com.au This document is also available in on the internet at www.depi.vic.gov.au

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.