APRIL 2015

EARLY-SOWING WHEAT IN VICTORIA FACT SHEET

GRDC
Grains Research & Development Corporation
Your GRDC working with you

SOUTHERN REGION

TAKE ADVANTAGE OF EARLY RAINS WITH EARLY SOWING

With decreasing late autumn rain, growers can take advantage of early autumn falls by sowing winter wheats and slow-maturing spring wheats.

KEY POINTS

- Early autumn rainfall is providing an opportunity to establish crops earlier than currently practised.
- Winter wheats can be sown from late summer to late April, depending on seasonal conditions.
- Trials have shown that early-sown crops can have the same or better yields compared with mid and fast maturing wheats sown from late April onward.
- Early-sown crops can provide a grazing opportunity without significant yield penalty.
- Winter wheats have a vernalisation requirement, which means they need low temperatures to develop beyond tillering. This results in consistent flowering time, even when sown very early.

PHOTO: TRACEY WYLIE

These wheat plots show the differences in maturity of varieties grown in trials at Inverleigh, Victoria, in 2013. The plots were all sown on May 10 but maturity ranged from GS 51 to GS 71 in October.

In the past 17 years, the number of dry autumns has increased, providing a new challenge for growers to manage the sowing time of wheat. A balance must be obtained between wheat flowering too early and risking frost damage, and flowering too late and risking drought and heat damage. While growers may understand when the optimal flowering time falls during the season, deciding when to sow is more difficult if season-breaking rainfall comes later than in previous years.

The option many growers are using to meet this challenge is sowing mid-fast maturing spring wheat varieties from late April onwards and dry-sowing if the break has not arrived by this time. However, there is another option proving profitable – sowing winter wheats between February and April and slow-maturing spring wheats in the second half of April.

Winter wheats

Winter wheats have a vernalisation requirement, which means the plant needs to be exposed to a certain duration of low temperature to develop past tillering. This causes the wheat to flower within a relatively consistent timeframe following the onset of colder weather, even when sown very early.

A winter wheat that is sown in summer will not flower much earlier than if it were sown in April. Figure 1 demonstrates flowering date versus sowing date for a mid-fast maturing spring wheat (long-dashed line), slow maturing spring wheat (dotted line) and winter wheat (solid line). As long as it is not sown too late, the winter wheat has a very high chance of meeting its optimal flowering window.

Tria data shows that in the past 17 years, February to March rainfall has not decreased in the same way that later autumn rains have. This provides an opportunity to establish a crop after early-autumn rain without it flowering too early.

For the past decade, there has been a lull in breeding of milling quality winter wheats, however breeding programs have recently been re-established and improved winter wheat varieties are expected in future.

Figure 1: This graph of the optimal flowering window of winter wheat (EGA Wedgetail(ф), solid line), slow-maturing spring wheat (EGA Eaglehawk(ф), dotted line) and mid-fast spring wheat (Janz, long-dashed line) is based on trial data from 2006 at Wagga Wagga.
Source: Peter Martin, NSW DPI

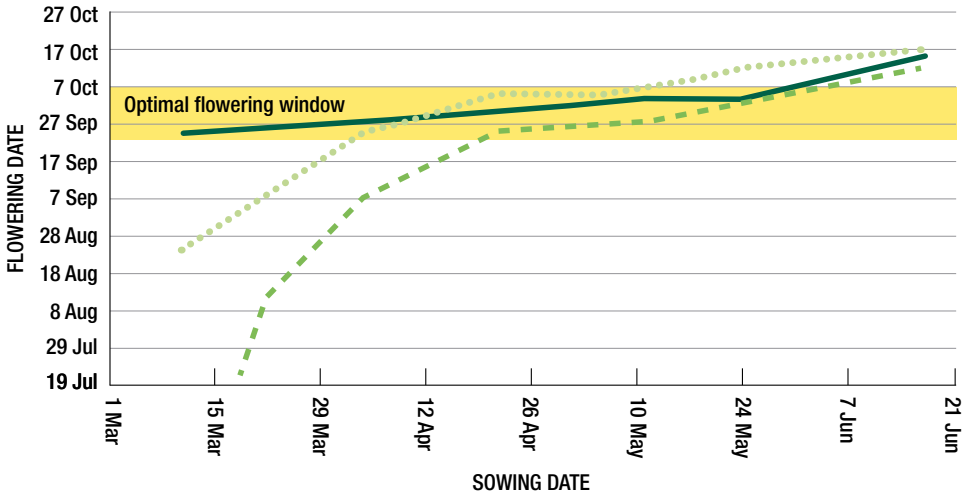

PHOTO: TRACEY WYLIE

Early-sown wheat can start developing root systems before the season break. This trial in 2013 at Inverleigh, Vic, shows wheat sown on March 26 (far left) was much further in its development than wheat sown on May 10 (far right), both were sown before the season break. On June 18, the earlier-sown crop was already at GS 30 or later, while the later sown was at GS 13.

TABLE 1: Ungrazed grain yield and quality of winter wheat varieties trial at Curyo, Vic

VARIETY	GRAIN YIELD (t/ha)	PROTEIN (%)	SCREENINGS (%)	TEST WEIGHT (KG/HL)
SQP Revenue(ф)	3.4	11.5	4.6	76
Rosella	3.3	12.2	2.7	81
EGA Wedgetail(ф)	2.8	12.4	2.5	77
Whistler	3.0	11.8	4.3	79
Wylah(ф)	2.8	13.1	2.6	76

Winter wheats and grazing

There is a common misconception that winter wheats are only suitable as a dual-purpose crop, meaning they require grazing to achieve their yield potential. Numerous trials in 2012 and 2013 have debunked this myth with winter wheat crop yields higher than the reference mid-fast spring crop – without any grazing.

The effect of grazing on yields can vary based on seasonal conditions, the extent of grazing and the variety. In some instances, trials showed grazing increased yield while sometimes it decreased yield. However any decrease in yield is rarely greater than 0.5t/ha as long as the grazing occurs before growth stage 30. Grazing presents a relatively low risk to yields in winter wheats.

Trial results

Three trials on early-sowing wheat have been completed in Victoria and southern NSW.

The first, run by the Birchip Cropping Group in the Wimmera-Mallee, planted summer-sown winter wheat varieties in late February 2013. Despite a hot and dry autumn, the crops survived and flowered in the optimal period. Yields of the best summer-sown varieties were comparable with a control crop of spring wheat sown in mid-May, despite the varieties being more than 10 years old and not adapted to the Mallee environment (Table 1 and Useful Resources).

The second trials were run by CSIRO and Kalyx in southern New South Wales and focused on grazing potential and grain recovery of winter and spring wheats. The winter and slow-maturing spring wheat varieties, sown in March and April, yielded 0.9 tonnes per hectare more than the reference spring wheat sown in May. The winter wheat also provided more forage, however when grazed the grain yield was reduced.

The third trial was run as part of the GRDC early-sowing project at Inverleigh in the Victorian high rainfall zone. In this trial, 15 millimetres of irrigation was applied to establish crops at sowing dates from late

PHOTO: JAMES HUNT

Early sowing of EGA Wedgetail(Φ) at Quambatook, north-east of Birchip, on March 9, 2014.

TABLE 2: Yield results from early-sowing trial at Inverleigh 2013.

VARIETY	TIME OF SOWING			
	MARCH 26	APRIL 8	APRIL 24	MAY 10
LongReach Beaufort(Φ)	8.3	8.8	9.4	8.9
Bolac(Φ)	6.2	6.6	7.3	7.6
Derrimut(Φ)	-	-	6.9	7.1
Einstein	7.6	7.4	-	-
Forrest(Φ)	7.4	7.7	7.4	7.2
Frelon	7.4	7.3	8.7	7.2
Kellalac	5.3	5.0	5.5	6.3
LongReach Lincoln(Φ)	-	-	5.4	6.6
SQP Revenue(Φ)	8.0	8.2	9.3	8.4
EGA Wedgetail(Φ)	6.3	6.3	6.3	6.8

March to early May. In this trial, *Septoria tritici* blotch was present in the wheats, and was controlled with fungicides. The highest yields, over 9t/ha, were obtained by the winter and slow-maturing spring wheat varieties (Table 2 and Useful Resources). Defoliation (to simulate grazing) in this case increased grain yield, though this may have been due to reduced *Septoria tritici* infection following defoliation.

Application of early sowing

Given the success of winter wheats in recent trials, growing early-sown winter wheats and slow-maturing spring wheats is a decision that growers may want to try on their own properties. A recommended strategy is:

Variety selection

Keep two or three varieties with different maturities on-hand to take advantage of sowing opportunities.

For example, if there is a good early rain, winter wheats can be planted. Table 3 provides examples of suitable varieties with different maturing times for the grain-growing areas of Victoria.

Weed control

Paddocks need to have a low weed burden for early sowing because weeds, such as ryegrass, will emerge too late to be controlled with a knockdown herbicide. Weeds need to be able to be controlled with pre-emergent herbicides.

Nitrogen application

Unless the crop is to be grazed and extra foliage is desired, delay nitrogen application until GS 30 to avoid excessive crop canopy growth.

Disease Management

Barley yellow dwarf virus (BYDV) and *Septoria tritici* blotch can seriously affect early-sown crops. Imidacloprid seed dressings and monitoring and control of aphids should be used to prevent BYDV, and appropriate fungicide strategies should be put in place to control *S. tritici.* Wheat streak mosaic virus is also a risk in some areas, and early crops should be tissue-tested if infection is suspected.

TABLE 3: Examples of varieties and sowing windows in Victoria.

	WINTER WHEAT EXAMPLES	SLOW-MATURING SPRING WHEAT EXAMPLES	MID-MATURING SPRING WHEAT EXAMPLES	FAST-MATURING SPRING WHEAT EXAMPLES
Sowing window	Late February – Late April	Mid-April – early May	Late-April – Mid-May	Mid-May onwards
Mallee & Wimmera	Rosella, EGA Wedgetail(Φ), Wylah, Whistler	LongReach Lancer(Φ), Kiora(Φ)	LongReach Phantom(Φ), Harper(Φ), Yitpi, Magenta, LongReach Trojan(Φ)	Corack(Φ), Mace(Φ), LongReach Scout(Φ), Shield(Φ)
North East & North Central	EGA Wedgetail(Φ), Wylah, Whistler	Bolac(Φ), LongReach Lancer(Φ), Chara(Φ), Kiora(Φ)	LongReach Phantom(Φ), EGA Gregory(Φ), LongReach Trojan(Φ)	Suntop(Φ), Scout(Φ), Corack(Φ), Young(Φ)
South West	SQP Revenue(Φ), Manning(Φ)	LongReach Beaufort(Φ), Bolac(Φ), Forrest(Φ), Kiora(Φ)	Derrimut(Φ), LongReach Trojan(Φ)	Scout(Φ), Elmore CLF

SOURCE: James Hunt, CSIRO, GRDC 2014 Southern Region Update Paper

FREQUENTLY ASKED QUESTIONS

What are the advantages of longer season varieties?

In addition to the ability to take advantage of early-sowing opportunities, grazing potential and a possible increase in yield depending on the seasonal conditions, there are other advantages to sowing earlier.

Earlier sown wheats develop deeper root systems and allow growers to apply nitrogen earlier, which can increase crop tolerance to waterlogging. Longer season varieties are slower to progress through stem elongation, which can improve the development of yield components, such as grains per ear.

What about wheat streak mosaic virus?

Wheat streak mosaic virus (WSMV) was a significant problem in 2005 in southern NSW. Since the virus is spread by a mite which is only active until April, it is more likely to present a problem in early-sown wheat. The risk of WSMV has put many farmers off early sowing. However, there are ways to control WSMV other than sowing late; control of green bridge hosts including summer grasses and volunteer cereals is a key measure to prevention. Control should include adjoining grassy verges and non-sown areas within a paddock. A tissue test of winter wheat is recommended if WSMV is suspected.

See Useful Resources for more information on controlling WSMV.

If wheat is sown a month earlier, when should canola be sown?

Simulations, trials and farmer experience have shown that canola can also be sown in early April and yield as well as or better than crops sown in late April or May.

Will sowing early increase my frost risk?

The vernalisation requirement of winter wheats mean they will still flower consistent with their maturity classification, even when sown very early.

The devastating, late-season frost on October 18, 2013, demonstrated that sowing late is not a solution to minimise frost risk. In many cases, the varieties that flowered earlier fared better in the frost than those which flowered later. It is recommenced that frost risk management considers a range of aspects, with sowing date only one of the management options.

USEFUL RESOURCES

Strategies and tactics to extend whole-farm water-use efficiency – sow on-time or early
James Hunt, CSIRO
GRDC 2014 Update Paper
www.grdc.com.au/2014-HuntEtAl-WUESowingVIC

Optimal Flowering
GroundCover TV Episode 13
http://www.grdc.com.au/GCTV13

Water Use Efficiency
GroundCover Supplement
http://www.grdc.com.au/GCS103

Wheat Curl Mite
GRDC Fact Sheet
www.grdc.com.au/GRDC-FS-WheatCurlMite

Barley Yellow Dwarf Virus
GRDC Fact Sheet
www.grdc.com.au/GRDC-FS-BYDV

MORE INFORMATION

James Hunt
Senior Research Scientist
CSIRO Plant Industry
02 6246 5066
James.Hunt@csiro.au

Annieka Paridaen
Projects Co-ordinator - Trials and Agronomy
Southern Farming Systems
03 5265 1666
aparidaen@sfs.org.au

GRDC PROJECT CODE

CSP00178, CSP00160

Acknowledgements: James Hunt, Annieka Paridaen

PRODUCED BY **AGCOMMUNICATORS**