Sow on time or early - getting the best out of our wheat varieties in 2014

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Key messages

- Sow spring wheats within 5-7 days of their optimum e.g. if the optimum date for sowing the chosen cultivar in south west Victoria is 12 May, don't sow it earlier than 5 May. Switch cultivars if you want to sow earlier than this.
- If sowing before 20 April, winter wheats (Wylah, Revenue, Manning, Adagio, Scenario) have a more flexible sowing window and are at lower risk of stem frost damage than slow maturing spring wheats (e.g. Forrest, Bolac).
- The last four years of trials have demonstrated that in the majority of Victorian environments, highest yields tend to come from appropriate cultivars established in the last week of April to the first week of May. This may change as better adapted winter wheats become available in the future.

Background

2014 seemed like the ideal year for early sown wheat crops – most districts had an early break and at least some stored soil water. However, a warm May put early sown crops well ahead of average development and hard frosts in July and August caused severe vegetative damage to many crops.

With drought, heat and frost all playing a role at the end of the season, crops that were sown on-time to slightly early tended to perform best. In south west Victoria a wet winter carried crops through a very dry spring and crops that were sown on time achieved reasonable yields.

This paper reports on trials conducted across Victoria in 2014 as part of the GRDC early sowing project, as well as trials individually funded by SFS.

Westmere, Inverleigh and Hamilton – time of sowing versus cultivar

These trials were classic time of sowing versus cultivar trials with 3-4 sowing dates and 6-8 cultivars at each time of sowing depending on the site. At all sites, highest yields in the majority of cultivars came from either the late April or mid-May sowing dates and this period spans the optimal sowing dates for most cultivars adapted to SW Victoria (Tables 1, 2 and 3). Beaufort was the stand-out performer in the feed wheats, particularly at Westmere and Hamilton. Trojan and Derrimut were the highest yielding milling wheats. Both these varieties have an optimal sowing date in SW Victoria of around 15 May, but in the very dry and relatively frost free spring of 2014 (in SW Victoria!). They also performed well when sown 'too early' in late April-early May particularly at Westmere. However, when sown on 10 April at Inverleigh both cultivars were heavily damaged by frost.

Table 1. Grain yield for different sowing times and cultivars at Inverleigh in 2014.

		Grain yield (t/ha)			
Cultivar - Feed	**Maturity**	**10-Apr**	**28-Apr**	**12-May**	**26-May**
Beaufort	Slow spring	4.3	5.0	3.6	3.6
Revenue	Slow winter	3.7	3.5	4.9	4.3
Cultivar - Milling					
Forrest	Very slow spring	3.5	3.8	3.1	3.4
Bolac	Slow spring	4.3	4.0	3.3	3.2
Kiora	Mid-slow spring	3.0	3.7	3.2	3.1
Derrimut	Mid spring	2.2	4.3	4.8	4.7
Trojan	Mid spring	2.0	4.4	4.7	3.7
	***p*-value**	**<0.001**			
	LSD (*p*=0.05)	**0.6**			

Table 2. Grain yield for different sowing times and cultivars at Westmere in 2014.

		Grain yield (t/ha)		
Cultivar - Feed	**Maturity**	**8-May**	**21-May**	**4-Jun**
Revenue	Slow winter	5.6	5.1	4.6
Beaufort	Slow spring	6.3	6.1	5.0
Preston	Mixed spring	5.6	5.4	4.4
Cultivar - Milling				
Forrest	Very slow spring	5.0	4.8	4.8
Bolac	Slow spring	5.3	4.5	4.6
Kiora	Mid-slow spring	5.5	5.3	4.9
Trojan	Mid spring	5.7	5.7	5.3
Derrimut	Mid spring	5.8	5.5	5.0
	***p*-value**		**0.005**	
	LSD (*p*=0.05)		**0.4**	

Table 3. Grain yield for different sowing times and cultivars at Hamilton in 2014.

		Grain yield (t/ha)		
Cultivar - Feed	**Maturity**	**1-May**	**16-May**	**5-Jun**
Beaufort	Slow spring	6.1	6.3	4.7
Revenue	Slow winter	5.4	6.0	4.6
Cultivar - Milling				
Forrest	Very slow spring	5.3	5.3	4.5
Bolac	Slow spring	4.7	5.3	4.7
Derrimut	Mid spring	5.7	6.4	4.9
Trojan	Mid spring	5.5	6.5	5.1
	***p*-value**		**<0.001**	
	LSD (*p*=0.05)		**0.5**	

Inverleigh – winter wheat agronomy

This trial aimed to compare winter wheat cultivars all sown early (10 April 2014) and different management treatments applied to Revenue, currently the most widely grown winter wheat in SW Victoria. Revenue and Scenario were the highest yielding cultivars (Table 4). Whilst light grazing at Z16 and Z30 significantly increased yield of Revenue relative to the ungrazed control, heavier grazing at Z30 reduced yields relative to light grazing though these treatments were not significantly different to the control. Seeding density or N timing did not affect grain yield of Revenue. N strategy had no significant effect on Z16 or Z30 dry matter available for grazing, with both having a mean of 2568 kg/ha removed in total, representing 1712 DSE/ha/days.

Table 4. Grain yield for different winter wheat cultivars and different management treatments applied to Revenue sown 10 April at Inverleigh.

Cultivar	Seeding density (seeds/m²)	Defoliation	N strategy	Grain yield (t/ha)
Manning	250	nil	grain	3.2
Scenario	250	nil	grain	4.3
Wylah	250	nil	grain	2.8
Revenue	125	nil	grain	4.0
Revenue	250	nil	grain	3.9
Revenue	250	Z16 (uniform light) + Z30 (level 1)	forage	4.5
Revenue	250	Z16 (uniform light) + Z30 (level 2)	forage	3.8
Revenue	250	Z16 (uniform light) + Z30 (level 3)	forage	3.7
Revenue	250	Z16 (uniform light) + Z30 (level 3)	grain	3.6
***Defoliation**: Grazing – All plots mechanically defoliated uniformly during tillering (GS16) then differentially at GS30 as follows; Level 1 (cut high GS30), level 2 (intermediate GS30) and level 3 (cut low GS30).*			***p*-value**	**<0.001**
***N Strategy**: Forage N – 75N at sowing / 125N post defoliation GS30-31 / 100N GS32-33; Grain N – 50N at tillering / 125N GS30-31 / 125 N GS32-33.*			**LSD (*p*=0.05)**	**0.3**

Figure 1. The agronomy trial directly after 'grazing', showing the different heights.

Conclusion

Four years of trials have demonstrated that in SW Victoria, highest yields come from sowing dates between ANZAC day and mid-May. Bolac, Beaufort and Kiora have optimal sow dates around 25 April - 1 May. Winter wheats such as Revenue, Manning, Scenario and Adagio can be sown much earlier than this, but are unlikely to yield more than if they were sown in late April-early May, in part due to *Septoria tritici* blotch (STB) pressure in the SW Victorian environment. However, there is an advantage in sowing winter wheats early for grazing (as early as November the year before harvest!), and defoliation by grazing has been shown to be an effective means of controlling STB. Forrest has an optimum sowing date of around 15 April which is problematic given the STB pressure that can be encountered planting at this time. Mid-maturing cultivars Derrimut and Trojan have an optimum sow date around 15 May. This may mean that 2 to 3 cultivars will need to be on hand to complete the sowing program, but the benefits at harvest time could well outweigh the logistical hassles!

Growers wishing to sow early in 2015 need to get themselves in a position to take advantage of early sowing opportunities should they arise. Early sown wheat is best sown into the best paddocks. Weeds and disease can be a problem if other conditions allow. Being wetter than we're used to, the summer we've just experienced may allow for better weed control prior to sowing, but a green bridge may favour of disease. Barley yellow dwarf virus (BYDV) can be a threat in all environments, and bearing all these things in mind, appropriate prevention should be put into place at the start of the season.