

## TAKE HOME MESSAGES

1 Forage barley variety Moby has vigorous early growth and matures quickly, and should be grazed sufficiently early to enable recovery for a second grazing.

2 Spring wheat variety Bolac maintained yield when sown early and grazed in 2014.

3 Winter wheat variety Wedgetail can be sown very early (March-early April) in low rainfall areas to utilise early rainfall, and widen both the sowing and flowering window of crops.

# GRAZING CROPS IN PRACTICE

Alison Frischke and Dannielle Ick (BCG)

## BACKGROUND

Greater attention is being paid to using late summer rainfall to increase on farm water use efficiency (WUE). Earlier sowing of a cereal is one way of capitalising on early moisture. Crops emerge quickly and can grow while soils are still warm, giving mixed farmers the opportunity to fill an early winter feed gap for sheep. Cereals provide nutritious feed for all classes of sheep, including high nutrient demand ewes in late pregnancy or lactation and growing lambs.

Previous research undertaken through Northern Victorian Grain & Graze 2 program, together with local experience, has indicated that for low rainfall systems there are three options that will make the most of the grazing crop opportunity: an April sown specific forage type cereal, a mid-late April sown spring cereal, or a March sown winter-type cereal.

Careful crop and animal management is needed to make best use of the different growth types. Growers must respond to each season's conditions in order to provide timely feed for animals, and allow for plants to recover from grazing. Crops may then be used as forage or hay, or be left to mature and fill grain. In 2014, Grain & Graze 3 followed three growers and recorded their experiences.

## AIM

To monitor the feed value and grain production from different types of grazed cereal crops in Northern Victoria.

## METHOD

Paddocks of cereal sown and managed by farmers were grazed and monitored at Patchewollock, Jil Jil and Normanville (Vic) in 2014.

At Patchewollock and Normanville dry matter cuts were taken prior to grazing by sheep to estimate forage value, nutrition and dry matter. Three 2.5 x 2.5m cages were erected across the paddock to exclude sheep and provide ungrazed crop areas.

At Jil Jil, the adjacent fenced paddocks provided the grazed and ungrazed comparisons. At crop maturity, dry matter cuts of crop were taken at all sites to estimate final dry matter production and grain production.



The Jil Jil and Normanville paddocks were harvested using farm machinery. The crop at Patchewollock was not harvested.

## RESULTS AND INTERPRETATION

### *Patchewollock*

Kevin and Tracey Hynam had sown the forage cereal Moby barley (a fast maturing barley bred specifically for dry matter production) for two seasons and had been impressed by the amount of forage it produced for their sheep. In 2014, Moby barley was sown on 10 April into a 10ha paddock at 40kg/ha in 30cm spacings (as well as four other paddocks sown into existing Lucerne stands at a lighter sowing rate of 20-30 kg/ha) after receiving 30 mm early rainfall.

After eight weeks, on 12 June, when plants were 35-40cm high and had 8-10 tillers, 130 ewes with 100 lambs at foot were allowed into the crop. There was about 0.9t/ha of dry matter available at that time (Table 1). The sheep remained grazing the paddock until 10 July. The paddock was then broadcast with 50kg/ha urea the same day the sheep were removed, with the expectation the crop would grow back and provide a second grazing period.

The 2014 growing season experienced above average temperatures. The warm conditions caused Moby to race through its growth stages. This was more apparent where the crop hadn't been grazed; the crop was taller but visually it also turned off faster. Crop that had been grazed stayed greener for longer and a small amount of green remained in the stalk in October. Very little rainfall was received once the sheep were taken out in July. Unfortunately the crop was unable to recover (Table 1) and was not harvested.

**Table 1. Dry matter production of ungrazed and grazed Moby barley, Patchewollock 2014.**

Date Location	12 June	17 July		23 October	
	Pre-grazing DM (t/ha)	Ungrazed DM post grazing (t/ha)	Grazed DM post grazing (t/ha)	Ungrazed final DM/ha (t/ha)	Grazed final DM/ha (t/ha)
Cage 1	1.08	2.53	1.20	2.18	0.89
Cage 2	0.51	2.64	1.47	2.43	1.41
Cage 3	1.02	2.13	1.08	2.11	1.12
<b>Average</b>	<b>0.87</b>	<b>2.43</b>	<b>1.25</b>	<b>2.24</b>	<b>1.14</b>

Feed tests measured 18% crude protein, 9.1 MJ ME/kg and 54% NDF. Usually ME levels in Moby are adequate, but in this case the feed test (possibly due to drier conditions) suggests that a supplement would be of benefit if grazing with pregnant/lactating ewes or fast growing lambs.

One of the Lucerne-Moby paddocks next to the sheep yards on higher, lighter ground recovered much better after being eaten to the ground, and grew back to about 15cm high. It was used as a standing hay crop for joining 70 ewes in November, providing another four weeks of grazing. By then it was grazed out. The other lighter soil Lucerne-Moby paddocks also performed better and were able to sustain two grazing periods during the season.

A paddock of Scope CL barley was also grazed by cattle. The grazing period continued for a little longer than desirable, and cattle grazed the crop down to 5cm. Cattle were taken off at the end of July but, with no further rain, recovery was poor. The grazed Scope CL barley yielded 0.6t/ha, half the yield achieved by ungrazed crops. In past seasons, however, Scope CL has been



grazed successfully without the crop suffering a yield penalty.

The Hynams use Moby and Scope CL according to each paddock rotation. Moby is used only for forage, and often drilled into Lucerne stands. It grows faster earlier and develops a more robust plant that can be grazed two to three times. Scope, on the other hand, is predominantly a grain crop, but offers a useful single grazing opportunity.

All types of stock are grazed on the cereal crops. Kevin Hynam has noticed that cattle will graze a paddock more evenly than sheep, but sometimes will pull plants out. Sheep tend to camp in certain areas more than cattle do.

In 2015 Kevin and Tracey plan to drill Moby back into the Lucerne country at 30kg/ha sowing rate, with 50kg/ha single super. This helps to add bulk to the Lucerne stand while providing some phosphorus. Due to the farm's rotations, there will be less Scope CL barley planted in 2015. The 2014 trial paddock will be sown to Wombat oats which will be harvested and used later for feeding sheep.

### *Jil Jil*

Despite not having had great success with some smaller grazing crop trial areas in the past using early-mid varieties, the McClelland family was keen to try the practice again with some changes to manage grazing risk to grain yield. This time they chose to use a slower maturing variety, aimed for an earlier sowing opportunity, and planned to remove sheep earlier (before GS30).

Bolac wheat had been purchased in 2013 with the intention of early sowing that season, but the opportunity never presented itself. Bolac wheat has a spring habit, is slow maturing (slower than other varieties used on the farm) and has a good disease profile.

The 2014 season began with the required opening rain and the chance to sow was seized upon. Two adjacent paddocks (40ha and 90ha) were sown with the Bolac wheat (AH in Victoria) on 17 April after receiving 46mm of rainfall between 8-10 April. The crop was sown at 50kg/ha with 50kg/ha of fertiliser (27:12).

The 90ha paddock was left ungrazed, while the 40ha paddock was grazed by approximately 400 ewes for three weeks from 9 June to 30 June, at which time the crop was approaching GS30. Sheep were then removed, the paddock top-dressed with 75kg/ha of urea then left to mature. Crops were harvested on 7 November. The crop recovered well, as moisture was still present at the time. The lower biomass levels were probably advantageous in the long run when an exceptionally dry spring eventuated.

Final dry matter production of the mature crops was lower for the grazed, compared with ungrazed, crop (Table 2). This didn't translate into yield differences with crops averaging 0.88t/ha for both paddocks. Grain quality of Bolac met APW specifications for protein, but both grazed and ungrazed crops had high screenings (6-7%).



**Table 2. Final dry matter production of ungrazed and grazed Bolac wheat, Jil Jil 2014.**

Paddock location	Ungrazed final DM/ha (t/ha)	Grazed final DM/ha (t/ha)
Western end	1825	1076
Eastern end	994	925
Average	1.41	1.00

The early sown slow maturing wheat worked well for McClellands in 2014. These crops yielded 20 per cent better than spring wheats sown in adjoining paddocks. The sheep were able to graze on the crop, letting other pasture areas bulk up, and crop yields were unaffected.

The McClellands will continue to use long season wheats in their sowing variety mix. As well as crops being valuable fodder for the sheep, the practice appeals because they are keen to capitalise on earlier rainfall events with extra varieties to extend their sowing period. A further advantage is that there will be two fewer paddocks to be sown later. In addition, by switching varieties during sowing, they can spread out flowering windows to help to manage the risk posed to crops by frosts.

In 2015, having the seed on hand they will use the spring-type Bolac again, but would consider a winter wheat if a variety with a good disease profile were made available. Grazing will be dependent on the season. They intend to take advantage of the feed potential in situations in which the crop is healthy. Sheep are highly valued as contributing positively to their farm business, providing useful cash flow when cropping seasons are poorer. They are also used to manage stubbles.

### *Normanville*

Geoff and Bronwyn Hunt sowed Wedgetail wheat (APW in Victoria) on 9 March for the first time on their property. Wedgetail has a winter habit and is a slow maturing variety. It was sown into a 10.5ha paddock following 45mm on 4 March. Another 9mm fell on 15 March to help establishment along. The crop was sown with 20cm row spacings at 28kg/ha with 30kg/ha MAP.

When the crop was eight weeks old on 8 May, it was standing 40cm high and had up to 20 tillers per plant. 154 agisted pregnant and lambing ewes were put into the crop and remained there until 12 June. About 1.5t/ha of dry feed was available (Table 3), and feed tests measured adequate nutrients for the sheep with 17.5% crude protein, 11.9 MJ ME/kg and 40.4% NDF.

While on the crop, several ewes had lambs. On the same day that the sheep were removed, 40kg N was applied as UAN, and the paddock was locked up and left to mature.

When sheep were removed from the Wedgetail crop on 12 June, there was still plenty of feed available (8-10cm high, with 1-2 weeks of grazing potential remaining), but plants were reaching GS31 and the Hunts didn't want to compromise grain yield.

Bronwyn was impressed by the way the crop recovered, which is reflected in the final cut measures for dry matter (Table 3). Grain yield was reduced across the paddock by grazing, the quadrat cuts indicate from 1.23 to 0.94t/ha. However, actual grazed paddock yields were higher at 1.74t/ha on average. The crop had some issues with establishment (thought to be residual herbicide following chickpeas), suffered from crown rot (about 10-20% of the paddock) and some frost damage, but in well-established areas it yielded about 2.2t/ha. The crop was also short of nitrogen leading up to GS30, but this could not be addressed until the sheep were removed.



**Table 3. Dry matter production of ungrazed and grazed Wedgetail wheat, Normanville 2014.**

Date	19 November				
	8 May	19 November		19 November	
Location	Pregrazing DM (kg/ha)	Ungrazed final DM/ha (t/ha)	Grazed final DM/ha (t/ha)	Ungrazed grain yield (t/ha)	Grazed grain yield (t/ha)
Cage 1	1.38	6.60	7.15	0.91	0.90
Cage 2	1.50	6.34	6.54	1.39	0.90
Cage 3	1.82	7.57	6.10	1.39	1.03
<b>Average</b>	<b>1.57</b>	<b>6.83</b>	<b>6.60</b>	<b>1.23</b>	<b>0.94</b>

A nearby paddock of Grenade sown on 25 April yielded 2.72t/ha.

The Hunts found the whole grazing crop experience interesting and feel it has potential in their farming system. While they don't own their own sheep, they regularly agist some neighbours' sheep to graze stubbles. They weren't concerned about putting sheep onto their growing crop as they were aware of the theory behind the practice and knew Wedgetail was very capable of recovering biomass. Nevertheless, they were glad to see that reality endorsed theory.

In 2015 the Hunts plan to sow Wedgetail in March again if it rains as it did in early 2014. They feel that if the next sowing rain in 2014 had been in July, the yield of conventional crops would have looked quite different. As it was, they had a perfect start to the conventional year. They will use Wedgetail again as they have the seed on hand already.

Looking to the future, the Hunts would like to see a better adapted winter wheat variety available for their area. They plan to store seed wheat with a winter habit so that if the sowing rules are met early in the year, they will sow one paddock at low rates (due to high tillering potential) to spread risk. However, they are not sure whether they will always graze it; they will make that decision on a year-to-year basis. Though they do not own sheep themselves, this strategy would always be considered as an opportunistic management decision.

## COMMERCIAL PRACTICE

An early sown cereal crop can provide valuable feed for livestock before legume pastures are ready to be grazed. To get the best value from the cereal crop, sow early to take advantage of early moisture and produce feed sooner. Sow a forage cereal purposely bred for grazing value or a longer season oats or barley in April. Alternatively, sow dual-purpose winter wheat in March/early April or a longer-season spring wheat in April.

Spreading the window of sowing to include earlier weeks during March or April, using slower maturing varieties makes better use of early moisture, reduces pressure at sowing time and helps to spread the flowering period of crops later in the year. These strategies assist growers to manage the use of rainfall across the season and minimise the risk of frost damage during flowering.



## ON-FARM PROFITABILITY

Improving production by increasing the survival rate of ewes and young lambs, and achieving better growth rates in lambs can be achieved by using a cereal crop to produce fast establishing feed early in the year. The cereal can be sown into existing pasture stands or as a crop that can be later harvested for grain.

Sowing slower maturing varieties early in the season can capitalise on early rainfall and help expand flowering windows, reducing the risk of frost damage.

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## KEY WORDS

grazing, cereals, low rainfall, Grain & Graze 3