8.12 Farmer Experiences With Introducing Cereals Into Established Lucerne To Boost Winter Growth - Vic

Locations:
A number of locations were selected to demonstrate and assess the value of sowing into cereals

"Geraldene", Inverleigh
"Wurrook South", Rokewood
"North Skene", Strathkellar
"Bolac Plains", Woorndoo

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Summary of Findings:
The four farmer demonstrations showed

- By sowing a cereal into established lucerne, total winter production can be increased although lucerne production will be decreased.
- Variety and cultivar selection is important to match growth to animal demand.
  - Spring wheat, oats or barley suit early production.
  - Winter wheat suits extended production.
  - Barley can be used for grain production.
- Different types of sowing machinery can be used successfully.
- Live weight gains in excess of 200grms/day/hd can be achieved at a period when pasture is usually in short supply
- A viable grain yield can be achieved under good seasonal conditions by using barley.

Background:
Lucerne has potential to become an important break crop in the cereal-canola rotation. It provides a high quality stock feed and an opportunity to address difficult to control weeds such as annual ryegrass whilst also acting as a disease break.

The Grain and Graze program has been actively researching the two major limitation identified by farmers that prevent them using lucerne more extensively. These are the poor growth of lucerne over winter and the less than optimum liveweight gain of stock grazing lush lucerne.

The poor winter growth aspect has been addressed by sowing a cereal into an existing lucerne stand.

Results from two years of trialing indicate significant extra drymatter production and weight gain can be achieved by introducing a cereal into the lucerne (SFS results book 2005, 2006). However, researchers were keen to see if the benefits measured under experimental conditions were realised in commercial farming operations.

Four farmers from different locations in South West Victoria agreed to trial the sowing of cereals into existing lucerne stands. The Grain and Graze program provided technical advice and conducted routine monitoring to quantify the impacts.

Demonstration design:
Four farmers sowed a cereal into their established lucerne paddocks. Their reasons for trialing cereals were:

- **David Robertson, *Mt Skene,*** finishes a large number of lambs during late autumn /early winter. He is frustrated by lower than anticipated lamb growth rates and a lack of drymatter production from his lucerne during the critical winter period.

- **Peter Fitzgerald, *Geraldine,*** is relatively new to growing lucerne and was keen to maximize year round production. To compare production a paired paddock was set up, with one part of the paddock broadcast, one part direct drilled both to *Yerong* barley and another paddock retained as a pure lucerne stand. Broadcast sowing and rolling was used because of Peter's concern about damaging the lucerne if using direct drilling.

- **Tom Blackford, *Wurrook South,*** was looking to create an alternative feed source so he could rest his perennial pastures. This would enable the pasture to gain more leaf area, setting them up for increased production when day length started to increase.

- **David Jamieson, *Bolac Plains,*** wanted to double crop his paddocks, increasing income but also to use the remaining cereal straw as a standing fibre source during summer to combat dietary imbalances from the lucerne.

Demonstration Inputs:
Crop type, seeding rates, sowing date, fertiliser and machinery used is listed (Table 8.43).

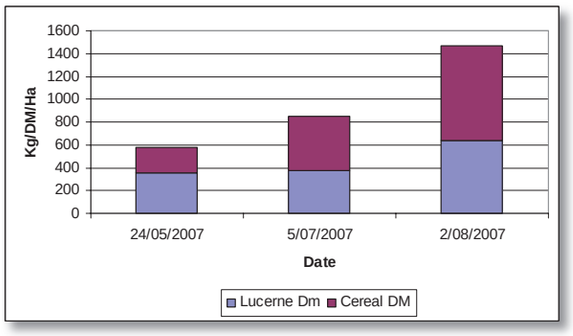
▼ Table 8.43: Crop inputs used in lucerne demonstration

Property	Crop type	Sowing rate (kg/ha)	Lucerne	Sowing date	Sowing machinery
Mt Skene	*Echidna* oats	100	Kaituna (WA 5)	14/3/2007	Twin disc seeder
Geraldene	*Yerong* barley	100	Kaituna (WA 5)	1/6/07	Part broadcast and rolled with a ribbed roller Part direct drilled
Wurrook South	*MacKellar* wheat *Kellalac* wheat	100 100	Kaituna (WA 5)	27/3/2007	Tyned airseeder
Bolac Plains	*Gairdner* barley	80	Kaituna (WA 5)	Late August	Direct drilled with a tyned seeder

Observations :
Three of the four demonstration sites experienced good conditions for establishment and winter growth. The following observations were made at each site.

Mt Skene

The oats established well and contributed more than half of the total amount of drymatter on offer to the lamb finishing operation. This increased feed on offer occurred at a time when the drymatter from the lucerne remained at between 400 kg/ha and 600 kg/ha. While no measurements were made, observations would suggest the low contribution from the lucerne resulted from a combination of competition and the dormancy effect, rather than preferential grazing by the livestock (Figure 8.25).



▲ **Figure 8.25: Early season feed on offer of lucerne and oats, *Mt Skene*.**

Dorset cross lambs grazing the oat and lucerne crop (supplemented with barley through lick feeders) gained 250 gm/hd/day. Lambs were stocked at 20/ha. Given the stocking rate and increasing food on offer, it is estimated the cereal and lucerne was growing at 35 kg/ha/day through mid winter.

Geraldine

At Geraldine a period of moisture stress was experienced during winter and early spring which effected drymatter production. The late sowing (early June) and slower establishment of the broadcast seed limited the ability of the barley to contribute to production. A section of the paddock that was direct drilled showed much better establishment and early drymatter production, but by August 21 the drymatter production from both the broadcast and direct drilled barley was the same (Table 8.44).

▼ **Table 8.44: Drymatter production from cereal and lucerne on 21 August from different establishment methods**

Treatment	Lucerne (kg/ha)	Barley (kg/ha)	Total (kg/ha)
Direct drilled	850	750	1600
Broadcast	1200	400	1600
Lucerne only	1400	0	1400

The cereal / lucerne paddock was grazed for five days at the end of August to less than 300 kg/ha, then locked up and cut for hay. The combined production from grazing and the hay was 2500 kg/ha. In contrast the lucerne without cereal was not grazed but cut twice for hay. It produced 1785 kg/ha.

The inclusion of the barley into the lucerne increased total production by 40 %, with a proportion of this extra production in late winter. The broadcasting of the cereal did not lead to a substantial increase in drymatter and in hindsight direct drilling would have provided more feed during winter. The potential downside is the loss of lucerne plants due to the sowing method. While no direct measurements were done, observations from another site would suggest losses up to 10% of lucerne plants is possible (David Watson, pers comm.).

Bolac Plains

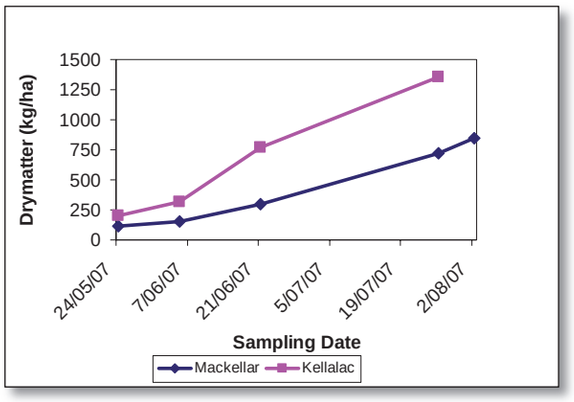
Bolac Plains received ideal conditions for the management plan adopted. A dry August put the established lucerne under stress which allowed the direct drilled *Gairdner* barley to become well established. Unseasonal late spring rains enabled the barley to out compete the lucerne, ensuring complete canopy closure. It is thought this would have reduced the competitive effects of the lucerne, enabling a substantial grain yield.

An application of Powermax herbicide (750 ml/ha) was used to desiccate the crop. This enabled harvest to proceed earlier but may also have worked as a spray topping tool to help control annual ryegrass. The barley yielded 3.5t/ha (malting grade), with some stubble left in the lucerne. In post harvest grazing, it is thought the fibre from the residual stubble will help combat the nutritional challenges faced by grazing lambs.

Wurrook South

The *Wurrook South* demonstration clearly showed the production differences of the two wheat varieties, *Kellalac*, a short season spring wheat and *Mackellar*, a long season winter wheat. The variety *Kellalac* produced more drymatter early compared with *Mackellar* (Figure 8.26). This created an extended grazing period, as the *Kellalac* was grazed before the *Mackellar*.

The hoggets grazed on the cereal / lucerne paddocks gained 214 grams/day during a 35 day period (May 24 to August 7). This weight gain is in contrast to most winters where weight loss is a common occurrence.



▲ **Figure 8.26: Comparison of early season drymatter production of Kellalac wheat compared to Mackellar at Wurrook South, 2007**