

# The benefits of grazing standing crops

By Claire Dennerley (PIRSA) for MacKillop Farm Management Group

## At a glance...

- Standing crops offer a protective alternative feed base option during times of high grass seed burden for lambs in our region.
- It is important to evaluate your feedbase and understand when to make decisions and take actions that optimise the growth rate of lambs.
- Grazing standing crops allows for flexibility in management of a mixed enterprise farm and offers a reduced labour cost option when growing lambs.
- Standing crops provide groundcover over summer, preventing erosion and are of general benefit to soil health.

Integration of cropping and grazing operations provides flexibility for farm businesses to manage seasonal and market variation, reduce business risk and improve profitability, while enhancing land condition. Managing the feed-base in a mixed enterprise can be problematic or complementary because both enterprises use the same land, and timing of operations can sometimes conflict

In the Upper South East region of South Australia, the winter-dominant rainfall dictates the management of breeding and finishing systems around the growing season months (April through to October). When grain harvest begins in late spring, grass seeds can become a significant burden for lambs grazing in pasture paddocks, so having a seed-free paddock to graze lambs on for the duration of harvest is advantageous.

To this end, MacKillop Farm Management Group (MFMG) has worked on demonstrating the role of standing crops in our local environment.

A standing crop is a cereal crop sown and taken through to flowering or grain fill, and managed as a crop would be for harvest. This means that varieties are chosen to suit the location, and are sown on time with adequate fertiliser and weed management to maximise dry matter production. The crop is then evaluated in spring to determine its most beneficial end-use, whether that be grazing, cutting for hay, or harvesting.

## The benefits of standing crops

- Allow for flexibility in management (for example a *Grain & Graze* opportunity in early winter and for finishing lambs then carry through to grain harvest);



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- Can be used as a fodder bank to finish lambs on;
- Offer a reduced labour cost option for growing lambs to achieve their target sale weights for marketing;
- Can meet the higher nutritional demands needed to turn lambs off earlier;
- Promote better soil erosion protection and subsequently facilitate maintenance of groundcover outside of the growing season, by turning lambs off earlier; and,
- Are grown on winter rainfall, therefore reducing the risk of summer cropping options that are dependent on opportunistic summer rainfall events.

## How the demonstration was done

This single-season demonstration project aimed to highlight a fodder option that will turn lambs off faster in summer while providing more soil protection outside of the growing season.

We wanted to demonstrate the role standing crops have in the local environment and to have a better understanding of the costs and benefits.

MFMG hosted an initial *Grazing Standing Crops Forum* in Keith in March 2019. San Jolly, a livestock consultant with Productive Nutrition, was invited to introduce the practice to the farmers and advisors in attendance.

Varieties were selected by growers at the forum for the purpose of assessing how they grow in the local environment as a standing crop fodder option.

MFMG collaborated with Birchip Cropping Group to deliver this project through funding from the Australian Government's National Landcare Program.

MFMG managed two demonstration sites in the Upper South East of SA while two sites in the Victorian Mallee were managed by BCG.

The project ran over one season, finishing in March 2020.

There were two parts to the demonstration:

- **Small plot demonstration strips**  
Ten varieties were sown at Keith, and 11 varieties were sown at the Sherwood site.
- **Paddock-scale demonstration sites**  
The Upper South East locations – 'Tolcairn' at Sherwood and 'Tallawong' at Willalooka – were



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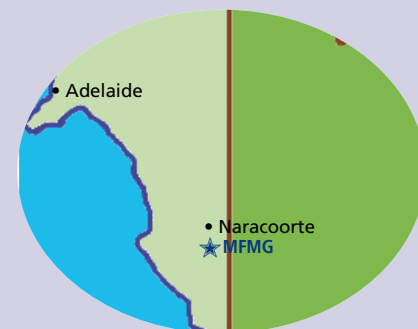
**Overview:** MacKillop Farm Management Group was formed in 1998 following a bus trip to Geelong to view raised bed cropping systems. In conjunction with a number of farmer groups, MFMG initiated a research and extension program for high rainfall cropping in the South East of South Australia. It was proposed that the cropping area in the South East could be lifted to 50,000 hectares by 2004, with yields being increased by 25 per cent.

In 1999, MFMG applied to Southern Farming Systems for association as a South Australian Branch, with a total of 15 members.

By 2006 the MacKillop Group had become a separate identity and was known as a farming systems group in its own right. By 2014 the membership base had increased to over 250 growers throughout the South East. In 2018 MFMG celebrated its 20th year and by then included members in the Upper South East – or the medium rainfall zone (MRZ) region.

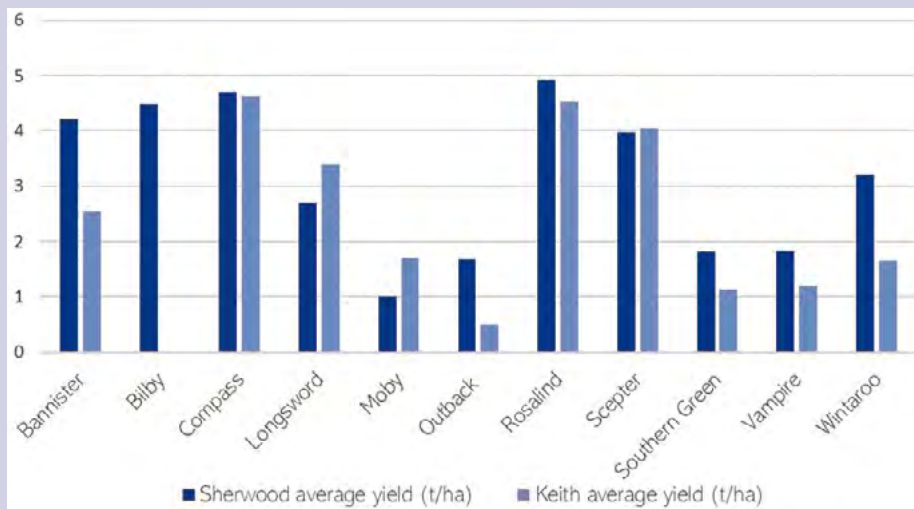
MFMG currently has around 370 members, 30 sponsors and has trial sites spread throughout the South East of SA and into Western Victoria.

MFMG develops and delivers innovative and sustainable farming practices through collaborative research, communication and extension for the benefit of members and the agricultural industry across the South East of South Australia, Western Victoria and beyond.



MFMG is proud to have more than 30 commercial sponsors. See [www.mackillopgroup.com.au](http://www.mackillopgroup.com.au) for more details.

**Figure 1: Average grain yield (t/ha) for all varieties at Keith and Sherwood**



into the standing crop were weighed and condition scored into the paddock on November 4, 2019. An additional sample (11 per cent) of 500 Wiltipoll x Aussie White cross ewe lambs were weighed and condition scored as a parallel mob, to graze for the same period on pasture.

The same samples (15 per cent, 10 per cent) of wether lambs and ewe lambs were weighed and condition scored out of their respective paddocks on January 6, 2020 – a total of 63 days grazing.

The paddock assessment captured information about groundcover, bio-mass, composition and feed quality (via feed tests), every two weeks throughout the project monitoring phase (starting October 21, 2019, concluding January 6, 2020). This was to help understand the nutritional value of the crop, as well as the groundcover and soil protection aspects.

## What we found

### Small plot demonstration strips

The highest yielding varieties at both sites were Rosalind and Compass barley, yielding 4.93 tonnes per hectare and 4.69 tonnes respectively at Sherwood. At Keith, 4.53 tonnes per hectare and 4.62 tonnes respectively were recorded (Figure 1).

Rosalind produced the highest dry matter of the varieties that were sampled at Sherwood (16.40 tonnes per hectare), while Compass produced the highest dry matter at Keith (14.00 tonnes) (Figure 2).

### Paddock-scale demonstration sites

At Sherwood (Table 1), the merino wether lambs improved in condition score by 0.01 on average over 58 grazing days, corresponding with an average total weight gain of 3.5 kg. The average difference between the minimum condition score at entry and exit was -0.25 (the lambs lost 0.25 of a condition score) and the average difference between the maximum condition score at entry and exit was 0.25 (the lambs gained 0.25 of a condition score).

The minimum weight at entry into the standing crop was 22.5 kg and upon exit was 24 kg – an average gain of 1.5 kg over the 58 days.

selected to host a large-scale demonstration of the practice. An economic analysis of the practice was carried out and presented in March 2020.

### The small plots in SA

These were located on two Upper South East family farms.

The Makin family are at Keith. Their sheep and cropping farm is predominately a clay loam soil. Sowing date of the small plots was May 23, 2019.

Fertiliser strategy was 140 kg per hectare 18:13:0:10 1 per cent Zn + 400 mL Flutriafol.

The Menz family are at Sherwood and also have a mostly sandy loam soil on their sheep and cropping operation.

Sowing date of the small plots was May 24, 2019 and the fertiliser strategy was 115 kg per hectare 18:13:0:10 1 per cent Zn + 400 mL Flutriafol.

Varieties sown at both sites were:

- Vampire and Southern Green rye corn;
- Outback, Wintaroo and Bannister oats;
- Moby, Compass and Rosalind barley; and,
- Scepter and Longsword wheat.

The Sherwood site had an additional oat variety sown – Bilby.

The sowing rates were as per the variety recommendations. These demonstration strips were exhibited at the MFMG Sherwood and Keith Crop Walks on November 1, 2019.

### The paddock demonstrations, SA

The Bartlett and Jackson families provided the demonstration paddocks.

Paul and Rodney Bartlett are at Sherwood and operate a mixed enterprise of annual cropping, lamb finishing and wool. The soil is a sand over clay (delved).

Jamie and Josie Jackson are at Willalooka and run a lamb finishing enterprise. The soil is also predominantly a sand over clay (delved)

Commercial farmer practice was used to at

both sites in preparing, sowing and managing the standing crop to fit with their system. At both sites, Scope barley was sown.

At Sherwood on May 11, 2019 Scope was oversown on an 8-year old lucerne stand at a rate of 60 kg per hectare across 40 hectares.

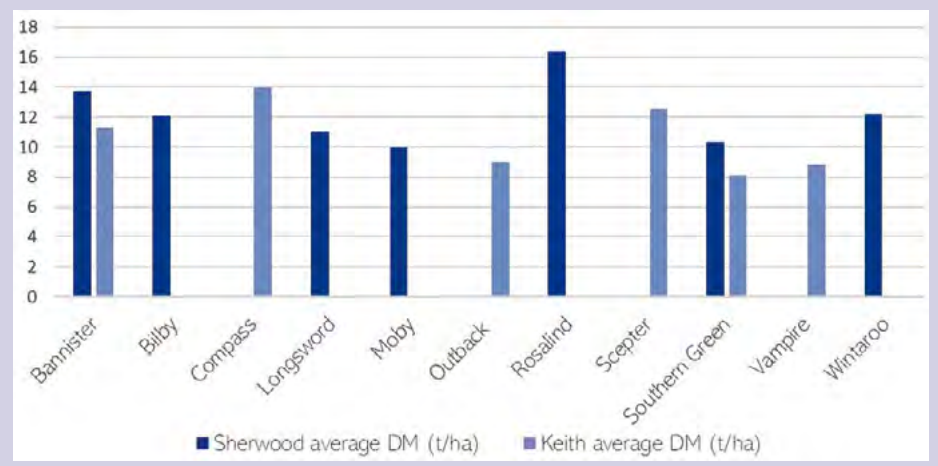
At Willalooka on June 15, 2019 Scope was sown as a pure sward at a rate of 60 kg per hectare across 16 hectares.

Both animal condition and paddock condition were assessed in this project. Animal condition was assessed by collecting empty liveweights and condition scores, as an indicator of animal wellbeing, upon entry to and exit from the standing crop paddock.

At Sherwood, a sample (15 per cent) of the 1000 merino wether lambs were weighed and condition scored (using the Lifetime Ewe Management app) into the paddock on October 21, 2019. A sample (13 per cent) was weighed and condition scored out of the paddock on December 18, 2019 – a total of 58 days grazing.

At Willalooka, a sample (17 per cent) of the 860 Wiltipoll x Aussie White cross wether lambs to go

**Figure 2: Average dry matter (t/ha) for all varieties at Keith and Sherwood**







**Grazing standing crops allows more flexible mixed farming management while reducing soil erosion.**

The maximum weight at entry to the standing crop was 44 kg and upon exit was 53 kg – an average of 9 kg over 5.8 days.

At Willalooka (Table 2), the condition score of the Wiltipoll x Aussie White cross wether lambs remained stable at 3.77 on average over 63 grazing days. Their average total weight improved by 5 kg over this period.

The average difference between the minimum condition score at entry and exit was -0.25 (the lambs lost 0.25 of a condition score) and the maximum was stable at 4.5 (the lambs maintained condition).

The average difference between the minimum weight at entry and exit was 1.5 kg over the 63 grazing days with a maximum gain of 12 kg.

At Willalooka, a parallel mob of ewe lambs were monitored. They were grazing pasture for the same 63 days as the wether lambs grazed the standing crop. This project acknowledges that numerous

previous studies show ram lambs grow faster than wethers, which in turn grow faster than ewe lambs on grass-based swards.

This demonstration project focussed on the feedbase as the main variable, and the class of stock was secondary to the priorities and convenience of the producers.

On average, the Wiltipoll x Aussie White cross ewe lambs in this parallel mob improved in condition score by 0.25, corresponding with an average total weight gain of 11.0 kg. The average difference between the minimum condition score at entry and exit was -0.25 (the lambs lost 0.25 of a condition score) and the average difference between the maximum condition score at entry and exit was 0.25 (the lambs gained 0.25 of a condition score).

The average difference between the minimum weight at entry and exit in the project was 10.5 kg with an average of 24.5 kg upon entry and 35 kg upon exit. The maximum weight among the ewe

lambs at entry was 46 kg and at exit was 56 kg – an average weight gain of 10 kg.

The feed quality at both sites declined after four weeks of grazing as measured in feed tests collected on November 19, 2019 at Sherwood and December 3 at Willalooka. It is important to note that at Sherwood the paddock was sampled in a 'north' section and 'south' section, predominantly reflective of the staggered maturity of the crop at the time the lambs were due to enter the paddock, likely due to the soil type variability and landscape.

Grazing behaviour of the lambs influenced the feed on offer. The lambs grazed out the lucerne plants first, which were more abundant in the north. They grazed the north part of the paddock more heavily at first, particularly closer to the water point (located in the northeast corner of the paddock).

After four weeks, feed testing indicated that the maturity of the crop had evened out and the feed quality was more uniform, so the 'north' and 'south' samples were bulked and the lambs grazed across the paddock on the feed that was left on offer.

An additional sample of hay from Willalooka was feed tested, representative of an alternative feed source. The quality of the hay was slightly better than the standing crop, based on energy, protein and NDF, though poorer quality compared with the pasture.

This feed quality is important to inform management decisions.

Based on rations developed for Sherwood (merino wether lambs, targeting 40 kg liveweight) the energy requirement was 15.0 total megajoules (MJ) per day and total protein requirement was 180 g per day.

The maximum energy the crop could provide without protein supplementation was 13.5 MJ per day and 117 g per day of protein.

In a second scenario where beans were added into the ration, the energy increased to 19.0 MJ per day and 203 g per day of protein, exceeding the requirement for growing lambs.

This highlights the importance of providing appropriate supplementation and managing introduction of that feed effectively to ensure the lambs consume enough feed to achieve their growing potential. Without a protein supplement,

**Table 1: Animal condition data for the Sherwood site**

Wether lambs									
Date In/Out	No. of Animals	Condition score			Weight (kg)				
		Min.	Max.	Average	Min.	Max.	Average	Total	
21/10/2019	150	2.5	3.25	2.82	22.5	44.0	33.5	5045	
18/12/2019	130	2.25	3.5	2.83	24.0	53.0	37.0	4984	
Change	58 days	-20	-0.25	0.25	0.01	1.5	9.0	3.5	-61
Average daily weight gain							60.34 g		

**Table 2: Animal condition data for the Willalooka site**

Wether lambs									
Date in/out	No. of animals	Condition Score			Weight (kg)				
		Min.	Max.	Average	Min.	Max.	Average	Total	
4/11/2019	150	2.5	4.5	3.77	20.5	46.5	36.0	5504	
6/01/2020	132	2.25	4.5	3.77	22.0	58.5	41.0	—	
Change	63 days	-18	-0.25	0	0	1.5	12	5.0	
Average daily weight gain							79.37g		
Ewe lambs									
Date in/out	No. of animals	Condition score			Weight (kg)				
		Min.	Max.	Average	Min.	Max.	Average	Total	
4/11/2019	57	3.0	4.25	3.86	24.5	46.0	33.0	1841	
6/01/2020	52	2.75	4.5	3.75	35.0	56.0	44.0	—	
Change	63 days	-5	-0.25	0.25	-0.11	10.5	10.0	11.0	
Average daily weight gain							174.6g		

the lambs did not grow as fast as they would have with the supplement.

Based on rations developed for Willalooka (Wiltipoll x Aussie White cross wether lambs, targeting 40 kg) the energy requirement was 15.0 MJ per day and protein was 180 g per day. Lentils were supplementarily fed as a protein source, comprising 19.5 per cent of the diet in this scenario. The ration provided approximately 15.9 MJ per day of energy and 183 g per day of protein, which was adequate to meet the target liveweight gain.

## Gross margin analysis

The summarised gross margins for grain production for harvest and for grazing the standing crop at each site are presented in Table 3.

Harvesting grain at Sherwood returns a gross margin of \$288.53 per hectare while grazing the standing crop returns a gross margin of \$305.36.

At Willalooka, harvesting returned a gross margin of \$680.94 per hectare and grazing the standing crop returned \$820.70 per hectare.

In both demonstrations, the gross margins for grazing the standing crop were higher than harvesting the crop.

The producers have acknowledged that the grazing standing crop gross margins can be improved in future years with further understanding and refinement of the practice on their own farms, including protein supplementation and crop treatment and preparation.

Host producers noted that in the future, they would draft off the smaller lambs and only place lambs greater than 30 kg in a standing crop to graze. The smaller lambs tended to grow more slowly on the standing crop compared with the larger lambs.

At Sherwood, the hosts producers' future intentions are to introduce lambs to lupins for four or five days prior to weaning, to enhance the success of the practice when supplementing the lambs' diet while grazing the standing crop.

Host producers also recognised the value of the standing crop in reducing grass seed burden in their lambs.

## To sum up

The major benefit as communicated by both site hosts of the grazing standing crops practice is that it offers a protective alternative feed base option during times of high grass seed burden for lambs in the Upper South East.

The data collected in this demonstration shows that it is important to evaluate your feedbase and understand when to make decisions and take actions that optimise the growth rate of lambs, namely when to remove them from the standing crop, supplement their diet or otherwise manage them.

The practice has added versatility to mixed farms, by keeping options open at the end of the season. The standing crops have provided good groundcover and subsequently greater soil erosion protection, benefitting soil health at both sites.

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**Table 3: Summarised gross margins for harvesting and grazing the crop at each demonstration site**

Gross margin	Sherwood (40 ha)	Willalooka (16.5 ha)
Grain production – harvest	\$288.53/ha	\$680.94/ha
Grazing standing crop	\$305.36/ha	\$820.70/ha



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