

Building Farmer & Advisor Knowledge in Carbon Farming



The Carbon Farming Knowledge Project involves a series of workshops to increase the understanding of 30 independent agricultural advisers in south-east Australia on reducing greenhouse gas emissions, carbon in farming systems and the Emissions Reduction Fund – where farmers can earn credits for storing carbon or reducing greenhouse gas emissions on their properties. The project helps advisers prepare their clients for potential environmental, economic and social benefits of future carbon management policy.

Session 2: Emissions reduction in livestock enterprises

Summary of March 2016 advisers workshop presentation by Leanne Sheriff, Macquarie Franklin (Farm 300), Anne Jackman, CropFacts (BCG trial) and John Ferrier, Wirrabilla

Farm 300

A Meat and Livestock Australia (MLA) program funded by the Australian Government, Farm 300 involved training advisors to coach 300 producers to reduce greenhouse gas emissions while increasing profit on-farm.

At the time of the project there were no relevant Emissions Reduction Fund (ERF) methods for southern livestock producers, so the coaching concentrated on lifting efficiency of livestock production systems with the aim of reducing greenhouse gas emissions intensity and increasing profit.

The program involved 16 short term projects around Australia as shown in Figure 1. All except one project reduced emissions intensity, with an average of 19 per cent. Although some projects increased net emissions, they were combined with an increase in productivity, thus a decrease in emissions intensity. The journeys of some of the Farm 300 participants can be found online (see Useful Resources).

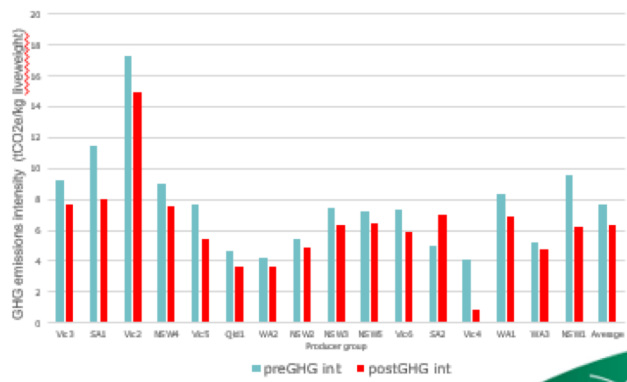


Figure 1: Farm 300 projects before (blue) and after (red) emissions intensity

Reducing methane emissions by early finishing lambs

Birchip Cropping Group with CSIRO, Department of Agriculture and Water Resources and GRDC support, investigated on-farm practices to reduce lamb finishing times and reduce whole-of-life methane emissions.

On four farms, the trials compared the current practice to two alternatives over 2013 and 2014. The trials faced challenges, including a period in January 2014 of eight days in a row of heat stress conditions.

Farm 1: Farmer practice (trail feed) vs self-feeder and feedlot

- Trail-fed reached the target weight 29 days later than self-feeder
- Self-feeder gave the highest weight gain at a lower cost than the feedlot
- The trail fed group cost \$4/head less to feed, however the additional days mean if labour was included, the self-feeder group would be the most cost effective

Farm 2: Farmer practice (stubble) vs grain mix and pellets

- Stubble weight gain was half that of the pellets and took 8-36 extra days to reach 50kg
- The low cost of feeding the stubble group meant this was still the most cost effective

Farm 3: Farmer practice (cereal stubble) vs pulse stubble

Building Farmer & Advisor Knowledge in Carbon Farming



- Both mobs lost weight during the heat stress period
- Pulse paddocks performed better with cereal paddocks 13-38 days behind

Farm 4: Paddock with vetch hay, vs feedlot (grain mix) and feedlot (pellets)


- All performed similarly until April when the paddock sheep stopped gaining weight
- Paddock took 26 additional days compared to the pellet group and 10 days longer than grain mix
- Pellets were considered the most cost effective practice to reach 50kg live weight

The number of days between fastest and slowest to reach 50kg ranged from eight to 29, representing additional CH₄ emissions of 240 to 870 g/hd from the slowest animals.

Wirrabilla Experience

John Ferrier's farm, Wirrabilla, was Farm 3 in the BCG trial, comparing a cereal stubble to pulse stubble on his 5,300 ha farm at Birchip. As shown in Figure 2, the key benefit from a pea stubble is in the much higher protein content of the straw and grain.

Nutritional requirements of sheep and value of sampled crop stubbles, Birchip 2015-2016



Feed Component	Sheep requirements		Wheat		Barley		Peas	
	Lactating Ewe and Lamb	Maintenance of Dry Ewe	Straw and trash	Grain*	Straw and trash	Grain	Straw and trash	Grain
Crude Protein (%)	16	8	2.2	12	1.2	9.6	8.5	28.6
Metabolisable Energy (MJ/kg of DM)	11	8	5.3	13.5	5.2	13.2	6.2	13.2
Nutrient Detergent Fibre (%)	>30	> 30, up to 50	75	12	75	23	59	15

(Straw and trash samples used from feed tests taken between 0-15 grazing days for cereal, and 0 days for peas. Barley and pea grain were from paddock samples. *Wheat grain is an average from Feedtest database.)




Figure 2: Nutritional value of cereal vs pea stubble

John learnt the importance of regular monitoring of sheep after both mobs lost weight while he was on holidays during the eight-day heatwave in January.

While the sheep gained more weight on the pea stubble, John had to monitor them carefully. By the time he took the sheep out, groundcover was 27 per cent and any further grazing would have resulted in an erosion risk.

John believes it is important to regularly weigh lambs and segregate to weight grades. This conserves feed reserves for the lambs that need it to reach their weight specification. He says success in finishing lambs early on stubble requires an understanding of stubble quality and willingness to supplement feed when necessary.

Useful resources

- Farm 300: <http://www.mla.com.au/Extension-training-and-tools/Farm300>
- BCG: <http://www.bcg.org.au/>

More information: Leanne Sherriff, 0429 329 349, lsherriff@macfrank.com.au, Anne Jackman, anne@cropfacts.com.au, John Ferrier, jferrier@bigpond.com.