

Supplementary feeding of sheep in southern NSW

Phil Graham

Livestock Officer, Extensive Industries Development, Yass

Introduction

'Supplementary feeding' is the addition of feed to pasture to improve animal performance.

When supplements are fed to stock there are three possible outcomes, depending on whether energy or protein supplements are used and on how the pasture and supplement interact during digestion.

- **Supplementation** – the supplement is eaten and pasture intake is not reduced. This is rarely achieved.
- **Substitution** – the supplement reduces pasture intake. This usually occurs when supplementing green pasture and the supplement is more digestible than the pasture. However, it may have the advantage of making the green feed last longer.
- **Complementation** – the supplement increases pasture consumption. This can occur with low quality pasture or crop residues.

When is feeding likely to pay?

The most likely cases in which supplementation will be profitable are:

- ensuring the survival of weaners in summer and early autumn on dry feed;
- maintaining ewes in a satisfactory condition during late pregnancy and lactation to avoid excessive lamb losses;
- increasing the fertility of ewes by increasing fat score prior to joining in years when the ewe's fat score is below 2.5 (see Primefact 309 *How responsive is the conception rate of your Merino ewes*);

- finishing weaner/hoggets to market specifications. The number of kilograms required to reach market specification is critical. The smaller the number the greater the chance of profits.

The question of feeding for increased wool production is unclear. Work by Coombe in 1987 indicated that the effects of supplementation had a carryover in increased wool production for 11–14 weeks after the supplements were stopped.

There is little effect on fibre diameter by supplementing on dry feed over summer/autumn but major improvements in length and strength can occur.

Supplementing weaners on dry pastures

The limiting factor for weaners on dry summer pasture is the pasture's low protein level and digestibility. The rumen micro-organisms digest the pasture, but if protein levels are low, the rate of digestion is slowed. A protein supplement will increase the rate of pasture digestion and therefore pasture intake, as well as directly benefiting the weaner. These supplements will also supply energy.

Working out the type and amount of supplement to feed depends on:

- pasture quality and quantity
- age and body weight of the weaner
- cost and availability of various supplements.

Sheep will select the green portions of plants in a pasture. Protein supplement is not needed while the pasture has a green component.

Work carried out in southern NSW and Victoria has shown that weaners weighing less than 16 kg at weaning in November are likely to die over the following summer if left to the summer pasture.



Table 1. Energy and crude protein content of commonly used stockfeeds

Stockfeed	Energy (MJ/kg dry feed) ^(a)	Crude protein (% of dry feed)
	Average (range)	Average (range)
Grain		
maize	13.8 (12.9–14.7)	10.0 (8–12)
sorghum	13.2 (12.2–14.2)	11.0 (6–14)
wheat	13.5 (12.5–14.0)	13.0 (9–18)
oats	12.0 (10.5–14.0)	11.0 (8–14)
barley	12.9 (12.0–13.8)	12.0 (9–14)
lupins	13.5	30.0
peas	12.5	23.0
Hay		
lucerne/clover hay	9.0 (8–10)	16.0 (14–20)
pasture hay	9.0 (7.7–9.5)	10.0 (8–12)
mature pasture hays	7.0 (6–8)	7.0 (5–9)
Manufactured feed		
sheep nuts	12.5 (12–14)	12.0 (10–14)

^(a) MJ/kg = megajoules of usable energy per kilogram of feed

Practical aspects of feeding weaners

- Training of lambs before weaning avoids problems later on. Give the ewes and lambs four feeds just before weaning – preferably the same grain as you will be feeding them later.
- A supplementary feeding program can be ruined by inadequate worm control.
- The cost of a feeding program can be lowered by drafting off those weaners below 20 kg and supplementing only these. The group not being supplemented will need to be monitored to ensure that adequate weight is maintained. Start feeding at least two weeks before weaners have reached critical body weight (20 kg). This allows for a settling-in period.
- Depending on the type of supplement, care must be taken in introducing weaners to grain. Grain high in starch, such as wheat, barley, maize or sorghum, requires the most care, but oats and peas need to be watched. Lupins are very low in starch and can be introduced over a few days, whereas the other grains should be built up over 1 to 2 weeks. (See Primefact 330 *Grain poisoning of cattle and sheep*.)
- Once weaners have been introduced to the grain, feeding is best done every third day.

Protein supplements are best fed more frequently to keep an even level of protein available to rumen microbes. Larger protein grains, such as lupins, can be broadcast around the paddock on a weekly basis. This stops weaners waiting to be fed from the trail.

- A long trail allows all weaners to feed at once and minimises the bullying effect.
- When pasture quantity becomes low, feeding moves from supplementing to full drought rations. The emphasis changes to ensure the survival of breeding stock. Energy plus some roughage are the major requirements.

Drought and early weaning

During drought conditions it is best to wean earlier at an average age of 8–10 weeks with body weight above 8 kg. This allows the lambs to be fed a good quality roughage and high-protein concentrate while the ewes can be maintained on a drought ration.

If lambing is spread out, two weanings may be required. Restrict weaners to a small paddock for feeding. They do not have the experience to forage for feed and they waste energy with aimless walking.

If mobs are bigger than 400, draft into mobs based on body weight. This will help to lower the percentage of shy feeders. Another draft of these shy feeders might be required after a few weeks.

Grain treatment

Grain is best fed whole to sheep. Cracking grain increases the risks of grain poisoning.

Minerals and vitamins during supplementation

When dry pasture is being supplemented there is no need to add minerals or vitamins. If the period of feeding on dry feed is extended to greater than four months, then vitamin A and calcium will be required. In nearly all cases it is cheaper to feed grain or hay supplements directly to weaners than to feed a block or lick which may contain the same product.

Creep feeding

Self-feeders are available in which intakes can be limited by adjusting the size of the opening. The response obtained from feeding lambs or ewes while at pasture or on a crop will vary depending on the quality of the pasture and supplement fed.

If the problems of substitution are to be avoided, the quality of all factors of the diet need to be known.

GrazFeed®

A computer program called GrazFeed® has been developed by CSIRO to help decide on the type and level of supplement to be fed. The producer needs to provide some information about pasture type and quantity, plus body weights and breed. If the costs of available supplement are given, the program will provide cost per hectare per day.

Information which producers need to supply is:

- weight of pasture in kilograms of dry matter per hectare (kg DM/ha) – even the height of the pasture would be helpful;
- percentage of green pasture;
- percentage of legume in pasture;
- improved or native pasture;
- cost and type of supplement available;
- breed of sheep, age, and body weight.

More detailed information on the GrazFeed® computer program is available at the Horizon Technology Pty Ltd website.

www.hzn.com.au/grazfeed

PROGRAZE

Producers need to develop some skills in assessing the quantity and quality of pasture. A PROGRAZE course provides these skills – contact your local NSW Department of Primary Industries District Livestock Officer or District Agronomist.

Summary

- ‘Supplementary feeding’ is the addition of feed to existing pasture to increase animal performance. The greatest returns are achieved when the feeding is targeted at:
 - the most limiting factor – either energy or protein;
 - the stock at greatest risk, for example weaners less than 20 kg over summer, or ewes late in pregnancy.

- Supplements will interact with the pasture on offer, and this affects the animal’s response. If basic pasture information is known, the feeding program can be fine-tuned to achieve the desired animal production.
- Management factors can ruin a feeding program. Attention must be paid to:
 - worm control
 - fly strike
 - clean water.
- In cooler areas, shelter for weaners during the autumn break should also be considered.

Acknowledgment

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