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Supplementation guide for sheep: Central and southern NSW

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Warning

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Pesticide residues may also contaminate grains, oils and other plant products for human use and consumption. Growers should observe harvest withholding periods on the pesticide label and should not assume that in the absence of a withholding period, or after the expiry of a withholding period, that the plant will be free of pesticide residues. It is the responsibility of the person applying a pesticide to do all things necessary to avoid spray drift onto adjoining land or waterways.

What is supplementation?

Supplementary feeding is the provision of feed to animals on pasture so as to improve animal performance and, in some cases, pasture performance. Note the differences between the following terms:

- **Supplementation** – the animal eats the supplement and pasture intake is not reduced.
- **Substitution** – some of the supplement is substituting for pasture, that is, the animal's pasture intake drops. Since the cost of a supplement is usually higher than that of pasture, substitution may have a cost. However, the pasture saved may also have other benefits, such as:
  - the shelter provided in a selected lambing paddock;
  - the protein provided by a dryland lucerne paddock;
  - saving feed for lambing ewes.
- **Complementation –** a good supplement increases the animal's intake of dead pasture or crop residue.

The objective of supplementation is production, and therefore feeding should be well managed and given a high priority. It can be satisfying and financially rewarding.

Intake

There is considerable variation in how much each animal eats when it is supplemented. This can be seen in sheep of different ages, sex and weights, so that a 400 g/head ration for a flock results in the low-intake sheep (the 'shy feeders') eating 100 g and the high-intake sheep eating 800 g. However, if sheep are fed only every second day, there is a tendency for the shy feeders to increase their intake, thus largely preventing the high-intake sheep from eating supplement in amounts that are surplus to their requirements.

High-intake sheep usually eat faster. Under drought conditions this could be a serious problem for shy feeders. Known shy feeders can be drafted off and fed separately. However, it is less of a problem when supplementing on pasture. If the pasture is adequate in quality, then those animals eating little supplement will eat more pasture.

Training

Supplementation requires that sheep learn:

- that a supplement is an alternative food source;

- to accept the physical aspects of supplementation such as troughs, bins, etc.;
- to recognise each supplement as acceptable.

The best procedure for training sheep to eat supplement is to feed lambs prior to weaning so that the lambs imitate their mothers in exploring this new food. There are real advantages in having all sheep on a property trained to eat common supplements.

The palatability of the various grains is variable. For example, barley is considerably more palatable than oats. It is not simply a matter of taste but also depends on the physical aspects of the grain, such as awned oats and the hard nature of lupins. Sheep remember the grains they have eaten in the past, but treat new grain cautiously.

Supplement delivery

The method of dispensing a supplement is important because it affects how much each animal eats and has a bearing on the cost. For example, wastage can be a huge problem and will add to the cost. Wastage can range from 0–25%. Other factors to be considered are:

- animal dominance
- contamination of wool
- disease
- climate
- intake variation.

Trailing of supplement

Trailing of supplement is a common, low-capital procedure. Wastage of lupins has been measured at 16%, and presumably that of other grains would be as high. Wastage is probably increased by the general recommendation to have a long trail to give all animals a better opportunity to forage.

- Trailing grain in rainy weather or after rain is not recommended.
- Large dumps are wasteful because of spoilage.
- Trailing of hay or silage where wafers are dropped on the ground is less wasteful.
- Some producers prefer to leave a circular trail to discourage followers.

Trough efficiency

- Trough efficiency is improved if the trough is raised off the ground to avoid faecal contamination.
- Troughs, whether on the ground or raised, will need emptying of any soiled material before refilling, particularly if the supplement has been wetted by rain or urine.
- Metal troughs can get too hot to touch.
- Trough space is the important issue; 20 cm of trough length will be sufficient for one sheep at each side.

Belting

Belting presents the problem of faecal and dust contamination and should be swept as necessary. There is less wastage and less soil intake than in a trail.

Spun

Grain can be spun from a fertiliser spreader and is used for weekly feeding. Wastage can be high.

Lamb creep

If unweaned lambs, but not their mothers, need to be supplemented with an expensive, quality supplement, then a lamb creep can be built near the day or night camp. Allow 200–220 mm space between the vertical bars.

A simple arrangement involves the use of a long ladder placed horizontally on the ground, with mesh panels placed above as a barrier. The lambs can then enter the enclosure between the ladder rungs.

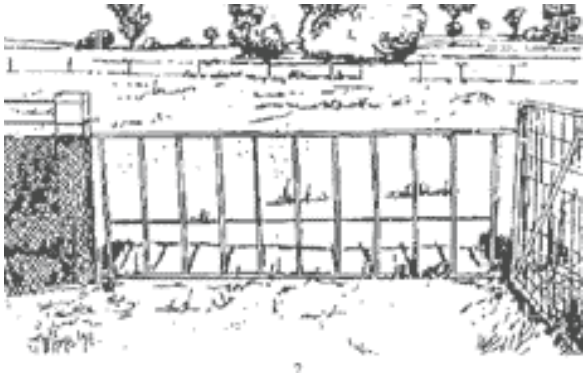

Figure 1. Lamb creep feeder

Self-feeder bins

Self-feeder bins for grain and loose supplements provide supplement on demand. It is hoped that the big eaters are better producers, to balance the variation in intake between animals. Wastage is still a problem.

Lick feeders

Lick feeders of the Cowra Lick Feeder type are a modified bin where some control can be exercised over intake, and wastage is reduced. However, variation in intake between animals still cannot be prevented.

Access by sheep to the bin can be easily controlled with a metal cover strip. If the cover strip is used on a regular basis for 2–3 days and removed for 24 hours, it has the effect of restricting intake. It gives

the benefit of feeding three times weekly, while only needing to handle grain weekly. It handles single and mixed grains.

How to feed supplements

Processed grain

Rolled or hammermilled grain increases the risk of grain poisoning in sheep (see ‘Introduction of the feed’ and ‘Potential problems’). Whole grain is preferable.

Location

Supplements should be provided at a well-drained location:

- from where there is an unrestricted view of the rest of the paddock;
- that is not too distant from water; and
- where some deterioration in pasture from trampling can be accepted.

Ideally there should be all-weather access.

Time of day

Provision of supplements or refilling of bins is best done in the afternoon, particularly if feeding lambing ewes.

Times per week

Feeding every second or third day has the effect of allowing more of the animals to eat an average amount rather than a few animals eating large amounts. The exceptions are when training lambs to eat supplements and when introducing cereal grain to experienced sheep.

Introduction of the feed

Sheep need to adjust to grain supplements every time they are reintroduced to supplementation. In most cases this will take 2 weeks of daily incremental rations to reach the 100% ration, but the animals themselves will not be settled for many more weeks. A common guide is as follows:

- Days 1–2: 20% (adjust for residues and discard soiled material)
- Days 3–4: 35%
- Days 5–6: 50%
- Days 7–8: 65%
- Day 9 onwards: continue working up to the full ration at around an extra 15 percentage points a day.

Lupins tend to be safer and can be introduced more rapidly.

Examples of supplementation

Finishing lambs to market specifications

Spring-born weaned lambs need green herbage if they are to be grown for late summer markets. Green forage is scarce at this time but often there is a limited amount of dryland lucerne available. It is possible to increase the contribution of this lucerne pasture by feeding about 300 g oat grain as a supplement while not reducing lamb growth rates. It is based on the lambs substituting some lucerne in the diet with oats, thus making lucerne available for about 10% more lambs or extending the grazing of lucerne by 2–3 weeks depending on paddock size.

Maintenance of weaners over summer/autumn

The limiting factor for weaners over the summer/ autumn is the low protein level of pastures. A protein supplement aids pasture intake and digestion.

The choice of supplement and amount depends on the pasture. This should be reviewed on a weekly basis. The objective should be for a positive growth rate, which can be a high or a low growth rate.

For example, the protein content of the whole diet needs to be above 15% protein for maximum growth rate, but protein levels as low as 11% will enable some growth. Severe weight loss may reduce staple strength in Merinos over summer, and result in significant lamb mortalities.

Bin feeders, particularly the lick feeder type, offer labour savings, less wastage and a reduced risk of pleuropneumonia which, if present, reduces the value of the carcase.

Summer feeding is not a problem if the lambs are trained before weaning to eat the type of supplement that will be offered to them in summer. At that time, weaners under 20 kg in liveweight should be treated preferentially.

Feed value

It is important to have laboratory tests conducted on samples of the feed before purchase, or when placing into storage, because the nutritional value of a supplement can vary considerably.

A common source of error is in the procedure of collecting a representative sample for analysis. If uncertain, seek advice from the laboratory.

Metabolisable energy (megajoules per kilogram of dry matter, MJ/kg DM) and percentage crude protein are the two most important values.

Table 1. Forage nutritional values

Forage	Metabolisable energy (ME) (MJ/kg dry feed)* Average (range)	Crude protein (% of dry feed) Average (range)
Hay		
Lucerne	9 (7–10.5)	16 (9–24)
Clover	9 (7–10.5)	14 (7–20)
Pasture (mainly clover)	8.5 (7–0)	10 (7–18)
Pasture (mainly grass)	8.0 (6–10)	7 (5–14)
Pasture hay (mature)	7.0 (6–8)	7 (5–9)
Cereal hay (oaten)	7.5 (5.5–9.5)	6 (2–9)
Silage		
Wilted lucerne	8.5 (6–11)	17 (13–20) First day: dry matter 40–50%
Grains		
Oats — Cooba — Echidna — Yarran	12 (10–13) 12 (10.5–13) 12.5 (12–12.5)	11 (5–21) 9.5 (6–17) 12 (10–13)
Barley	12 (11.6–13)	11 (6–18)
Wheat	13 (12–13.5)	14 (9–20)
Triticale	13 (12–13.3)	12 (8–21)
Lupins	13 (12–14)	31 (27–41)

*MJ/kg = megajoules of useable energy per kilogram of dry feed

Potential problems

- **Acidosis** from grain poisoning is a common problem at the beginning of supplementation or when changing grains during supplementation.
- **Coccidiosis** from faecal contamination is not usually a problem in short-term feeding.
- Some animals exposed to dust over a period, for example when trail feeding, can be at risk of contracting **pneumonia** and **pleurisy**.

Low supplement intake in a few animals may be due to acidosis or to factors associated with shy feeders, whereas low intake over the whole flock may be due to a high-temperature effect (over 28°C), spoilage, palatability, or quality of the total diet.

Note: At all times, producers should ensure that no harmful residues or weed seeds are present in the supplement.

Guidelines for substituting some of the grain in the ration with hay

Lucerne hay

- **Good quality** – can replace 50% of grain with good quality hay, that is:
  - metabolisable energy (ME) more than 9 MJ
  - crude protein more than 15%
  - digestibility more than 60%.

For example, a ration of 20 kg oats**:**10 kg lupins becomes 10 kg oats**:**5 kg lupins**:**20 kg hay at least.

- **Poor quality –** if this is all that is available, feed hay at 10% of the total ration, that is:
  - ME less than 7 MJ
  - crude protein less than 9%
  - digestibility 50%.

Fodder rolls, pasture hay or silage

- **Of good protein:** replace 50% of grain (on DM basis).
- **Of fair protein:** replace 40% of grain (on DM basis).

Pasture + supplement (minimum requirements)

Dry ewes:	9 MJ ME + crude protein 9%
Lambing and lactating ewes:	9 MJ ME + crude protein 12%
Lambs greater than 30 kg:	9 MJ ME + crude protein 13%
Weaner lambs:	9 MJ ME + crude protein 15%

Sheep supplementation guide (central and southern NSW)

Supplementation guides for sheep in **central and southern NSW** are given in Tables 3–9 below. The pasture scenarios referred to in these tables are described below in Table 2.

Typical bag weights available for purchase

Typical bag weights of feed purchased in 0.9 m × 0.6 m polybags are as follows:

- Oats: 31–42 kg
- Lupins: 56 kg
- Wheat: 52 kg
- Barley: 43 kg

Table 2. Pasture scenarios

Pasture scenario	Description	Guide
Ample, green pasture	Good quality pasture, more than 1.2 tonnes of green, dry matter per hectare	More than 5 cm deep
Short, green pasture	Short, green pasture, less than 0.8 tonnes of green dry matter per hectare	Less than 2.5 cm deep
Limited lucerne	Limited lucerne pasture	
Dry pasture	Dead pasture	

Table 3. Dry ewes, 3 weeks to joining

Merino (fat score 2 or less) Crossbred (3 or less)	Supplement/100 sheep/day
Flushing on dry pasture:	20 kg oats:20 kg lupins
Survival/maintenance on dry pasture:	As for wethers

Table 4. Pregnant ewes

Merino (fat score 3 or less) Crossbred (3 or less)	Supplement/100 sheep/day
4 weeks to lambing – introduce to supplement:	On short, green pasture – Introduce oats. On limited lucerne – Introduce oats. On dry pasture – Introduce oats:lupins.
2 weeks to lambing – full supplement with 1.5% lime (calcium is needed at lambing):	On short, green pasture – 30 kg oats:10 kg lupins On limited lucerne – 30 kg oats On dry pasture – 20 kg oats:30 kg lupins
Lambing – move into lambing paddocks when first lamb dropped:	On short, green pasture – 30 kg oats:10 kg lupins On limited lucerne – 30 kg oats On dry pasture – 20 kg oats:30 kg lupins

Table 5. Lactating ewes with lambs

Merino (fat score 3– or more) Crossbred (3 or more)	Supplement/100 sheep/day
Weeks 1–3:	On short, green pasture— 30 kg oats:10 kg lupins On limited lucerne— 30 kg oats On dry pasture— 20 kg oats:30 kg lupins
Merino (fat score 2+ or more) Crossbred (3– or more)	Supplement/100 sheep/day
Weeks 4–6:	On short, green pasture— 40 kg oats On limited lucerne— 40 kg oats On dry pasture— 25 kg oats:20 kg lupins
Weeks 7–9:	On short, green pasture— 20 kg oats On limited lucerne— 20 kg oats On dry pasture— 20 kg oats:25 kg lupins
Weeks 10–12:	On ample, green pasture— Train lambs to eat supplement pre-weaning.

*Table 6. Lambs**

Merino, Crossbred	Supplement/100 sheep/day
Post-weaning:	On limited lucerne— 30 kg oats On dry pasture— 13 kg oats:27 kg lupins
Finishing:	On limited lucerne— 30 kg oats On dry pasture— 40 kg oats:10 kg lupins

***Note:** Lambs will need green to finish.

Table 7. Shorn sheep

Merino (3– or less) Crossbred (3 or less)	Supplement/100 sheep/day
For chill prevention — 2 days before shearing to 6 days after (assume sheep are familiar with lupins):	On short, green pasture — 40 kg lupins On dry pasture— 40 kg lupins, or very best lucerne hay

Table 8. Rams

Merino (2 or less) Crossbred (3– or less)	Supplement/100 sheep/day
Flushing on dry pasture — 3 weeks to joining:	40 kg oats:40 kg lupins

Table 9. Wethers

Merino, Crossbred	Supplement/100 sheep/day
Maintenance on dry pasture:	20 kg oats
Survival during drought:	See Primefacts 347 *Full hand feeding of sheep – quantities*, 346 *Full hand feeding of sheep – feeding management*, and 345 *Full hand feeding of sheep – management*.

Further information

Primefact 302 *Fat scoring sheep and lambs*

Kaiser, A et al. 2003 *Successful Silage*, a joint publication by NSW Agriculture (now NSW DPI) and the Dairy Research Development Corporation. (Available for purchase from NSW DPI's Bookshop, phone 1800 028 374 or visit www.dpi.nsw.gov.au/reader/forage-fodder/successful-silage-manual)

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