



## Feedlotting Lambs

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*This note provides guidance for grain finishing lambs in a feedlot.*

### Introduction

The lamb feedlotting industry in Australia is poised for considerable expansion on the back of strong export demand for lamb. However, it has evolved to date with limited industry support and a scarcity of evidence based guidelines.

Much of the country's sheep and grain growing regions are well placed to capitalize on feedlotting as they have ready access to lambs and feed as well as being climatically suitable.

Grain finishing involves financial risk; in particular lamb deaths, shy feeders and unexpected changes in market prices for lambs and feed. For this reason it is important that a budget be produced and a portion of the lambs be contracted to reduce the risks in an operation that on average offers only a small profit margin.

### The Industry

Intensively finishing lambs in a feedlot has rapidly become a specialised component of the prime lamb industry with the number of lambs being grain finished steadily increasing. A survey conducted in 2007 estimates about 14% of all lambs sold are finished in a feedlot, an increase of 2% on the previous year.

This increase in feedlotting can be mainly attributed to the export demand for a consistent supply of lambs that meet market specifications. This is particularly so when quality pasture feed is unavailable or during drought conditions.

Over 40 percent of Australia's lamb (2007) is now exported – the largest market being the United States. This has been associated with a demand for larger and leaner lambs of a consistently high quality, reinforcing the importance of correctly bred lambs.

Larger, more permanent feedlots are also emerging through alliances with breeders and processors. Some specialist breeders in high rainfall grazing areas see the opportunity to increase their gross margins by maximising stocking rates and selling store lambs to finishers. Similarly processors are purchasing lambs and forwarding them to contracted finishers thus giving them continuity of supply of a desirable product.

### Marketing

Identifying a market and its specifications is critical to establishing a program and making a profit. Stock agents, meat buyers or livestock consultants can assist with this task. Selling grain finished lambs through saleyards is risky because of price volatility.

In general, purchasing light lambs to finish on grain and aiming to sell at trade weights (below 40kg liveweight) is not recommended because of the unlikelihood of securing forward contracts. There is greater certainty in predicting the final value of lambs finished to heavy weights because of the availability of price grids and forward contracts. At least 50% of lambs should be forward contracted.



*Lambs being finished to export weight in a feedlot*

### Rations

The correct levels of crude protein and energy are the essential ingredients in a lamb finishing ration. A combination of cereal grain, pulses and roughage, are suitable for this purpose.

Protein is measured as Crude Protein % in Dry Matter (CP%) and energy is expressed as megajoules of metabolisable energy per kilogram of feed dry matter (M/D). The lamb's protein requirement varies as a result of the energy content of the ration and the lamb liveweight as shown below (Table 1).

**Table 1: Crude protein and energy in balanced rations for different liveweights**

M/D (energy)	CP% (20kg Lwt)	CP% (30kg Lwt)	CP% (40kg Lwt)
13	19.3	16.1	13.8
12	17.5	14.7	12.9
11	15.7	13.3	11.9
10	14.0	11.9	10.8
9	12.4	10.6	9.6

Suitable rations can be made available in various forms: pellets, loose mixes, separate components or combinations of these. Recent research in WA showed no significant differences in lamb performance in relation to ration type however pellets produced less variation in individual growth rates.

Pellets or commercially formulated rations are convenient and easy to use however many farmers have the capacity to produce their own rations at considerable saving. The choice will be determined by the size of the operation, skills and available on-farm resources.

If producers are mixing their own rations it is important to have all feedstuffs analysed for crude protein, metabolisable energy, digestibility, fibre and dry matter. This is because considerable variation does occur, particularly with roughages such as hay, straw and silage. If considering buying-in fodder, request a nutritive analysis and obtain a declaration in relation to chemical exposure.

Cereal grains are a concentrated source of energy and generally the cheapest. Cereals and pulses can also make up the bulk of protein requirements. Rations commonly contain a high percentage of cereal grain (barley) plus pulses such as peas or lupins, together making up at least 80% of the mixture. Roughage such as hay is also an important component of the ration and is generally included at about 15-20% by weight.

### Additives

Sodium bentonite and sodium bicarbonate are added to rations to reduce the likelihood of acidosis (grain poisoning). It is also important to include salt and ground limestone in rations based on cereal grain. However, the need for other additives in a ration is often overstated and to a large extent depends on environmental and management factors. There are situations where Vitamins A, E and B12 and urea (increases protein) supplementation are necessary.

### Introducing grain

To avoid digestive upsets (acidosis) and loss of production lambs must be slowly introduced to a grain concentrate ration. This process will take at least 14 days and will initially involve feeding the lambs a high roughage (hay) diet that is slowly replaced with the concentrate. Concentrates should not be introduced until all lambs are eating (Table 2).

**Table 2: Program for introducing lambs to a grain ration**

Day	Concentrate %	Roughage %
Until all feeding	0	100
2-4	20	80
5-7	40	60
8-10	50	50
11-13	60	40
14+	70	30

### Preparation

Preparing or back grounding lambs for feedlotting can take various forms but whatever the process it involves allowing time for adjustment to a different ration and feeding system. For example, lambs that have previously grazed crop stubbles or eaten grain have been shown to adjust more quickly to feedlotting.

The future will see an expansion of specialists who prepare lambs for “downstream” customers. These types of specialist alliances already include stud breeders, commercial breeders, backgrounders, finishers and processors.

Preparation for lambs will also involve disease prevention treatments (see below) and shearing where they carry excess wool. Shearing about two weeks prior to entry into the feedlot will stimulate appetite, reduce the risk of flystrike and importantly provide a valuable hide after about 8 weeks feeding.

### Selection

The potential performance of lambs is determined by their genes; however the ability to achieve good results is dependant on good management and nutrition. Lambs bred by terminal sires evaluated under LAMBPLAN for high growth and leanness will potentially perform best.

Generally, a lamb suitable for feedlotting is second cross, 35 kilogram minimum weight with a fat score of about two. The older the lambs the greater the risk of laying down excess fat and having a poorer feed conversion.

Other considerations when selecting lambs are freedom from disease, (see below) structural soundness and good frame size.

### Growth and monitoring

Regular monitoring of liveweight gain is important in feedlot management. Weighing and fatscoring lambs during the feeding period and prior to marketing will improve the accuracy of matching supply specifications. When selling lambs on a price grid severe penalties may apply if they don't match specifications.

Higher growth rates and the likelihood of making a profit will result from using second cross lambs compared to first cross and merinos. Merino lambs will grow at 110-200g/day; first cross 150-350g/day and second cross 150-450g/day. Generally better feed conversion rates (FCR)

are found in second cross lambs however the most abundant feeder lambs are merinos. A FCR of 6:1 (6kg dry matter eaten to 1kg liveweight gain) is a realistic target.

Dressing percentage (carcase weight % of liveweight) varies with many factors including fatness, breed, feed type, sex, time off feed, carcase trim and pelt weight. Lambs should be weighed at the same time of the day to avoid variations in gut fill.

Fat scoring can be done by feeling the live animal at the GR site (located 110 mm from the backbone over the twelfth rib) which is where fatness is measured by the processor.

## Feedlot design

When setting up a feedlot for the first time be sure to contact the local council to check legal requirements for location, construction and environmental management.

Most feedlot designs are semi intensive setups in the paddock where lambs have at least 5 square meters of space. However, there are also fully enclosed, off-the-ground sheds with densities of 2-3 lambs per square meter.

The higher the capital investment, the more intensive and year round the operation must be, in order to be profitable.

The following are considerations when locating a feedlot-

- Well drained site with shade and shelter
- Separated from disturbances (roads, dogs)
- Close to handling facilities, power and water
- Well away from wetlands and water courses
- Downwind and clear of residential areas
- Separated from native vegetation

The following are some guidelines for setting up a feedlot-

- Yards that hold no more than 500 lambs each - allow approx 5 square metres/lamb
- Water troughs that are cool and easy to clean - semicircle concrete or shaded.
- Water pressure system plus three days supply – replenishment rate is important as lambs drink up to 9 litres/day in summer.
- Feed trough space per lamb – for self feeders allow 10cm/lamb and for daily feeding allow 15cm of trough space /lamb.
- Establish a plan for pen cleaning and effluent run off – effluent pondage
- Locate feed bins to allow external filling and that are well separated from water troughs
- Make arrangements for disposal of dead animals and isolation of sick ones
- Have a temporary escape paddock should muddy conditions occurs

## Animal Health

### Acidosis

Acidosis (grain poisoning) is likely to be the major health concern in a feedlot and commonly accounts for at least 2% of deaths and shy feeders. Some reports however estimate this to be as high as 15% and often of a sub clinical nature that goes unrecognized. It is caused by the

rapid fermentation of starches, most prevalent in cereal grains.

Prevention of acidosis involves slowly introducing lambs to a grain concentrate diet that contains additives such as sodium bentonite and sodium bicarbonate. (See Table 2). Affected lambs can be treated by drenching with 15g of sodium bicarbonate however in severe cases will have limited success. At the same time restrict water and provide roughage.

### Pulpy kidney

Pulpy kidney is a disease that occurs when animals consume highly digestible feed and therefore a thorough vaccination program is essential before placing lambs in a feedlot. This involves two vaccinations a month apart in the past six months or a booster vaccination if the lambs have been correctly vaccinated as young lambs but are over six months old.

Pulpy kidney will cause sudden death often in the heaviest and best lambs.

### Pneumonia

Pneumonia is usually a bacterial infection of the lungs causing nasal discharge, coughing, ill-thrift or sudden death. It is often associated with dusty pen or feed conditions during the summer months. Prevention involves provision of a dust and stress free environment. Antibiotics are successful in treating some types of pneumonia.

### Coccidiosis

Coccidiosis is caused by a parasite found in the intestines and spreads when lambs are crowded together in a way that feed becomes contaminated with droppings. Lambs are most susceptible soon after introduction to the feedlot due to them not having previous exposure to the parasite. Stress due to poor nutrition or worms increases their susceptibility.

### Pink eye

This is an infection of the eye resulting in the eyeball becoming pink or white, often leading to blindness when in both eyes. Pink eye is most prevalent in dusty conditions and when flies are common. Affected lambs need to be isolated until recovery occurs.

Treatments are of little value and the condition will self-cure in about a week. Prevention involves reducing dust in the feedlot and isolating severely affected lambs.

### Other diseases

Worms can cause significant production loss and drenching at the time of introducing lambs to the feedlot is recommended.

Scabby mouth is a viral infection causing scabs around the mouth and feet of lambs and significant production loss is possible.

Grain rich diets predispose lambs (mainly wethers) to Urinary Calculi or Water Belly. Including ground limestone and salt in the ration and providing good quality drinking water will help in its prevention.

Vitamin and mineral deficiencies can be significant. The most likely being Vitamin A deficiency where lambs have never had access to green feed. Many forms of vitamin and

mineral supplements are available however advice should be sought to gauge their need.

## Budget

Establishing a simple budget will support decisions in setting up and operating a feedlot. Critical factors include lamb values before and after feeding, feed costs and animal performance. (Table 3)

**Table 3: Example budget for grain finishing lambs from 35 to 50 kg liveweight**

<b>Lamb cost/value</b>	16kg @ \$2.20 + \$2 skin	37.20
<b>Feed cost</b>	* 100 kg @ \$310/t	31.00
<b>Running costs</b>	Drench and vaccine	0.45
	Feed analysis	0.54
	Deaths @ 2% (\$70 each)	1.40
	Selling and cartage	7.55
	# Labour @ 5c/lamb/day	3.00
	Interest @ 10% for 60 days	1.02
	Crutching	1.00
<b>Fixed costs</b>	Capital depreciation	1.25
<b>Total costs</b>	(Break even price)	84.41
<b>Lamb sale value</b>	24kg @ \$3.40 + \$8 skin	89.60
<b>Profit</b>		<b>\$ 5.19</b>

\* assumes FCR 6:1 and feed @ 90%DM

# calculated on a mob of 300

## Publications of interest

*Feedlotting lambs, a producer's guide* - DPI Vic, 2003

*Grain finishing of lambs* - MLA, 2006

*Feeding grain for sheep meat production* – DOA WA, 2004

*A producers' guide to production feeding for lamb growth* – MLA 2007

*Drought feeding and Management of Sheep* – DPI Vic, 2006

*Wool Meets Meat* – Sheep CRC, 2006

## Websites of interest

Meat and Livestock Australia - [www.mla.com.au](http://www.mla.com.au)

Department of Primary Industries Victoria - [www.dpi.vic.gov.au](http://www.dpi.vic.gov.au)

Sheep CRC - [www.sheepcrc.org.au](http://www.sheepcrc.org.au)

Sheep Genetics Australia - [www.sheepgenetics.org.au](http://www.sheepgenetics.org.au)

Department of Agriculture and Food WA - [www.agric.wa.gov.au](http://www.agric.wa.gov.au)

Department of Primary Industries NSW - [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

Grain, hay and livestock markets – <http://fm.farmonline.com.au/markets.asp>

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