

Early Weaning of Lambs

Table of Contents

1. Introduction
2. Why Early Weaning?
3. How to Wean
4. Creep Feeding
5. Rules of Thumb for Early Weaning
6. Steps to Weaning
7. Terminating Lactation in the Ewe Using Nutrition
8. Drying Off Ewes
9. Clostridial Infections

Introduction

Weaning is the practice of removing lambs from a milk diet provided by the ewe (natural or foster rearing) or milk replacement. From this milk diet, the animals move onto forage or grain based diets. "Early Weaning" is a relative term, but implies weaning at any time after 21 days of age. As with any management practice involving a sudden change in social structure (separation of ewe and lambs) or changes of diet and environment, this period will be stressful, and is a critical point for good health and general management practices.

Why Early Weaning?

The time of weaning in an operation must be a decision that is made on an objective basis. For animals raised on ewes (regardless of natural or foster status), the goal may

be to ease the lactation stress on the ewe, or to assist prolific ewes in raising litters. It may be an important factor in accelerated lambing flocks, to allow ewes to return to breeding condition quickly. The decision could be made based on limited pasture resources relative to the cost of grain that can be fed to grow the lamb, allowing for better performance of both the lamb and ewe. In other situations, weaning may occur at marketing due to favourable grazing resources for pasture finishing of lambs.

In artificial rearing situations, the major motivators are typically labour and cost associated with milk replacer feeding, relative to the ease and economical supply of solid feed. In the ARC program (Animal Research Centre, Ottawa), it was determined that the weaning of lambs at 35 days used 18 kg* dry powder, whereas weaning at 21 days consumed only 8 kg* per animal (*21 day uses less than half of the powder used in 35 days, regardless of exact rates based on differing products). When the animals were weaned at 21 days, the initial setback was more severe than in older weaning ages. The reduced cost and quick recovery compensates for this. Lamb growth is certainly better on milk and/or milk replacer than early weaning, as long as the ewe continues to milk. However, this higher growth rate is often not economical and must be carefully evaluated. Reasoning for various weaning ages is addressed in [Table 1](#).

Table 1. Various weaning ages and the impact of weaning at that age on lamb production constraints and other factors.

Weaning Age	Production Constraint Addressed	Benefits	Cautions
21 days	Artificial Rearing	Reduced Cost,	Feed Intake, Stress

		Labour	
35 days	Artificial Rearing	Rapid Growth	Cost, Labour
35-56 days	Lambing Interval	Breeding Preparation	Ewe Lactation
2-4 weeks prior to marketing	Carcass Quality	Grain Finishing	Poor Feed Conversion
At marketing	N/A	Pasture, Forage Based	Level of Finish

How to Wean

Weaning can most easily be achieved by removing the source of milk from the lamb, whether it is the ewe or artificial rearing. However, this may not be successful unless the weaning is planned and strategic. By leaving the lambs in their pre-weaning surroundings and groupings, only the stresses of diet change and ewe/lamb bonds are a factor. If the lambs are moved to a new location as well, there is additional stress. Consideration must be made for lamb size, stage of ewe's lactation (i.e., risk of mastitis), and previous grain or forage intake by lambs with respect to the ability to utilize solid feed. Furthermore, lamb feeds must be carefully formulated to ensure animal health as well as economic and feed efficiency.

In the case of early weaning, the ability of the animal to eat enough solid feed is a critical consideration. Also, feeds containing urea should not be fed until two weeks after weaning in young lambs considering the fact that rumen development is not complete.

Creep Feeding

This is the practice of providing a very high quality diet [17 to 20% crude protein (CP)] for the lambs which can be accessed only by them. Typically, this involves partitioning a section of the pen or area with a gate or openings through which the lambs can fit, but not the ewes. This can be accomplished by using openings that are adjustable from 15 to 25 cm (6 to 10 inches), set in a wall or panel at least 50 cm (24 inches) high, so that ewes cannot jump over. Some details for designing a creep gate or panel are included in [Figure 1](#). A sample creep ration is given in [Table 2](#).

Figure 1. Some construction details for a creep gate or panel. Within the creep area various troughs or self feeders may be used for the grain (and good hay if desired).

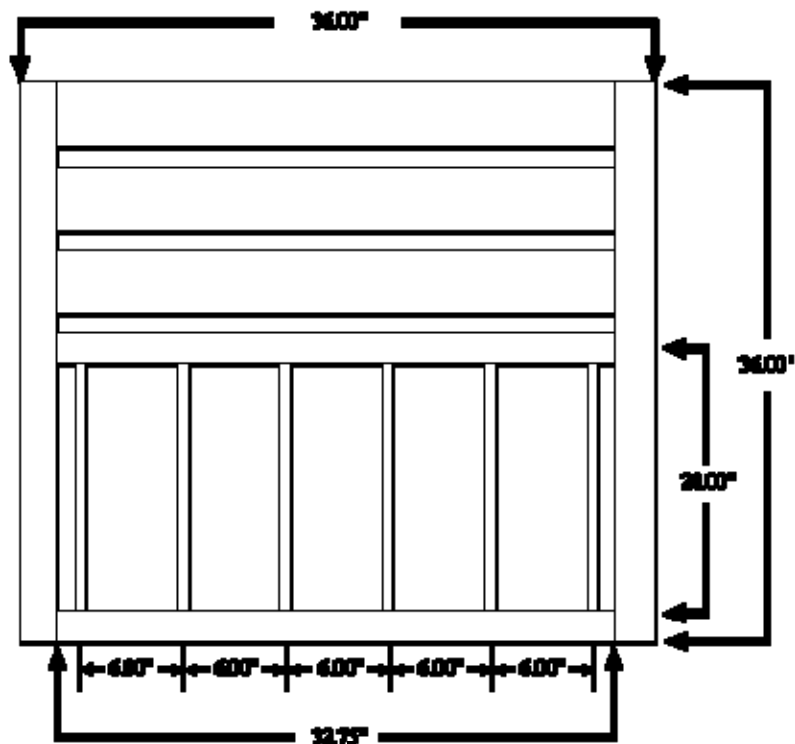
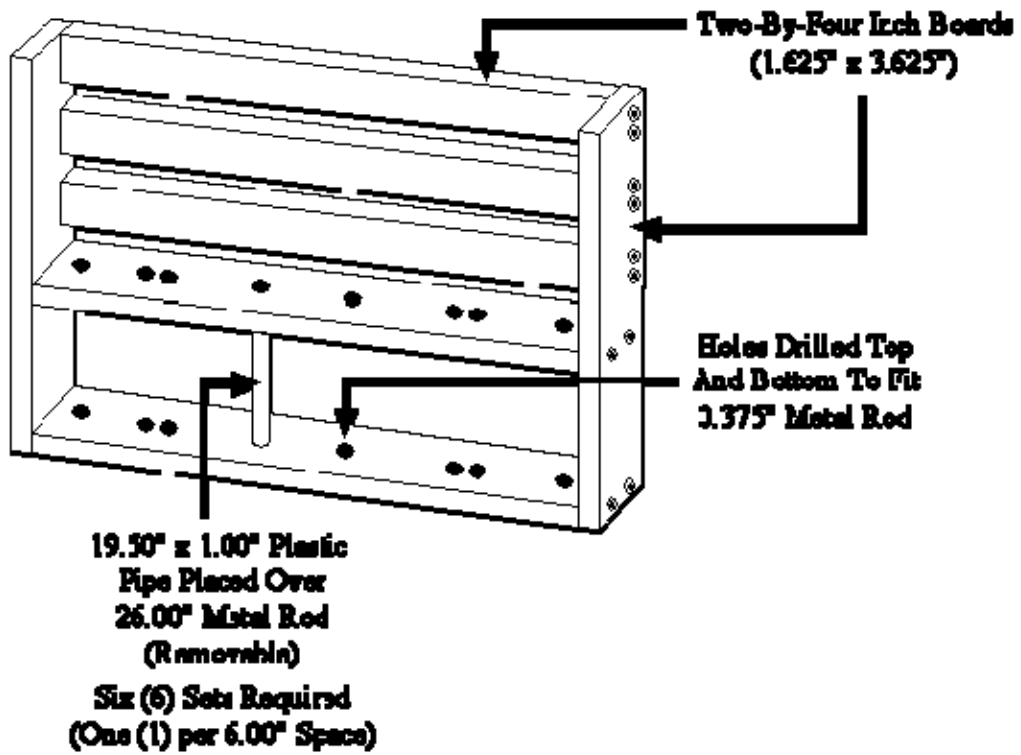


Table 2. A sample 17.9% CP Creep Ration for Lambs.

Acceptable Commercial rations may be available at local feed mills and feed outlets.

Ingredient	% of Ration* (As fed basis)	Ingredient Processing	Ingredient Attribute
Barley	35	rolling, grinding	energy
Oats	35	rolling, grinding	energy
Corn	8	rolling, grinding	energy
Fishmeal ¹	5	none	protein
Soybean Meal	11	none	protein
Molasses	6	(heating), mixing	palatability
Premix	<i>a</i>	none	vitamins, minerals
Additive	<i>b</i>	proper mixing	lamb health

For footnotes *, ¹, a, b - see [Table 3](#).

Rules of Thumb for Early Weaning

1. Clean, fresh water available -- always.
2. Creep feeding (free choice 17% to 20% CP) before weaning will encourage a smoother transition.
3. Lambs may be weaned at 21 days of age in artificial rearing systems.
4. Provide a very high quality, high protein diet at weaning (18% to 25% protein). Some animal or other very high quality protein is required (e.g., fishmeal or heat-treated soy products if fishmeal is not available).

5. Utilize partially processed grains (rolled, cracked or steam flaked) in early weaning systems; processing may be discontinued as animals reach 50 lb. body weight.
6. The diet must be highly palatable, more so than in any other stage of life. Molasses may be useful to minimize dust and sorting, and may improve palatability. A commercial pelleted diet may be considered to reduce sorting, but intakes tend to be lower than with molasses enhanced, rolled grain diets.
7. Urea (if fed) must not be fed until two weeks after weaning, unless late weaned and animals have consumed solid feed to allow rumen development (earliest possible age is 35 days).
8. Urea should not be fed at more than 1% of ration dry matter (DM); only feed grade urea should be used.
9. Consult and follow the guidelines of a lamb ration program as set out by a qualified nutritionist.
10. Use an ionophore as a coccidiostat (reducing coccidiosis outbreaks in lambs); an ionophore as a rumen optimizer may be included in the diet after weaning.

Steps to Weaning

1. Plan weaning protocol, timing and facilities 14 to 21 days prior to weaning.
2. Ensure animals are consuming creep feed (1% of Body Weight e.g., if lambs weigh 20 lb. they should consume $20 \times 0.01 = 0.2$ pound).
3. Ensure animals are utilizing water.
4. Remove milk replacer or ewe (weaning).
5. Feed high protein ration (18% to 25% CP); sample diet given in Table 3.

Table 3.Two Sample Weaning Rations (fed from weaning until 14 days post weaning).

Ration 1 is a 21.4% CP ration, while Ration 2 is about 18.5% CP. Ration 1 should give better performance, but is more complicated (and expensive, depending on availability of ingredients) to produce.

Ingredient	Ration 1*	Ration 2*	Ingredient Processing	Ingredient Attribute
	% of Ration (As fed basis)	% of Ration (As fed basis)		
Barley	30	41	rolling, grinding	energy
Oats	30	36	rolling, grinding	energy
Corn	5	-	rolling, grinding	energy
Brewer's Grain	9	-	none	protein, energy
Corn Gluten	5	-	none	protein
Fishmeal ¹	5	5	none	protein
Soybean Meal	10	12	none	protein
Molasses	6	6	(heating), mixing	palatability
Premix	<i>a</i>	<i>a</i>	none	vitamins, minerals
Additive	<i>b</i>	<i>b</i>	proper mixing	lamb health

* Percent of ration basis can be used to mix 100 lb or kg batches (e.g., 35% Barley = 35 kg in 100 kg batch). Although oats are recommended to be included, barley may be substituted one for one to replace oats without altering ration analysis. Oat inclusion in the diet should be reduced if any hay is provided, on account of the high fibre content of oats and the possibility of causing 'hay bellies'. Corn may also be replaced by barley; this exchange will marginally increase CP levels, and marginally lower energy. Alternatively, corn may also be used in the place of part of the oats or barley in the ration; this will raise energy but lower CP levels of the diet.

¹ Fishmeal is an expensive protein, and is often not used as a result. The high levels indicated are to help provide a high quality protein to the lamb's system, with ease of digestion. Molasses will help mask odour.

a Supplemental vitamins and minerals should be included in the ration. If using a premix, use a lamb or sheep mineral (as opposed to beef, dairy) to avoid mineral metabolism complications, such as copper toxicity. Alternatively, trace mineralized salt ("TM 10") and Vitamin ADE mix (10,000 IU vitamin A activity-per-gram potency) may each be added at 50 grams per 100 kg feed.

b Therapeutic medications may be given to the lamb under a veterinarian's guidance using the feed.

Terminating Lactation in the Ewe Using Nutrition

With lambs being weaned from ewes, caution must be taken to ensure ewes do not continue lactating after weaning, as milk remaining in the udder could cause mastitis. This is of great risk in breeds known for high milk production (for example, Rideau Arcott, Friesian, and some lines of Dorset and Suffolk). In the two weeks prior to

weaning, ewe ration energy should be reduced from peak lactation levels (good to excellent forages plus grain), eventually down to sub-maintenance levels (restricted feeding of poor hay or straw of low digestibility -- not moldy) for 2 to 3 days prior to weaning. This low energy diet should be maintained for a number of days after weaning (4 to 7). In cases where ewes historically are difficult to dry off, using restricted access to water is also a possibility. Animals must still be allowed to drink daily, but not free choice. This restriction may begin one to two days prior to weaning and may continue until 3 days after. On the day of weaning water can be withheld.

Drying Off Ewes

1. Two weeks prior to weaning, begin removing grain from ration.
2. Discontinue grain 9 days prior to weaning; also begin using some first cut hay in the place of a portion of the second cut hay. Remove silage from diet.
3. Seven days prior to weaning, all second cut hay and any legume forages (clover, alfalfa, trefoil) removed totally from diet.
4. Four days prior to weaning, begin feeding straw in the place of part of the mature hay.
5. Two days prior to weaning, feed only straw or very mature grass hay. Begin restricting water.**
6. Wean lambs. Withhold water from ewes.
7. The day after weaning, return ewes to restricted water access.
8. Four days post weaning, return ewes to free choice water and moderate hay, pending udder status (if swollen and hard, continue feed and water restriction and check for mastitis).
9. Two weeks post weaning, preparations for re-breeding may begin.

** Exercise great caution in the restriction of water, especially in hot weather. If this is the case, ensure adequate shade and access to water to prevent dehydration. The best method is to allow access to water for a short time only per day, and to ensure all animals drink.

Note: Ewe nutrient status must be independent of the lamb's nutrient intake -- use creep feeding, or creep pasturing. Transition from a high energy to low energy ewe diet may be accomplished on pastures by adapting the preceding process to forage quality and quantity on offer.

Clostridial Infections

One problem for the early weaned lamb is sudden death from enterotoxaemia. Often it is the best growing lamb that is found dead with no previous symptoms. At post mortem the only lesions to be seen grossly are reddish areas in the wall of the small intestine. There are microscopic changes to be seen in other organs, and tests can confirm the presence of toxins. The causal organism is a bacteria, *Clostridia perfringens* type D. This bacteria can be present in small numbers in the intestine, but, with the normal movement of ingesta through the intestine, insufficient organisms remain in the duodenum to cause problems.

In the early weaned lamb, there are four factors which may allow sufficient multiplication of this bacteria to cause death.

1. Insufficient intake of colostrum - the lamb may not have received adequate antibodies for protection.
2. Ewes were not fully vaccinated before lambing; therefore, the level of protective antibody in the colostrum was too low.

3. Lack of movement through the gut, allowing increased numbers of the bacteria to remain and multiply in the small intestine, releasing toxin.
4. The passage of a large amount of starch into the duodenum, from over-eating combined with the intestinal stasis described in 3. Consistent intakes will prevent intestinal stasis, and may be accomplished by restricting intake to 95% of free choice. This may also be addressed by adding more roughage to the diet.

The increased permeability of the intestine to this toxin allows it to spread rapidly through the body. Death can occur in two hours or less; but rarely more than twelve hours after infection.

Where early weaning is practiced, a vaccination program against this group of bacteria is essential. All ewes should receive the initial primary course of vaccination before they lamb for the first time; two doses six weeks apart with the last injection at least two weeks before lambing. Ewes lambing once a year should receive a booster vaccination two weeks before they are due to start lambing. Ewes on accelerated programs need a booster injection two weeks before each lambing. If the ewe is fully vaccinated against the clostridial group of diseases before lambing, the colostrum antibodies should protect the lamb for 10 - 12 weeks. As antibody levels can be affected by stress, it is essential that the environment, flock management and nutrition be maintained at the optimum for the pre-lambing ewe and the lambs. Early weaned lambs should receive a booster vaccination at 10 - 12 weeks of age.

