

## **Lamb Nutrition and Feeding**

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In most cases, farm flock operations in Iowa feed lambs from birth to market. The primary objective is to maximize rate of gain to get lambs to market as early as possible. Additional benefits of this strategy are improved feed efficiency and lower fixed costs. This goal, however, of maximum gain may no longer be the most desirable since the lamb market of late does not seem to be following historical averages with peak prices around Easter and high prices in May and June followed by falling prices through the remainder of the year. One must evaluate the most desirable marketing date and lambing season to determine the best method of feeding the lamb crop.

Creep feeding lambs is a very common practice that improves weaning weights 10-20%. Additionally, it allows for a smoother transition on to feed during the post-weaning period. Young lambs prefer feeds with relatively small particle size. As they get older, the physical form of diet they prefer is ever coarser. In most cases, feeding whole grains with pelleted protein supplements is far and away the easiest and cheapest means of finishing lambs, especially for operations without feed mixing and processing capabilities.

Young lambs find soybean to be very palatable with some producers using straight SBM for their creep starter. Many other producers top dress SBM on the creep to get lambs started. Other feeds high on the palatability scale for young lambs include corn, alfalfa hay and molasses. Table 1 contains some example creep rations using the previously mentioned feeds.

Lambs will begin to nibble on creep at 7-14 days of age. Consumption will be very low and keeping the creep feed fresh is the primary objective. Location of the creep can help or hinder lambs getting started. The creep should be easily accessible, close to the ewe flock and out of the traffic flow, but very near it. Creep areas need to be well lit, clean and dry in other words one of the most comfortable locations in the barn. Creep areas serve another important function in that they provide a sanctuary for lambs to get away from the ewe flock. As lambs grow, creep gates need to be adjusted to allow lamb access yet continue to prevent ewe access. This is no easy

task. Feeders used in the creep area need to be designed such that lambs cannot stand in the feeders to reduce exposure to coccidia.

As lambs approach weaning age, a management decision must be made on whether to switch lambs to the post-weaning ration before or after weaning. Weaning age directly influences this decision, with lambs weaned at greater than 60 days of age, the switch can be made pre-weaning. However, with younger lambs, the change needs to occur after weaning. An additional factor to consider is the cost of creep ration compared to the grower/finisher ration.

Critical components of the creep ration include palatability as previously discussed. Most commercially available lamb feeds contain Bovatec (Roche) which is an ionophore that improves feed efficiency (3-5%) and controls coccidiosis. The Roche technical manual indicates that lambs should consume 15-80 mg of Bovatec per day. In very young lambs, this level of intake (1 pound) is impossible due to their bodyweight. In most situations, prevention of coccidiosis in very young lambs requires strict sanitation and management along with a much more aggressive strategy to increase Bovatec intake. One must note that FDA allows the maximum level of Bovatec incorporation into the feed at 30 grams per ton.

Selenium and vitamin E are two nutrients that must be incorporated into creep rations. White muscle or stiff lamb disease is the common name referring to deficiencies of either/or both selenium and vitamin E. Iowa soils and therefore, feedstuffs tend to be deficient in selenium. All lamb rations should be fortified with at least .18 grams of selenium and 15,000 international units (IU) of vitamin E per ton of complete feed. One quickly realizes that .18 grams is a very small (.000397 lb.) amount to incorporate into a ton of feed. Therefore, accurate scales and thorough mixing are critical since 2 parts per million (PPM) can be toxic (.0044 pounds). Vitamin E however, is not toxic and can be increased in the ration to help overcome a shortage of selenium.

Creep consumption by young lambs may not provide adequate selenium or vitamin e intake relative to their requirements. Many sheep operations routinely administer injectable selenium and vitamin E to lambs as additional insurance in combating a deficiency. Two important points are critical to remember, one being vitamin E stores in the body are very low and secondly, serum vitmain E levels drop very rapidly to pre-injection levels (5-8 days). Lastly, very little

vitamin E crosses the placenta so colostrum or an injection is the lamb's only means of getting vitamin e.

### Common Nutritional Disorders

#### Urinary Calculi (UC)

As previously stated, maximum gain is generally the objective when feeding lambs. This requires the feeding of high concentrate diets that results in a poor calcium to phosphorous ratio. This is due to grain being very low (<.05%) in calcium. All high grain rations should be fortified with calcium by adding 1- 3% limestone to the ration. Additional methods of preventing UC include adding 10 pounds of salt and 6-10 pounds of ammonium chloride or sulfate per ton of ration. Clean, fresh water sources reduce UC by increased water intake and urine output which serves to flush out the urinary tract. An additional benefit with increased water intake is a corresponding increase in intake and performance. During cold weather it is critical to provide a warmed water source to encourage consumption.

#### Enterotoxemia (Overeating)

Overeating (OE) is one of the most common causes of death in feedlot lambs. Management inputs to minimize OE include gradual ration changes, vaccination programs and feeding 20 grams per ton of oxytetracycline (OTC) or chlorotetracycline (CTC). Neither antibiotic is cleared to be feed with Bovatec. Lambs being fed on self feeders must always have feed available once they are adapted to self feeders. Flocks using hand feeding should monitor daily consumption and adjust feed offered so that lambs are just slightly hungry. In farm flock operations, annual boosters to ewes during late gestation along with lamb vaccinations at 3 and 6 weeks of age provides the best possible protection through weaning. Careful administration of vaccine (clostridium perfringens type C & D toxoid) along with appropriate handling and storage of the vaccine increases the efficacy of the vaccine products.

#### Polio Encephalomalacia (PEM)

Polioencephalomalacia is a thiamin deficiency that usually occurs following a digestive disorder. Symptoms of PEM are neurological, with staggers, blindness and convulsions being the most common. Lambs will eventually go down flat on their side, paddle and arch their head over their back. Examples of situations which might create PEM include poor communications that results in a double feeding or lambs getting out and having free access to stored feed. The best indicator

of PEM is the response to thiamin injections. One should see rapid responses, however, if digestive upsets created the problem, supplemental thiamin injections may need to be continued for several days until the digestive health of the animal has returned to normal and eating aggressively.

### Self feeding Versus Hand Feeding

There are advantages and disadvantages of both systems. The biggest disadvantage of self-feeding is that monitoring lamb health is more difficult. This is because lambs are not actively eating at any one time and requires the shepherd to move through the pen(s) observing lambs for signs of illness. Hand feeding requires more bunk space, however, unless the ewe flock is dry-lotted, feeders previously used to feed ewes can be used for the lambs. Lambs require 9 to 15 inches of bunk space per head. The higher space requirements are for heavy lambs (>120 pounds) or lambs in full fleece. Hand feeding does require more labor and should be done in two equal feedings each day. Ideally, feeding times should be similar from day to day as lambs become accustomed to a specific feeding schedule. An additional advantage of hand feeding is the incorporation of hay into the ration. At times hay can be a very economical ingredient to include in the ration at 10-20 percent of the total ration.

### Cost Control Measures

Generally when discussing feed cost of gain, one first considers the cost of the ration as the biggest factor. Ration costs are currently very low and furthermore should stay low in future due to incredibly high inventory of grains. Even today with our cheap grain prices there may be some byproduct feeds that can cheapen the ration even further. An example might be dry corn gluten feed. It is important to shop around for under utilized (cheap) feed resources in the area.

Protein requirements of native lambs are high and therefore, result in a higher percentage of the total ration cost due to protein in the ration. As lambs reach heavier weights, their protein requirement decreases (Table 3) so frequently adjusting protein content downward can reduce feed costs. An additional means of reducing protein costs is to investigate cooperative purchasing of commercially available protein supplements or ordering a custom protein supplement. In most cases, a minimum of three tons is required for custom orders. Table 2 contains the custom protein supplement formulation used at the McNay Research Farm along with feeding directions. Incorporating alfalfa hay into the finishing ration may also provide a

cheaper protein source. Feeding rations with more than 10% hay will result in slower growth rates and poorer feed conversions. This may result in a higher feed cost of gain even though the ration cost per ton is lower.

Other means of reducing lamb feeding costs would include timely marketing of finished lambs. Refer to Jeff Held's article last month for more information. As lambs reach market weight they become much less efficient and feed cost of gain increases dramatically. Another way to improve growth efficiency is to use large framed terminal sires because their offspring have better efficiency than small or medium frame lambs. Death loss during the finishing phase of production also impacts feed cost of gain. Preventive health programs addressing individual flock health problems, which have occurred in the past, is money well spent. The last area that is not often discussed relative to controlling feed cost of gain is to minimize waste. With appropriately constructed feeders, this should not be a problem. Feed spoilage due to poor storage or sloppy transport from storage to feeders could increase cost of gain 2, 5 or even 10 percent.

The objective of lamb feeding programs is to provide low cost diets which are balanced and therefore result in rapid and efficient gains. Frequently adjusting the protein concentration in the ration will reduce cost. Many factors impact the feed cost of gain and all areas must be addressed in today's market to insure profitable lamb feeding.

Table 2. Protein supplement formulation fed at the McNay research farm.

<b>ISU LamPro 42<sup>a</sup></b>			
<u>Ingredients</u>	<u>Amount</u>		
Soybean meal, 49%	1340		
Blood meal	200		
Limestone	220		
Molasses	100	<u>Nutrient density, as fed basis</u>	
Ammonium sulfate	70	Crude Protein	42.4%
Trace Mineral salt <sup>b</sup>	70	NEm (mcal/lb)	.69
Selenium premix <sup>c</sup>	1.3 grams	NEg (mcal/lb)	.46
Zinc <sup>c</sup>	300 grams	Calcium	3.88%
CTC or Bovatec	200 grams	Phosphorous	.54%
Vitamin A, IU of activity	7 million	Selenium (ppm)	1.27
Vitamin D, IU of activity	800,000		
Vitamin E, IU of activity	150,000		

<sup>a</sup> Supplement is to be fed with whole corn.

<sup>b</sup> Should not contain added copper.

<sup>c</sup> Reduce this amount equal to that supplied by trace mineral salt.

The supplement shown above when fed with corn in the following ratios provides the nutrient levels listed below. Assumes corn is 8.5% CP on DMB.

<u>Corn</u>	<u>Supp.</u>	<u>Crude protein</u>	<u>Ca:P ratio</u>
4	1	16.2	2.35
6	1	14.0	1.74
8	1	12.8	1.38
10	1	12.0	1.15

Please be advised that these are very high energy rations.

Table 3. Suggested protein levels for lamb rations as affected by lamb daily gain and weight.

<u>Lamb Weight</u>	<u>DM Intake</u>	<u>Daily Gains (lb.)</u>			
	<u>(lb.)/lamb</u>	<u>.5</u>	<u>.6</u>	<u>.7</u>	<u>.8</u>
40	2.4	15.9	17.0	18.6	20.4
55	2.9	13.4	14.7	15.8	16.9
70	3.1	12.8	13.9	14.7	15.5
85	3.4	12.0	12.7	13.4	14.3
100	3.6	11.4	11.9	12.6	13.3
<u>115 and heavier</u>	<u>3.8</u>	<u>10.8</u>	<u>11.4</u>	<u>11.9</u>	<u>12.5</u>



**Table 1. Creep, Growing and Finishing Rations.**

<u>Ingredient</u>	<u>Creep Feeds</u>			<u>Grower Rations</u>						<u>Finisher</u>			
Corn	1470	1015	1240	1500	1375	1435	1170	1235	1000	1750	1675	1535	1170
Oats		400					300						
SBM (49%)	370	425	600			450	415	360	270			160	
ISU Lampro 42				500						250			
Comm. Protein 34					625						325		
Corn Gluten Feed								600					700
Alfalfa Hay EB								300				200	
Molasses	100	100	100			60	60	60	60			60	60
Limestone	40	40	40			35	35	25	50			25	50
Ammonium Sulfate	10	10	10			10	10	10	10			10	10
Trace mineral	10	10	10			10	10	10	10			10	10
Selenium (grams)	.2	.2	.2			.2	.2	.2	.2			.2	.2
Vit. A IU	1,000,000	1,000,000	1,000,000			1,000,000	1,000,000	1,000,000	1,000,000			1,000,000	1,000,000
Vit. D IU	100,000	100,000	100,000			100,000	100,000	100,000	100,000			100,000	100,000
Vit. E IU	35,000	35,000	35,000			20,000	20,000	20,000	20,000			20,000	20,000
Antibiotic or Bovatec, respectively	50 or 30	50 or 30	50 or 30			50 or 30	50 or 30	50 or 30	50 or 30			50 or 30	50 or 30
<b>Calculated Nutrient (DMB)</b>													
Crude Protein	16.7	18.4	21.0	18.1	17.9	18.0	18.0	18.0	18.1	13.4	13.4	13.4	13.3
Total Dig. Nutrients	83.4	81.0	82.7	83.7	80.6	83.4	81.9	79.9	80.8	85.3	83.6	81.5	80.9
Calcium	.84	.84	.86	1.11	1.14	.74	.74	.75	1.02	.57	.61	.66	.99
Phosphorous	.38	.40	.43	.39	.43	.41	.41	.39	.57	.37	.39	.35	.56

