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Lamb Feeding Guide

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Lamb Feeding Guide

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Lamb Feeding Guide

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Lamb feeding in South Dakota provides a satisfactory way to market considerable good quality roughage and corn.

Numerous practices and a great variety of feeds are used in lamb feeding operations. As with other livestock, the lamb feeder has to provide the proper nutrients if he is to get economical gains from his lambs. This involves feeding the right nutrients in the right amounts.

NUTRITIVE NEEDS

The essentials include protein, carbohydrates, minerals, vitamins, and water.

PROTEIN

Few feeders question the value of protein supplements in lamb finishing rations, especially when no alfalfa or other leguminous roughage is fed.

The common high protein ingredients such as soybean, linseed, or cottonseed meal are about equal in quality of protein for sheep. From 1/7 to 1/4 pound of these supplements per lamb daily is sufficient under most conditions. Govern the amount fed by the kind of roughage fed and the relative price of concentrate compared with grain.

A finishing ration should contain 10.5 to 12.0% total protein. This will depend to some extent on how much is fed and the digestibility of protein in the feeds. Digestibility of protein in roughage is somewhat lower than in high protein ingredients such as soybean meal.

CARBOHYDRATES

The most familiar carbohydrates are sugar, starch, and cellulose—the fibrous or woody parts of plants. These materials have two distinct values in feeding. The fibrous portion helps to form bulk, a matter of extreme importance in the lamb's diet. Sugars and starches are major sources of energy. A surplus taken into the body may be transformed into fat and stored as a reserve supply.

MINERALS

Feeding mineral supplements free choice appears to suit the needs of sheep in most areas of South Dakota. Vary the amount of calcium and phosphorus in mineral supplements with the type of ration being consumed (see table 1). Stabilized iodized salt, free choice or in mineral mixtures, will take care of sodium, chlorine, and iodine requirements.

When mineral supplements are force fed, a ration containing .18 to .23 per cent calcium and .16 to .21 per cent phosphorous will meet the requirements from these minerals (Table 3.). A common recommendation for phosphorous is about .25 per cent of the ration for all weight classes of finishing lambs. A ration containing high levels of phosphorous seems to contribute to urinary calculi, especially with low levels of calcium.

Some work has indicated that the calcium level should be about twice that of phosphorous (2:1) for optimum weight gains and maximum protection from urinary calculi. This means a level of about .50 per cent of calcium in the total ration, a value somewhat higher than that shown in Table 3.

Provide salt at all times for lambs on feed, regardless of the feeds used. However, there is danger of loss if lambs shipped in from the range are allowed free access to salt soon after arrival. They often do not get all the salt they need on the range, and this plus an increased appetite for salt caused by a change of feed may result in consumption of enough salt to cause death. Small quantities of loose salt scattered in troughs can be gradually increased until the lambs overcome their salt deficiency and lose their abnormal appetite for it. Levels of .50 per cent salt in the total ration will meet the salt requirements of finishing lambs.

Under conditions where urinary calculi has been encountered, a 2% or more level of salt in the total air dry completely mixed ration appears to be beneficial.

Table 1. Mineral Mixture for Finishing Lambs

	Dicalcium phosphate or bonemeal %	Trace mineral salt %	Ground limestone %
Finishing ration with 20-50% legume roughage	50	50	
Finishing ration with 20-50% nonlegume roughage	50	40	10
Finishing rations of barley, oats, or ground ear corn with little or no additional roughage	30	40	30

VITAMINS

Vitamin A is probably the only vitamin that may be deficient in any normal sheep feeding program.

The fact that sheep are generally outdoors and exposed to the sunlight much of the time protects them from any deficiency of vitamin D. The B vitamins as well as vitamins K and C appear to be synthesized in sufficient amounts by the sheep.

When vitamin A deficiency symptoms appear, add dehydrated or high quality green alfalfa hay or a stabilized vitamin A product to the ration.

Feeds normally consumed by sheep, especially well-cured hays and green pastures, contain ample quantities of vitamin E.

WATER

Water consumption varies with the climate and type of feed. Feeder lambs require approximately $\frac{1}{2}$ gallon of water per day. Keep watering equipment free of ice in the winter.

ANTIBIOTICS

The tetracyclines (aureomycin and terramycin) have both proved to be good additions to complete lamb finishing rations. These antibiotics seem to be most effective in relatively high roughage rations and

FEEDING UREA TO LAMBS

Livestockmen often have to choose between feeds which contain urea and those which do not. A general understanding of the value and limitation of urea is necessary to make a sound choice.

What Urea Is

Ruminant animals such as sheep are unique in that they can utilize some simple compounds which contain nitrogen in order to meet their protein requirements. These are referred to as nonprotein nitrogen compounds. The chief one used in sheep feeding is urea.

Level of Urea

The level of urea in the protein supplement or total ration is an important factor affecting its utilization. Research has shown that urea is utilized efficiently when it furnishes up to $\frac{1}{3}$ of the protein in the ration. When fed in larger amounts than this, efficiency of utilization may be reduced.

Protein supplement in which the level of urea does not exceed $\frac{1}{3}$ of the protein in the protein supplement appears to be used as efficiently as supplement without urea with all kinds of rations, including high-roughage ration. Protein supplement with 10 to 12 per cent urea, or even more, has been used satisfactorily with rations composed of large amounts of grain (40 to 50 percent of ration). The proper mixing of rations becomes more important with increasing levels of urea.

General Recommendations

1. Protein supplements with 10 to 12 per cent urea may be fed with fattening rations if fed at the rate of about 1 pound of grain to each .10 pound of protein supplement.
2. The same limitations apply to liquid protein concentrates (LPC) containing high levels of molasses, and to protein blocks.
3. When urea is mixed in a complete ration, limit the level to one per cent or less of the total ration.
4. Urea should be mixed in protein supplements or complete rations only by people who understand its value and limitations and who use equipment capable of uniformly distributing such small quantities thoroughly in the final mixture.

ANTIBIOTICS

The tetracyclines (aureomycin and terramycin) have both proved to be good additions to complete lamb finishing rations. These antibiotics seem to be most effective in relatively high roughage rations and at fairly low levels (7.5 to 10.0 milligrams per pound of feed).

HORMONE TREATMENT

A feeding level of 2 milligrams diethylstilbestrol per lamb per day has been shown to improve rate of gain from six to twelve per cent and feed efficiency six to seven per cent. A three-milligram implant of diethylstilbestrol or an implant of Synovex-L has been shown to be equally effective. In general, more improvement will be obtained when using diethylstilbestrol with wether lambs than with ewe lambs.

VACCINATION

Vaccinating lambs against enterotoxemia is generally desirable unless a complete ration is self fed. A new type of vaccination with toxoid material promises to give longer protection with less local reaction to the injection.

It would be helpful if all shipped-in lambs had already been vaccinated against contagious ecthyma (sore mouth), but few have been. At the first signs of sore mouth or if it has been on the premises recently, vaccinate all lambs. The vaccination against sore mouth is relatively simple and inexpensive.

SHORN VERSUS WOOLED

Field fed lambs should always be faced and crotched. If put in the field before mid-September in eastern South Dakota, they will gain faster if shorn. Later in

the fall this difference is not apparent. Shearing will also help reduce maggot trouble. This is most likely to happen when the lambs scour and filth collects on the wool. Judging from lamb performance, it seems to be desirable to shear lambs that are put on feed during warm to hot weather.

RATIONS FOR FINISHING LAMBS

Feed costs per hundred weight gain are important in figuring net income from finishing lambs. Experiences of successful lamb feeders as well as numerous trials at experiment stations have resulted in a standard ration for lambs on full feed:

Shelled corn	50-60%
Legume hay	36-46%
Protein supplement	4%

Recent research has shown that lambs can be finished with rations containing as low as 30% shelled corn and 70% hay. They also may be finished with a ration containing as high as 80% shelled corn and 20% hay. However, the most economical ration contains between 50 and 60% shelled corn and 40-50% hay.

Corn and legume hay may be expected to finish 60-pound feeder lambs in a period of 90 to 110 days. Fed with good judgement, these two feeds make a ration sufficiently balanced in nutrients to put about a pound plus per head on good feeder lambs every 3 days.

BALANCING RATIONS

The rations suggested in table 2 may be followed in estimating feed required per 100 lambs daily. If daily feed and nutrient requirements per lamb are needed, tables have been prepared to assist producers in balancing rations and in determining if the particular rations they are feeding are adequate for finishing lambs.

Table 3 shows the amount of daily feed on a dry matter basis and nutrients (excluding minerals) required in the ration.

Table 5 is a worksheet showing the average composition and digestible nutrients of some of the most common feeds used in South Dakota. This work sheet can be used to calculate daily rations similar to the example shown in table 4.

**Table 2. Suggested Rations for Feeding Lambs. Use Mixtures as Approximate Guides
(Pounds of feed required per 100 lambs daily)**

Ration number	1	2	3	4	5	6	7	8	9	10	11	12
Corn*	100	150	100	60	60	100	60	75	125	100	150	125
Grain sorghum†										or 100		or 125
Ground grain sorghum heads										or 175		
Dried beet pulp				60	60							
Wet beet pulp						300						
Beet tops									250-300			
Sorghum fodder or stover‡										200-300		150
Soybean meal§	15	10			15		15	15		25	10 to 20	25
Alfalfa	225	150	250	225 to 250	200	175	200	200			50 to 100	
Corn or grain sorghum silage											200	
Sorghum silage (forage)												300
Molasses**							60	40				
Ground limestone										1.5		1.5

*Grain sorghums or wheat may be substituted in equal weights for corn. Sorghums may replace all corn, but wheat should replace no more than 50 to 75% of the grain ration. Barley or oats may be fed instead of corn at the rate of 1½ pounds barley or 1½ to 1¾ pounds oats for each pound of corn replaced.

†The grain or heads of any of the grain sorghums may be used with good results. Forage sorghum grain has not proved equal to that of the grain types.

‡Grinding sorghum fodder and stover usually pays, because when ground all of it is eaten. The fodder usually contains too much moisture for easy storage so it usually is ground at 1- to 2-day intervals in warm weather and every 4 to 5 days in cold weather.

§Linseed meal, cottonseed meal, or tankage may be substituted for soybean meal.

||Well cured clover hay, soybean hay, or other good legume hay may be used instead of alfalfa. Non-legume roughages may be fed successfully instead of alfalfa, by increasing the protein supplement from 15 to 20 or 25 pounds, and adding 1½ pounds of ground limestone per 100 lambs daily.

**Five percent molasses in a complete mixed ration will take up dust, improve texture of mixture, and will likely increase feed consumption. The value of molasses in a mixture will depend upon cost of molasses in relationship to grain, the expenses involved in getting molasses mixed in the ration, and the feed consumption obtained without the molasses.

Table 3. Nutrient Requirements of Sheep in Percentage or Amount Per Pound of Total Ration
(Based on air-dry feed containing 90 percent dry matter)

Body weight lb.	Daily gain or loss lb.	Daily feed		Percentage of ration or amount per lb. of feed										
		Per animal lb.	% live weight	TDN %	De ¹ megal	Protein %	DP ² %	Ca %	P %	Salt %	Carotene mg	Vit. A meg ³	Vit. A IU	Vit. D IU
LAMBS—Fattening														
60	0.35	2.7	4.5	55	1.10	12.0	6.6	.23	.21	0.6	0.4	61	204	56
70	0.40	3.1	4.4	58	1.16	11.0	6.1	.21	.18	0.6	0.4	64	213	57
80	0.45	3.4	4.3	62	1.24	10.7	5.9	.19	.18	0.6	0.4	68	226	59
90	0.45	3.7	4.2	62	1.24	9.5	5.3	.18	.16	0.6	0.4	70	230	61
100	0.40	3.9	3.9	62	1.24	9.4	5.2	.18	.16	0.6	0.4	72	240	64

¹1 lb. TDN = 2,000 megal DE (digestible energy).

²DP = digestible protein.

³Vitamin A alcohol, 0.3 meg is equivalent to 1 IU of vitamin A activity. If vitamin A acetate is used, the vitamin A alcohol should be multiplied by 1.15 to obtain equivalent vitamin A activity. The comparable multiplier for vitamin A palmitate is 1.83.

*The figures presented in table 3 are based on experimental results compiled by the subcommittee on sheep nutrition of the National Research Council (Publication No. 1193). Rations computed on the basis of the requirements listed can be expected to furnish the nutritional requirements of lambs and produce good rates of gain.

Table 4. Example of Daily Ration for a 70-Pound Lamb on Full Feed

1	2	3	4	5	6	7	8	9	10
Lbs. of feed	Kind of feed	% dry matter	lbs. dry matter	% crude protein	lbs. crude protein	% dig. protein	lbs. dig. protein	% TDN	lbs. TDN
1.60	Corn, No. 2	85.0	1.36	8.7	.14	6.7	.11	80.1	1.28
1.50	Alfalfa Hay	90.5	1.35	15.3	.23	10.9	.16	50.7	.76
.10	Soy Bean Meal	91.0	.09	44.0	.04	37.0	.04	78.0	.08
3.20	Total Feed lbs.	---	2.80	---	.41	---	.31	---	2.12
	Minimum required	---	2.80	---	.33	---	.18	---	1.90
	Excesses	---	---	---	.08	---	.13	---	0.22
	Deficiencies	---	---	---	---	---	---	---	---

USING THE WORKSHEET

Step 1. Refer to table 3 for feed and nutrient requirements listed for the weight of your animals. Copy these figures in the blank spaces on the line headed "minimum required" at the bottom of table 5 (dry matter in column 4; crude protein, column 6; digestible protein, column 8; total digestible nutrients, column 10).

Step 2. In table 5 locate the kind of feed to be fed in column 2. In column 1 write in the pounds fed daily for each kind of feed.

Step 3. To calculate the pounds of dry matter in column 4, multiply pounds of each feed in column 1 times percent of dry matter in column 3. *Example: 1.5 pounds corn x 85% dry matter = 1.28 pounds dry matter.*

Step 4. Calculate the total crude protein for each feed in column 6 by multiplying pounds of each feed in column 1 times percent of protein in column 5. *Example: 1.5 pounds corn x 8.7% protein = .13 pounds of crude protein.* (Note: Since percentages are

used in feed composition in table 5, it is necessary to point off two additional decimal places in the multiplications.) The digestible protein for each feed in column 8 is calculated in the same manner using pounds of feed in column 1 and percent digestible protein in column 7.

Step 5. Calculate the total digestible nutrients in column 10 by multiplying pounds of feed in column 1 times percent TDN in column 9. *Example: 1.5 pounds of corn x 80.1% TDN = 1.2 pounds TDN.*

Step 6. After the amounts of nutrients furnished by each feed have been calculated, add column 1 and place result in line marked "total." Repeat this procedure for columns 4, 6, 8, and 10. After totals have been obtained, you can determine whether minimum requirements have been met or whether there are excesses or deficiencies in total dry matter or other required nutrients. Simply subtract the figure in the line "minimum required" from the figure in total line for each column, and pencil in whether it is excess or deficient.

If you find the ration low in total crude protein, you can tell how much more to feed by dividing per-

Table 5. Work Sheet Average Composition and Digestible Nutrients*

1	2	3	4	5	6	7	8	9	10
Lbs. of feed	Kind of feed	% dry matter	Lbs. dry matter	% crude protein	Lbs. crude protein	% dig. protein	Lbs. dig. protein	% TDN	Lbs. TDN
	Corn, No. 2	85.0		8.7		6.7		80.1	
	Corn and cob meal	86.1		7.4		5.4		73.2	
	Corn, high moist.	70.0		7.4		5.7		64.2	
	Oats	90.2		12.0		9.4		70.1	
	Barley	89.4		12.7		10.0		77.7	
	Sorghums, grain	89.0		10.9		8.5		79.4	
	Sorghums, high moist.	70.0		8.5		6.6		62.5	
	Corn silage	27.6		2.3		1.2		18.3	
	Grass silage	25.6		3.6		2.0		15.5	
	Alfalfa haylage	60.0		11.0		7.0		37.0	
	Oat silage	32.0		2.7		1.4		16.9	
	Oat silage low moisture	55.0		4.6		2.4		29.0	
	Sorghum silage	25.4		1.6		0.8		15.2	
	Alfalfa hay	90.5		15.3		10.9		50.7	
	Alfalfa-brome hay	89.2		11.8		7.6		47.9	
	Brome hay	88.8		10.4		5.3		49.3	
	Prairie hay	91.3		6.0		2.0		45.1	
	Soybean meal	91.0		44.0		37.0		78.0	
	Linseed meal	90.9		35.1		29.5		71.0	
	Commercial supplement								
	Totals	xx		xx		xx		xx	
	Minimum required	xx		xx		xx		xx	
	Excesses	xx		xx		xx		xx	
	Deficiencies	xx		xx		xx		xx	

*The figures presented in Table 5 are based on experimental results compiled by the subcommittee on sheep nutrition of the National Research Council (Publication No. 504). Rations computed on the basis of the requirements listed can be expected to furnish the nutritional requirements of lambs and to produce good rates of gain.

cent protein in the supplement to be fed into the pounds of protein you are deficient. For example, if the ration is short .10 pound crude protein and a 40% protein supplement is to be used, then .25 pound of the 40% supplement is needed daily per head to balance the ration in protein (.10 pound protein needed ÷ 40% supplement = .25 pound). If a 32% supplement is fed, then divide 32 into .10 and so on.

If the ration is deficient in TDN, increase grain and cut back on hay or silage.

Table 4 shows how to use the work sheet (table 5) to determine if the ration is adequate for finishing lambs.

The ration in table 4 is slightly over on crude and digestible protein. The TDN more than meets the requirements. This is not objectionable as long as the lambs will consume the amount of feed being offered.

ESTIMATING COSTS OF RATIONS

Table 6 has been prepared to assist in estimating costs of the daily ration. Because of the close margins that often occur between the cost of putting on a pound of gain and the market value of finished lambs, it may be advisable to compute two or more rations on feed available to see which is the most economical.

When the ration has been computed on the work sheet take the figures in column 1 for each kind of feed and place them in table 6. Ration cost can then be calculated.

Table 6. Figuring Costs of Daily Ration

Kind of Feed	Pounds Fed Daily	Cost Per Pound	Total
Grain			
Silage			
Hay			
Supplement			
Total Cost.....			

PELLETED FEEDS

In general, pelleting has paid off best in a higher rate of gain and a lower feed requirement per pound of gain when the feed contained 65% or more of roughage and when the roughage was relatively low in quality. Pelleting a high concentrate ration may actually reduce rate of gain. At present, the advantage of

pelleted feeds seems to lie mainly in their convenience rather than in the production of lower cost gains, even though consumption and rate of gain can be increased by pelleting most rations that are not too high in concentrate.

SILAGE

It has been amply demonstrated that good quality silage has merit as a part of the ration for finishing lambs.

Shelled corn, legume hay, corn silage, and a protein supplement fed in these proportions make a suitable ration for finishing lambs.

	Average daily ration/lb.
Shelled corn	1.1 to 1.4
Protein supplement10 to .20
Legume hay75 to 1.00
Corn or grain sorghum silage	1.00 to 1.50

Table 7. Getting Lambs on Feed

Days	Shelled corn (lbs. per day per 100 lambs)	Oats (lbs. per day per 100 lambs)	Soybean meal or linseed meal (lbs. per day per 100 lambs)	Legume hay (lbs. per day per 100 lambs)
1		25		200
2		26		200
3		31.2		200
4		31.2		200
5		31.2		200
6		37.2		200
7		37.2		200
8	12.5	37.2	12.5	200
9	12.5	37.2	12.5	200
10	18.7	31.2	12.5	200
11	18.7	31.2	12.5	200
12	18.7	31.2	12.5	200
13	25	31.2	12.5	200
14	31.2	31.2	12.5	200
15	37.2	31.2	12.5	150-190
16	44	25	12.5	150-190
17	50	25	12.5	150-190
18	56.2	25	12.5	150-190
19	60.2	25	12.5	150-190
20	69	25	12.5	150-190
21	75	25	12.5	150-190
22	87	12.5	18.7	125-150
23	94	12.5	18.7	125-150
24	112.2		18.7	125-150
25	119		18.7	125-150
26	125		18.7	125-150
27	131		18.7	125-150
28	137		18.7	125-150
29	143		18.7	125-150
30	150		18.7	125-150
31-100	150-190		18.7	100-125

PURCHASING AND SELLING COSTS

The purchasing and selling cost of lamb feeding is paid by the operator.

The absolute fixed cost (transportation, stop charge, feed, health certificates and incidentals) on western lambs purchased in western South Dakota, eastern Wyoming, or Montana will amount to approximately \$2 to \$2.50 per hundred pounds. A 4 to 8 pound shrink on each lamb when the purchase price is \$17.50/cwt. will add \$.70 to \$1.40, making a total increase over purchase price of \$2.70 up to \$3.90 per

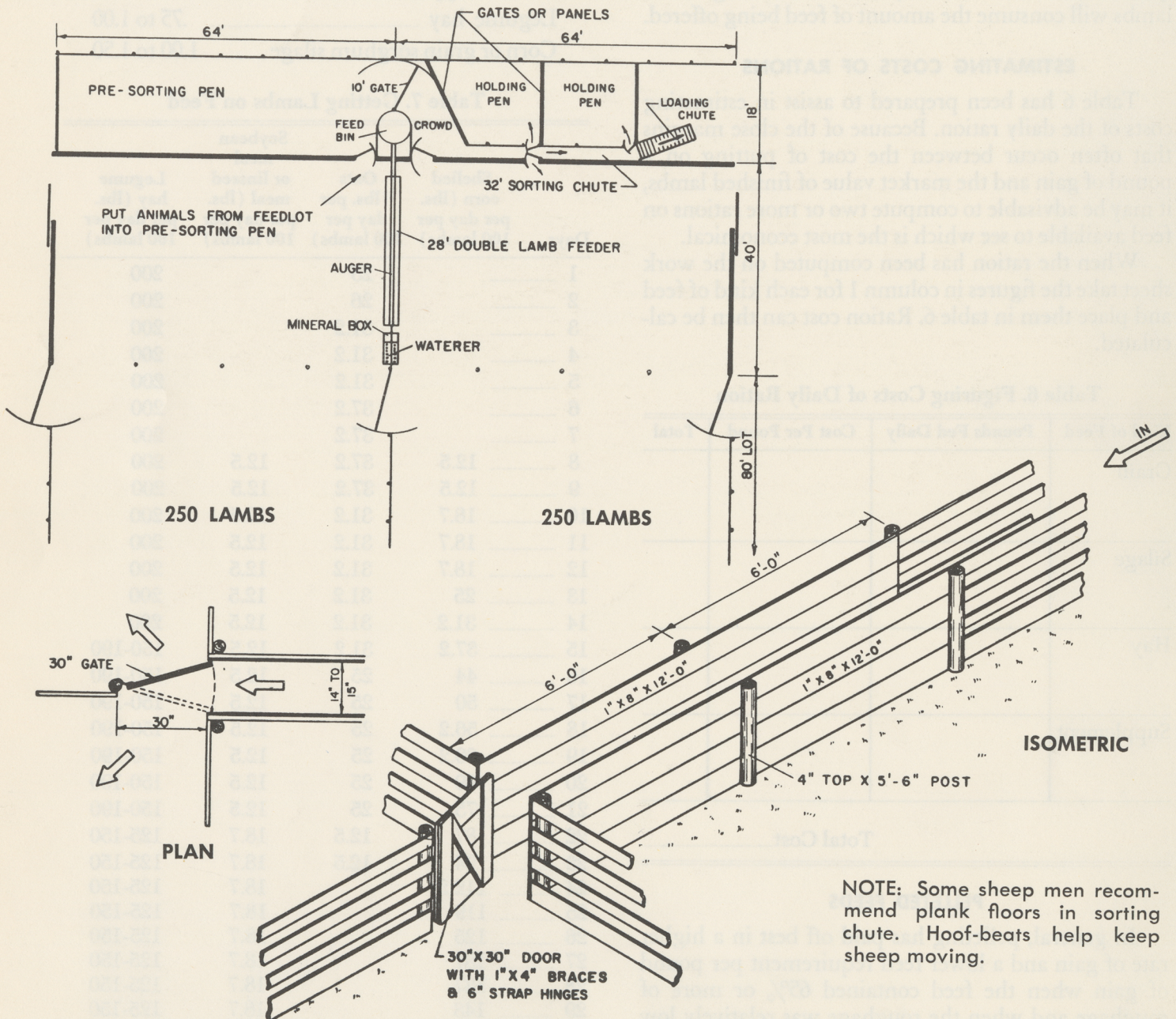
hundred weight or \$1.35 to \$1.95 per 50-60 pound lamb.

The selling cost for native or western lambs will involve a fixed cost (transportation, feed, and disinfecting) of \$1.20 to \$1.30 per lamb. A 4 to 5% shrink cost will add 80 cents to \$1, making a total selling cost of approximately \$2 per 100-pound lamb.

EQUIPMENT

M W P S 3—Sheep Equipment Plans Book—is an equipment and planning information guide for sheep producers. Obtain this guide at your County Extension office.

HANDLING SYSTEM FOR LAMB FEEDING LAYOUT



NOTE: Some sheep men recommend plank floors in sorting chute. Hoof-beats help keep sheep moving.

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