North Central Regional
Extension Publication 235

Feeding Ewes

North Central Regional Extension Publications are prepared as a part of the Cooperative Extension activities of the 13 land-grant universities from the 12 North Central States in cooperation with the Extension Service - U.S. Department of Agriculture, Washington, D.C. The following states cooperated in making this publication available.

University of Illinois
1301 W. Gregory Drive
Urbana, IL 61801
217-333-2007

Purdue University
301 South Second Street
Lafayette, IN 47905
317-494-6795

Iowa State University
112 Printing & Publication Bldg.
Ames, IA 50011
515-292-5247

Michigan State University
P.O. Box 231
East Lansing, MI 48824
517-355-0240

University of Missouri
222 S. Fifth Street
Columbia, MO 65211
314-882-7216

North Dakota State University
Dept. of Ag. Communications
Fargo, ND 58105
701-237-7881

Ohio State University
2120 Fyffe Road
Columbus, OH 43210
614-422-1607

*South Dakota State University
SDSU, Box 2212A
Brookings, SD 57007
605-688-5628

*Publishing state

For copies of this and other North Central Regional Extension Publications, write to: Publications Office, Cooperative Extension Service, in care of the University listed above for your state. If they do not have copies or your state is not listed above, contact the publishing state as specified or contact the coordinating office for the NCR Educational Materials Project, B-10 Curtiss Hall, Iowa State University, Ames, IA 50011. (515) 294-8802.

In cooperation with NCR Educational Materials Project

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the USDA and Cooperative Extension Services of Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Nebraska, North Dakota, Ohio, and South Dakota. Richard A. Battaglia, Director of Extension Service, South Dakota State University, Brookings, SD 57007.

Feeding Ewes

Leon F. Bush and **James Thompson**
Extension sheep specialists, SDSU

Proper feeding and year-round management of ewes are essential to profitable sheep production. Feed for the ewes can be 60 to 80% of the total production costs of the sheep enterprise. Either excessive or inadequate nutrition is expensive. To avoid these costly extremes you must know something of the nutritive requirements of the ewe throughout the year. That knowledge may make the difference between profit and loss in your operation.

Nutritive Needs of Sheep

The ideal sheep ration supports optimum production. is efficient and economical to feed, and minimizes nutritionally related problems. It is essential to know the nutritive requirements of the animal at its particular life stage, the composition of the feed, and then how to supplement these feeds to meet animal requirements.

It is just as important to know **what** to feed sheep as it is **when** to feed them.

Water

An adequate supply of clean water is essential. If you force sheep to consume stagnant. poor quality water, production will drop sharply.

Water consumption varies with climate and type of feed. Sheep drink more water in summer than in winter and more when fed dry feeds than when eating pasture grass or other succulent feeds. They may go for weeks without water when foraging on grasses of high moisture content. However, under normal production a plentiful supply of good quality water should be provided daily and kept free of ice during winter months (Table 1).

Table 1. Average daily water requirement for sheep.

Breeding ewes, before lambing	4 qt/head
Breeding ewes, lactating	6 qt/head

Energy

The most common limiting factor in ewe nutrition is energy. Although the most plentiful feeds available are the best sources of energy. sheep are often underfed.

Poor quality roughage or inadequate amount of feed is the primary Cause of energy deficiency. Inadequate energy will result in decreased production, reproduction failure, increased mortality. and increased susceptibility to disease and parasites.

The major sources of energy are hay. silage. and pasture. During periods of high energy requirements, such as the last 4 to 6 weeks of gestation and during lactation, grain (corn, barley. milo, wheat. and oats) is needed to supplement the energy supplied by roughage.

Overfeeding so that ewes are excessively fat at breeding and parturition can adversely affect conception, increase risk of ketosis (pregnancy disease), and increase mortality rate of lambs. Overfeeding will also certainly decrease profit.

Protein

Except for very young lambs, the **amount** of protein in sheep rations is more important than the **quality** of protein.

Oil meals such as soybean meal are excellent protein supplements for sheep. Properly harvested legume hays are intermediate in protein content (12-16%) and, when used as the total ration, will provide adequate protein for all classes of sheep.

Non-protein nitrogen sources such as urea can be converted by sheep to protein. When non-protein nitrogen sources are used, it is essential to provide sufficient energy to allow efficient utilization of the nitrogen.

The level of urea in protein supplements which will be the only supplement to low protein roughage or winter range should be limited to one third of the protein supplement. This would be about 5.1% urea (13% protein equivalent) in a 40% protein supplement.

Mineral (calcium, phosphorus, and salt)

Free choice mineral supplement appears to suit the needs of sheep in most cases. Salt is generally provided to ewes at the level of 0.25-0.40 ounces per head per day (Table 2). Stabilized iodine salt. free choice or in a mineral mixture, will meet requirements for sodium, chlorine, and iodine.

Table 2. Average salt requirement for sheep.

Breeding sheep, range	1 lb/head/month
Breeding sheep, farm flock	0.9lb/head/month

Most pasture, legume hay, and range forage contain adequate levels of calcium. Grains are generally somewhat deficient in this mineral. Finely ground limestone is the cheapest and best source of calcium for supplementation.

Mature pasture and range plants are quite low in phosphorus. Grains are relatively high. Forages containing less than 0.16% phosphorus are considered deficient for ewes during gestation, and 0.20% phosphorus content is considered borderline during

lactation. Steamed bonemeal, a defluorinated rock phosphate, or dicalcium phosphate may be used as phosphorus supplements.

The amount of calcium and phosphorus in mineral supplements should vary with the type of ration being offered. A 40% dicalcium phosphate or bonemeal and 60% trace mineral salt mixture will meet requirements. Additional salt may be advisable, so that animals do not need to eat the mineral mixture merely to satisfy their appetite for salt.

Vitamins

Mature sheep require the fat soluble vitamins A, D, E, and K, but do not need sources of B vitamins in their diets. B vitamins are synthesized in adequate amounts in the rumen.

Normal ewe rations (good quality legume hay or green pastures) are adequate in all fat soluble vitamins expect carotene and/or vitamin A which is low in winter range. However, ewes can build up liver stores of vitamin A which are adequate enough to maintain production for 3 to 4 months. When vitamin A may be deficient, add dehydrated or high quality green alfalfa hay or stabilized vitamin A product to the rations.

Vitamin D deficiency is not a problem unless ewes are fed a vitamin D-deficient ration and housed where they receive no sunlight.

Vitamin E is usually supplied in ample amounts in normal rations. If there is reason to believe that vitamin E is short, consider supplementing with wheat germ oil.

If it is difficult to provide these nutrients in a supplemental feed, use injectable ADE.

Antibiotics in Ewe Rations

Antibiotics in the ration during late gestation and early lactation may reduce lamb mortality.

Research at South Dakota State University showed that supplementing rations to pregnant ewes with 60 mg aureomycin per head daily for 80 days, starting 6 weeks before lambing, substantially reduced lamb mortality. The average lamb mortality from birth to weaning for a 3-year period was 3.9% in the aureomycin supplemented group, compared with 14.5% in the control group. The antibiotic treatment did not influence weight change of the ewe or lamb gains from birth to weaning.

A 2-year study at the University of Wyoming showed similar results. Supplementing pregnant ewe rations with 65 mg per head daily of aureomycin, starting 6 weeks before lambing and continuing for 6 weeks, reduced lamb deaths between birth and 14 days of age from 13.8 to 4.8% the first year and from 15.6 to 10.9% the second year. An apparent improvement in health was observed as well as a reduction in mastitis.

Pasture Management

Sheep are the only farm animals that will produce a top quality market product from pasture. They are natural foragers and exceed all other animals in ability to utilize pasture plants.

You must work out your own pasture program to fit your individual situation. Lambing date, type of lambs produced, pasture available, and other livestock on the farm are a few of the factors that affect your program. To provide satisfactory grazing throughout the season, use rotation and temporary or emergency pasture in addition to permanent pasture.

Proper pasture rotation provides 20% more grazing days during the summer pasture season:

1. Use at least three permanent pastures in the rotation. Along with these, it is good management to provide a summer temporary pasture.
2. Use only one pasture at a time and start grazing when grass is 5 to 7 inches high.
3. Rotate sheep every 2 weeks or more often if grass coverage is down to 4 inches.
4. Allow at least 3 inches of growth to remain at the end of the grazing season. This will help preserve the stand, conserve moisture. and aid in parasite control.

A non-lactating ewe will often consume much more feed than she requires for maintenance, especially during periods of lush vegetative growth. She may become too fat, which will affect conception rate. Providing access to pasture for 4 hours or less per day (depending upon condition of the pasture) will meet the ewe's requirement and also increase carrying capacity.

To obtain maximum sustained sheep production from native range:

1. Utilize no more than 45% of the annual forage production during the summer grazing season.
2. Use water sources, fencing, shade, and distribution of salt and mineral to achieve even grazing of the entire pasture.
3. If possible, rotate grazing so that you use each pasture during a different season in different years.
4. And if possible, provide an early spring tame pasture so that native range will not be grazed early in the spring when range plants are in their most critical growth stage. At this time they can he damaged excessively by grazing.
5. Allow each native pasture to rest one year out of every 4 to 6.
6. Carry over a plentiful supply of hay and cull heavily so that your range will continue to stay in good condition during droughts.

Any suggested grazing rate is only a guide. Your actual rate will depend upon rainfall. the kind of pasture mix, and the fertility of the soil in the pastures.

Preparation of Feeds for Ewes

Grinding or rolling grains

Of all farm animals, sheep are best able to do their own grinding. With few exceptions, they should be fed whole grain. Those exceptions are extremely hard grain or poor teeth.

Chopping or grinding roughage

Does it pay to chop, shred, or grind hay? That depends upon the quality of the hay, the way in which it is fed, the price of hay, and the cost of the preparation.

Such processing facilitates handling. The hay can be stored in smaller areas and can be fed with less waste. Such processing does not, however, increase the nutritive value of the initial product.

Pelleting

Check the value of pelleting of against the cost. Use as much your own home-grown feeds as possible for economical operation. Since home-grown feeds make up most the ewes' diet, under most management situations, it does not appear feasible to feed a pelleted ration.

Flushing the Ewe

Feeding the ewe so she is gaining weight about 2 weeks before breeding may increase lambing percentage by 10 to 20%. (Ewes already in high condition will not respond as well to flushing as those in poorer condition. Ewes that are too fat may not conceive at all.)

To flush, graze ewes on a good pasture saved for this purpose or feed them 0.5 to 0.75 lb of oats or corn per head per day. Flushing ewes on legume pastures may delay conception because of the estrogen coumestrol, present in legumes.

Flushing that is continued through the breeding season will favorably influence embryo survival during early pregnancy.

Feeding the Pregnant Ewe

You can use pastures (including permanent, temporary, stubble, or corn stalks) as long as they are available. When pasture can no longer maintain the ewe's weight, supplemental feed must be provided.

The most satisfactory forage is good quality alfalfa hay. If native hays are used, every effort should be made to cut the hay in an early stage of maturity and cure it properly. A protein supplement is usually required when feeding native hay. The protein may be supplied by feeding one third of the roughage as good quality alfalfa hay.

During the last 4 to 6 weeks of pregnancy, a concentrate supplemented ration must be fed to meet the needs of the rapidly growing fetus. About two thirds of the total birth weight is put on during the last 6 weeks of pregnancy. The ewe should receive about 3/4 lb grain daily. start feeding 1/4 lb and gradually increase grain allowance.

The ewe should gain 20 to 30 lb during the gestation period.

Feeding at Lambing Time

Provide clean, fresh water to the ewe after lambing. Feed only a moderate amount of roughage for the first 2 days. Take about one week to place the ewe on full feed.

A mixture of equal parts oats and wheat bran is a good ration to feed at this time.

Feeding During Lactation

Lactation places a greater demand on the ewe than pregnancy. The ewe is not only feeding her lambs but also is growing wool and, if young, should be making growth herself.

The ewe reaches peak milk production about 4 weeks after lambing; production drops after this point. She will yield from 1 to 4 qt milk per day and will maintain adequate milk production, if properly fed, for 2 1/2 to 3 months.

How much you feed the ewe during the first 60 days of lactation depends on whether she is nursing a single or twins, her size and condition, her age, and the time of year the lambs were born. Separate the ewes with twins from those with singles for feeding during lactation.

After the first 60 days, reduce the amount of feed to what the ewes were fed during late pregnancy. Continued heavy feeding will only fatten ewes and increase costs.

Feeding Ewes Nursing Triplets

Research at the Ohio Agricultural Research and Development Center has produced these guidelines for feeding ewes nursing triplets (Table 3).

Table 3. Feed for ewes nursing triplets, 130-lb ewe and 160-lb ewe*.

		Roughage		*Concentrate*			
				Grain		*Protein*	
Class of sheep	*No. days*	*lb/hd/ day*	*total lb*	*lb/hd/ day*	*total lb*	*lb/hd/ day*	*total lb*
Early lactation	60	2.0 (2.5)	120.0 (150.0)	3.5 (4.0)	210.0 (240.0)	0.3 (0.3)	18.0 (18.0)
Late lactation	14	4.5 (5.0)	63.0 (70.0)‘	1.4 (1.8)	19.6 (25.2)		
Total per ewe	74		183.0 (220.0)		229.6 (265.2)		18.0 (18.0)

*Amounts in parentheses are for ewes weighing 160 lb.

1. Have ewes in above-average condition at lambing time.
2. Provide a 16 to 17% crude protein ration during the first 4

weeks of lactation.

3. Limit roughage to 2 to 2'/z lb of high quality legume hay per day.
4. Feed total concentrate levels (grain + protein supplement) of 3 to 3 3/4 lb for medium sized ewes (150 lb) per head per day. Feed twice a day.

Self-Feeding Ewes

There are two main advantages to self-feeding a ground mixed ration to ewes: (1) reduced labor and (2) more efficient use of lower quality roughage. The major disadvantage is that the ewes may become too fat, especially during gestation. But you can control consumption of the self-fed ration by limiting ewe access time to the feeder.

The University of Illinois has had satisfactory results with the rations given in Table 4.

Self-fed ewes nursing twins will require a higher percentage of grain and protein than self-fed ewes nursing only singles.

Substituting Grain for Hay In Winter Rations for Ewes

When little or no winter grazing is available and hay supplies are short, you may have to substitute grain for a major part of the roughage.

Table 5 shows the energy value of various grains compared to alfalfa and prairie hay. Use this table to determine the feeding value of the grains.

For example, on the basis of TDN, corn grain is worth 1.9 times as much as average quality prairie hay. One pound of corn, replaces 1.9 lb of prairie hay in the wintering rations of ewes.

Table 6 shows the price that could be paid for various grains in relation to the price of alfalfa hay, based on the energy value of each feed.

For example, if good quality alfalfa hay costs $75/ton delivered, you could afford to pay up to $6.01/cwt for corn grain or $4.74/cwt for oats delivered in a ready-to-feed form. If grain can be bought for less than the value indicated in Table 6, it should be economical to substitute grain for part of the roughage in the winter ration of ewes.

Table 4. Rations for self-feeding ewes.

	Corncob ration			*Oat hay ration**		
Ingredients	*early gestation*	*late gestation*	*lactation*	*early gestation*	*late gestation*	*lactation*
Corn cobs, ground	70	65	60	—	—	—
Oat hay, ground	—	—	—	80	75	70
Alfalfa meal	5	5	5	5	5	5
Corn, ground	10	15	20	10	15	20
Soybean meal	15	15	15	5	5	5
Steamed bonemeal	1	1	1	1	1	1
Salt, trace mineralized	1	0.5	0.5	1	0.5	0.5

*Medium to low quality hay may be used in similar manner as oat hay.

Table 5. Energy values of various grains compared to prairie and alfalfa hay.

		Amount of hay that can be replaced by one lb grain	
Grain	*TDN*	*Prairie hay (46% TDN)*	*Alfalfa hay (55% TDN)*
Corn	91	1.9	1.7
Barley	83	1.8	1.5
Oats	76	1.6	1.4
Sorghum	80	1.7	1.5
Wheat	88	1.9	1.6
Ear corn	80	1.7	1.5

Table 6. Comparative value of hay and grain for wintering ewes.*

	Valve of grain per hundred weight					
Cost of hay per ton	*Corn*	*Barley*	*Oats*	*Sorghum*	*Wheat*	*Ear corn*
40	3.20	2.87	2.53	2.87	2.94	2.57
45	3.61	3.23	2.84	3.23	3.31	2.89
50	4.01	3.58	3.16	3.58	3.68	3.211
55	4.41	3.94	3.48	3.94	4.05	3.53
60	4.81	4.30	3.79	4.30	4.42	3.85
65	5.21	4.66	4.11	4.66	4.78	4.17
70	5.61	5.02	4.42	5.02	5.15	4.49
75	6.01	5.38	4.74	5.38	5.52	4.81

The grains in Tables 5 and 6 are compared on the basis of estimated net energy values only. Differences in protein content have not be considered. When making substitutions, the higher protein grains (barley, oats, and wheat) would be worth slightly more than is indicated in Table 6 because a little less protein supplement will be needed when these grains are fed.

Since wheat may cause possible digestive problems, it should make up no more than half of the grain fed. Grains with built-in roughage such as barley, oats, and ear corn are less apt to cause feeding problems.

Costs and Returns For Your Own Operation

Tables 7 and 8 give you winter feed budgets for two different lambing periods. Table 9 gives suggested daily rations for early lactation when shelled corn and roughages are fed. Tables 10 and 11 will help you determine net return over direct operating costs.

Table 7. Winter feed budget for 100-ewe flock, 130-lb average and 160-lb average* using alfalfa hay (14% protein). January-February lambing, 150% lamb crop

			Roughage		*Concentrate*			
Class of sheep	*No. head*	*No. days*	*lb/hd/ day*	*flock total tons*	*grain lb/hd/ day*	*flock total tons*	*protein lb/hd/ day*	*flock total tons*
Mature ewes and yearlings								
flushing and breeding	100	48			0.5	1.2		
					(0.5)	(1.2)		
early gestation	100	105	2.9	15.22				
			(3.1)	(16.28)				
late gestation	100	28	4.0	5.60	0.5	0.7		
			(4.0)	(5.60)	(0.65)	(0.91)		
early lactation, single	50	56	4.0	5.6	1.6	2.24		
			(4.5)	(6.3)	(1.6)	(2.24)		
early lactation, twins	50	56	4.2	5.9	2.0	2.8		
			(5.0)	(7.0)	(2.0)	(2.8)		
late lactation, single	50	14	4.0	1.4	0.5	0.18		
			(4.0)	(1.4)	(0.65)	(0.23)		
late lactation, twins	50	14	4.5	1.6	1.0	0.35		
			(5.0)	(1.75)	(1.0)	(0.35)		
maintenance, post weaning	100	30	2.5	3.75				
			(2.7)	(4.05)				
Replacement ewe lambs	20	235	3.2	7.52	0.5	1.18		
			(3.4)	(7.99)	(0.5)	(1.18)		
Ram (260 +) breeding	3	48			1.0	0.07		
					(1.0)	(0.07)		
maintenance, post breeding	3	233	6.0	0.70				
			(6.0)	(0.70)				
Lambs (expected gain 0.7 lb/day)	150	150	0.6	6.75	2.1	23.6	0.45	5.1
(expected gain 0.8 lb/day)	(150)	(140)	(0.7)	(7.35)	(2.3)	(24.15)	(0.52)	(5.4)
Total feed required, tons				54.04		32.32		5.1
				(58.42)		(33.13)		(5.4)
If ewe lambs are bred to lamb at one year of age add the following:								
lambs	20			0.9		3.15		0.675
				(0.98)		(3.22)		(0.728)
replacement ewe	20			0.2		1.00		
				(0.2)		(1.10)		

*Weight of ewe taken at breeding time; ewes in average condition, salt-mineral mixture fed free choice. Figures in parentheses are for ewes weighing 160 lb.

Table 8. Winter feed budget for 100-ewe flock, 130-lb average and 160-lb average* using alfalfa hay (14% protein), March-April lambing, 150% lamb crop.

			Roughage		*Concentrate*			
Class of sheep	*No. head*	*No. days*	*lb/hd/ day*	*flock total tons*	*grain lb/hd/ day*	*flock total tons*	*protein lb/hd/ day*	*flock total tons*
Mature ewes and yearlings								
maintenance	100	15	2.5	1.88				
			(2.7)	(2.03)				
flushing and breeding	100	48	2.9	6.96	0.5	1.2		
			(3.1)	(7.44)	(0.5)	(1.2)		
early gestation	100	105	2.9	15.22				
			(3.1)	(16.28)				
late gestation	100	28	4.0	5.6	0.5	0.7		
			(4.0)	(5.6)	(0.65)	(0.91)		
early lactation, single	50	30	4.0	3.0	1.6	1.2		
			(4.5)	(3.38)	(1.6)	(1.2)		
early lactation, twins	50	30	4.2	3.15	2.0	1.5		
			(5.0)	(3.75)	(2.0)	(1.5)		
Ram (260 lb+) maintenance	3	15	5.8	0.13				
			(5.8)	(0.13)				
flushing, breeding	3	48	5.8	0.42	1.0	0.07		
			(5.8)	(0.42)	(1.0)	(0.07)		
maintenance, post breeding	3	163	5.8	1.42				
			(5.8)	(1.42)				
Replacement ewe lambs	20	266	3.2	8.51				
			(3.4)	(9.04)				
Lambs	150	90	0.8	5.4	2.95	19.91	0.25	1.69
			(0.8)	(5.4)	(2.95)	(19.91)	(0.25)	(1.69)
Total feed required, tons				51.69		24.58		1.69
				(54.89)		(24.75)		(1.69)

*Weight of ewe taken at breeding time; ewes in average condition. Salt-mineral mixture fed free choice. Figures in parentheses are for ewes weighing 160 lb. Feeding calculated from October 1 through May 15. The use of stubble fields, corn stalks, and temporary forage crops during the fall would reduce the amount of harvested feeds required.

The most common shortage in ewe rations is energy; the causes are poor quality roughage and/or not enough feed. If so, add grain, particularly during lactation. Separate the ewes according to number of lambs produced. The general rule: the bigger the family, the more grain. Ewes with twins or triplets may need more protein than the NRC recommendations, if soybean meal is your protein source. Consider feeding extra meal during the first 4 weeks; see Table 9.

Table 9. Suggested daily rations to meet requirements* when shelled corn and various roughages are fed to ewes during early lactation.

		*Ewe Weights***			
		nursing twins		*nursing a single*	
Rations		*130 lb*	*160 lb*	*130 lb*	*160 lb*
1					
	Alfalfa hay	4.2	5.0	4.0	4.5
	Shelled corn	2.0	2.0	1.6	1.6
2					
	Bromegrass hay	4.2	5.0	4.0	4.5
	Shelled corn	2.0	2.0	1.6	1.6
	Soybean meal	0.15[a]	0.15[a]	0.1	0.1
3					
	Alfalfa silage (30% DM)	7.5	9.5	7.5	9.5
	Alfalfa hay	1.5	1.5	1.5	1.5
	Shelled corn	2.3	2.3	1.8	1.8
4					
	Alfalfa haylage (50% DM)	7.5	8.5	7.0	8.0
	Shelled corn	2.0	2.0	1.6	1.6
5					
	Corn silage (30% DM)	10.0	12.0	10.0	12.0
	Shelled corn	1.4	1.2	1.2	1.0
	Soybean meal	0.75[a]	0.8[a]	0.45	0.5
6					
	Corn silage (30% DM)	7.5	9.	7.5	9.0
	Alfalfa hay	1.5	1.5	1.5	1.5
	Shelled corn	1.7	1.8	1.25	1.25
	Soybean meal	0.3[a]	0.3[a]	0.1	0.12

*Salt-mineral mixture to be fed free choice.
**Weight taken at breeding time; ewes in average condition.
[a]Some current research indicates that the protein requirement for ewes nursing twins may be higher than NRC recommended level. You may wish to increase the soybean meal in these three rations by 0.3 lb for the first 4 weeks of lactation.

Table 10. Estimated cost and return per ewe per year, early lambs born January-February, 150% lamb crop marketed.

Gross Income					*Your estimate*
market lambs	1.15 cwt	x 1.5 x $65	=	$112.12	
	____cwt	x____x____	=		_____
lamb wool Incentive	1.15 cwt	x 1.5 x 1.60	=	2.76	
	____cwt	x____x____	=		_____
shorn wool	10 lb	x $0.60	=	6.00	
	____lb	x_____	=		_____
wool incentive	10 lb	x 0.60	=	6.00	
	____lb	x_____	=		_____
cull ewes	120 lb	x .2 x 0.10	=	2.40	
	____lb	x_____x_____	=		_____
Total income				$129.28	
Operating costs					
breeding charge (cost of ram/yrs used/35)				2.00	_____
veterinary and drugs				3.20	_____
shearing				2.00	_____
supplies				2.00	_____
marketing				2.40	_____
protein supplement	1.05 cwt	@ $12.00	=	12.60	
	____cwt	@_____	=		_____
mineral, salt	.2 cwt	@ 10.00	=	2.00	
	____cwt	@_____	=		_____
corn, equivalent	11.6 bu	@ 3.30	=	38.28	
	____bu	@_____	=		_____
Alfalfa hay, equivalent	.56 ton	@ 55.00	=	30.80	
	____ton	@_____	=		_____
pasture	1.16 AUM	@ 15.00	=	17.40	
	____AUM	@_____	=		_____
Total direct operating costs				$113.28	_____
Income over direct operating costs				16.00	_____
Income per animal unit (5 x 16.00)				80.00	_____

Table 11. Estimated cost and return per ewe per year, late lambs born March-April, 150% lamb crop marketed.

Gross Income					*Your estimate*
market lambs	1.10 cwt	x 1.5 x $58	=	$95.70	
	____ cwt	x____x____	=		_____
lamb wool Incentive	1.10 cwt	x 1.5 x 1.60	=	2.64	
	____ cwt	x____x____	=		_____
shorn wool	10 lb	x $0.60	=	6.00	
	____ lb	x_____	=		_____
wool incentive	10 lb	x 0.60	=	6.00	
	____ lb	x_____	=		_____
cull ewes	120 lb	x .2 x 0.10	=	2.40	
	____ lb	x____x____	=		_____
Total income				$112.74	
Operating costs					
breeding charge (cost of ram/yrs used/35)				2.00	_____
veterinary and drugs				3.45	_____
shearing				3.15	_____
supplies				2.00	_____
marketing				2.40	_____
protein supplement	0.35 cwt	@ $12.00	=	4.20	
	____ cwt	@_____	=		_____
mineral, salt	0.25 cwt	@ 10.00	=	2.50	
	____ cwt	@_____	=		_____
corn, equivalent	8.8 bu	@ 3.30	=	29.04	
	____ bu	@_____	=		_____
Alfalfa hay, equivalent	.50 ton	@ 55.00	=	27.50	
	____ ton	@_____	=		_____
pasture	1.45 AUM	@ 15.00	=	21.75	
	____ AUM	@_____	=		_____
Total direct operating costs				$97.99	_____
Income over direct operating costs				14.75	_____
Income per animal unit (5 x 16.00)				73.75	_____