

Sheep on Shares



**Erin Brown
Dan Nudell
Harlan Hughes
Tim Faller**

Hettinger
Research Extension Center
and
NDSU Extension Service

The sheep industry is undergoing major fundamental structural changes. The American Sheep Industry Association predicts that expanded sheep production will move into the farm belt of the upper great plains. As this happens, the potential exists for new producers to enter the business.

One of the entry methods may be to use leased or rented ewes. Investors are expressing interest in owning sheep, and working farmers and ranchers are looking for alternative ways to finance sheep flock expansion. A sheep lease arrangement may provide a vehicle for a retiring sheep producers to help the next generation get started and also provide a method for deferring capital gains on the flock.

One way for an investor to capture some of the economic profits from sheep production is to own the sheep and lease them to a working farmer or rancher. In turn, the working farmer or rancher provides the labor, feed, and all other inputs needed to operate the sheep flock but does not need to provide investment capital for sheep ownership.

A leasing or sharing arrangement allows these two business people to share the production costs and, in turn, share the sheep income. A question that quickly surfaces, however, is that of what would be an equitable sheep leasing agreement.

This circular will show one way to determine an equitable sheep leasing agreement.



NDSU EXTENSION SERVICE

North Dakota State University, Fargo, ND 58105

APRIL 1999

Determining What Is An Equitable Leasing Agreement

The theoretical procedure for determining an equitable sheep share agreement is really quite simple. An equitable agreement is one in which the two parties share business income in the same proportion that they share production costs. If the ewe owner provides 25 percent of the production costs, then the ewe owner should receive 25 percent of the total income and the participating rancher should receive 75 percent of all income.

Expenses can be shared in many different ways. In some cases the ewe owner provides the ewes, the rams, and sometimes even the summer pasture. Typically, however, the owner of the ewes provides only the ewes and the replacement females, and the participating rancher provides the rest of the resources. Each equitably shared arrangement should be tailored to the two participants' unique resource contributions.

Include All Income From Sheep Flock In The Agreement

Although in a typical lease the equity question relates mainly to the sharing of the lamb crop, it is important to note that "all" the income from the flock should be accounted for. A sheep enterprise can generate income from four sources: lamb sales, cull ewe sales, cull ram sales, and wool.

An equitable sharing agreement has to ensure that all potential income sources are taken into account. Each party needs to clearly understand the total income potential of the flock.

Projecting The Full Costs of Production

An equitable sheep share agreement should be based around the projected full costs of production. Full costs should

include all resources employed in the sheep enterprise, including the direct costs, the opportunity costs for the working rancher's labor and management, and the equity capital of both parties. Ewe depreciation should be included in place of replacement ewe costs (more on this later).

An example of a cost budget for a sheep flock is presented in Table 1. The projected cost of feeding this North Dakota sheep flock from weaning the previous

Table 1. Sample projected cost budget for a 100-ewe flock (lambs fed to 130 lbs).

	Units	Total Price	Costs
Feed Costs –			
Hay	52.00 tons	\$45.00	\$2,340.00
Pasture	89.00 AUMs	\$12.00	\$1,068.00
Grain	977.00 bu	\$1.90	\$1,856.30
Protein supplement	0.00 lbs	\$0.00	\$0.00
Stubble	37.00 AUMs	\$0.00	\$0.00
Commercial feed	total flock cost		\$64.00
Total feed cost for enterprise			\$5,328.30
Annual feed cost per ewe		\$53.28	
Livestock Costs –			
Bedding	per ton	\$15.00	\$30.00
Marketing charges for flock	per ewe	\$5.44	\$544.00
Vet and medicine	per ewe	\$4.50	\$450.00
Power and fuel	per ewe	\$0.95	\$95.00
Utilities and general farm expenses	per ewe	\$3.00	\$300.00
Supplies	per ewe	\$1.00	\$100.00
Shearing	per ewe	\$1.75	\$175.00
Annual livestock costs per flock			\$1,694.00
Annual livestock costs per ewe		\$16.94	
Operating capital interest*			\$280.89
Total variable costs per ewe		\$73.03	
Fixed Costs (depreciation, repairs, insurance) –			
Buildings (depreciation, repairs, insurance)		7%	\$350.00
Equipment (depreciation, repairs, insurance)		13%	\$260.00
Ewes (depreciation and insurance)			\$1,100.00
Rams (depreciation and insurance)			\$207.50
Total fixed costs			\$1,917.50
Total fixed costs per ewe		\$19.18	
Total Costs (excluding labor, management, equity capital) –			
Total direct costs per ewe		\$92.21	

* Operating capital interest was computed by multiplying one-half of the variable costs (feed and livestock) by the economic or long-term interest rate. This sample projection used a rate of 8%.

year until weaning the current lamb crop is \$5,328.30 total feed cost, or \$53.28 per ewe. Add vet and medicine at \$4.50 per ewe, utilities at \$3.00 per ewe, power and fuel at \$0.95 per ewe, marketing at \$5.44 per ewe, bedding at \$.30 per ewe, shearing at \$1.75 per ewe, and miscellaneous supplies at \$1.00 per ewe to get a projected non-feed direct cost of \$16.94 per ewe, or \$1694 for the total flock. An operating capital interest cost of \$280.89 is assigned to the flock to cover the cost of capital for operating expenses. This example enterprise assumed that variable costs are used throughout the year, so on average the use is one-half of the total. The opportunity cost of this capital was assumed to be 8 percent. After accounting for asset depreciation, equipment and building repairs, and insurance, the total projected direct cost of operating this flock comes to \$9220.69, or \$92.21 per ewe.

The second step in setting up an equitable sheep share agreement is to calculate the opportunity costs of selected resources provided by both parties (see Table 2). In this example flock, the three hours of labor required per ewe on an annual basis was priced at \$8 per hour, management charge was calculated at 5 percent of gross income, and the charge for equity capital was valued at 8 percent of fair market value of assets. When the labor cost of \$2400, management charge of \$655.13, and equity capital charge of \$1420 are added in, the full-cost budget comes to \$13695.82, or \$136.96 per ewe.

Table 3 presents a detailed description of the example herd. This flock had 100 females (80 mature ewes plus 20 replacement females) exposed to rams the fall before. These ewes had a conception rate of 95 percent, so 95 were assumed pregnant. Since no pregnancy checking was done, all 100 ewes were wintered. The 100 wintered ewes produced 143 live lambs. Eighteen lambs died and five were sold as bums before weaning so that 120 live lambs were weaned. This calculates to a 120 percent lamb crop (120/100) based on live lambs weaned per females exposed. This 120 percent lamb crop was

calculated according to the National Sheep-SPA Guidelines.

Table 4 presents the projected total income for the example sheep flock. The 120 lambs were split evenly between wethers and ewe lambs. Fifteen ewes and one of the three rams were culled this year. These lambs were sold at 130 pounds for \$0.75 per pound, producing income of \$11,700. In addition 5 bum lambs were sold for \$10 each bringing lamb income to \$11,750. The cull ewes brought \$787.50 and the cull ram \$50. Wool income was \$515. The total income for this flock was \$13102.50, or \$131.03 per ewe.

Table 2. Opportunity costs for selected resources.

Labor charge	3.00 hours @	\$8.00	\$2,400.00
Management charge	5% of gross		\$655.13
Capital investment	8% of investment	Value	
Ewes		\$10,000.00	\$800.00
Ram(s)		\$750.00	\$60.00
Buildings		\$5,000.00	\$400.00
Total equity capital interest cost			\$1,420.00
Management charge			\$655.13
Labor charge			\$2,400.00
Total direct cost			\$9,220.69
Full cost of production			\$13,695.82
Full cost of production per ewe	\$136.96		
Unit full costs of production	1.74 cwts/ewe	\$0.79 per lb.	

Table 3. Description of example sheep flock.

100 Head Spring Lambing Ewe Flock			
Expected replacement	20 head	ewe death rate	5%
Lamb weaning rate	90 days	ewe culling rate	15%
Feed included for	100 ewes	ewe conception rate	95%
		percent lamb crop	132%
Lambs fed to 130 lbs	120 head	lamb death rate	12.5%
		replacement females	purchased
Number of rams	3 head		

Table 4. Gross revenue for 100-ewe flock.

Cash Flow	Receipts			Economic Output
\$11,700.00	120 lambs	15600 lbs	\$0.75 /lb =	\$11,700.00
\$787.50	15 cull ewes	2250 lbs	\$0.35 /lb =	\$787.50
\$50.00	1 rams		\$50.00 /hd =	\$50.00
\$50.00	5 bum lambs		\$10.00 /hd =	\$50.00
\$515.00	shorn wool	1030 lbs	\$0.50 /lb =	\$515.00
\$13,102.50	gross income per flock			\$13,102.50
\$131.03	gross income per ewe			\$131.03

* Cash flow income does not need to equal economic income. It will be different if there is an inventory change and/or capital gains income is received from the sale of cull breeding animals.

The third step in setting up an equitable sheep share agreement is to allocate each resource cost to the party that will pay that particular production cost. Each member of the agreement can contribute any combination of resources as long as each party agrees on who is responsible for each and every production cost.

An Example Equitable Share Agreement

Let's evaluate a typical sheep lease situation where the investor furnishes the ewes, the rams and the replacement females. The participating rancher provides the feed, labor and management. Table 1 suggests that the cost (excluding labor, management and equity) of running this study flock is \$9220.69, or \$92.21 per ewe. Table 2 shows the projected full cost of operating this sheep flock, which totals \$13,695.82, or \$136.96 per ewe.

Once the total costs are determined, the next step is to allocate each and every cost to be shared between the two participants. This cost allocation is best done by adding in two more columns

on the cost budget — one for the ewe owner and one for the working rancher (see Table 5).

Each resource cost is then allocated to the party that is going to pay that cost. When labor, management, and capital costs are added, and all cost items are allocated item by item to the ewe owner and participating rancher, each participants' full cost can be figured. Participants' cost contribution percentages are equal to their own total costs divided by the overall total cost column (see Table 5).

The owner of the sheep flock represented in Table 5 is projected to contribute 15 percent of the full cost and the participating rancher is projected to contribute 85 percent of the full cost. This suggests that an equitable share agreement would be one where the ewe owner receives 15 percent of the lamb and wool income, plus all the cull ewe income and all the cull ram income. The participating rancher should receive 85 percent of the lamb and wool income.

Table 6 indicates that sharing all lamb and wool income in this herd in this 16-84 proportion, the owner of the ewes is projected to receive

\$28.19 per ewe — \$18.90 from the sale of lambs and wool plus \$8.37 cull sales income. The working rancher is projected to receive \$102.84 per ewe from lamb and wool sales.

In terms of total income, the ewe owner gets 22 percent of all income and the working rancher gets 78 percent, even though the lamb and wool crop is to be shared 16-84. The example equitable share calculations shown in Table 1 through 6 indicate an equitable share that is different than the common share arrangements that range from 25-75 to 50-50. Cull ewe, cull open replacement ewes and cull ram income goes to the party that provides the investment capital.

Cull Ewe Income Versus Cost Of Replacement Females

Lamb crop sales may account for only 70 to 80 percent of the total income per ewe in a ewe flock. The remaining 20 to 30 percent of the ewe flock's income typically comes from cull animals and wool. Cull ewes account for the biggest share of the cull animal income. Managers who buy replacements will have more lambs to sell, so cull ewe sales will be a smaller part of gross sales. Regardless of the size of cull ewe income, it should be shared in the same proportion as the costs of replacement females are shared.

In this lease arrangement the ewe owner provides replacement females. The ranch operator should not receive any cull ewe

Table 5. Sample projected full-cost budget for a 100-ewe flock (lambs fed to 130 lbs.).

	Units	Price	Total Costs	% To Owner	Owner of Ewes	Working Rancher
Feed Costs –						
Hay	52.00 tons	\$45.00	\$2,340.00	0%	\$0.00	\$2,340.00
Pasture	89.00 AUMs	\$12.00	\$1,068.00	0%	\$0.00	\$1,068.00
Grain	977.00 bu	\$1.90	\$1,856.30	0%	\$0.00	\$1,856.30
Protein supplement	0.00 lbs	\$0.00	\$0.00	0%	\$0.00	\$0.00
Stubble	37.00 AUMs	\$0.00	\$0.00	0%	\$0.00	\$0.00
Commercial feed	flock total use	\$0.00	\$64.00	0%	\$0.00	\$64.00
Total feed cost for enterprise			\$5,328.30		\$0.00	\$5,328.30
Annual feed cost per ewe		\$53.28				
Livestock Costs –						
Bedding	per ton	\$15.00	\$30.00	0%	\$0.00	\$30.00
Marketing	per ewe	\$5.44	\$544.00	0%	\$0.00	\$544.00
Vet and medicine		\$4.50	\$450.00	0%	\$0.00	\$450.00
Power and fuel		\$0.95	\$95.00	0%	\$0.00	\$95.00
Utilities and general farm expenses		\$3.00	\$300.00	0%	\$0.00	\$300.00
Supplies		\$1.00	\$100.00	0%	\$0.00	\$100.00
Shearing		\$1.75	\$175.00	0%	\$0.00	\$175.00
Annual livestock costs per flock			\$1,694.00		\$0.00	\$1,694.00
Annual livestock costs per ewe		\$16.94				
Operating capital interest*			\$280.89	0%	\$0.00	\$280.89
Total variable costs			\$7,303.19		\$0.00	\$7,303.19
Total variable costs per ewe		\$73.03				
Fixed Costs (depreciation, repairs, insurance) –						
Buildings (depreciation, repairs, insurance)			\$350.00	0%	\$0.00	\$350.00
Equipment (depreciation, repairs, insurance)			\$260.00	0%	\$0.00	\$260.00
Ewes (depreciation and insurance)**			\$1,100.00	100%	\$1,100.00	\$0.00
Rams (depreciation and insurance)**			\$252.50	100%	\$252.50	\$0.00
Total fixed costs			\$1,917.50		\$1,352.50	\$610.00
Total fixed costs per ewe		\$19.18				
Total Costs (excluding labor, management and equity capital)			\$9,220.69		\$1,352.50	\$7,913.19
Total costs per ewe		\$92.21				
* Operating capital interest was computed by multiplying one-half of the variable costs (feed and livestock) by the economic or long-term interest rate. This sample projection used a rate of ????????						
** Insurance estimated at 1% of total value and depreciation at \$10/ewe/year.						
*** Insurance estimated at 1% of total value and depreciation at \$10/ram/year.						
Labor and Management Charges						
Labor charge	3.00 hours @	\$8.00	\$2,400.00	0%	\$0.00	\$2,400.00
Management charge	5% of gross		\$655.13	0%	\$0.00	\$655.13
Capital Investment						
Capital investment	8%					
Ewes		\$10,000.00	\$800.00	100%	800.00	\$0.00
Ram(s)		\$750.00	\$60.00	100%	\$60.00	\$0.00
Buildings		\$5,000.00	\$400.00	0%	\$0.00	\$400.00
Equipment		\$2,000.00	\$160.00	0%	\$0.00	\$160.00
Total equity capital interest cost			\$1,420.00		\$860.00	\$560.00
Full cost of production			\$13,695.82		\$2,212.50	\$11,528.32
Full cost of production per ewe		\$136.96				
Unit full costs of production		1.74 cwts/ewe	\$0.79 per lb.		\$0.13	\$0.66
Percent contribution					16%	84%

Table 6. 16-84 equitable share agreement.

			Total Flock	% To Owner	Owner of Ewes	Working Rancher
Economic Income/Ewe from 100 Ewes –						
1.20 head lambs	130 lbs	\$0.75 /lb	\$117.00	16%	\$18.90	\$98.10
0.15 cull ewes	150 lbs	\$0.35 /lb	\$7.87	100%	\$7.87	\$0.00
0.01 cull ram	1 head	\$50.00 /hd	\$0.50	100%	\$0.50	\$0.00
0.05 bum ram	5 head	\$10.00 /hd	\$0.50	16%	\$0.08	\$0.42
0.01 shorn wool	1030 lbs	\$0.50 /lb	\$5.15	16%	\$0.83	\$4.32
			\$131.03		\$28.19	\$102.84
Gross economic income for flock			\$13,102.50		\$2,818.86	\$10,283.64
Share					22%	78%
Replacement ewes purchased to maintain flock					\$2,000.00	
Owners return on investment					\$818.86	
Owners percent return on original investment					7.62%	

income if he/she does not own the ewes nor has contributed any of the costs of raising or placing the ewe into the breeding herd. The ewe owner should receive all the cull ewe income. Theoretically it is the undepreciated portion of the original capital investment. The depreciation costs are included in the ewe owner's contribution of the full cost production expenses.

Yearly depreciation can be calculated as follows:

$$\text{Depreciation} = \frac{\text{(purchase cost – projected salvage value)}}{\text{projected years ewe is in the flock}}$$

where salvage value is the projected value of cull ewes at the time that they are culled from the leased herd. Cull animal income goes to the ewe owner. The total price risk associated with the value of the ewe when culled is absorbed by the ewe owner.

Depreciation calculated with a zero salvage value would be appropriate if both parties share cull income. This can be done by calculating depreciation with a zero salvage value and letting

depreciation account for the total original investment cost of the ewe. This way a larger portion of the original ewe investment is repaid to the ewe owner each year the ewe is in the flock. In this type of an arrangement, cull ewe price risk is shared by both parties. Depreciation, in this case, should be calculated as:

$$\text{Depreciation} = \frac{\text{(purchase cost – zero salvage value)}}{\text{projected years ewe is in the herd}}$$

When depreciation is calculated this way, all cull animal income is shared in proportion to expense contributions. Very few leasing arrangements, use this second approach.

A third leasing arrangement is where the replacement females are raised inside the leased ewe flock, resulting in the cost of replacement ewes being shared by both parties. Depreciation should go back to the previous method that includes a salvage value. The cull animal income, in this case, should be shared by the parties in proportion to their total

flock expense contributions. Our experience to date has been that this leasing arrangement is messy at best, and frequently leads to inequitable leasing arrangements because ownership of the flock is changing each year.

We think a better alternative, if replacements are to come from the flock, would be to have the ewe owner purchase the replacements at market lamb value at the time of sale. This provides the rancher some level of control on the replacements in the leased flock and saves him the marketing expense for the sold replacements. The ewe owner also gains more control of the replacements he buys and may save any premiums that replacement females bring in the market.

In summary, we recommend that the replacement females be handled outside of the leased enterprise. We recommend the ewe owner provide all replacement ewes. This is the most common arrangement and seems to be the easiest way to ensure equitability.

An Alternative Leasing Agreement

An alternative to the lease where both parties share the income is one where the ewes are leased for a set cash payment each year. In this arrangement the rancher would pay the ewe owner a fixed amount each year for the use of the ewe. From the owner's perspective, this payment would need to cover the depreciation of the ewes, the loss of animals, and a return to the ewe for the investment. The party leasing the ewes will not want to pay more rent than the income from the ewe's lamb and wool production less all costs of production including a value for labor and management.

A cash lease has advantages and disadvantages. The working rancher absorbs all the price and production risk associated with the year's production. If prices are lower or if environmental factors affect the total production of the leased ewes, the rancher is still obligated to make the same payment to the resource owner. On the other hand, because of the extra risk assumed, any extra income that occurs due to market prices or the working rancher's efforts and skills accrues to the rancher.

A cash lease agreement may also serve to attract investor income to the sheep industry since potential investors may be more comfortable with a non-volatile return to their investment. They may be willing to provide funds at a lower cost due to the reduction in the risk they face as investors.

Final Comments

Two final cautions to people entering into a sheep share agreement: first, agreements should be in writing and the written contract should clearly identify all the specifics agreed upon. Participants are advised to account for all production costs, death losses and exactly how the business agreement will be terminated. It is **much** easier to work out the share agreement details before the agreement is signed than to work out an agreement after an emergency or a business disagreement occurs.

It should also be pointed out that two people can enter into any legal agreement which both parties agree to, even if it is not equitable. The important thing to remember is that the both parties should agree on the terms of the business agreement and that the details of the agreement are in writing.

Computerized Worksheets

The worksheets used in this bulletin are available as a computer program that you can use on your home personal computer. The program can be downloaded free from the web address:

<http://www.ag.ndsu.nodak.edu/hettinge/>



EC-1168

NDSU Extension Service, North Dakota State University of Agriculture and Applied Science, and U.S. Department of Agriculture cooperating. Sharon D. Anderson, Director, Fargo, North Dakota. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. We offer our programs and facilities to all persons regardless of race, color, national origin, religion, sex, disability, age, Vietnam era veterans status, or sexual orientation; and are an equal opportunity employer.

This publication will be made available in alternative formats for people with disabilities upon request, 701/231-7881.

1.5M-4-99