

Bulletin No. 577
October 1977

LIBRARY

MAR 7 1984

UNIVERSITY OF IDAHO

Estimating Sustainable Predation Losses On Idaho Range Sheep Operations

Henry Bahn
John O. Early



Agricultural Experiment Station

UNIVERSITY OF IDAHO

College of Agriculture

Table of Contents

Introduction	3
Problems in the Sheep Industry	3
Objectives of the Study	3
Methodology	4
Data Sources	4
Assumptions	4
Results	6
Preparing the Budget Summary	7
Computing Sustainable Lamb Predation Losses	8
Summary and Conclusions	9
Appendix	9
Literature Cited	12

About the Authors

Henry Bahn is research associate specializing in resource and marketing research and John Early is research professor and agricultural economist in marketing, finance and farm management, both in the Department of Agricultural Economics at the University of Idaho, Moscow.



Published and distributed by the
Idaho Agricultural Experiment Station
R. J. Miller, Director

University of Idaho College of Agriculture
Moscow 83843

The University of Idaho offers its programs and facilities to all people without regard to race, creed, color, sex, or national origin.

Estimating Sustainable Predation Losses On Idaho Range Sheep Operations

Henry Bahn and John O. Early

This study was assembled to help sheep producers determine a sustainable lamb predation rate which will allow their operations to "break even" financially.

The authors produced a hypothetical model using data which should approximate conditions in Idaho. The model represents a highly efficient operation, assumes use of good marketing and management techniques and assumes high quality livestock are maintained. The authors are aware the results may be on the high side but they feel that the findings are reasonable.

The results may be looked upon as goals or targets for sheep operations. Hopefully, the information presented will allow producers to become more knowledgeable about their operations and thus make better decisions that will increase efficiency and profits.

Introduction

Idaho's sheep industry is a small but positive contributor to the state's agricultural balance. In 1974 the sheep industry accounted for 1.7 percent, or over \$23 million, of Idaho's agricultural cash receipts.

The sheep industry has been declining steadily for some time due in part to technological advances in synthetic fiber production, reduced demand for lamb by consumers, competition from imports, inadequate marketing and management practices and disease and predation losses.

Fig. 1 illustrates the decline in Idaho's sheep industry in the past decade in terms of meat production and breeding ewe numbers. This is a continuation of the downward trend in both numbers of sheep and meat production which began in the 1930's. National sheep production has declined similarly; Idaho's share of production has remained relatively stable at 5 to 6 percent of the national total for the past 15 years (4).

Problems in the Sheep Industry

Several reasons for the decline in sheep production are beyond the control of the individual producer. Losses due to disease and to predation are two exceptions. In 1972-73 disease claimed about 3.2 percent of Idaho's ewe flock and over 7 percent of

the lambs (2). Predation, primarily by coyotes, took about 3 percent of the state's ewes and about 4 percent of the lambs during the same period (1).

Disease and predation deaths must be minimized for range sheep flocks. Although improved management practices will help cut down these losses, they will not eliminate them.

One important management tool is a complete set of physical and financial records so managers can make sound production, marketing and financial decisions. Adequate records aid the producer in evaluation performance in terms of growth or profitability. They assist in planning and budgeting and also help identify existing or potential problems.

Objectives of the Study

The purpose of this study is to estimate sustainable (break-even) predation losses for a hypothetical 1,600 ewe range sheep operation with shed lambing. Specifically, the objectives include:

1. Estimating fixed and variable production costs for the operation.
2. Estimating revenue from the sale of sheep and wool.
3. Comparing costs and revenue received for the operation and determining the level of lamb predation which would allow the operation to break even.

Methodology

To achieve the outlined objectives, initially a budget summary was prepared for a sheep operation experiencing the disease and predation mortality rates which prevailed in Idaho in 1972-73, the latest year such data were available for the state. Production costs and revenue data were gathered for 1974-75.

This budget summary (Table 4) revealed a net operating gain for the operation. This gain was divided by the market price received per lamb, thus converting the value of the net gain to lambs. This number of lambs was added to the number of lambs lost to predation resulting in a new percentage of lamb predation mortality.

A second budget summary was prepared, identical to the first except for the new lamb predation figure. Minor adjustments were made to the predation figure to ensure a break-even figure. Thus, the net operating gain of the initial budget summary was converted to lamb predation losses resulting in a break-even sheep operation.

Data Sources

The Agricultural Experiment Station and Cooperative Extension Service at the University of Idaho provided mortality and some cost data (1,2,5). The mortality data, the result of surveys of Idaho sheep

producers, represent average mortality for both fenced and open range and herded and unherded sheep operations.

Production cost and revenue data were taken from federal, state and local sources and from sheep producers (3,4). An attempt was made to use "hard" data wherever possible, rather than averages or estimates. Thus, the specific cost or revenue figures employed here may be too high or too low for many individual sheep operations, depending on their proximity to data sources and depending upon their individual input mix.

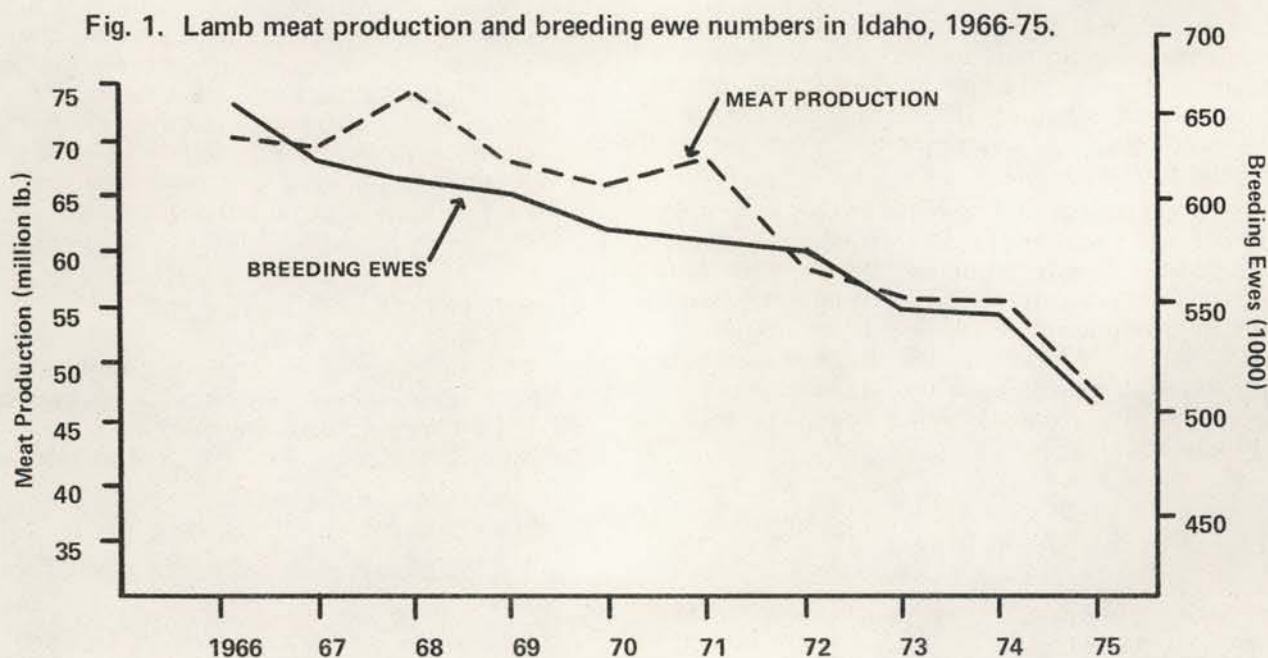
In the appendix to this publication, the individual producer may use his own data to determine the sustainable predation loss for his operation.

Assumptions

Cost and revenue data were gathered for the production year October 1974 to October 1975. Disease and predation mortality rates are from 1972-73. This study assumes that these mortality rates held constant for 1974-75. Figs. 2 and 3 give a breakdown for lamb and ewe mortality, respectively. Disease mortality includes starvation, weak lamb syndrome, pregnancy losses, lambing losses, etc.

To arrive at a sustainable predation level, several other assumptions were made:

1. The size of the sheep operation was assumed to remain constant at 1,600 ewes and 48 rams with



Data Source: 1976 Idaho Agricultural Statistics

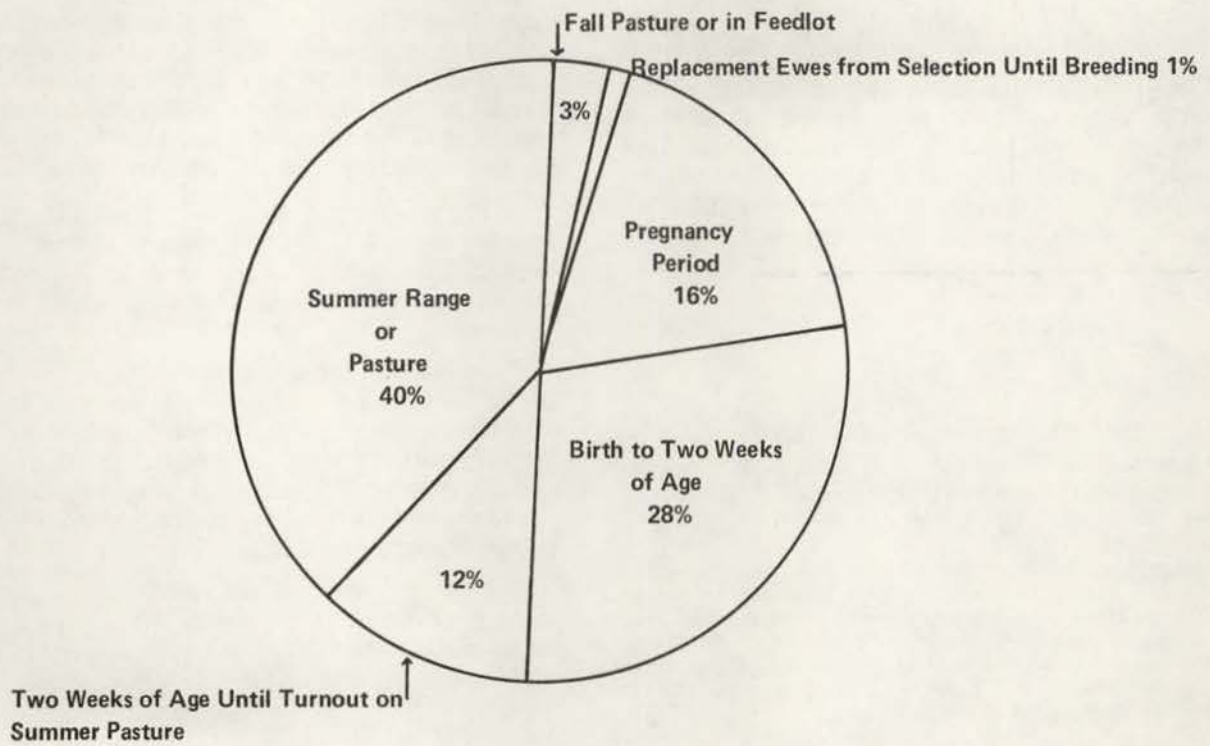


Fig. 2. Estimated percentage of all lamb deaths in Idaho range operations by period of production cycle, 1972-73.

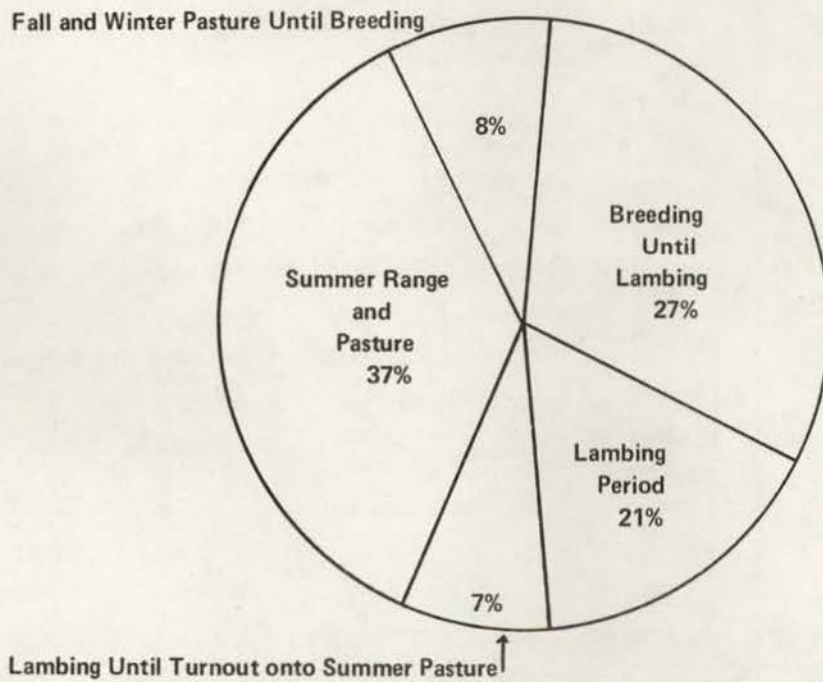


Fig. 3. Estimated percentage of all ewe deaths in Idaho range operations by period of production cycle, 1972-73.

150 percent lambing.¹ Replacement ewe lambs (to maintain a 1,600 ewe flock) were taken from the lamb flock; remaining lambs were sold.

2. Production costs were estimated for a 1,600 ewe, unherded, shed lambing operation on fenced land.
3. Per head costs were estimated according to the average number of head alive during any portion of the production year. For example, the lambing period was assumed to be February 15 to March 30. The head count on March 7 was used as the number of ewes alive during the lambing period.
4. Disposition or loss of rams was not considered.

Results

Table 1 lists fixed production costs for a hypothetical Idaho range sheep operation. The basic operation is assumed to cover 20 acres with \$40,000 in

¹The hypothetical sheep operation is assumed to be a highly efficient, well managed operation with high quality stock. Lambing rates, cull values, etc., may thus be on the high end of the scale. The lambing rate is the percentage increase in flock size assuming all ewes become pregnant and give birth to live lambs. Thus a 150 percent lambing rate for a 1600 ewe flock should yield 2400 lambs.

Table 1. FIXED PRODUCTION COSTS — Hypothetical Idaho range sheep operation for a 1600 ewe flock.

Item	Cost
Taxes	\$ 735.00
Land \$20,000 Assessed 17.5% \$ 245.00 Mill Levy ¹ 7	
Buildings \$40,000 " " " 490.00	
Management	4000.00
Vehicle	
7000 Mi. @ 5mpg @ 50 cents 700.00	1910.00
Depreciation \$4000 @ 4 years 1000.00	
Insurance, License, Repairs 210.00	
General Repairs	1611.00
Insurance	500.00
Misc. Supplies	2456.00
Utilities	1250.00
Depreciation	
\$40,000 @ 30 years	1333.00
Interest	
Land \$20,000 @ 8% 1600.00	4800.00
Buildings \$40,000 @ 8% 3200.00	
TOTAL FIXED COSTS	\$18,595.00

¹Cents per dollar

buildings and capital. The 20 acres does not include range or pasture.

Fenced range or pasture land is charged as a variable (per head) cost based on Animal Unit Month (AUM) requirements. Accounting for land use in such a manner allows a similar value to be placed on owned or rented fenced land. The implicit assumption is that the value of owned land is the opportunity cost of renting it to another producer.

Fixed costs are those which would continue to accrue whether or not the sheep operation was producing. The costs do not necessarily increase or decrease as the total volume of production increases or decreases.

Variable (per head) production costs are presented in Table 2. A variable cost, such as for material and direct labor, is one which increases or decreases proportional to the volume of production. Total variable production costs per ram, ewe and lamb represent total cost of producing or maintaining one animal for one production year.

Sheep are assumed to spend nine months (June through February) on range or pasture, with five sheep allotted per AUM. No charge is made for lambs accompanying ewes. Sheep are fed alfalfa and corn

Table 2. VARIABLE PRODUCTION COSTS — Hypothetical Idaho range sheep operation for a 1600 ewe flock.

Item	Cost/head
Interest	
Ewes \$50 @ 8%	\$ 4.00
Rams \$150 @ 8%	12.00
Feed	
Alfalfa @ \$50/ton 412 lb/year/adult	10.31
Corn @ \$110/ton 50 lb/year/adult	2.75
Creep @ \$132.50/ton 6 lb/year/lamb	.40
Salt @ \$35/ton 6 lb/year/adult	.11
Mineral @ \$16.25/cwt. 4 lb/year/adult	.65
Veterinary Fees Ewes	.50
Range Rent @ \$7/AUM 1/5 AUM/adult 9 months	12.60
Labor @ \$12,000/year 1 unit/1500 adults	8.00
Freighting Market lambs and culls	1.00
Shearing Adults	1.00
TOTAL VARIABLE COST	
per ewe ¹	\$40.92
ram ²	47.42
lamb ³	1.40

¹Includes all items listed except creep feed

²Includes all items listed except creep feed, veterinary fees and freighting

³Includes creep feeding and freighting

from February through the end of April. Lambs are creep fed about 60 days (April 1 through May 30).

Direct labor may include several employees during rush seasons (i.e., lambing) rather than one unit spread over the entire production year.

The total variable costs per animal approximate the cost of producing and/or maintaining one head for one production year. If an animal dies during the year, the funds spent up until the time of death are considered part of the operation's total variable cost.

Assuming 3 rams per 100 ewes and 150 percent lambing, a net total direct and indirect variable cost per lamb can be computed as follows: First, subtract the value of wool from the total variable cost per ewe and per ram (Table 3). This gives a net variable cost per ewe and per ram of \$31.99 and \$38.49, respectively. Then the net direct and indirect variable cost per lamb would be:

$$\$1.40 + (\$31.99 \times .66) + (\$38.49 \times .03 \times .66) = \$23.27$$

The first term of the equation, \$1.40, is the variable production cost of one lamb. The second term is the result of the 150 percent lambing assumption. Each ewe which incurs a net variable cost of \$31.99 is expected to bear 1.5 lambs. Thus 1/1.5 or .66 of a ewe's net variable production cost is added to the variable production cost of a lamb.

Similarly, the third term of the equation allots a portion of the net variable cost of a ram to the variable production cost of a lamb. A ram is exposed to 33 ewes, which have a 150 percent lambing rate. Each ewe thus absorbs 1/33 or .03 of the \$38.49 net variable cost of a ram. This term is multiplied by .66 to allocate to a lamb its proportion of the ram's cost.

Estimating the net total variable cost of a lamb in such a manner treats the ewe and ram as production inputs which are necessary to produce one unit of the lamb crop.

Preparing the Budget Summary

A budget summary was prepared for a hypothetical range sheep operation (Table 4). Ewes experienced a 2.8 percent predation rate and 3.2 percent disease mortality rate. Lamb mortality was 3.8 percent for predation and 7.1 percent for disease.

Note the decline in number of head throughout the production cycle as sheep mortalities are removed from the total. Thus, a ewe that dies in lambing, for example, is not charged with range rent, shearing or freighting fees; similarly the lamb is deducted from the anticipated lamb crop and likewise incurs no cost.

Total production costs are subtracted from total revenue to get a net operating gain of \$11,035.28. This figure may be looked upon as net profit for the sheep operation.

Table 3. RETURNS — Hypothetical Idaho range sheep operation for a 1600 ewe flock.

Item	Return/head
Sheep	
Lambs	
Market	\$42.59
Ewes	
Culls ¹	25.00
Wool	8.93
10.5 lb/adult @ 85 cents ²	

¹150 lb. @ \$16.75 per 100 lb.

²Includes subsidy

Table 4. BUDGET SUMMARY — Hypothetical Idaho range sheep operation¹.

Production Costs	No. Head	\$
Sheep (Interest)		
Ewes	1600	6,400.00
Rams	48	576.00
Labor	1648	13,184.00
Feed		
Alfalfa	1605	16,547.55
Corn	1605	4,413.75
Creep	2259	903.60
Veterinary Expense	1557	778.50
Salt/Mineral	1588	1,206.88
Range Rent	1588	20,008.80
Shearing	1551	1,551.00
Freighting	2062 ²	2,062.00
	Total Variable Cost	67,632.08
	Total Fixed Cost (Table 1)	18,595.00
	Total Production Cost	86,227.08
Revenue		
Sheep		
Lambs		
Market	1838 ³	78,280.42
Ewes		
Culls	224	5,600.00
Wool	1551	13,850.43
	Total Revenue	97,262.36
	Net Operating Gain	11,035.28

¹1600 ewe, 48 ram operation sustaining 150% lambing, ewe mortality of 2.8% predation, 3.2% disease and 14% cull rate; lamb mortality of 3.8% predation and 7.1% disease.

²Includes 1838 lambs and 224 cull ewes.

³321 ewe lambs were retained to maintain the 1600 ewe flock.

Computing Sustainable Lamb Predation Losses

Dividing the net operating gain of \$11,035.28 by \$42.59, the market price received for lambs, yields 259 lambs. If the sheep operation is to break even — show no net profit or loss — these lambs must be added to predation losses. After adjusting the variable production costs, the lamb predation rate which allows the operation to break even was 14.5 percent.

Stated differently, the hypothetical range sheep operation can sustain a 14.5 percent lamb predation rate and still meet expenses including labor and management returns. This 14.5 percent lamb predation mortality rate is dependent upon holding constant all other possible changes on mortality, prices paid for inputs and revenue received. Assuming these factors approximate conditions in Idaho, the 14.5 percent figure may be considered a reasonable estimate of sustainable lamb predation losses for highly efficient sheep operations in the state.

Table 5 presents the break-even budget summary for the hypothetical sheep operation developed for this study. Note that the entries are similar to those in Table 4 except for the higher lamb mortality rate and the changes in lamb production costs caused by it.

One note of caution is required when interpreting the 14.5 percent predation loss figure. This model assumes that all mortality is accounted for either as disease or predation losses. No deaths are listed as “unknown”, “unspecified” or “other”. If a producer has a substantial number of losses listed in such categories, true disease and predation rates cannot be calculated. Good management and good record keeping can minimize the number of deaths being placed in such categories.

The examples used in this study assume an efficient sheep operation with 150 percent lambing. A less efficient operation may not be able to sustain lamb predation of 14.5 percent, especially if it had a lower lambing rate. A lower rate would mean fewer

Table 5. BREAK-EVEN BUDGET SUMMARY — Hypothetical Idaho range sheep operation¹.

Production Costs	No. Head	\$
Sheep		
Ewes	1600	6,400.00
Rams	48	576.00
Labor	1648	13,184.00
Feed		
Alfalfa	1605	16,547.55
Corn	1605	4,413.75
Creep	2214	886.80
Veterinary Expense	1557	778.50
Salt/Mineral	1588	1,206.88
Range Rent	1588	20,008.80
Shearing	1551	1,551.00
Freighting	1785 ²	1,785.00
	Total Variable Cost	67,338.28
	Total Fixed Cost (Table 1)	18,595.00
	Total Production Cost	85,933.28
Sheep		
Lambs		
Market	1561 ³	66,482.99
Ewes		
Culls	224	5,600.00
Rams	48	7,200.00
Wool	1,551	13,850.43
	Total Revenue	85,933.42
	Net Operating Gain	.14

¹1600 ewe, 48 ram operation sustaining 150% lambing, ewe mortality of 2.8% predation, 3.2% disease and 14% cull rate; lamb mortality of 14.5% predation and 7.1% disease.

²Includes 1561 lambs and 224 cull ewes.

³321 ewe lambs were retained to maintain 1600 ewe flock.

Table 6. Estimated sustainable lamb predation rates for selected lambing rates¹.

Lambing ² Rate	150%	140%	130%	125%	120%	115%	110%
Live Birth ³ Rate	145%	136%	127%	123%	118%	113%	108%
Lambs ⁴ Marketed	1561	1482	1310	1289	1225	1160	1096
Sustainable Lamb Predation Rate	14.5%	10.7%	2.9%	0%	0%	0%	0%

¹1600 ewe, 48 ram operation sustaining ewe mortality of 2.8% predation, 3.2% disease and 14% cull rate, lamb disease mortality of 7.1%.

²Expected percentage increase in flock size if all ewes become pregnant and give birth to live lambs; pregnancy losses would have to be subtracted to determine the actual live birth rate.

³Actual lamb births—assumes 16% of lamb crop is lost before birth, i.e. between breeding and lambing (Fig. 2).

⁴Excludes 321 replacement ewes not marketed.

lambs reaching the market and thus less revenue to offset predation losses.

Estimates of sustainable lamb predation for various lambing rates have been prepared in Table 6. These estimates use the production costs and revenue figures from the previous break-even analysis and as such can only be considered a general guide.

The figures in Table 6 indicate that the hypothetical sheep operation could not sustain any lamb predation losses with a lambing rate of 125 percent or less. This information should help the manager of the operation to monitor the operation's performance and attempt to maintain profitable lambing and predation rates.

Of course, the sustainable predation for a particular operation will depend on that operation's input mix, cost and revenue structure and local lambing and predation rates. By using the appendix attached to this publication, the producer can estimate reasonably accurate sustainable loss rates using specific data from his or her operation.

Summary and Conclusions

The sheep industry in Idaho and in the United States has been declining over the past 40 years.

Disease and predation losses, two reasons for the decline, can be dealt with at the local producer's level. This study was undertaken to assist producers in identifying a sustainable lamb predation mortality rate as an aid to management.

Fixed costs and per head variable costs were estimated for a hypothetical 1,600 ewe, range sheep operation with shed lambing similar to the operations in existence in Idaho. Revenue from the sale of sheep and wool was estimated and a budget summary was prepared. Costs and revenue were compared, and the net gain of the operation was converted into lamb predation losses.

A second budget summary was prepared in order to identify a sustainable or "break-even" level of lamb predation. The study determined that the hypothetical operation could sustain a 14.5 percent lamb predation mortality rate without suffering a net loss.

The information presented in this study should assist managers in determining the sustainable loss rates for their individual operations, thereby enabling them to identify real and potential production problems. The study should enable operators to increase the efficiency of their management and, hopefully, the proliferation of their operations.

APPENDIX

Record Keeping and A Procedure for Determining Sustainable Lamb Predation Losses

This appendix contains work sheets which will allow you, as a sheep producer, to compute sustainable lamb predation losses for your operation.

Adequate record keeping should allow such computations to be made easily at income tax time; however, be sure to note that your "production year" may not coincide with the tax year. In such a case you will need cost and revenue data for the present and the previous year as well.

The success of determining a realistic sustainable predation loss depends upon the accuracy of your records. Particular attention should be paid to properly determining causes of mortality. Try to list all deaths as predation or disease rather than "unknown" or "unspecified". Mortality records, like cost records, should be updated regularly and as needed rather than at the end of the production year. If you need help in determining proper recording procedures, your County Extension Agent can assist.

A reasonable estimate of the cost of your own labor may be the wage you would earn in off-farm employment. Remember, charge only that labor connected with sheep production. Record keeping, sales contracting, etc., are management activities, and may be valued at a higher rate than your general labor.

When you are determining your production costs, be as specific and as realistic as possible. If your operation contains activities not connected with or in addition to sheep production, be sure to allocate only that portion of time, labor, taxes, etc. actually used in sheep production.

When you have completed the budget summary (Table A-4), take the net operating gain and divide it by the market price received per lamb. This changes the dollar value of the net gain into a number of lambs. Add this number to the total number predation losses. This is the total sustainable lamb predation you might expect to absorb and still break even.

To determine the lamb predation rate, divide the sustainable loss number by the total births expected from your ewes. For example, if you have 200 ewes and a 125 percent lamb rate, you may expect $200 \times 1.25 = 250$ lambs to be born. Dividing by this figure rather than actual number of lambs born allows you to account for pregnancy losses.

Recompute the budget summary in Table A-5 using the new lamb predation losses but keeping everything else constant. You will find your total production costs somewhat less than in Table A-4 since more lambs are lost during the production year. You will similarly find the revenue is less than in Table A-4 since fewer lambs were sold.

Subtracting total costs from revenue should give you a figure at or near zero, thus indicating that your operation could pay expenses, including your labor and management, but earn no profit, with the lamb predation rate you determined above.

The procedure outlined previously and described in this publication should help you, the producer, to better understand the relationship between lamb mortality and profit in your particular operation. With this information you will, hopefully, be able to better assess the relative profitability of your operation and you will have a fuller understanding with which to make production decisions.

Table A-1. Fixed production costs.

Item	Cost
Taxes	
Land	
Buildings	
Management	
Vehicles	
Mileage	
Depreciation	
Insurance, license, repairs	
General Repairs	
Insurance	
Miscellaneous Supplies	
Utilities	
Depreciation	
Interest	
Land	
Buildings	
Other Fixed Costs	
Total Fixed Costs	

Table A-2. Variable production costs.

Item	Cost/head
Interest	
Ewes	
Rams	
Feed	
Salt	
Minerals	
Veterinary Fees	
Range Rent	
Labor	
Freighting	
Shearing	
Other Variable Costs	
Total Variable Cost	

Table A-3. Returns.

Item	Return/head
Sheep	
Lambs	
Market	
Ewes	
Culls	
Wool	

Table A-4. Budget Summary.

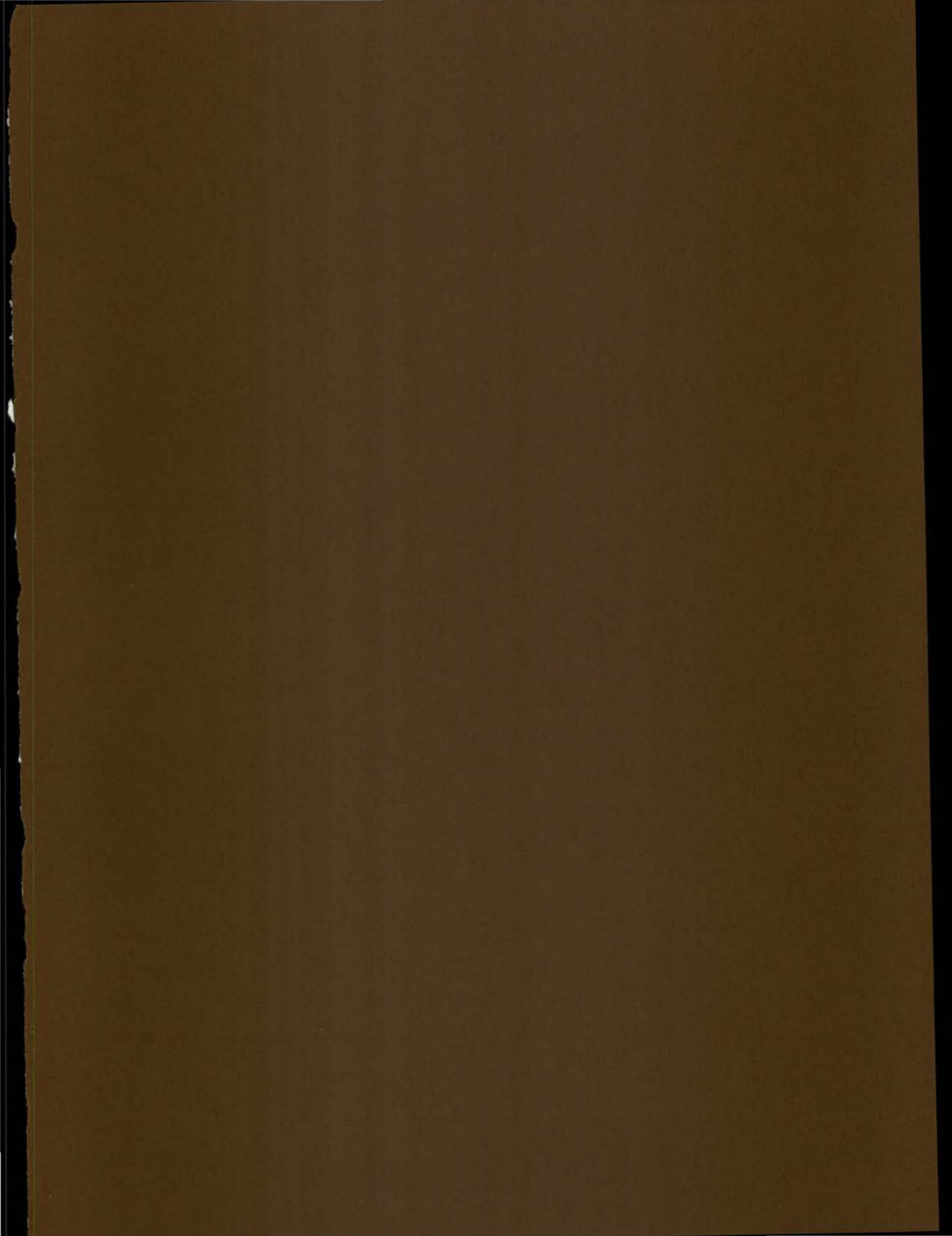
Production Costs	No. Head	\$
Sheep		
Ewes		
Rams		
Labor		
Feed		
Alfalfa		
Corn		
Creep		
Veterinary Expense		
Salt/Mineral		
Range Rent		
Shearing		
Freighting		
Total Variable Cost		
Total Fixed Cost		
Total Production Cost		
Revenue		
Sheep		
Lambs		
Market		
Ewes		
Culls		
Wool		
Total Revenue		
Less Production Costs		
Net Operating Gain (Loss)		

Table A-5. Break-even budget summary.

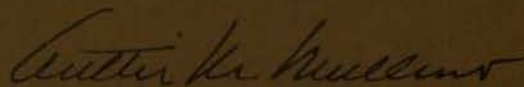
Production Costs	No. Head	\$
Sheep		
Ewes		
Rams		
Labor		
Feed		
Alfalfa		
Corn		
Creep		
Veterinary Expense		
Salt/Mineral		
Range Rent		
Shearing		
Freighting		
Total Variable Cost		
Total Fixed Cost		
Total Production Cost		
Revenue		
Sheep		
Lambs		
Market		
Ewes		
Culls Retained		
Wool		
Total Revenue		
Less Production Costs		
Net Operating Gain (Loss)		

Literature Cited

1. Early, John O., Joe C. Roetheli, and Gary R. Brewer. 1974. An economic study of predation in the Idaho range sheep industry, 1972-73. Agr. Exp. Sta., Univ. of Idaho, Moscow, ID, Progress Report No. 186.
2. Early, John O., Joe C. Roetheli, and Gary R. Brewer. 1975. An economic study of deaths attributed to disease in the Idaho sheep range industry, 1972-73. Agr. Exp. Sta., Univ. of Idaho, Moscow, ID, Progress Report No. 191.
3. Gee, Kerry, and Richard Magleby. 1976. Characteristics of sheep production in the Western United States. USDA-ERS, Agr. Econ. Report No. 345, Washington, DC.
4. Idaho Department of Agriculture. 1976. 1976 Idaho Agricultural Statistics. Idaho Crop and Livestock Reporting Service, Boise, ID.
5. Prigge, G. Ray, and George Gardner. 1976. Estimated costs and returns for a 100 ewe farm flock. Coop. Ext. Ser., Univ. of Idaho, Moscow, ID, Idaho Farm Business Management Series No. 6.



The State is truly our campus. We desire to work for all citizens of the State striving to provide the best possible educational and research information and its application through Cooperative Extension in order to provide a high quality food supply, a strong economy for the State and a quality of life desired by all.



Auttis M. Mullins
Dean, College of Agriculture
University of Idaho



SERVING THE STATE

This is the three-fold charge of the College of Agriculture at your state Land-Grant institution, the University of Idaho. To fulfill this charge, the College extends its faculty and resources to all parts of the state.

Service ... The Cooperative Extension Service has active programs in 42 of Idaho's 44 counties. Current organization places major emphasis on county office contact and multi-county specialists to better serve all the people. These College of Agriculture faculty members are supported cooperatively by federal, state and county funding to work with agriculture, home economics, youth and community development.

Research ... Agricultural Research scientists are located at the campus in Moscow, at Research and Extension Centers near Aberdeen, Caldwell, Parma, Sandpoint, Teton, Twin Falls and at the U.S. Sheep Experiment Station, Dubois and the USDA/ARS Soil and Water Laboratory at Kimberly. Their work includes research on every major agricultural program in Idaho and on economic and community development activities that apply to the state as a whole.

Teaching ... Centers of College of Agriculture teaching are the University classrooms and laboratories where agriculture students can earn bachelor of science degrees in any of 20 major fields, or work for master's and Ph.D. degrees in their specialties. And beyond these are the variety of workshops and training sessions developed throughout the state for adults and youth by College of Agriculture faculty.