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# Investigation of Factors Contributing to the Declining Range Sheep Industry in Utah

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# INVESTIGATION OF FACTORS CONTRIBUTING TO THE DECLINING RANGE SHEEP INDUSTRY IN UTAH

by

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Investigation of Factors Contributing to the

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by

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The purpose of this paper is to document the major reasons sheep producers are liquidating their business, and to provide some insight into the present use of land and labor resources taken out of sheep production. Data compiled for the study were obtained from personnel interviews of former sheep producers statistically selected from a master list of all producers who stopped sheep production from 1968 to June 1974. The general characteristics of Utah sheep ranches were presented followed by an analysis of producers who, and the reasons why, they sold their herds. The last section of the report documents the present use of resources taken out of sheep production.

(102 pages)

# CHAPTER I

# GENERAL CHARACTERISTICS AND REVIEW OF LITERATURE OF UTAH SHEEP INDUSTRY

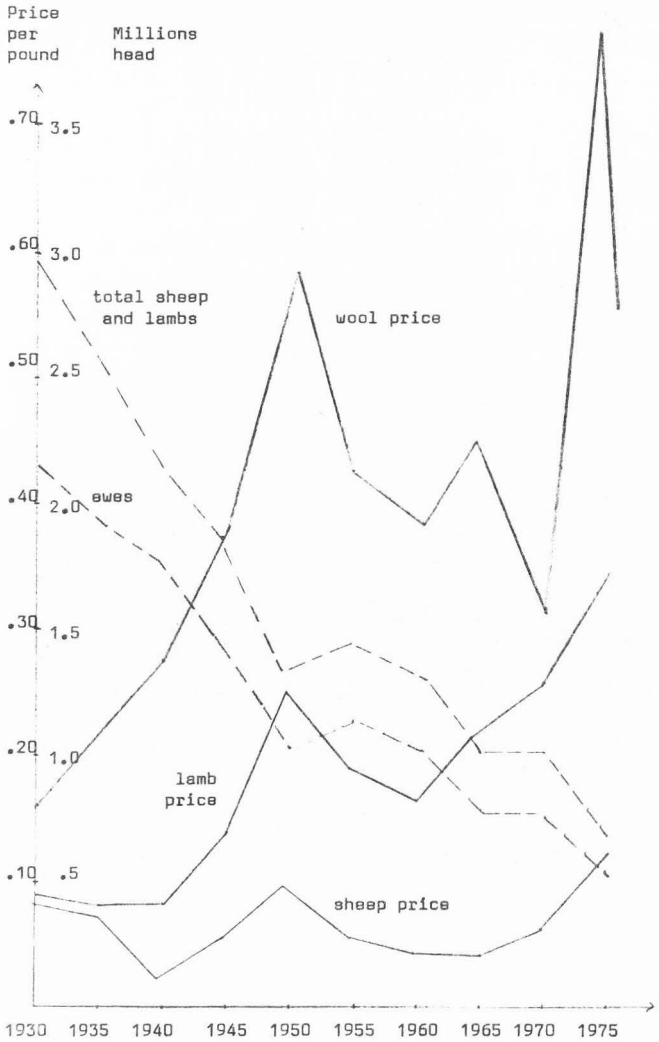
In 1974, 80 percent of all stock sheep in the United States were located in range areas of the 17 western states. Nearly half of the sheep in these western states are located within the boundaries of Utah, Wyoming, Colorado, and Texas.

In the last 20 years, there has been a 47.8 percent decline in the number of stock sheep in the state of Utah. In recent years, the rate of decline in sheep numbers has been increasing, Figure 1, compared to the decline between 1950-1960. In the 10 years from 1954 to 1964, there was a 1.33 percent per year decline. From 1964 to 1970, the rate of decline was a 3.08 percent per year and accelerated to 5.24 percent per year between 1970 and 1974. Between 1973 and 1974, there was an 11.9 percent reduction in the number of stock sheep, or approximately 100,000 head.

Any action to stop this downward trend or to reverse it must be preceded by an identification of factors contributing to the exodus of sheep producers from the industry, and the relative importance of these factors. A number of reasons for this decline in sheep numbers have been hypothesized.

## Description of Study Area

Utah extends 345 miles from north to south and 275 miles from east to west. Because of its topography, Utah has enjoyed a compar-




Source: U.S.D.A. Statistical Reporting Service.

Figure 1: Sheep inventory and sheep, lamb, and wool prices.

ative advantage in sheep production over many of the other sheep producing states. Mountain ranges, with lush vegetation, provide summer grazing while the adjacent desert basins are used for winter feed. Utah has two major plateaus, the Colorado Plateau on the east and the Great Basin on the west, which are used by sheep for winter grazing while the Wasatch and Uintah mountain ranges provide summer grazing.

The Bureau of Land Management and Forest Service, respectively, maintain control over much of the area previously mentioned. About 66 percent of the land area, including almost 9,000,000 acres of national forests, and 22,735,224 acres of Bureau of Land Management are in Federal ownership. There are approximately 26,000 farms totaling 10,000,000 acres in Utah (Flint, 1968) with cattle and sheep as the principle livestock.

The major population centers are located along the Wasatch front, but with the recent energy development projects in eastern and south central Utah, the "rural" areas are experiencing the most rapid increase in population. This could be a contributing factor to the decline of sheep numbers, either because of increased demand for land urbanization or because of better opportunities for nonfarm employment.

The largest amount of water, the life blood of Utah, is located in the north central portion of the state. Bear River drains from the north, while the Jordan, Sevier, and Virgin Rivers drain from the south. The western portion of the state is extremely dry necessitating sheepmen, who use it for winter grazing, to haul water for their sheep. Because of the desert conditions, this large area of land has limited uses. Sheep or goats are the only domestic animals capable

of harvesting this desert forage and converting it into protein for human consumption.

## General Economic Facts Relating to Utah Sheep Industry

Sheep production has long been one of the largest segments of Utah agriculture. This only seems natural when one considers the topography of Utah. Sheep have been the domestic animals best suited for the conversion of Utah's semiannual desert folia into protein.

Before many of the grazing restrictions imposed upon the livestock industry by the Forest Service and Bureau of Land Management, Utah experienced its largest sheep numbers, close to three million head in 1930, Figure 1. With the establishment of the Bureau of Land Management and increased restrictions imposed by the Forest Service together with fluxuating lamb and wool prices, substantial higher input costs and a shrinking competent labor supply, sheep numbers declined steadily until 1950. The next 20 years were characterized by rather stable numbers of sheep. Since 1970, the rate of decline has been increasing.

This increased decline cannot be attributed to substantial reductions in grazing permits. There are other reasons, to be discussed later, which are causing producers to sell their sheep.

As can be seen from Figure 1, there is a negative correlation between sheep numbers and prices for sheep, lamb, and wool. This would tend to make one hypothesis that absolute prices alone are not responsible for declining sheep numbers. Although one possible cause could be that the price index of sheep, lamb, and wool has not increased as fast as the price index of inputs into the industry.

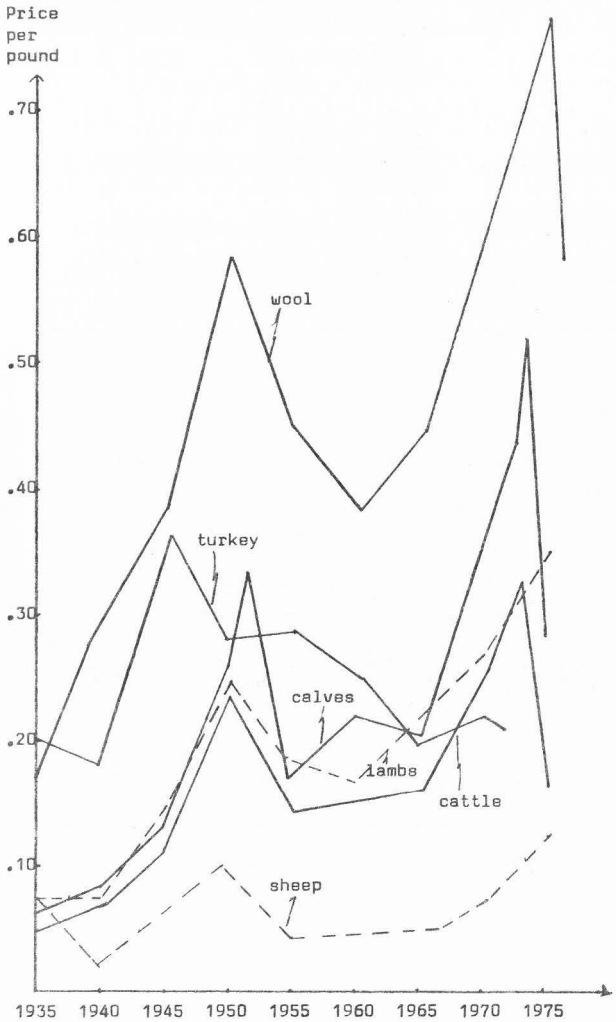
The price per pound payed for products from the sheep industry has been comparable to prices received from other Utah agriculture products, Figure 2. Especially relevant are the prices received for wool, lambs, and sheep the last two years. Even with comparitively good prices, there has been an increased decline in the sheep industry.

Sheep husbandry has been and still is one of the larger base revenue producing agriculture occupations in the state. During the thirties, more revenue was generaged from the sheep industry than any other livestock enterprise, Figure 3. From that time to the present, even though there has been over a 300 percent decrease in sheep numbers, total revenue from the industry has shown a steady increase.

In the early history of the state, pounds of meat produced from sheep and cattle were almost equal, Figure 4. Even with the large decrease in numbers, meat production of sheep ranked second only to cattle and calves until just recently, being replaced by turkey production. The reason attributed to this rather stable meat production from sheep, during the time when sheep numbers declined over 300 percent, is that lambs have been marketed at increasingly heavier weights. During the early part of the century, lambs were being marketed at 60 to 70 pounds. Today the average market weight for choice lambs is between 100 and 110 pounds, with many people advocating an increase in marketing weight up to as high as 150 pounds. If this were achieved, it could greatly increase the profitability of raising sheep.

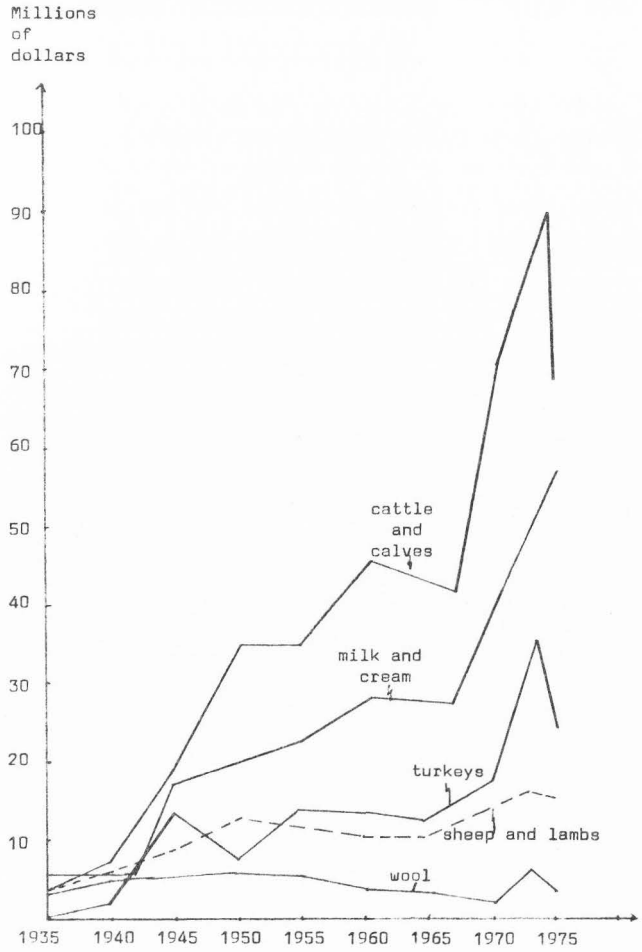
## Review of Pertinent Literature

It has not been until the last five years that concern has developed within the Department of Agriculture and other organizations, relative



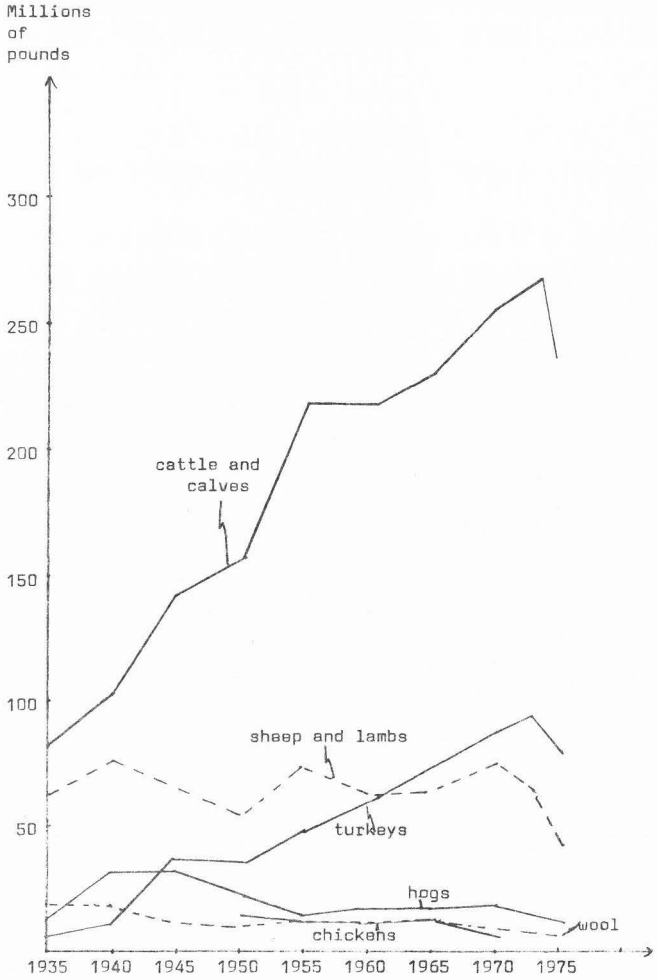

Sources: S.R.S. Livestock Report, Grant Lee, Agriculture Statistician, Federal Building, Salt Lake City, Utah, Unpublished workbook.

Figure 2: Price per pound of principle Utah agriculture products.




Source: Farm Income Situation, Economic Research Service, USDA, Issued August each year.

Figure 3: Revenue from principle Utah agriculture products.




Source: Annual Livestock Reports, S.R.S., U.S.D.A., Federal Building, Salt Lake City, Utah, Unpublished workbook.

Figure 4: Pounds of meat and wool produced from Utah agriculture.

to the declining sheep industry. Recently there have been a number of people who have hypothesized reasons for reductions in sheep numbers, but this study is one of the few to document the reasons.

Utah ranked fifth nationwide in stock sheep and first nationwide in migratory sheep production in 1972 according to Palmer and Spendlove (1972). Forage grows to maturity each year, and if not harvested, goes to waste. Much of Utah's vast grazing land is suitable only for sheep because of the rugged, steep terrain, desert type folia, which is not palatable enough for cattle, and lack of available water. Sheep, because they are herded, can graze an area causing less environmental damage than cattle. Also, sheep are adaptable to rugged, steep mountainous country where no cow would wander nor care to be driven.

Labor problem

Because of the constant need for labor in a range sheep operation, many people believe that the shortage of good hired labor is a contributing factor to declining sheep numbers. Scher (1971), indicated that labor is difficult to obtain. A study of labor problems on Utah sheep ranches by Dettart and Metuler (1953) listed three things of importance in reference to the labor problem.

1. First, of major concern, is the number of regular workers who are leaving the sheep enterprise for work in industry. A fourth of the workers who left sheep ranches during 1952-1953 went into nonfarm work. Relatively few industry workers left industry in this same period to work on sheep ranches.

2. Some concern is shown in the large number of workers who move from one ranch to another. More than half of the regular workers

in 1952 and 1953 changed jobs, usually to find work on other sheep ranches.

3. A third factor is retirement. Sheepherders in Utah are an aging group. Fifty-seven percent of those not related to the ranch operator were 45 or more years old in 1953 compared with 27 percent in the same age group in the United States labor force (Dettart and Metzler, 1953, p. 3).

Some reasons for the large turnover in workers are incompetence, age, disability, unreliability and drunkeness. These reasons for discharge indicate that ranchers are looking for better quality workers than they are able to obtain. Many of the workers now being used are Spanish-American, Basque, or Indians. Anglo-Americans, who will herd sheep, are becoming increasingly difficult to obtain. Unless the owner is of the same nationality as his workers, there are difficult language and ethical barriers to be overcome. Dettart and Metzler (1953) conclude that the drying up of old sources of labor should warrant the establishment of a specialized program to recruit and train persons adapted to this line of work. The Federal Government did pass special legislation for Basque herders to come to the U.S. on contract through the Western Range Association, which has helped to cushion the shortage of labor (Palmer and Spendlove, 1972).

Depredation problem

Related to labor problems is the depredation problem faced by sheep producers. There appears to be good correlation between the amount and quality of labor, and sheep losses due to predators. The difference in average verified predator loss was 1.3 percent between an unherded group and a herded group of sheep, in a study completed

in southern Utah by Davenport, Bowns, and Workman (1973). The small difference in losses between the herded and unherded groups of sheep were undoubtly due to the restrictiveness of the study. Davenport, Bowns, and Workman concluded, though, to achieve this decrease in losses required substantial increases in expenses which may not be justified.

The coyote is primarily responsible for the major decline in the sheep industry (Shelton, 1973), and is also becoming a factor in beef production. As long as there are sheep, the coyote will have an unlimited food supply. There are no major limitations to coyote numbers except as imposed by man. Shelton (1973) states that there is a misconception that coyotes are near extinction and estimates there are four to five million in the western United States. In 1929, it was estimated that each coyote did $100 damage to the livestock industry (Shelton, 1973).

In a study consisting of 20 percent of the range sheep ranches in Utah completed by Nielsen and Curle (1969), coyotes were attributed with 78 percent of the losses due to predation. Cougar, bobcat, eagle, dog, and bear accounted for the remaining 22 percent. It was estimated that sheep ranchers annual losses due to predation totaled $1,320,098, which is quite significant when considering the parity difference between farm and nonfarm income.

There are several methods of controlling predators. The one method most effective, was the use of chemical toxicants. This was a relatively cheap method to adminster and was very effective. Since the Environmental Protection Agency banned the interstate transport of all chemical toxicants, sheepmen, who would like to use them on private property, are unable to do so.

Another method of control is the bounty system. An allotment of money is paid for each verified predator killed. This system, in Utah, has met with limited success. It has been suggested that the bounties are not large enough to induce hunting of predators (Nielsen, 1973). If, for example, the objective was to reduce the coyote population in certain areas, a large bounty on female coyotes during March, April, and May would be more effective in controlling numbers than a small bounty on both sexes year around (Nielsen, 1973). This would eliminate the female, plus five to seven pups, which would reduce the geometric multiplication rate greatly.

Aerial hunting of coyotes using small airplanes or helicopters has been quite effective in limited areas of the state, with suitable topography and sufficient coyote numbers. This is one of the most expensive methods of control and is impractical for single ranchers unless the size of their operation is sufficient. Government trappers have also been used to control predation losses in localized specific incidents. Because of the cunning instinct of the coyote, it requires an experienced and persistent trapper to be effective.

There are several other nonleathal methods of predation control which are being studied at the present. Included in this group are the following: repellents, aversive agents, tranquilizers, attractants, mechanical methods, chemosterilants, and fencing against predators. None of the above mentioned methods, at the present time, are technically nor economically feasible. Continued study in this area is desirable.

Other reasons, hypothesized by Nielsen B. (1971) and others, contributing to declining sheep numbers are the reductions of grazing

permits. Scher (1971) points out that, not only grazing permit reductions, but higher costs of grazing fees and increased restrictions on public land, has been an influencing factor on the decision of producers to sell. Transportation and movement of sheep between winter and summer ranges has become more difficult and comparitively very expensive for Utah sheepmen (Nielsen B., 1971). With the new interstate highway systems and lack of designated stock trails, range sheep operators are forced to truck an increasingly larger proportion of their herds between ranges, greatly increasing operating costs. Many synthetic fibers, good substitutes for wool, have been developed at lower prices, resulting in low wool prices.

Marketing problem

Marketing problems of lamb and wool are becoming more acute without the sheep producers realizing the full extent of the problem Poor, inefficient markets have substnatially increased the costs of getting the lamb from the farm to the housewive's table. Brandow (1961) determined that the cross elasticity of lamb and mutton with beef, veal, pork, and chicken was .62008, .17035, .41480, and .21533, respectively, which indicates that beef and pork are readily substituted for lamb.

Lambs are a highly perishable commodity, points out Bruce Nielsen, order buyer of Producers Livestock Market Association, and when it's time to sell, you have to move them (Parker, 1973). As lambs are kept longer, they lose their fat grade and become feeders, which means thousands of dollars in losses. During the last part of August, September, and the first of October, there is a glut of lambs which hit the market; and, without adequate packer facilities

the price received by producers can rapidly decline. Twenty years ago, Swift and Cudahy, two of the larger packers, had a large number of lamb and sheep packing houses. Today, Cudahy kills no lambs while Swift has only three operating plants (Nielsen B., 1971). There are only about a half dozen major packing houses left in the United States with the nearest for Utah being Armour in Nampa, Idaho.

Meat packers have not encouraged lamb production because of the high cost of processing and marketing (Thorne, Foote, Spillette, 1974). There is a small portion of lamb, because of consumer preference, which must be priced to pay for most packing and distribution costs. Increasing costs result in more and more people being priced out of the market.

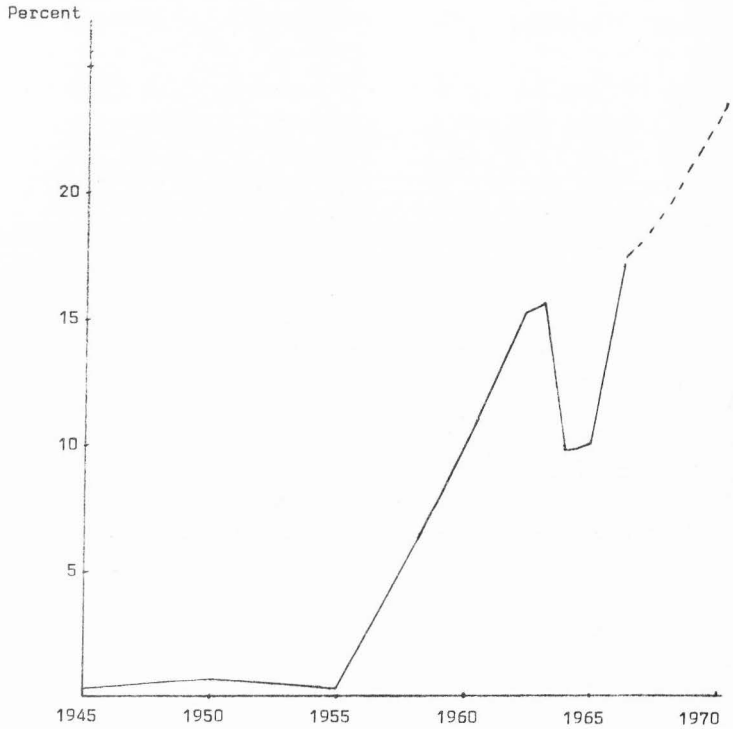
The price elasticity of demand for lamb and mutton at the retail level is very elastic, -2.35 according to Brandow (1961). Lamb and mutton had the most price elasticity of any food or nonfood item that was studied. As the retail prices and margins have been increasing for lamb, due to the marketing problems previously mentioned, the quantity demanded has shrunk considerably. At the farm level, the price elasticity is somewhat more inelastic at -1.78, which can be attributed to the retail marketing spread. The income elasticity for lamb and mutton is .65, which is more elastic than all farm commodities analyzed by Brandow (1961), indicating that consumers will demand lamb and mutton as their incomes rise, if this increased demand is not offset by increased prices. Breimyer (1961) stated that a shrinking productive resource is largely responsible for the decrease in output and consumption of lamb. A long term trend in demand for lamb, as revealed by a net regression on time, appears to have swung

from a slow increase in earlier years to a decrease more recently. It is possible that a reduction in supply of lamb made available, has contributed greatly to this apparent loss in demand. A question that must be raised is, has demand really decreased in the "true classical sense," or has a drop in production had an origin, not in a reduction of demand, as much as a change in conditions affecting supply. If this is the case and sheepmen had continued with high production rates, they would be facing a higher demand curve (Brumyer, 1961).

While American sheep production has been declining, the world sheep numbers have increased 33 percent. This can be explained in comparitive economics, cultural trends, and obstacles in the sheep industry. The percent of lamb and mutton imports consumed to total consumption has been increasing (Figure 5), which tends to support the hypothesis that demand shifts have not caused the supply reductions.

Most knowledgeable people in the industry believe the above is true. A reduction in quantity demanded can be traced to supply reductions caused by previously mentioned factors, which increase producer costs.

Dr. William Larson (1971) reported that on a long term basis, most economic analysis favor sheep production to cattle production for making money. Using the exact same resources, some studies suggest up to 2½ times more profit can be made from sheep than cattle. With good management practices, including limited losses and a high percentage lamb crop, sheep producers over the last 15 years would have been able to make more profit than cattlemen. The reason sheepmen are unable to do so now is because they are unable to control their costs.




Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1967, (88th edition) Washington, D.C.

Figure 5: Percent of lamb and mutton imports consumed to total consumption of lamb and mutton in the U.S.

Sheep industry development program

In 1967, an organization, Sheep Industry Development Program, was organized to improve the climate for raising sheep in the United States, with an ultimate aim of increasing sheep numbers. The following are objectives of the organization.

1. Develop production, marketing, and management systems.

2. Gather research information of production and marketing and evaluate it.

3. Field test new ideas.

4. Encourage support for all segments of the industry (Gladys 1970, p. 13). The organization has not been very effective in stemming the exodus from the sheep industry.

If producers must continue to face increasing costs which they are unable to control, productivity needs to be increased (Wohld, 1972). Partial or complete confinement could be used to reduce or eliminate the grazing and predator problems. Lambs could be weaned earlier, 45-60 days old, and put on concentrated feed (Wohld, 1972). Also, increased lambing cycles are being successfully experimented with, which would greatly increase the productivity of a ewe.

If the sheep industry dies, a way of life for many people will disappear. Many rural areas of Utah would suffer a substantial reduction in income without replacement. The advantages of grazing mixed species on range land will be lost with unmeasurable and unproven consequences. Even with the sheep industry gone, the coyotes will remain (Maurice, 1973).

# CHAPTER II

## OBJECTIVES AND DATA COLLECTION PROCEDURES

This project is designed to investigate economic, institutional, environmental, and management factors which are acting as a deterrent to a stable sheep industry, and are causing the rapid reduction in sheep numbers in the state of Utah. The more specific objectives include:

1. Determine the rate of decline in sheep numbers by geographical areas, and describe the economic characteristics of those businesses that have stopped sheep production. A comparison of those characteristics to a sample of sheep producers still in business will be made. The chi square test will be used to determine if there are any significant differences.

2. Assess the role of predation on producer's decisions to stop sheep production and search out other factors which might have influenced producers to sell their breeding herds.

3. The current use of resources taken out of sheep production, including Forest Service, Bureau of Land Management, and other Federal and private range, will be analyzed.

After reasons are established as to why sheepmen are selling their herds, necessary actions can be taken that will stabilize and/or reverse this downward trend in sheep numbers.

### Sampling Procedures

The information used in this study was obtained by a personal

interview with a sample of producers who terminated their sheep production between 1968 and July of 1974. A list of producers with over 100 head of sheep was compiled from information furnished by the Agriculture Conservation and Stabilization Service (A.S.C.S.). A list of all sheep producers is maintained in each county A.S.C.S. office, which used the information for computation of wool subsidy payments.

Table 1 provides the number of sheep and producers in December of 1968 and a comparison with the number of sheep and producers who left the industry through 1974. Producers and stock sheep are listed at the end of 1968 because detailed data were unavailable for January 1, 1968. A slight adjustment of 30,000 head should be added to the total stock sheep 1968 column to make it correspond to the study data.

This study is concerned with a large reduction in sheep numbers, and since only 3.3 percent of the 1968 total stock sheep in Utah were in herds smaller than 100 head, they were not included in the study sample. There was a 34 percent reduction in number of producers and a 23 percent reduction in sheep numbers which indicates some of the herds being sold were absorbed into other sheep operations and/or the small producers were going out of business.

From 1968 to the middle of 1974, there were approximately 322 producers with over 100 head who went out of business. Table 2 provides a breakdown of the number of head, and producers in the population and in the corresponding sample according to size classifications. The sample was taken using slightly different herd size classifications, but any biases will be negligible. Thirteen percent of the producers with less than 1,000 head, who owned 19 percent of

Table 1. Numbers of producers and stock sheep in 1968 and numbers that sold out, 1968 - 1974

| Size class stock sheep | December 1968 | | Sold out by 1974 | | Those sold out as a percent of 1968 | |
|---|---|---|---|---|---|---|
| | Producers | Stock sheep | Producers | Stock sheep | Producers | Stock sheep |
| -----head----- | ----------number---------- | | | | ----percent----- | |
| Less than 50 | 399 | 4,389 | * | * | * | * |
| 50 - 99 | 511 | 27,917 | * | * | * | * |
| 100 - 299 | 413 | 69,067 | 183 | 29,372 | 44 | 42 |
| 300 - 999 | 257 | 140,791 | 83 | 40,329 | 32 | 28 |
| 1,000 - 2,499 | 160 | 258,856 | 30 | 42,619 | 19 | 16 |
| 2,500 - 4,999 | 76 | 265,489 | 17 | 63,683 | 22 | 24 |
| 5,000 and over | 25 | 217,408 | 9 | 48,100 | 36 | 22 |
| Total | 1,841 | 983,917 | 322 | 224,103 | 34 | 23 |

*Data was not collected.

Table 2. Number of stock sheep and producers who sold out 1968 - 1974 and corresponding sample numbers

| Size class stock sheep | Population | | Sample | | Those sampled as a percent of population | |
|---|---|---|---|---|---|---|
| | Producers | Stock sheep | Producers | Stock sheep | Producers | Stock sheep |
| -----head----- | ----------numbers---------- | | | | -----percent---- | |
| 100 - 299 | 183 | 29,372 | 16 | 2,732 | 9 | 9 |
| 300 - 999 | 83 | 40,329 | 19 | 10,315 | 23 | 26 |
| 1,000 - 2,499 | 30 | 42,619 | 22 | 25,920 | 73 | 61 |
| 2,500 - 4,999 | 17 | 63,683 | 6 | 18,800 | 35 | 20 |
| 5,000 and over | 9 | 48,100 | 2 | 10,100 | 22 | 21 |
| Total | 322 | 224,103 | 65 | 67,867 | 20 | 30 |

the sheep in these smaller herds, were sampled from the population. Approximately 50 percent of the producers with over 1,000 head, who had 35 percent of the sheep in the population, were sampled. A smaller proportion of the small producers was sampled because it was hypothesized that many of these producers left the industry for other than economic reasons.

The sample size was 20 percent of the producers who went out of business, which included 30 percent of the sheep that were sold.

The following table, Table 3, shows a breakdown, by size groups, of the population of producers who terminated sheep production and the number of producers sampled within each size group. Producers with under 100 head of sheep were not considered in the study.

Table 3. Population and sampling rates by state for survey of producers who stopped sheep production, 1968 - 1974

| Herd size groups | Population | Sample |
|---|---|---|
| --------head-------- | -----number of producers----- | |
| Less than 50 | * | * |
| 50 - 99 | * | * |
| 100 - 299 | 183 | 16 |
| 300 - 999 | 83 | 19 |
| 1,000 - 2,499 | 30 | 22 |
| 2,500 - 4,999 | 17 | 6 |
| 5,000 and over | 9 | 2 |
| Overall sampling rate Percent | | 20.2 |

*Population was not determined nor sample made.

Table 4 shows each size classification as a percent of the total

Table 4. Percent of sheep numbers by size classification in the population and sample

| Herd size | Sheep numbers population | Percent of total | Sheep numbers sample | Percent of total |
|---|---|---|---|---|
| 100 - 299 | 29,372 | 13 | 2,732 | 4 |
| 300 - 999 | 40,329 | 18 | 10,315 | 15 |
| 1,000 - 2,499 | 42,619 | 19 | 25,920 | 38 |
| 2,500 - 4,999 | 63,683 | 28 | 18,800 | 28 |
| 5,000 and over | 48,100 | 22 | 10,100 | 15 |
| Total | 224,103 | 100 | 67,867 | 100 |

number of sheep in the population and sample, respectively. The sample is quite representive of the total population. To insure the elimination of bias from the sample, a random number table was used to generate the producers chosen for the sample. Alternatives were also chosen randomly before the survey to insure an adequate sample if some of the original sample producers were unable to be contacted.

## Data Collection

After a sample list of producers and alternatives was developed, data were collected via a personal interview with the chosen producers, during the summer of 1974. The questionnaire used for data collection was developed by the Economic Research Service, Washington D.C. A copy is included in Appendix A. Example data obtained from the questionnaire that are used in this study are:

1. Acres and type of land used in the operation.
2. All types and amounts of grazing allotments.
3. If there was a reduction in herd sizes prior to quitting the sheep business, and why.
4. Did the producer own cattle or goats while in the sheep business.
5. Proportion and type of annual feed requirements.
6. Type of lambing operations, and relative locations of ranges.
7. Type of lamb and wool marketing.
8. Percent lamb crop, fleece weight, and lamb death losses.
9. Quantities and present use of resources shifted out of sheep

production or sold.

10. Indication of importance of several factors influencing decisions to stop sheep production.

11. Ownership of operation, age of operator, and present occupation.

12. Percent equity in real estate, livestock, and equipment.

13. Net return from operation.

After the data were collected, they were taken off the questionnaire and punched on computer cards. A program was written which compiled the data in totals and by size groups. These summary statistics will be used in the analysis of the data in subsequent sections of this paper.

# CHAPTER III

## ANALYSIS OF UTAH SHEEP INDUSTRY AND FORMER SHEEP PRODUCERS

From 1968 to 1974, about 359,000 head of sheep have been liquidated from Utah sheep ranches and farms. Sixty-four percent of this reduction, or 229,800 head of sheep, were sold by farmers and ranchers who quit the sheep business. The other 36 percent or 129,200 head of sheep, were removed from farms as a result of herd reductions, Table 5.

Table 5. Source of change in stock sheep inventories between January 1, 1968 and January 1, 1975

| Item | Unit | Utah |
|---|---|---|
| Stock sheep inventory-January 1, 1968 | head | 1,018,000 |
| Stock sheep inventory-January 1, 1975 | head | 660,000 |
| Change in stock sheep inventory | head | 359,000 |
| Proportion of change due to: | | |
| Reducing herd size | percent | 36 |
| Producers going out of business | percent | 64 |

### Decline of Sheep Numbers

Since 1968, there has been a general increase in the number of sheep producers leaving the business, Table 6. Of the total number of producers who quit between 1968 and 1974, 9 percent quit in 1968

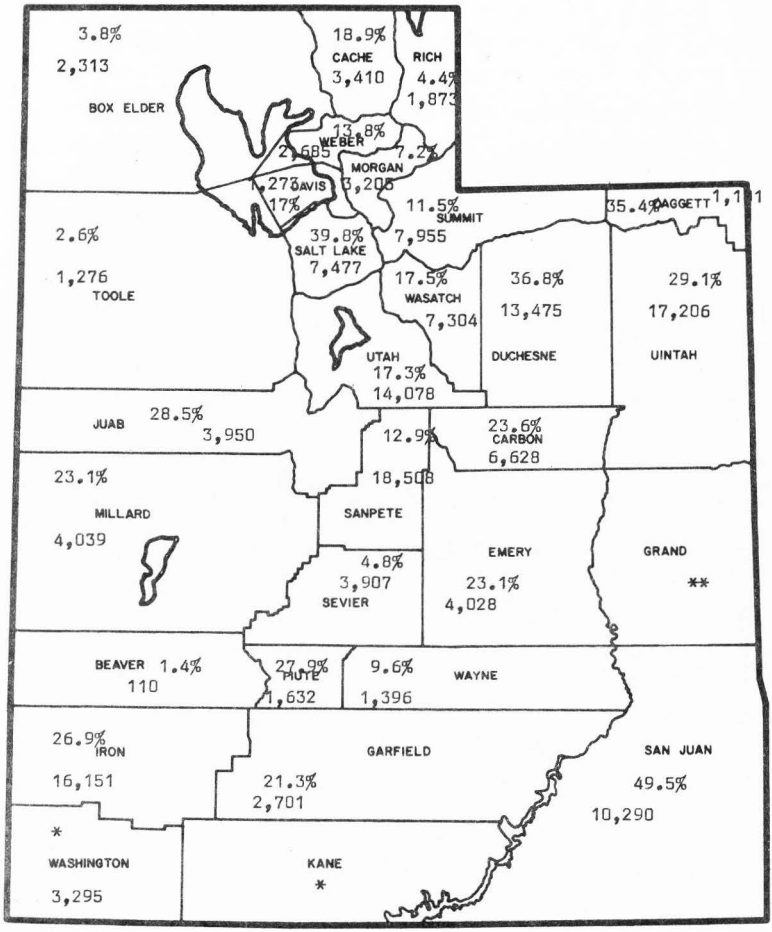
Table 6. Proportion of sheep producers that went out of business during each year from 1968 to 1974*

| Year producer went out of business | Utah |
|---|---|
| | percent |
| 1968 | 9 |
| 1969 | 8 |
| 1970 | 17 |
| 1971 | 18 |
| 1972 | 22 |
| 1973 | 15 |
| 1974 1/ | 11 |
| Total | 100 |

*Does not include producers with less than 100 sheep.
1/1974 includes only producers who sold out during the first six months.

while 11 percent quit during the first six months of 1974, which signifies a significant increase.

The Uintah Basin, in Utah, has experienced the greatest relative reductions in sheep numbers, Figure 6. The topography of this area, which is very conducive to sheep ranching, cannot be the influencing factor. There is excellent summer range in the Uintah Mountains and good winter range east and south along the Colorado border. After interviewing ranchers in this area, it is apparant that even with the comparative advantage they enjoy, predation and labor problems plus other more insignificant problems outweight any advantages, especially when the energy development opportunities are considered. Salt Lake County is the only northern county which has had a large relative reduction in sheep numbers, but this does not reflect conditions in the county. Most of the sheep registered in Salt Lake County are registered there because of producers residence not physical location.




* Not available
**No sheep

Figure 6: Stock sheep numbers sold since 1968 and stock sheep sold as a percent of total sheep in each county during 1968.

The central portion of the state, which has the largest concentration of sheep, has not experienced as large a reduction in sheep numbers as those previously mentioned. Sheep ranchers in Carbon and Emery counties, because of coal development, are affronted with similar conditions as those ranchers in the Uintah Basin. Sanpete and Sevier counties, the two largest sheep producing counties in Utah, accounting for approximately one fourth of the total, have maintained nearly stable sheep numbers. Further study to determine reasons why these counties are able to maintain their sheep number while others are experiencing a decrease would be interesting and useful, but goes beyond the scope of this study.

Iron county is the largest sheep producing county in southern Utah and is having difficulty maintaining its sheep numbers. Piute and San Juan counties have also experienced relatively large reductions in sheep numbers. The rest of the area in southern Utah either does not have any sheep or is not experiencing the large reduction in numbers that is evident elsewhere.

## General Characteristics of Sample Group

A summary of the general characteristics of the sample group is presented in Table 7. There was a total of 329,041 acres of rangeland, 4,490 acres dryland, and 7,888 acres irrigated land studied, with 76 percent, 55 percent, and 66 percent, respectively, being used for sheep production. Producers in the study had 52,000 head of Forest Service sheep grazing permits and 79,000 head of Bureau of Land Management sheep grazing permits. The producers average age was 58 years old, and he had been in the sheep business an average of 24

Table 7. General characteristics of sheep business that were discontinued, 1968 - 1974

| Item | Unit | |
|---|---|---|
| Land resources: | | |
| Rangeland | | |
| Owned | acres | 232,251 |
| Rented or leased | acres | 96,790 |
| Total | acres | 329,041 |
| Used for sheep | percent | 76 |
| Dry cropland | | |
| Owned | acres | 4,490 |
| Rented or leased | acres | ------- |
| Total | acres | 4,490 |
| Used for sheep | percent | 55 |
| Irrigated cropland | | |
| Owned | acres | 7,633 |
| Rented or leased | acres | 255 |
| Total | acres | 7,888 |
| Used for sheep | percent | 66 |
| Grazing permits: | | |
| Forest Service | | |
| Stock sheep | head | 52,393 |
| Cattle | head | 159 |
| Goats | head | ------- |
| Bureau of Land Management | | |
| Stock sheep | head | 79,075 |
| Cattle | head | ------- |
| Goats | head | ------- |
| Livestock: | | |
| Breeding ewes and replacements | head | 67,869 |
| Beef cows | head | 3,102 |
| Goats | head | ------- |
| Equity in resources: | | |
| Land | percent | 64 |
| Livestock | percent | 30 |
| Equipment | percent | 6 |
| Operator: | | |
| Age | years | 58 |
| Time in sheep business | years | 24 |

Table 7. Continued

| Item | Unit | |
|---|---|---|
| Disposition of land: | | |
| Sold to non-agriculture | percent | 7 |
| Sold to sheepmen | percent | 8 |
| Sold to cattlemen | percent | 7 |
| Shifted to cattle | percent | 36 |
| Shifted to goats | percent | --- |
| Other idle (describe) | percent | 42 |
| Total | percent | 100 |

years. This indicates that the producers leaving the business are seasoned veterans with many years of experience. The reasons and observations they profess for leaving the sheep business must have credence.

Nearly 50 percent of the land taken out of sheep production has been shifted to the production of cattle, while only 8 percent of the land was sold to other sheep producers. Forty-two percent of the land was classified as idle at the time of the interviews. There are two main reasons for this large idle acreage. The first reason is that approximately 50 percent of the land has been taken out of sheep production within the last 2½ years. Because of size, many estates require a number of years to transfer ownership. The second reason, for such a large number of idle acres, is that much of the land is unsuitable for any use other than sheep production, especially when the recent past economic cattle situation is considered.

Average herd and ranch size

To obtain an idea of the general producer characteristics within each sample size group, Tables 8 and 9 were developed. The average herd size within each group is presented in Table 8.

The percent of producers, together with the average acres and allotments owned of rangeland, cropland, Forest Service, Bureau of Land Management, and Grazing Association allotments, are presented in Table 9 according to size classifications. The smaller producers owned an average of 100 acres of irrigated land which was the basis of their operations. Seventy-five percent of the producers in the size group, 100 - 299, owned an average of 578 acres rangeland while only 13 percent and 6 percent of the same producers owned Forest

Table 8. Average herd size within sample size groups

| Size group | Ranchers | Average head |
|---|---|---|
| 100 - 299 | 16 | 171 |
| 300 - 999 | 19 | 543 |
| 1,000 - 2,499 | 22 | 1,178 |
| 2,500 - 4,999 | 6 | 3,133 |
| 5,000 and over | 2 | 5,050 |

Service and Bureau of Land Management allotments, respectively. Policies of the Bureau of Land Management and Forest Service have had little, if any, affect on these small producers. Because of their resource composition, these producers have been able to move into and out of sheep production relatively easily. Also, sheep production was not the only means of income for this group of producers.

As the herd size increased, more producers owned larger tracts of rangeland while fewer producers owned the same average number of irrigated acres. The percent of producers using Bureau of Land Management and Forest Service allotments increased until 100 percent of the largest producers used grazing permits. The larger producers were more specialized and received all of their income from sheep production. Even though they enjoyed economies of size, the larger producers were affected most by adverse economic and social conditions in the industry.

Herd size reductions

There were 55 percent of the sheep ranchers who did not reduce their herd sizes prior to selling the total operation. The remaining

Table 9. Percent of producers by size group and average acres or head of different land and allotments

| Size group<br>Land and Allotments | Percent of producers | Average acres or head |
|---|---|---|
| Size group 100 - 299 | | |
| Rangeland | 75 | 578 acres |
| Dry cropland | 0 | 0 acres |
| Irrigated cropland | 94 | 99 acres |
| Forest Service allotments | 13 | 250 head |
| Bureau of Land Management allotments | 6 | 250 head |
| Grazing Association land | 0 | 0 head |
| Size group 300 - 999 | | |
| Rangeland | 95 | 1,824 acres |
| Dry cropland | 16 | 163 acres |
| Irrigated cropland | 100 | 119 acres |
| Forest Service allotments | 21 | 781 head |
| Bureau of Land Management allotments | 21 | 460 head |
| Grazing Association land | 10 | 3,800 head |
| Size group 1,000 - 2,499 | | |
| Rangeland | 95 | 4,166 acres |
| Dry cropland | 9 | 100 acres |
| Irrigated cropland | 86 | 117 acres |
| Forest Service allotments | 73 | 1,173 head |
| Bureau of Land Management allotments | 86 | 1,762 head |
| Grazing Association land | 9 | 1,200 head |
| Size group 2,500 - 4,999 | | |
| Rangeland | 84 | 12,800 acres |
| Dry cropland | 17 | 800 acres |
| Irrigated cropland | 84 | 313 acres |
| Forest Service allotments | 67 | 3,750 head |
| Bureau of Land Management allotments | 100 | 4,583 head |
| Grazing Association land | 0 | 0 head |
| Size group 5,000 and over | | |
| Rangeland | 100 | 20,500 acres |
| Dry cropland | 50 | 3,000 acres |
| Irrigated cropland | 50 | 100 acres |
| Forest Service allotments | 100 | 7,500 head |
| Bureau of Land Management allotments | 100 | 8,000 head |
| Grazing Association land | 50 | 10,000 head |

45 percent had some reductions in herd size before a total liquidation of their operations, Table 10.

Table 10. Percent of ranchers by size group who reduced herd sizes and average size reductions.

| Size group | Percent of ranchers | Average head decrease |
|---|---|---|
| 100 - 299 | 31 | 106 |
| 300 - 999 | 42 | 34 |
| 1,000 - 2,499 | 50 | 986 |
| 2,500 - 4,999 | 50 | 2,400 |
| 5,000 and over | 100 | 4,950 |

All of the largest ranches had some reduction in herd sizes while about 50 percent of the other producers reduced their herd sizes. Table 11 provides some additional information on the magnitude of herd reductions prior to those producers leaving the industry.

The average number of years that the maximum herd was maintained, by size group, is shown in Table 12. The larger herds were maintained at a maximum number of years for a much longer period of time than the smaller herds.

Economies of size and the ability, because of size, to endure the cyclical pattern of high and low lamb and wool prices enabled the large producers to maintain their herds at maximum numbers for a longer number of years than the small producers.

Table 11. Herd size in peak production year and in last year of operation of sheep producers who stopped production, 1968 - 1974

| Herd size class stock sheep | Producers who reduced herds | Herd size | | Change |
|---|---|---|---|---|
| | | Peak year | Last year | |
| -----head----- | percent | total sample herd sizes | | |
| 100 - 299 | 31 | 3,262 | 2,732 | 530 |
| 300 - 999 | 42 | 10,575 | 10,315 | 270 |
| 1,000 - 2,499 | 50 | 36,770 | 25,920 | 10,850 |
| 2,500 - 4,999 | 50 | 26,000 | 18,800 | 7,200 |
| 5,000 and over | 100 | 20,000 | 10,100 | 9,900 |
| Average | 45 | 19,321 | 13,573 | 5,750 |

Table 12. Frequency distribution and averages for number of years that maximum herd was maintained

| Size group | Average years | Frequency distribution (years) Percent of producers | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 25+ |
| 100 - 299 | 10 | 25 | 31 | 25 | 13 | 6 | 0 |
| 300 - 999 | 12 | 21 | 32 | 16 | 16 | 10 | 5 |
| 1,000 - 2,499 | 18 | 23 | 9 | 19 | 14 | 18 | 18 |
| 2,500 - 4,999 | 22 | 50 | 0 | 0 | 0 | 0 | 50 |
| 5,000 and over | 36 | 0 | 0 | 50 | 50 | 0 | 50 |
| Average | 20 | 24 | 15 | 22 | 8 | 7 | 24 |

Reasons for herd size reduction

In order to acquire some indication of the relative importance of several different factors which affected the producers decision to reduce his herd size, a questionnaire was developed, the results of which appear in Table 13. The producers were asked to rate each of the factors listed, according to the influence of that factor on his

Table 13. Relative importance of factors causing reductions in herd size as reported by sheep producers who went out of business, 1968 - 1974

| | Percent of producers responding | Average rating (number) |
|---|---|---|
| Producers who reduced herd size prior to selling out: | | |
| Shortage of good hired labor | 22 | 4.75 |
| Shortage of sheep shearers | 22 | .25 |
| Lamb marketing problems | 22 | .50 |
| Wool marketing problems | 22 | 1.25 |
| Lamb prices | 22 | 2.50 |
| Wool prices | 22 | 2.75 |
| Bureau of Land Management grazing policies | 20 | 2.00 |
| Forest Service grazing policies | 17 | 1.33 |
| State land grazing policies | 2 | 0.00 |
| Cost of private range leases | 3 | 0.00 |
| Predator losses | 22 | 4.75 |
| Poisonous plants | 22 | .75 |
| Other livestock more profitable | 14 | .66 |
| Sale of owned land | 14 | .66 |
| Age of owner | 20 | 4.00 |
| Insufficient financing for sheep operation | 22 | 0.00 |
| Adequate income without sheep | 17 | 0.00 |
| Other1/ | 2 | 5.00 |

1/ List reasons family problem

decision to reduce his herd. The possible ratings were from zero to six, with a zero signifying the producer was aware of the factor, but it had no influence on his decision to reduce his herd. A rating of six indicated that the factor, so rated, was a major influence in his reduction decision. Also, included on Table 13 is the percent of producers to which the question applies. Even if the average number rating is comparitively high, if the question applies to only a small percentage of producers, the factor had a localized or even individual influence. For example, 22 percent of the producers was the most that responded to any individual factor while two percent of the producers was the least to respond to any one factor. The two most important factors cited for reduction in herd size were the shortage of good hired labor and losses due to predation. Twenty percent of the producers rated their age as a very important factor influencing their decision. Lamb and wool prices were also indicated as factors which influenced herd size reductions. The larger producers, especially, indicated that Bureau of Land Management and Forest Service grazing policies necessitated their reduction in herd sizes, which accounts for the average ratios of these two factors. It is interesting to note that 22 percent, the largest percentage responding to any one factor, responded to the factor of insufficient financing for sheep operations, with an average rating of zero, which indicates that the factor was considered but that it did not contribute to the herd reduction decision. There was sufficient financing to maintain herd size but it was not used, undoubtedly because the main factors causing reductions, age, labor shortage and predation losses were

beyond the control of the producer or could not be controlled economically, under existing conditions.

## General Characteristics of Sheep Ranch Operations

In other areas of the United States, especially Texas, New Mexico, and Arizona, goat production is quite prevalent. Though Utah has similar terrain, no producers surveyed owned goats.

### Cattle production

Approximately 31 percent of the producers owned beef cattle when they stopped sheep production (Table 14). It appears that the largest sheep producers were entering the cattle business in the last few years of their sheep operations since they averaged only four years in the cattle business. Other producers apparently organized their resources from the outset to co-produce both sheep and cattle as indicated by the number of years they were in the cattle business.

### Management practices

The typical sheep operations of the past required producers to move their herds long distances, between winter and summer range. Today, it appears that to continue in the sheep business, the distance and amount of movement by sheep herds must be held to a minimum (Table 15). There is a marked contrast in the percent of producers who move their herds and in the distance which these herds are moved. Of the herds that are moved, trucking has replaced trailing as the principal means of movement. The advent of the new interstate systems, which prohibit sheep trailing, across the principle migratory routes has forced producers to either truck their herds, greatly increasing

Table 14. Beef cattle on farms of producers who stopped sheep production, 1968 - 1974

| Size group stock sheep | Producers who had beef cows when they stopped sheep production | Average herd size last year of sheep production | Average maximum herd size | Average years maximum herd size was maintained | Average years in the cattle business | Producers who had beef cows at some time prior to leaving the sheep business |
|---|---|---|---|---|---|---|
| head | percent | head | head | number | number | percent |
| 100 - 299 | 31 | 58 | 64 | 10 | 15 | 13 |
| 300 - 999 | 32 | 127 | 141 | 12 | 15 | 11 |
| 1,000 - 2,499 | 27 | 75 | 91 | 19 | 23 | 14 |
| 2,500 - 4,999 | 33 | 525 | 525 | 26 | 23 | 17 |
| 5,000 and over | 50 | 550 | 550 | 6 | 4 | 00 |
| Average | 31 | 142 | 274 | 15 | 18 | 14 |

Table 15. Transportation of breeding herd between major feeding areas and by producers who stopped production between 1968 and 1974

| Item | Unit | Current sheep producers | Former sheep producers |
|---|---|---|---|
| Farms that did not transport breeding herd | percent | 78 | 18 |
| Farms that transported breeding herd | percent | 22 | 82 |
| Both trailed and trucked | | | |
| Total miles | miles | 188 | 2,211 |
| Proportion of herd | percent | 30 | 100 |
| Trailed only | | | |
| Total miles | miles | 66 | 1,761 |
| Proportion of herd | percent | 43 | 68 |
| Trucked only | | | |
| Total miles | miles | 143 | 961 |
| Proportion of herd | percent | 26 | 40 |
| Not moved | | | |
| Proportion of herd | percent | 1 | 18 |
| Total herd | percent | 100 | 100 |

transportation costs, or develop alternate feed sources, which also increases operating expenses.

The method of marketing lamb and wool is presented in Table 16. The largest percentage of producers marketed their lambs to an order buyer for two reasons. The first being that most of the lambs were produced from range operations and when sold, were not ready to be slaughtered. They were usually put on feed to gain 10 - 20 pounds and a finish that would grade prime or choice. The second reason more lambs were marketed through an order buyer is that packer buyers are more difficult to find due to the closing of the large packer houses in the state. In the future, producers will sell more to local auctions even though prices are not always the highest. None of the former sheep producers sold their lambs through producer pools.

The largest percentage of producers sold their wool through the Utah Wool Association. The remaining producers, 37 percent, marketed their wool direct to wool buyers. Almost all of the smaller producers went through the association while 100 percent of the largest producers surveyed sold directly to wool buyers. There appears to be developing a lamb and wool marketing problem, especially with the smaller producers. They are being forced to operate in a monopsonistic situation, receiving less money for their product than they would with perfect competition.

Table 17 provides an insight into the average number of lambs weaned per ewe bred by different size classes. As would be expected, the smaller herds weaned more lambs per ewe than the larger herds.

There was a wide frequency distribution in the number of head weaned per ewe indicating to some extent the producers managerial ability and his operation's comparative advantage over other producers.

Table 16. Market outlets for lambs and wool used by producers who went out of business, 1968 - 1974

| Item | Former sheep producers |
|---|---|
| | percent of farms |
| Lamb marketing: | |
| Auction | 7.8 |
| Packer buyer | 32.3 |
| Order buyer | 58.5 |
| Producer pool | 1.4 |
| Other | 0.0 |
| Total | 100.0 |
| Wool marketing: | |
| Cooperative marketing | 0.0 |
| Association | 63.0 |
| Direct to wool buyer | 37.0 |
| Other | 0.0 |
| Total | 100.0 |

Table 17. Average and frequency of lambs weaned per ewe bred by size group

| Size group | Average | Frequency percent of producers | | | |
|---|---|---|---|---|---|
| | | Under .90 | .91-1.05 | 1.06-1.20 | 1.21+ |
| 100 - 299 | 1.21 | 6 | 0 | 31 | 63 |
| 300 - 999 | 1.22 | 0 | 11 | 26 | 63 |
| 1,000 - 2,499 | .97 | 23 | 45 | 27 | 5 |
| 2,500 - 4,999 | 1.05 | 17 | 17 | 50 | 16 |
| 5,000 and over | 1.08 | 0 | 50 | 50 | 0 |
| Average | 1.11 | 9 | 25 | 36 | 30 |

An average of 11.2 pounds of wool was produced per sheep in the study, Table 18. No wide variations in wool production was noticed between small and large herds even though it would appear that small herds, confined and fed throughout the winter, would produce more wool than range sheep.

Table 18. Average and frequency of pound of wool shorn per ewe by size group

| Size group | Average | Frequency percent of producers 10# | 11# | 12# | 13# |
|---|---|---|---|---|---|
| 100 - 299 | 11 | 12 | 37 | 51 | 0 |
| 300 - 999 | 11 | 21 | 47 | 25 | 7 |
| 1,000 - 2,499 | 11 | 18 | 50 | 27 | 5 |
| 2,500 - 4,999 | 11 | 33 | 33 | 17 | 17 |
| 5,000 and over | 12 | 50 | 0 | 0 | 50 |
| Average | 11.2 | 27 | 33 | 24 | 16 |

Different lambing procedures and the percent of producers who used each are presented in Table 19. One hundred percent of the small producers lambed 100 percent of their sheep in sheds, while 100 percent of the largest producers lambed most of their sheep on the range. The percent of current producers shed lambing is larger than for former producers. There must be a correlation between the number of lambs weaned per ewe and the type of lambing operation. This has provided an incentive for more producers to develop shed lambing facilities for more of their sheep.

Information on the manner sheep are handled after lambing is provided in Tables 20 and 21. The smaller herds were summered in fenced

Table 19. Average percent of ewes which were shed lambed, ranged lambed or other lambed and percent of producers by size group using different lambing methods

| Size group | Shed lambed | | Range lambed | | Other | |
|---|---|---|---|---|---|---|
| | Average percent ewes | Percent producers | Average percent ewes | Percent producers | Average percent ewes | Percent producers |
| 100 - 299 | 100 | 100 | 0 | 0 | 0 | 0 |
| 300 - 999 | 96 | 95 | 57 | 16 | 0 | 0 |
| 1,000 - 2,499 | 80 | 23 | 97 | 82 | 50 | 6 |
| 2,500 - 4,999 | 35 | 33 | 86 | 83 | 100 | 17 |
| 5,000 and over | 30 | 50 | 85 | 100 | 0 | 0 |
| Average | 68 | 64 | 65 | 43 | 30 | 3 |
| Current sheep producers | 93 | 78 | 90 | 22 | 57 | 2 |

Table 20. Average percent of herd and percent of producers, by size group, who kept their sheep, between docking and marketing of lambs, either on open range or in fenced pasture

| Size group | Herded open range | | Fenced pasture | |
|---|---|---|---|---|
| | Percent of herd | Percent producers | Percent of herd | Percent producers |
| 100 - 299 | 93 | 19 | 94 | 87 |
| 300 - 999 | 81 | 37 | 83 | 84 |
| 1,000 - 2,499 | 98 | 91 | 83 | 14 |
| 2,500 - 4,999 | 100 | 100 | 0 | 0 |
| 5,000 and over | 100 | 100 | 0 | 0 |
| Average | 94 | 58 | 52 | 50 |
| Current sheep producers | 94 | 56 | 91 | 50 |

Table 21. Average percent of breeding ewes and percent of producers by size group who wintered sheep on open range or in fenced pastures

| Size group | Herded open range | | Fenced pasture | |
|---|---|---|---|---|
| | % of ewes | % of producers | % of ewes | % of producers |
| 100 - 299 | 13 | 12 | 88 | 87 |
| 300 - 999 | 23 | 26 | 77 | 79 |
| 1,000 - 2,499 | 86 | 86 | 14 | 18 |
| 2,500 - 4,999 | 97 | 100 | 3 | 17 |
| 5,000 and over | 100 | 100 | 0 | 0 |
| Average | 64 | 52 | 36 | 52 |
| Current sheep producers | 97 | 51 | 94 | 51 |

pastures while all of the big operators herded on open range. There is a two percent difference in the number of current producers and former producers using open range. This is an indication of a slow trend in the industry, away from open range to fenced pasture, which has been occuring for a long time, and seems consistant with their labor problems.

During the winter, 100 percent of the larger producers used open range forage for feed, while about 90 percent of the smaller producers keep their sheep in fenced pastures. There is little difference in the percent of current producers and former producers who winter on open range or in fenced pastures.

Producer characteristics

To obtain some idea of the general characteristics of the producers who left the sheep business, questions were asked about their age, number of years in the sheep business, type of operation ownership, and their present occupation. Results of these questions are presented in the next four tables together with a comparison of present sheep owners.

The former sheep producers were in the business an average of 24 years compared to 21 years for the current producers, Table 22. Thirty-five percent of the former producers had owned sheep for 30 or more years. This indicates that the people leaving the business have had a substantial amount of experience in this sheep business.

The chi-square test was used to determine if there was a significant difference between the years in the sheep business of former producers compared to current producers. A chi-square ($x^2 = 46.75$) was calculated with six degrees of freedom. This was not significant

Table 22. Frequency distribution of producers by years in the sheep business and average years, current producers and producers who went out of business, 1968 - 1974

| Years | Current sheep producers | Former sheep producers | $x^2$ |
|---|---|---|---|
| | ---percent of producers--- | | |
| Less than 5 | 10 | 11 | .13 |
| 5 - 9 | 20 | 8 | 22.00 |
| 10 - 14 | 9 | 14 | 7.26 |
| 15 - 19 | 11 | 14 | 2.53 |
| 20 - 24 | 15 | 9 | 6.57 |
| 25 - 29 | 6 | 9 | 4.50 |
| 30 and over | 29 | 35 | 3.76 |
| Total | 100 | 100 | 46.75 |
| Average years in the sheep business | 21 | 24 | |

Table 23. Age distribution and average age, current sheep producers and producers who went out of business, 1968 - 1974

| Age class | Current sheep producers | Former sheep producers | $x^2$ |
|---|---|---|---|
| ---years--- | --percent of producers-- | | |
| Under 30 | 17 | 0 | 50.00 |
| 30 - 39 | 14 | 20 | 7.90 |
| 40 - 49 | 23 | 14 | 9.94 |
| 50 - 59 | 29 | 20 | 8.47 |
| 60 and over | 17 | 46 | 141.66 |
| Total | 100 | 100 | 217.97 |
| Average age | 45 | 58 | |

Table 24. Present activity of sheep producers who stopped production 1968 - 1974 and attitude of children toward sheep business

| Item | Percent of producers |
|---|---|
| Present activity of former sheep producers: | |
| Retired | 29.2 |
| Other agricultural business | 41.5 |
| Nonfarm business | 20.0 |
| Other[1/] | 9.3 |
| Former sheep producers who had children interested in continuing with sheep business | 12.3 |
| Most common reason for not continuing business: | |
| insufficient income | |

1/ List other part-time agriculture

Table 25. Distribution of producers by type of business ownership, current sheep producers and producers who stopped production, 1968 - 1974

| Type of ownership | Current sheep producers | Former sheep producers | $x^2$ |
|---|---|---|---|
| | percent of producers | | |
| Single owner | 64 | 77 | 7.24 |
| Partnership | 15 | 8 | 10.02 |
| Family corporation | 18 | 15 | .90 |
| Other corporation | 1 | 0 | 3.0 |
| Other | 2 | 0 | 6.0 |
| Total | 100 | 100 | 27.16 |

even at the .005 level, indicating there is definitely a larger difference between the amount of time in the sheep business, of current producers versus former producers, than can be attributed to sampling error. The current producers have been in the sheep business a shorter period of time than former producers.

Average age of former sheep producers is 58 years compared to 45 years for current producers, Table 23. Close to half of the former producers were 60 year old or older. A chi-square test was used to determine if there was any difference in age distribution between current and former producers. Chi-square equaled ($x^2 = 217.97$), and with four degree of freedom it is significantly larger than could be expected at the .005 percent level, indicating there is a difference in age distribution between current producers and former producers. The current producers include 17 percent which are under 30 years old. This suggests that even though young people are entering the sheep business, they are not entering as fast as the older producers are leaving it.

The present activity of former producers is presented in Table 24. Seventy-one percent of former producers are either retired or in other agriculture business. These people are not stopping sheep production because of a dislike for agriculture. Instead, they are finding it uneconomical to continue production under existing conditions. Only 20 percent of the producers who quit shifted out of the agriculture into nonfarm business. There were only 12 percent of former producers who had children interested in continuing in the sheep business, but all indicated insufficient income deterred them from doing so.

Single owner type operations were most prevalent with former sheep producers, accounting for 77 percent (Table 25). A comparison of current and former producers indicates that single owner type operations are declining, while there is a large increase in partnerships and family corporations. Because of the large required investment to enter and continue in agriculture today, people are combining their resources. Also, there are some special tax advantages which can be realized under the partnerships and family corporation type ownerships, increasing their desirability.

There has been a large decline in Utah sheep numbers over the last five years. Producers have been reducing and/or selling their herds. The major reasons for reductions in herd size are: shortage of good hired labor, lamb and wool prices, Bureau of Land Management and Forest Service grazing policies, predation losses, and the owners age. The larger producers had mostly range operations, while the smaller producers had private pasture and irrigated cropland. Forty percent of the former producers were over 60 years old, and 80 percent were either retired or in some other agriculture production. Nearly all of the producers interviewed enjoyed producing sheep and were either too old, or it was economically unfeasible for them to continue.

# CHAPTER IV

## REASONS FOR LIQUIDATION OF HERDS

Sheep producers, even though they might get a lot of joy and satisfaction out of their work, are in that business, just like any other businessmen, to earn an income and hopefully a profit. If, over the long run, they are not making a profit, or at least a reasonable return on their investment, they will act like any other rational businessman and transfer their resources into some other more profitable venture.

### Return On Investment

The age of the owner may be the only factor which does not directly affect their return on investment. A big sheep operation, 1,000 head or over, necessitates a sizeable investment by the owner. Anywhere from $100,000 and up can be invested in a large sheep ranch, depending on the amount of private land owned, etc. For example, a $200,000 ranch would have to produce a clear return of $16,000 annually to be comparable to other opportunities in the investment market, excluding the effects of land appreciation.

Estimated average net income from sheep, over the last five years of operation, is presented in Table 26. Many producers indicated that they actually lost money their last one to two years of operation, which fact is concealed in the table. The rate of return on producer investment is very much below what could be earned elsewhere. This

Table 26. Estimated average net returns from sheep over last five years of operation received by sheep producers who went out of business, 1968 - 1974

| Size group stock sheep | Average net income from sheep | | | | | | |
|---|---|---|---|---|---|---|---|
| | Less than $5,000 | $5,000-$9,999 | $10,000-$14,999 | $15,000-$19,999 | $20,000-$24,999 | $25,000 and over | Total |
| | percent of producers | | | | | | |
| 100 - 299 | 25 | 63 | 12 | 0 | 0 | 0 | 100 |
| 300 - 999 | 5 | 47 | 42 | 6 | 0 | 0 | 100 |
| 1,000 - 2,499 | 18 | 32 | 22 | 18 | 5 | 5 | 100 |
| 2,500 - 4,999 | 17 | 17 | 32 | 0 | 17 | 17 | 100 |
| 5,000 and over | 0 | 0 | 50 | 50 | 0 | 0 | 100 |

is the major reason why more young people are not going into the sheep production business.

## Depredation Problem

According to producers, predation reduces net returns more than any other factor. A considerable degree of emotion is generated when a producer discusses the affects of predation on his sheep herd because it is a highly visible means of destruction over which the rancher has little control. Other ranch operation expenses are under his control. He can hire more or less labor, feed different rations, and cull his herd as needed to control his expenses. When lambs are lost to predators, expenses remain stable, or increase depending on the amount spent on predation control, while returns are decreased by the net value of the lamb. Without the lambs, the ewe becomes somewhat of a liability to the rancher instead of an asset, until the next lamb crop. Net income from a sheep operation will nearly be cut in half if total lamb losses are doubled. This is the reason producers are so sensitive to depredation losses.

The counties which have incurred the largest reductions in sheep numbers are those which are reporting the largest number of lamb losses due to predation. The Uintah Basin has sustained the heaviest losses due to predators while producers in Utah, Iron, Carbon, Emery, and Sanpete counties are also sustaining large losses.

It has been assumed by some that there is a relationship between the herd size and predation losses, indicating the larger the herd size the larger the loss. If this were true, it would indicate a rather equal proportion of sheep to predators across the state. One county

or area could then be used to describe and project the predation problem statewide with quite accurate results. If, on the other hand, the proportions were not equal, there would be differences between areas and any summation of results from one area, if projected over the state, would render quite misleading results. A regression was run to determine if there was any relationship between sheep numbers and predation losses, with the following results. The explanatory variable, sheep numbers, had a T statistic of .9436, which was not significantly different from zero at either the 1 or 5 percent levels. An $R^2$ = .0139 was achieved, indicating there is very little correlation between sheep numbers and predation losses. The large herds are not necessarily the ones losing proportionally the largest number of sheep. This has implications when predation control programs are being evaluated for possible implementation. Each area in the state needs to be evaluated to determine the correct predation control program which would result in the greatest amount of control per dollar spent. Considerable more predation control per dollar spent would be achieved under this type of program.

There appears to be a relationship between the reduction of sheep numbers per county and the percent of losses per 100 head of sheep, which supports the argument that predation loss is a factor influencing producers to sell.

It was found in this study that there was an average loss of 15.26 head per 100 head of ewes in the herd, across the state. There was considerable variation also in losses per 100 head from a high of 65.45 head per 100 head of ewes to a low of 1.2 head per 100 ewes.

A comparison of the predation loss statistics from a study done by Dr. Darwin Nielsen in 1969 are shown in Table 27.

Table 27. Comparison of 1969 and 1974 predation losses

| Loss per 100 | 1969 Head | 1974 Head |
|---|---|---|
| Average loss per 100 | 7.1 | 15.26 |
| High loss per 100 | 26.7 | 65.45 |
| Low loss per 100 | .3 | 1.2 |

From these figures, it can be seen that relative predation losses have definitely increased, almost doubling over the last five years.

Lambs are more vulnerable to predators than are mature sheep. High predation losses are suffered during the summer months from May through September, but do not totally cease when the lambs are sold. Producers are reporting higher ewe losses due to predation while on the winter ranges. An average percent and frequency distribution of lamb death losses between docking and marketing is presented in Table 28. The larger herds are suffering higher average lamb losses than the smaller herds. In the 2,500 - 4,999 size group, 50 percent of the producers have between 10 - 14 percent lamb death losses, and 33 percent of the producers have between 15 - 19 percent lamb death losses. It is only a matter of time before sustained losses of this magnitude force producers to sell. A comparison of these figures to those in Table 29 provides an indication of lamb losses due to predation as a proportion of total losses. The larger producers are also suffering

Table 28. Average percent and frequency of lamb death loss to all causes between docking and marketing by size group

| Size group | Percent average loss | Frequency distribution % producers percent losses 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25+ |
|---|---|---|---|---|---|---|---|
| 100 - 299 | 8 | 32 | 50 | 6 | 0 | 6 | 6 |
| 300 - 999 | 8 | 5 | 53 | 37 | 5 | 0 | 0 |
| 1,000 - 2,499 | 15 | 9 | 32 | 27 | 9 | 9 | 14 |
| 2,500 - 4,999 | 15 | 0 | 0 | 50 | 33 | 0 | 17 |
| 5,000 and over | 14 | 0 | 50 | 0 | 0 | 50 | 0 |
| Average | 12 | 9 | 37 | 24 | 9 | 14 | 7 |

Table 29. Average head, percent and frequency of lamb death loss to predation during the last five years of operation by size group

| Group size | Average head loss | Percent average loss | Frequency distribution % producers percent losses 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25+ |
|---|---|---|---|---|---|---|---|---|
| 100 - 299 | 14 | 6 | 50 | 37 | 0 | 6 | 0 | 7 |
| 300 - 999 | 45 | 10 | 26 | 53 | 10 | 5 | 0 | 6 |
| 1,000 - 2,499 | 181 | 13 | 18 | 41 | 5 | 14 | 9 | 13 |
| 2,500 - 4,999 | 428 | 13 | 0 | 33 | 33 | 17 | 0 | 17 |
| 5,000 and over | 593 | 12 | 0 | 50 | 0 | 50 | 0 | 0 |
| Average | 252 | 11 | 19 | 43 | 10 | 18 | 2 | 8 |

the highest losses due to predation. An average of 252 head of lambs or 11 percent of the total are being lost to predators.

In order to obtain some indication of the relative importance of several factors influencing producers decisions to sell their herds, a question was asked, similar to the one explained in Chapter III, relating to reasons for herd size reductions. Each of several factors was rated from zero to six, zero indicating the factor was considered but had no influence and six indicating the so rated factor had a very definit influence on the producers decision to sell. The percent of producers responding to each factor was also determined, providing an indication of the number of producers who considered the factor important. The results of the question are provided in Table 30. Loss of sheep to predators had the second highest ranking, 4.6, with a 100 percent response. Depredation losses were a very important factor which influenced producers to sell.

## Other Important Liquidation Factors

The factor, with a 100 percent producer response and the highest average ranking next to the owner passing away, is a shortage of good hired labor. Producers indicated they were unable to pay the wages needed to attract good dependable hired labor. Sheep herding is not the most desirable profession as indicated by the difficulty of securing help. The labor problem is closely related to the predation losses. If more dependable motivated herders could be hired, predation losses could be lowered.

Since over 40 percent of the producers surveyed were over 60 years old, one would expect that age would be a factor prompting their

Table 30. Relative importance of factors causing the sale of sheep businesses as reported by producers who went out of business, 1968 - 1974

| Factors causing sale of sheep | Percent of producers responding | Average rating |
|---|---|---|
| | | number |
| Shortage of good hired labor | 100 | 4.8 |
| Shortage of sheep shearers | 100 | 1.0 |
| Lamb marketing problems | 100 | .8 |
| Wool marketing problems | 100 | 1.0 |
| Lamb prices | 100 | 2.4 |
| Wool prices | 100 | 2.6 |
| Bureau of Land Management grazing policies | 50 | 1.2 |
| Forest Service grazing policies | 46 | 1.0 |
| State land grazing policies | 9 | 1.0 |
| Cost of private range leases | 32 | 1.8 |
| Predator losses | 100 | 4.6 |
| Poisonous plants | 98 | 1.2 |
| Other livestock more profitable | 69 | 1.6 |
| Sale of owned land | 57 | 2.0 |
| Age of owner | 85 | 3.0 |
| Insufficient financing | 94 | 0.0 |
| Adequate income without sheep | 92 | 0.0 |
| Other 1/ | 11 | 6.0 |

1/ List reasons: owner died

decision to sell. Eighty-five percent responded, with an average rating of 3.0, that their age was an important factor influencing their decision to leave the sheep business.

Lamb and wool prices were the next two most important contributing factors affecting the producers decision to sell. One hundred percent of the producers responded to these two questions with an average rating of 2.4 and 2.6, respectively. Lamb prices, compared to other meat prices, have been very favorable the last three years, but producers are looking at the bottom line and are having too many uncontrollable expenses.

There is developing a shortage of good sheep shearers who are available when the producers are ready to shear. Marketing lambs was also sited by 100 percent of the producers as a problem potential area, because of the decreasing number of packing plants. Other factors mentioned were poisonous plants, Bureau of Land Management and Forest Service grazing policies (larger producers), other livestock was thought to be more profitable, and the owners had a good opportunity to sell their land. A number of people who had shifted to cattle indicated that they had made a bad decision especially with the low cattle prices of 1973 and 1974.

In order to determine if there was a correlation between the reasons given for herd size reductions and leaving the sheep business, a correlation was run on the two sets of average ratings. An $R^2 = .8307$ was obtained, indicating there is a good correlation between reasons for reducing herd sizes and selling the herds. Producers sold their herds for approximately the same reasons they reduced their herds.

If the affects of the most important factors causing liquidation of

herds could be mitigated, sheep numbers would become stable in Utah. There is a good possibility that sheep production would even increase in the next five to ten years.

# CHAPTER V

# PAST AND PRESENT LAND RESOURCE USE

The type of feed resource requirements depend on the size and location of sheep ranches. The larger operations had Bureau of Land Management and Forest Service permits which furnished the bulk of annual feed requirements. Most of these producers also had large acreages of private rangeland for use in the early spring and fall.

The smaller sheep producers owned more irrigated cropland and had other sources of income besides sheep. They had no federal grazing permits and relied on private rangeland and irrigated pasture as feed sources.

## Use of Federal Grazing Land

Table 31 provides some information on the percent of producers who rely on federal grazing permits and the average number of head of sheep and cattle grazed on these lands. There were 43 percent of former producers who had Forest Service permits, averaging 1,870 head of sheep. Five percent of the producers also had Forest Service permits for cattle, averaging 53 head.

Bureau of Land Management rangeland was used by almost half of the producers. They grazed an average of 2,470 head of sheep on this land. None of the producers had cattle permits for Bureau of Land Management land. Only 8 percent of the producers had grazing association permits, but the permits were larger, averaging 4,000 head.

Table 31. Use of public grazing land by former sheep producers, percent of producers and average head grazed

| Item | Unit | Utah |
|---|---|---|
| Forest Service grazing land | | |
| Sheep | | |
| producers | percent | 43 |
| average head | number | 1,871 |
| Cattle | | |
| producers | percent | 5 |
| average head | number | 53 |
| Goats | | |
| producers | percent | ----- |
| average head | number | ----- |
| Bureau of Land Management grazing land | | |
| Sheep | | |
| producers | percent | 49 |
| average head | number | 2,471 |
| Cattle | | |
| producers | percent | 0 |
| average head | number | 0 |
| Goats | | |
| producers | percent | ----- |
| average head | number | ----- |
| Grazing Association land | | |
| Sheep | | |
| producers | percent | 8 |
| average head | number | 4,000 |
| Cattle | | |
| producers | percent | 0 |
| average head | number | 0 |
| Goats | | |
| producers | percent | ----- |
| average head | number | ----- |

## Feed Sources of Former Producers

The percent of producers using different feed sources for each month is presented in Table 32. Almost all of the producers used supplemental feed during winter months before lambing even though half of them were on winter BLM rangeland. Private rangeland and Forest Service permits supplied the bulk of additional forage requirements. Irrigated pasture and crop residue were used to some extent by the smaller producers who had no Forest Service or BLM permits. The average number of months that each feed source was used is also presented. Bureau of Land Management feed was used an average of 5.8 months, longer than any other feed source. Forest Service and private rangeland were used a little more than four months on the average.

Table 33 presents some additional information on the proportion of annual feed from different sources, used by former producers. Twenty-five percent of the producers received over 50 percent of their annual feed requirement from private rangeland. About half of the producers used some BLM and Forest Service feed during the year. Private rangeland was used by 94 percent of producers, while supplementary feed was used to some degree by 89 percent of the producers. The amount of state land and irrigated pasture used by former sheep producers was quite significant when compared to the overall proportion of annual feed usuage.

To determine if there is an evolution in the useage of different feed sources, Table 34 was developed. The percent of feed used from different sources, by producers who went out of business, is compared to the percent of feed used from different sources by producers still

Table 32. Seasonal use patterns of different feeds by producers who stopped sheep production, 1968-1974

| Month | Bureau of Land Management | Forest Service | State land | Private range | Irrigated pasture | Grain pasture | Crop residue | Supplementary feed | Other |
|---|---|---|---|---|---|---|---|---|---|
| | percent of producers | | | | | | | | |
| January | 48 | 0 | 3 | 6 | 0 | 0 | 2 | 88 | 3 |
| February | 48 | 0 | 3 | 5 | 0 | 0 | 2 | 88 | 3 |
| March | 49 | 0 | 5 | 5 | 0 | 0 | 2 | 83 | 3 |
| April | 43 | 0 | 2 | 18 | 9 | 0 | 2 | 8 | 0 |
| May | 14 | 0 | 2 | 72 | 12 | 0 | 2 | 8 | 0 |
| June | 6 | 14 | 2 | 77 | 8 | 0 | 0 | 0 | 0 |
| July | 5 | 45 | 2 | 52 | 5 | 0 | 0 | 0 | 0 |
| August | 3 | 45 | 2 | 52 | 5 | 0 | 0 | 0 | 0 |
| September | 3 | 43 | 2 | 54 | 5 | 2 | 5 | 0 | 0 |
| October | 8 | 15 | 2 | 55 | 9 | 3 | 28 | 2 | 0 |
| November | 32 | 0 | 2 | 17 | 11 | 3 | 40 | 11 | 0 |
| December | 48 | 0 | 3 | 8 | 5 | 2 | 26 | 58 | 3 |
| Average number of months | 5.8 | 4.2 | 1.8 | 4.4 | .8 | 2.8 | 1.6 | 4.4 | 1 |

Table 33. Frequency distribution of proportion of annual feed from different sources, producers who stopped sheep production, 1968 - 1974

| Proportion of annual feed | Bureau of Land Management | Forest Service | State land | Private range | Irrigated pasture | Grain pasture | Crop residue | Supplementary feed | Other |
|---|---|---|---|---|---|---|---|---|---|
| --percent-- | percent of producers | | | | | | | | |
| none | 49 | 55 | 94 | 6 | 95 | 78 | 52 | 11 | 98 |
| 1 - 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 - 19 | 0 | 0 | 2 | 9 | 3 | 5 | 11 | 17 | 2 |
| 20 - 29 | 0 | 0 | 5 | 20 | 2 | 8 | 31 | 28 | 0 |
| 30 - 39 | 17 | 23 | 0 | 18 | 0 | 6 | 6 | 22 | 0 |
| 40 - 49 | 17 | 15 | 3 | 22 | 0 | 0 | 0 | 20 | 0 |
| 50 and over | 17 | 2 | 0 | 25 | 0 | 3 | 0 | 3 | 0 |
| Total | 100 | 95 | 101 | 100 | 100 | 100 | 100 | 101 | 100 |

Table 34. Proportion of annual feed from different sources, current sheep producers and producers who went out of business, 1968 - 1974

| Item | Current sheep producers | Former sheep producers | $x^2$ |
|---|---|---|---|
| | ----------percent---------- | | |
| Bureau of Land Management | 18 | 25 | 2.72 |
| Forest Service | 9 | 17 | 7.11 |
| State Land | 1 | 1 | .00 |
| Private range | 39 | 30 | 2.07 |
| Irrigated pasture | 13 | 1 | 11.07 |
| Grain pasture | 0 | 4 | 4.00 |
| Crop residue | 4 | 6 | 1.00 |
| Supplementary feed | 14 | 16 | .28 |
| Other | 2 | 0 | 2.00 |
| Total | 100 | 100 | 30.25 |

in the sheep business. The proportion of Forest Service and Bureau of Land Management feed used, by current producers is much less than the proportion of these feeds used by former producers. This is undoubtly due to increased costs and controls of federal grazing permits. The difference in use of private irrigated pasture was much higher, over 1,000 percent, for former producers compared to current producers. Private rangeland also provides a larger percentage of feed for current sheep producers than for former producers. Public grazing policies have focused attention to the fact that private range property is becoming a necessity if the producer is going to exercise the management ability necessary to make a profit. A crude chi-square test was performed on this data. The results indicated that there definitely was a larger difference in feed resource usage between former and current sheep producers than could be attributed to sampling error. One of the new inovations in the industry is total confinement of the sheep herd, which would greatly alter the composition and nature of resource use.

## Disposition and Current Use of Land

Questions were asked to obtain some indication of the current use of land resources taken out of sheep production. Reliable data pertaining to the disposition of land by former sheep producers could be beneficial to those forming agriculture policy. Table 35 provides information about the percent of producers who participated and the percent of land which was sold, shifted to cattle, or left idle. Forty-one percent of the producers sold their rangeland, which was 20 percent of the total rangeland in the study. There were 25 percent

Table 35. Disposition of different kinds of land used for sheep production by producers who went out of business, 1968 - 1974

| Kind of land | Sold | | Shifted to cattle | | Shifted to goats | | Other | |
|---|---|---|---|---|---|---|---|---|
| | Producers | Proportion of total land | Producers | Proportion of total land | Producers | Proportion of total land | Producers | Proportion of total land |
| | percent | | | | | | | |
| Private range | 41 | 20 | 25 | 34 | -- | -- | 29 | 42 |
| Dry cropland | 3 | 68 | 0 | 0 | -- | -- | 8 | 32 |
| Irrigated cropland | 23 | 18 | 29 | 65 | -- | -- | 40 | 16 |
| Public range leased | 6 | 86 | 0 | 0 | -- | -- | 2 | 5 |
| BLM grazing permits | 32 | 73 | 9 | 13 | -- | -- | 8 | 11 |
| FS grazing permits | 27 | 64 | 8 | 8 | -- | -- | 6 | 19 |

of the producers who shifted to cattle production while 29 percent had their land idle at the time of the survey. Producers with the larger tracts of rangeland had the land idle longer because either it was unsatisfactory rangeland for anything other than sheep, or the tracts were so large that potential buyers were scarce.

Over half of the irrigated land acreage was shifted to cattle production by 30 percent of the producers. Most of the producers who held federal grazing permits sold the permits or are holding them idle.

Of the land sold, over half was sold to other farmers or ranchers (Table 36). Fifty-one percent of the private rangeland, 100 percent of the dry cropland, and 68 percent of the irrigated cropland was sold to other people in agriculture. Land speculators purchased almost all of the remaining land. An interesting note is that speculators bought nearly twice as much rangeland as irrigated land. Recreational development was undoubtly responsible for this phenomenon. The irrigated land, sold to speculators, was in close proximity to the urban development centers, mostly along the Wasatch front.

The present use of land sold, which was formerly used for sheep production, is presented in Table 37. One hundred percent of the dry cropland sold is currently being used for sheep production, while only 2.2 percent of private rangeland and 8.3 percent of irrigated cropland supports sheep. Most grazing permits were also sold to other sheep producers.

About half of the private property sold is being used for other agriculture production. Beef production appears to be replacing sheep production in almost all instances. One third of the private rangeland

Table 36. Proportion of total land sales made to different types of buyers by sheep producers who went out of business, 1968-1974

| Type of buyer | Private range | Dry cropland | Irrigated cropland |
|---|---|---|---|
| | percent | | |
| Farmer or rancher | 51.6 | 100 | 68.2 |
| Nonfarm buyer for personal use | 0.0 | 0 | 0.0 |
| Land speculators | 38.7 | 0 | 23.7 |
| Other | 9.8 | 0 | 8.1 |
| Total | 100 | 100 | 100 |

Table 37. Present use of land formerly in sheep production but sold by producers who went out of business, 1968 - 1974

| Present use of land sold | Private range | Dry cropland | Irrigated cropland | BLM permits | Forest Service permits |
|---|---|---|---|---|---|
| | percent | | | | |
| Sheep production | 2.2 | 100 | 8.3 | 68 | 87 |
| Other agriculture production | 57.2 | --- | 41.7 | 29 | 13 |
| Summer homes | 1.2 | --- | ----- | --- | --- |
| Other recreation | 0.0 | --- | ----- | --- | --- |
| Held for speculation but in agriculture use | 34.6 | --- | 40.6 | --- | --- |
| Other | 4.8 | --- | 9.4 | 3 | --- |
| Total | 100 | 100 | 100 | 100 | 100 |

and almost half of the irrigated cropland sold is being held for speculation, but is presently being used for agriculture purposes.

An analysis of data suggests that federal grazing in the past provided a substantial proportion of feed requirements for sheep producers. A comparison of feed sources between current and former producers indicates that the importance of federal grazing permits is diminishing. More producers are turning to private rangeland and cropland pasture because of restrictive federal grazing policies and increased grazing fee assessments.

Very little of the land sold is, at the present, being used for sheep production. Nearly all of the rangeland and a large proportion of irrigated land is in agriculture production, but could be classified as held for speculation if the right prices develop.

# CHAPTER VI

## SUMMARY AND CONCLUSIONS

The sheep industry in Utah has steadily lost its position, from 1930 to the present, as one of the major revenue producing industries in the state. Today, sheep production has even been reduced to a minor role in the state's agriculture industry. Sheep numbers have decreased from three million head to 690,000 head over the last 45 years.

There are several reasons hypothesized for this large reduction in sheep numbers. Among them are labor problems, depredation problems, reduction in grazing permits, transportation problems, low lamb and wool prices because of competitive synthetic fibers, marketing problems and higher grazing permit costs.

This is one of the first studies to determine if indeed the above mentioned reasons are valid in relation to their affects on the sheep industry. A list of sheep producers who terminated sheep production statewide over the last five years was developed and a portion of those producers were sampled to determine their resource composition, producer characteristics, reasons for herd liquidations and present use of land resources. Twenty percent of the producers who terminated production over the last five years were sampled for this study.

Depending on sheep numbers, the producers considered themselves as either having small flocks providing part time employment or large herds to which full time was devoted and from which all income was

was received. Public rangeland was used by approximately half of the producers and provides a large portion of feed requirements. The profitability of the sheeop operation is reflected in the cost of grazing permits.

Reasons cited by these people which forced them to discontinue sheep production according to importance were the following.

A shortage of good, reliable hired labor was the major reason cited by most producers. It is difficult to find people in our society who know how and are willing to spend all of their time out in the mountains herding sheep.

Closely related to labor problems is the depredation problem. Without dependable labor, and because of other factors, predation losses have become unbearable for many producers. Every lamb lost does not alter operating expenses, it just decreased revenue. This explains why increased predation losses generates such an outcry from producers.

Producers age has also been a factor influencing their decision to discontinue sheep production. When a producer gets too old to handle the operation by himself, he either has to sell his operation or hire labor. Most producers have optioned to sell their herds because of the shortage of good hired labor.

Other factors which have influenced producers to sell are: shortage of sheep shearers, low lamb and wool prices, Forest Service and Bureau of Land Management policies, and insufficient income of the sheep operation.

Approximately half of the land resources taken out of sheep production was sold. The remainder was either shifted to cattle

production or was idle during the study. Of the land sold, over half was sold to other farmers or ranchers who used it mostly for cattle production.

There was a large amount of idle land during the study, either because it had just been released from sheep production and there was not sufficient time to transfer ownership or else the land was unsuitable for any other activity than sheep production.

There is still a demand for lamb chops and wool which has not shrunk so much because of changing preferences, but because of a shrinking supply. The sheep industry is a vital part of Utah's agriculture industry. The major factors contributing to its decline have been identified. Some of the factors are natural forces over which there can be no control. It is the other factors, for example, depredation, labor and Federal grazing policies, which need to be examined and the effects upon the producers mitigated. Sheep producers should not be asked to subsidize another persons enjoyment. With everyone contributing their fair share to the production of our food and fiber, the sheep industry has the potential to become a strong and prosperous part of Utah agriculture.

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# APPENDIXES

# Appendix A

## Questionnaire

State_____ OMB Number: 40-S74076

County _____ Approval Expires: June 30, 1975

SURVEY OF FORMER SHEEP PRODUCERS

Operator Identification (for office use)

State [1] ___ ___ Size ___ ___ Management system ___;

___; ___; ___; ___;

Feed sources ___ ___ ___; ___ ___ ___; ___ ___ ___; Sales ____

Let's begin with some introductory information. What is your:

Name_____

Address _____

Telephone number _____

1. What was your last full year of sheep production before selling your herd? 19 _____(year)

Now I want to ask about the land you operated as a sheep producer during 19____.

2. How many acres did you own, rent or lease of:

| | Owned ( Acres ) | Rented or leased ( Acres) | Total (Acres) | Indicate the part of the land grazed by sheep or used for sheep feed production (Acres) |
|---|---|---|---|---|
| Rangeland | _____ | _____ | _____ | _____ |
| Dry Cropland | _____ | _____ | _____ | _____ |
| Irrigated Cropland [2] | _____ | _____ | _____ | _____ |

3. How many head of livestock did you graze on:

| | Stock Sheep (head) | Beef Cattle (head) | Goats (head) |
|---|---|---|---|
| Forest Service allotments | _____ | _____ | _____ |
| Bureau of Land Management allotments | _____ | _____ | _____ |
| Grazing association land | _____ | _____ | _____ |

3

Now let's talk about your sheep operation.

4. During 19____how many head of breeding ewes and replacements did you own? _____(head)

5. How many years were you in the sheep production business before you sold out?_____(No. of years)

   a. During this period of time what was the maximum number of breeding ewes and replacements that you owned at one time? _____(head)

   b. During which years did you maintain this maximum number?
   From 19_____to 19_____.

   c. Did you make major reductions in your sheep breeding herd prior to selling out? _____ yes (1)_____no (2)
   If no, skip to question 6, if yes, continue to "d".

   c. During which years did you make permanent reduction in your sheep breeding?

4

| Year | Herd size |
|---|---|
| 19____ | _____(head) |
| 19____ | _____(head) |
| 19____ | _____(head) |
| 19____ | _____(head) |
| 19____ | _____(head) |

e. What factors made these reductions necessary?

Classify the factors below as to their importance with 0 indicating unimportant and 6 indicating very important.

(Check the box by those that do not apply or circle the appropriate number)

| | | | |
|---|---|---|---|
| 1. | Shortage of good hired labor | ☐ | 0 1 2 3 4 5 6 |
| 2. | Shortage of sheep shearers | ☐ | 0 1 2 3 4 5 6 |
| 3. | Lamb marketing problems | ☐ | 0 1 2 3 4 5 6 |
| 4. | Wool marketing problems | ☐ | 0 1 2 3 4 5 6 |
| 5. | Lamb prices | ☐ | 0 1 2 3 4 5 6 |
| 6. | Wool prices | ☐ | 0 1 2 3 4 5 6 |
| 7. | Bureau of land management grazing policies | ☐ | 0 1 2 3 4 5 6 |
| 8. | Forest Service grazing policies | ☐ | 0 1 2 3 4 5 6 |
| 9. | State land grazing policies | ☐ | 0 1 2 3 4 5 6 |
| 10. | Cost of private range leases | ☐ | 0 1 2 3 4 5 6 |
| 11. | Predator losses | ☐ | 0 1 2 3 4 5 6 |
| 12. | Poisonous plants | ☐ | 0 1 2 3 4 5 6 |
| 13. | Other livestock more profitable | ☐ | 0 1 2 3 4 5 6 |
| 14. | Sale of owned land | ☐ | 0 1 2 3 4 5 6 |
| 15. | Age of owner | ☐ | 0 1 2 3 4 5 6 |
| 16. | Insufficient financing for sheep operation | ☐ | 0 1 2 3 4 5 6 |
| 17. | Adequate income without sheep | ☐ | 0 1 2 3 4 5 6 |
| 18. | Other _____ | ☐ | 0 1 2 3 4 5 6 |
| 19. | Other _____ | ☐ | 0 1 2 3 4 5 6 |

I would now like to ask about other livestock.

6. During 19____did you own beef breeding cows?

☐ (2) No ☐ (1) Yes

a. How many head of beef breeding cows two years and older did you own? _____(head)

b. How many years had you owned beef breeding cows _____(yrs)

c. What was the maximum number of beef breeding cows that you owned at any one time? _____(head)

d. During which years did you maintain this maximum number from 19___ to 19___.

(Skip question 7)

7. Had you ever owned beef breeding cows prior to leaving the sheep business? ☐ (2) no ☐ (1) yes

8. During 19____did you own goats?

☐ (2) No ☐ (1) Yes

a. How many head of goats did you own? _____(head)

b. How many years did you own goats? _____(years)

c. What was the maximum number of goats that you owned at any one time? _____(head)

d. During which years did you maintain this maximum number? From 19____to 19____

(Skip question 9)

9. Had you ever owned goats prior to leaving the sheep industry?

☐ (2) no ☐ (1) yes

Now let's talk about your sheep management practices

10. What percent of the annual feed requirements for your sheep breeding herd normally came from each of the following sources and during which months was the feed source used?

| | Proportion of annual feed requirements | Season of Use (Write in months) |
|---|---|---|
| a. Bureau of Land Management 7 | _____% | _____months |
| b. Forest Service | _____% | _____months |
| c. State grazing land | _____% | _____months |
| d. Privately owned range | _____% | _____months |
| e. Annual small grain pasture | _____% | _____months |
| f. Privately owned irrigated pasture (other than small grains) 8 | _____% | _____months |
| g. Crop residues | _____% | _____months |
| h. Supplemental feed (hay and grain) | _____% | _____months |
| i. Other (specify)_____ 9 | _____% | _____months |
| _____ | | |
| Total | 100 % | |

11. During lambing, what percent of your breeding ewes were:

a. Shed lambed..... _____ %

b. Range lambed..... _____ %

c. Other _____ ..... _____ %
(describe)

Total..... 100 %

12. Between docking and marketing of lambs, what percent of your breeding ewes were:

a. Herded on open range..... _____ %

b. Kept in fenced pasture..... _____ %

c. Other _____ ..... _____ %
(describe)

Total..... 100 %

13. After marketing of the lambs but before the ewes lamb again, what percent of your breeding ewes were:

a. Herded on open range..... _____ %

b. Kept in fenced pasture..... _____ %

c. Other _____ ..... _____ %
(describe)

Total..... 100 %

14. Did you normally trail and/or truck your breeding herd to or from your principal feeding area?

10 ☐ yes (1) ☐ no (2)

a. What percent of your breeding herd was:
1. Both trailed and trucked ___ %
2. Trailed only..... ___ %
3. Trucked only..... ___ %
4. Not moved..... ___ %

b. How many total miles per year was the breeding herd:
1. Both trailed and trucked ___ %
2. Trailed only..... ___ %
3. Trucked only..... ___ %

15. What was the most common method for marketing your lambs? (check one)

A. Auction market ☐ 1
B. Packer buyer ☐ 2
C. Order buyer ☐ 3
D. Producer pool ☐ 4
E. Other _____ 5
(describe)

16. How did you normally market your wool? (Check one)

A. Cooperative marketing association ☐ 1

B. Direct to wool buyer ☐ 2

C. Other _____ ☐ 3
(describe)

17. What was the productivity of your sheep operation under normal conditions with regard to the following items:

A. Average lambs weaned per ewe bred _____(head)

B. Average fleece weight per ewe shorn _____(pounds)

C. Percent lamb death loss between docking and marketing _____(percent)

18. What was your average lamb loss to predators during your last five years of operation?

_____(percent) or _____(head)

Now I would like to ask about the use of your land after the sheep were sold.

19. What did you do with the land formerly used for sheep production?

| | Sold | Shifted to cattle | Shifted to goats | Other use Specify | Quantity |
|---|---|---|---|---|---|
| Private range (acres) 11 | | | | | |
| Dry cropland (acres) | | | | | |
| Irrigated cropland (acres) 12 | | | | | |
| Grazing association land (A.U.) | | | | | |
| Public range leased (A.U.) 13 | | | | | |
| Public grazing permits | | | | | |
| BLM (A.U.) | | | | | |
| Forest Service (A.U.) 14 | | | | | |

If land was sold answer questions 20 and 21

If land was not sold, skip to question 22

20. How much of your land was sold to each of the following classifications of buyers:

| | Private Range (Acres) | Dry Cropland (Acres) | Irrigated Cropland (acres) |
|---|---|---|---|
| 15 Farmer or rancher | | | |
| Non-farm buyers for personal use | | | |
| Land speculator | | | |
| 16 Other (describe) | | | |

21. What is the current use of land that you sold?

| Principal use | Private range | Dry cropland | Irrigated cropland | BLM permits | Forest Service permits |
|---|---|---|---|---|---|
| Sheep production | % | % | % | % | % |
| Other agricultural production | % | % | % | % | % |
| 17 Summer homes | % | % | % | % | % |
| Other recreation | % | % | % | % | % |
| Held for speculation but in agricultural use | % | % | % | % | % |
| Other(specify)_____ | % | % | % | % | % |
| Other(specify)_____ | % | % | % | % | % |
| Total | 100% | 100% | 100% | 100% | 100% |

Now let's discuss your reasons for leaving the sheep business.

22. What factors were important in this decision?

Classify the factors below as to their importance with 0 indicating unimportant and 6 indicating very important. (Check the box by those that do not apply or circle the appropriate number)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Shortage of good hired labor | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. | Shortage of sheep shearers | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. | Lamb marketing problems | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. | Wool marketing problems | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. | Lamb prices | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. | Wool prices | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. | BLM grazing policies | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. | Forest service grazing policies | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. | State land grazing policies | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. | Cost of private range leases | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. | Predator losses | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. | Poisonous plants | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. | Other livestock more profitable | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. | Sale of owned land | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. | Age of owner | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. | Insufficient financing for sheep operation | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. | Adequate income without sheep | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 18. | Other (specify)_____ | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 19. | Other (specify)_____ | ☐ | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

23. Which of the following best describes your sheep operation: (Check One)

1 ☐ Single Owner

2 ☐ Family corporation

3 ☐ Partnership ... Number of partners _____

4 ☐ Other corporation

5 ☐ Other (Specify) _____

24. At the time you sold your sheep what percent of the current market value did you consider to be the owner's equity in:

    a. Real Estate.....%_____

    b. Livestock.....%_____

    c. Equipment.....%_____

25. What was your age when you sold your sheep? _____(years)

26. Did you have children who would have been interested in continuing your sheep business?

    ☐ (2) no ☐ yes (1)

    If yes, describe briefly why they did not_____

    _____

27. If you are not in the livestock business at the present time, what is your major activity. (check the appropriate box)

    1. Retired 1 ☐
    2. Other agriculture 2 ☐
    3. Non-farm business 3 ☐
    4. Other (specify) 4 _____

28. Which of the following best describes your average net return from sheep production during your last five years of operation? (Check one)

| Net return | | Net return | |
|---|---|---|---|
| Less than $5,000 | ☐ 1 | 15,000 - 19,999 | ☐ 4 |
| $5,000 - $9,999 | ☐ 2 | 20,000 - 24,999 | ☐ 5 |
| $10,000- $14,999 | ☐ 3 | 25,000 or more | ☐ 6 |

# Appendix B

## Chi Square Tables

Table 22. Actual numbers of current producers and former producers sampled

| Years | Current sheep producers (expected) number | Former sheep producers (actual) number | | Equivalent units number | $x^2$ |
|---|---|---|---|---|---|
| Less than 5 | 30 | 7 | (4.5) | 32 | .13 |
| 5 - 9 | 59 | 5 | (4.5) | 23 | 22.00 |
| 10 - 14 | 27 | 9 | (4.5) | 42 | 7.26 |
| 15 - 19 | 32 | 9 | (4.5) | 41 | 2.53 |
| 20 - 24 | 44 | 6 | (4.5) | 27 | 6.57 |
| 25 - 29 | 18 | 6 | (4.5) | 27 | 4.50 |
| 30 and over | 86 | 23 | (4.5) | 104 | 3.76 |
| Total | 296 | 65 | | 295 | $\Sigma x^2 = 46.75$ |

Table 23. Actual numbers of current producers and former producers sampled

| Age class | Current sheep producers (expected) number | Former sheep producers (actual) number | | Equivalent units number | $x^2$ |
|---|---|---|---|---|---|
| Under 30 | 50 | 0 | (4.5) | 0 | 50.00 |
| 30 - 39 | 41 | 13 | (4.5) | 59 | 7.90 |
| 40 - 49 | 68 | 9 | (4.5) | 42 | 9.94 |
| 50 - 59 | 86 | 13 | (4.5) | 59 | 8.47 |
| 60 and over | 51 | 30 | (4.5) | 136 | 141.66 |
| Total | 296 | 65 | | 296 | $\Sigma x^2 = 217.97$ |

Table 25. Actual numbers of current producers and former producers sampled.

| Type of ownership | Current sheep producers (expected) numbers | Former sheep producers (actual) numbers | | Equivalent units numbers | $x^2$ |
|---|---|---|---|---|---|
| Single owner | 189 | 50 | (4.5) | 226 | 7.24 |
| Partnership | 44 | 5 | (4.5) | 23 | 10.02 |
| Family corporation | 54 | 10 | (4.5) | 47 | .90 |
| Other corporation | 3 | 0 | (4.5) | 0 | 3.00 |
| Other | 6 | 0 | (4.5) | 0 | 6.00 |
| Total | 295 | 65 | | 296 | $\Sigma x^2 = 27.16$ |

Table 34. Proportion of annual feed from different sources, current sheep producers and producers who went out of business 1968 - 1974

| Item | Current sheep producers (expected) numbers | Former sheep producers (actual) numbers | $x^2$ |
|---|---|---|---|
| Bureau of Land Management | 18 | 25 | 2.72 |
| Forest Service | 9 | 17 | 7.11 |
| State land | 1 | 1 | .00 |
| Private range | 39 | 30 | 2.07 |
| Irrigated pasture | 13 | 1 | 11.07 |
| Grain pasture | 0 | 4 | 4.00 |
| Crop residue | 4 | 6 | 1.00 |
| Supplementary feed | 14 | 16 | .28 |
| Other | 2 | 0 | 2.00 |
| Total | 100 | 100 | $\Sigma x^2 = 30.25$ |

# VITA

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