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AN ECONOMIC ANALYSIS OF SELECTED
LIVESTOCK ENTERPRISES IN RELATION TO
THE AVAILABLE FEED SUPPLIES, UTAH, 1968

by

RONALD JAY WOOLF

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Agricultural Economics

UTAH STATE UNIVERSITY
Logan, Utah

1970

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Ronald J. Woolf

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ABSTRACT

An Economic Analysis of Selected Livestock
Enterprises in Relation to Available
Feed Supplies, Utah, 1968

by

Ronald Jay Woolf, Master of Science
Utah State University, 1970

Major Professor: Dr. Lynn H. Davis
Department: Agricultural Economics

A study was made to determine the relative profitability and competitive position of cattle fattening, lamb fattening, and milk production in the state of Utah for 1968.

Production costs of cattle fattening ranged from \$22.10 to \$32.28 per hundred pounds of gain. Net return amounted to \$19.65 per head. Lamb fattening costs ranged from \$24.25 to \$29.76 per hundred pounds of gain. Net return from lamb feeding operations averaged \$2.06 per head. Cost of producing milk amounted to \$4.90 per hundredweight while net return amounted to \$.61 per hundredweight.

Measure of profitability used in comparison included \$100 worth of feed fed, return per hour of labor, and return per \$100 invested in fixed assets.

Lamb fattening was the most profitable of the selected enterprises. Return per \$100 worth of feed fed amounted to \$35.46, \$25.35, and \$21.68 for lamb fattening, cattle fattening, and milk production respectively. Based on return per hour, lamb fattening, cattle fattening, and milk

production contributed \$10.08, \$8.50, and \$2.49 per hour respectively. Labor requirement was much higher for milk production than the other enterprises.

Return per \$100 invested showed lambs again to be the most profitable showing a return of \$79.54. Cattle fattening was second with a return of \$69.73 while milk production with its high investment per cow showed only \$24.00 return per \$100 invested in fixed assets.

All three selected enterprises could pay as high as \$28.00 per ton for alfalfa and \$2.60 per hundredweight for barley without causing a negative return.

(83 pages)

INTRODUCTION

Livestock has been an integral part of Utah's economy since the early settlement by the pioneers. During the period 1950-1964, cash receipts from farm marketings in Utah for cattle and calves, sheep and lambs, and dairy products accounted for 70 to 90 million dollars. This represented a range of 47 to 56 percent of total farm receipts. The sale of cattle and calves, sheep and lambs, and dairy products accounted for 62 to 72 percent of total receipts from the sale of livestock and livestock products.

The sale of cattle and calves accounted for 30 to 49 million dollars during the above time period and was the major source of income to Utah farmers (8). The number of cattle on feed as of January 1 of each year has increased from 40,000 head in 1950 to 61,000 in 1968, an increase of 52.5 percent. The 1968 figure also represents a decrease of 15,000 head below the 1966 level, Table 1.

U.S.D.A. statistics for 1968 indicate that 96 percent of all cattle feedlots in Utah have a capacity of less than 1,000 head. Lots with a capacity of more than 1,000 head accounted for 36 percent of the fat cattle marketed. The trend in recent years has been for the size of the feedlot to increase while the number of lots has decreased.

Table 1. Number of cattle and lambs on feed in Utah, January 1, 1950-1968

| Year | Cattle on feed 1,000 head | Lambs on feed 1,000 head |
|------|------------------------------|-----------------------------|
| 1950 | 40 | 60 |
| 1951 | 46 | 60 |
| 1952 | 50 | 73 |
| 1953 | 51 | 90 |
| 1954 | 53 | 105 |
| 1955 | 57 | 98 |
| 1956 | 60 | 89 |
| 1957 | 63 | 94 |
| 1958 | 65 | 66 |
| 1959 | 67 | 81 |
| 1960 | 58 | 87 |
| 1961 | 71 | 78 |
| 1962 | 76 | 82 |
| 1963 | 81 | 70 |
| 1964 | 77 | 68 |
| 1965 | 66 | 64 |
| 1966 | 81 | 62 |
| 1967 | 81 | 60 |
| 1968 | 66 | 60 |

Source: Utah Crop and Livestock Reporting Service, U. S. Department of Agriculture, Statistical Reporting Service, Salt Lake City, Utah.

Cash receipts from farm marketings of sheep and lambs ranged from 9.5 million to 14.5 million dollars during the period 1950-1964. The number of lambs on feed as of January 1 each year increased from 60,000 head in 1950 to a high of 105,000 head in 1954. Lamb feeding decreased to 60,000 head again by 1968 and seemed to have leveled out somewhat at this point. Thus, there was a 75 percent increase in the number of sheep and lambs on feed between 1950 and 1954, but the number has since returned to its 1950 level.

Receipts from dairy products have ranged from 21.7 million to 30.8 million dollars per year over the 15-year period under consideration. Although there has been some fluctuation downward, the general trend has been upward in cash receipts. Cash receipts were higher in 1965 than in any previous year during the 15-year period.

Milk production in the state of Utah has ranged from 655 million pounds in 1950 to 769 million pounds in 1961. Since 1961, production has dropped slightly to 736 million pounds produced in 1965, Table 2.

The number of milk cows in herds has decreased consistently each year since 1954.

In 1964, the latest census year, eighteen counties in Utah produced sufficient roughages to meet their present needs. The remaining 11 counties all imported roughage from neighboring counties and/or states. The state has a net surplus of 142,015 tons of roughages.

Production and consumption of concentrate feeds is vastly different. Concentrate requirements exceed production. The state of Utah imported 166,704 tons of concentrates in 1964. This amounts to an average of 5,748 tons of concentrates imported per county. Only nine counties in Utah produced more than was consumed. Five of these counties

had excesses of less than 2,000 tons. Feed grains or concentrates were imported from neighboring states.

Table 2. Milk cows and total production in Utah, 1950-1968

| Year | Number of cows 1,000 head | Milk Million pounds |
|------|------------------------------|------------------------|
| 1950 | 100 | 655 |
| 1951 | 98 | 657 |
| 1952 | 99 | 662 |
| 1953 | 102 | 705 |
| 1954 | 102 | 705 |
| 1955 | 99 | 697 |
| 1956 | 98 | 717 |
| 1957 | 97 | 741 |
| 1958 | 96 | 742 |
| 1959 | 96 | 761 |
| 1960 | 95 | 764 |
| 1961 | 94 | 769 |
| 1962 | 93 | 758 |
| 1963 | 90 | 753 |
| 1964 | 86 | 730 |
| 1965 | 85 | 736 |
| 1966 | 77 | 736 |
| 1967 | 76 | 745 |
| 1968 | 75 | 753 |

Source: Utah Crop and Livestock Reporting Service, U. S. Department of Agriculture, Statistical Reporting Service, Salt Lake City, Utah.

OBJECTIVES OF THE STUDY

1. To compare the relative profitability of beef fattening, lamb fattening, and milk production, thus indicating the competitive position of each.

2. To estimate under what conditions one enterprise is more profitable than the others with respect to price of products and feed costs.

REVIEW OF LITERATURE

Prior to this study, no work has been done in Utah to compare cattle fattening, lamb fattening, and milk production enterprises relative to available feed supplies. Some work has been done on individual enterprises.

Cattle Fattening

A study conducted by Davis presented costs and ways of increasing returns from cattle fattening operations (3). Enumerators interviewed 103 feedlot operators who fed cattle in 1953-54. Data collected were analyzed and presented and showed that cost of feeder cattle accounted for nearly 50 percent of total cost of the operations. Feed accounted for nearly 30 percent of total cost. Based on 1953-54 prices, cattle fattening was a profitable enterprise.

Clements' study of the cattle fattening enterprises presented an economic analysis of finishing beef cattle in major feeding areas of Utah (1). The study was restricted to Cache, Box Elder, Weber, Davis, Utah, Sevier, Sanpete, and Millard Counties. Operators who fed on a year-round basis were excluded in the sample used. Based on 1953-54 price levels, cattle fattening was a profitable enterprise and showed a net return of \$17.71 per head.

A recent study conducted by the Animal Science Department at Utah State University dealt with Breed-Feed Effects of Finishing Steers (7). Eighteen Holstein and 18 Hereford steers were fed in individual pens and randomly allotted to different feed treatments. Average daily

gain was higher for Holsteins than Herefords. Those cattle which had silage included in their diet had a slightly higher rate of daily gain.

Lamb Fattening

Davis conducted a study on Costs and Returns from Lamb Fattening in Utah (2). Enumerators interviewed 36 operators who fed lambs in the 1954-55 feeding period and obtained cost and return data. Feed cost was the largest cost and accounted for 73 percent of total cost per pound of gain.

Milk Production

Several studies have been conducted on milking enterprises in Utah. Most significant to this study was the study by Palmer (6). Major emphasis was placed on analysis of cost and returns from milking enterprises on selected Dairy Herd Improvement Association (D.H.I.A.) farms in Northern Utah. Population for the study was limited to 115 commercial members of D.H.I.A. operating in Cache, Box Elder, and Weber Counties. A random sample was drawn and interviews conducted with the operators. Data used in that study were updated and are presented in the analysis section of this study.

Another study in Utah was conducted by Morrison in 1957 (4). He presented cost and returns for Grade A and manufacturing milk in selected areas of Utah. Receipts and costs varied slightly between counties, but net return was the same in both counties and amounted to \$.02 per pound of butterfat for Grade A milk.

SOURCE OF DATA AND METHOD OF PROCEDURE

Data for this study were obtained from both primary and secondary sources.

Primary Data

Data for cattle fattening and lamb fattening enterprises were obtained by enumerators interviewing feedlot operators. A schedule of questions was used to guide the interviews and record data relative to 1968 feeding operations.

Cattle fattening enterprises were selected at random from a list of beef feeders supplied by County Extension Agents in Utah. Lists were stratified according to the approximate number of cattle fed during 1968. Table 3 gives the location and size of the various operations surveyed. The number of records obtained varied from county to county with the largest number of interviews taking place in Box Elder, Millard, and Sevier Counties.

Lamb fattening enterprises were selected at random from lists of operators provided by Extension Agents in nine major lamb feed counties throughout the state. Sevier County had the largest number of operators interviewed. One operation was included in the survey from Box Elder, Cache, and Uintah Counties, Table 4.

When the collection of data was finished, the records were checked and summarized according to size groups. Data were transferred to tabulation sheets for calculating totals and averages for various costs and returns.

It should be emphasized that all averages are for the samples only and in no way are they attempts to estimate the population means. Due to the sampling distribution, there may be a bias since only a small proportion of the smaller operations were included in the samples while a larger percentage of the larger commercial-type operations were included.

Table 3. Size distribution of cattle finishing feedlots in the sample by county, Utah, 1968

| | Number of head fed | | | | | | | Total |
|---------------|--------------------|---------|---------|---------|---------|-----------|-------------|-------|
| | 50-99 | 100-199 | 200-299 | 300-499 | 500-999 | 1000-1999 | 2000 & over | |
| <u>County</u> | | | | | | | | |
| Beaver | - | - | - | 1 | - | - | - | 1 |
| Box Elder | 1 | 1 | 1 | 2 | 5 | 1 | - | 11 |
| Cache | - | 1 | 1 | 1 | 2 | - | - | 5 |
| Carbon | 1 | - | - | 1 | - | - | - | 2 |
| Davis | 1 | 1 | 1 | - | 2 | - | 1 | 6 |
| Emery | - | - | - | 1 | - | - | - | 1 |
| Iron | - | - | - | - | 1 | 1 | - | 2 |
| Juab | 1 | 1 | 2 | - | - | - | - | 4 |
| Millard | - | 2 | 1 | 1 | 2 | 2 | 2 | 10 |
| Piute | - | 1 | - | - | - | - | - | 1 |
| Rich | - | - | - | - | 1 | - | - | 1 |
| Salt Lake | - | 1 | - | 2 | 1 | - | - | 4 |
| San Juan | - | 1 | - | - | - | - | - | 1 |
| Sanpete | 1 | 1 | - | 1 | 1 | - | - | 4 |
| Sevier | - | 3 | 2 | - | 1 | 2 | 2 | 10 |
| Tooele | - | - | - | - | - | 1 | - | 1 |
| Uintah | 1 | 2 | 1 | - | - | - | - | 4 |
| Utah | - | 3 | 1 | - | 1 | 2 | 1 | 8 |
| Wasatch | 1 | - | - | - | - | - | - | 1 |
| Washington | - | - | 2 | - | - | 1 | - | 3 |
| Weber | 1 | 1 | 1 | - | 3 | 2 | 1 | 9 |
| Total | 8 | 19 | 13 | 10 | 20 | 12 | 7 | 89 |

Table 4. Size distribution of lamb fattening operations in the sample by county, Utah, 1968

| | Number of head fed | | | | Total |
|---------------|--------------------|-----------|-----------|-------------|-------|
| | 225-999 | 1000-1999 | 2000-4999 | 5000 & over | |
| <u>County</u> | | | | | |
| Box Elder | - | - | - | 1 | 1 |
| Cache | - | - | 1 | - | 1 |
| Iron | 2 | - | 1 | - | 3 |
| Millard | - | - | - | 1 | 1 |
| Sanpete | - | 1 | 1 | 2 | 4 |
| Sevier | 2 | 3 | 5 | 2 | 12 |
| Uintah | 1 | - | - | - | 1 |
| Utah | 1 | 2 | 2 | 2 | 7 |
| Wayne | 4 | 3 | - | - | 7 |
| Total | 10 | 9 | 10 | 8 | 37 |

Secondary Data

Data for the dairy enterprises were taken from a study conducted by the Agricultural Economics Department. Costs and returns from the milking enterprise were obtained and analyzed under the direction of Professor Earnest M. Morrison and reported in a M.S. thesis by Charles J. Palmer. These data were updated by means of 1968 price indices and other information to make them comparable to the primary data used.

ANALYSIS AND PRESENTATION OF DATA

This section will be presented in four parts. The first part presents a description and analysis of costs, receipts, and net return of cattle fattening enterprises. The second and third parts present similar information for lamb fattening and milk production enterprises respectively. The fourth part compares measures of profitability for the different enterprises. Average budgets for each major category are included.

Cattle Fattening

Description of cattle fattening enterprises studied

Cattle feeding in Utah is generally done on a supplementary and/or complementary basis. Feeding cattle provides a market for the operator's feed and at the same time increases the efficiency in the use of labor by utilizing excess labor in the off season. This excess labor arises due to fluctuations in labor used in other enterprises. The operator with a fixed amount of labor can utilize the excess labor in feeding operations. Feeding cattle becomes a supplementary operation to other crops and/or livestock operations.

Some complementarity arises from use of cattle feeding by-products if the operator is able to use the manure as fertilizer on the fields.

Size of enterprise ranged from 25 head to 10,000 head fed in a year's time with an average of all lots in the sample of 872. The number of cattle fed which occurred the largest number of times in the sample was 500 head. For calculation purposes, the operator who fed

only 25 head was included in the smallest size group being those feedlots which finished from 50 to 99 head per year. More than 20 percent of all operators interviewed fed over 1,000 head while over 50 percent fed less than 500 head in a year's time.

Cattle fed were either raised or purchased through various marketing agencies, Table 5. Operators who fed only cattle raised on their farms or ranches accounted for 6.7 percent of all feedlots included in the study. Operators who purchased a portion of the cattle fed and combined these with some they raised accounted for 38 percent of total interviews.

Table 5. Method of procurement of feeder cattle included in sample by size group, Utah, 1968

| Number of head fed | Raised | Auction | Order | Direct |
|--------------------|---------|---------|---------|---------|
| | Percent | Percent | Percent | Percent |
| 50-99 | 54.3 | 27.9 | 0.0 | 17.8 |
| 100-199 | 32.0 | 5.0 | 26.2 | 36.8 |
| 200-299 | 18.5 | 30.3 | 11.5 | 39.7 |
| 300-499 | 24.4 | 32.5 | 24.4 | 18.7 |
| 500-999 | 14.8 | 17.8 | 33.0 | 34.4 |
| 1000-1999 | 4.0 | 26.7 | 39.0 | 30.3 |
| 2000 & over | 1.8 | 28.4 | 11.5 | 58.3 |
| Average | 7.9 | 25.5 | 21.8 | 44.8 |

Average weight of cattle entering the feedlots was 615 pounds, Table 6. Average daily gain ranged from 1.8 to 2.9 pounds per day and showed no relationship to the size of feedlot. Average gain amounted

to 2.7 pounds per day for all finishing operations.

Cattle were on feed an average of 158 days with a range of 147 to 200 days for the various size groups. Those size groups with the highest average daily gain were not the same groups that had the lowest number of days on feed due to differences in the average weight at which cattle entered and left the feedyards. Average weight of cattle going to slaughter was 1,043 pounds.

Table 6. Average weight, daily gain, and days on feed for beef cattle in sample by size group, Utah, 1968

| Number of head fed | Average days on feed | Average in weight | Average out weight | Average daily gain |
|--------------------|----------------------|-------------------|--------------------|--------------------|
| Number | Number | Pounds | Pounds | Pounds |
| 50-99 | 177 | 661 | 988 | 1.8 |
| 100-199 | 166 | 674 | 1053 | 2.3 |
| 200-299 | 186 | 621 | 1011 | 2.1 |
| 300-499 | 200 | 581 | 1026 | 2.2 |
| 500-999 | 181 | 563 | 1086 | 2.9 |
| 1000-1999 | 151 | 595 | 1039 | 2.9 |
| 2000 & over | 147 | 622 | 1025 | 2.7 |
| Average | 158 | 615 | 1043 | 2.7 |

Type of ownership of feedlots varied considerably throughout the size groups studied. Single proprietorship was the most common type and accounted for 57.3 percent of all operations surveyed, Table 7. Partnerships were second and accounted for 29.2 percent.

Table 7. Type of ownership of cattle finishing operations included in sample by size groups, Utah, 1968

| Number of head fed | Number of feedlots | | | |
|--------------------|-----------------------|-------------|-------------|-------------|
| | Single proprietorship | Partnership | Cooperative | Corporation |
| 50-99 | 5 | 3 | - | - |
| 100-199 | 15 | 4 | - | - |
| 200-299 | 9 | 3 | - | 1 |
| 300-499 | 4 | 6 | - | - |
| 500-999 | 12 | 5 | - | 3 |
| 1000-1999 | 4 | 3 | 1 | 4 |
| 2000 & over | 2 | 2 | - | 3 |
| Total | 51 | 26 | 1 | 11 |

Analysis of inputs

This subsection includes a brief discussion of the major input requirements of cattle fattening enterprises.

Capital requirement. Capital requirement for the 89 enterprises surveyed which finished cattle averaged \$28.18 per head fed¹ with a range from \$103.16 to \$14.34 per head. There was an inverse relationship between size of operation and investment per head. As size increased, investment per head continually decreased. Smaller lots with investments of \$103.16 per head fed had an investment per head capacity²

¹Investment per head fed - Total dollar investment divided by number of head fed.

²Investment per head capacity - Total dollar investment divided by number of head that the lot can hold at one time.

of \$68.16. All size groups with the exception of the largest had an investment per head higher than the investment per head capacity, Table 8. Lots which finished 2,000 head or more had \$32.08 invested per head capacity; but by using the lots more intensively, they were able to reduce investment to \$14.34 per head fed. This size group was the only one which fed more than capacity collectively as a group. All other groups had some operations which used their capacity at 100 percent or greater, Table 9.

Table 8. Investment per head and per head capacity of cattle finishing operation included in sample by size group, Utah, 1968

| Number of head fed | Investment per head fed | Investment per head capacity |
|--------------------|-------------------------|------------------------------|
| 50-99 | \$103.16 | \$68.16 |
| 100-199 | 54.33 | 39.59 |
| 200-299 | 45.49 | 22.77 |
| 300-499 | 38.52 | 37.99 |
| 500-999 | 37.95 | 34.58 |
| 1000-1999 | 37.84 | 33.59 |
| 2000 & over | 14.34 | 32.08 |
| Average | 28.18 | 33.43 |

Commercial banks were the major source of capital used to finish cattle. Over 43 percent of operators interviewed reported that commercial banks were their most important source of capital. Another 35 percent of the operators reported that the majority of capital used in

fattening cattle was their own, Table 10.

Table 9. Use of capacity of cattle fattening operations sampled, Utah, 1968

| Number of head fed | Number of feedlots | | |
|--------------------|--------------------|----------|---------------|
| | Under capacity | Capacity | Over capacity |
| 50-99 | 6 | 1 | 1 |
| 100-199 | 10 | 4 | 2 |
| 200-299 | 5 | 4 | 4 |
| 300-499 | 4 | 5 | 1 |
| 500-999 | 10 | 5 | 5 |
| 1000-1999 | 2 | 4 | 6 |
| 2000 & over | 0 | 1 | 6 |
| Total | 37 | 24 | 25 |

Table 10. Major source of capital used in cattle finishing operations sampled, Utah, 1968

| Number of head fed | Number of feedlots | | | | Total |
|--------------------|--------------------|-------------------|-----|-------|-------|
| | Commercial bank | Production credit | Own | Other | |
| 50-99 | 5 | - | 3 | - | 8 |
| 100-199 | 8 | 3 | 7 | 1 | 19 |
| 200-299 | 5 | 3 | 5 | - | 13 |
| 300-499 | 4 | 2 | 4 | - | 10 |
| 500-999 | 7 | 3 | 9 | 1 | 20 |
| 1000-1999 | 5 | 1 | 4 | 2 | 12 |
| 2000 & over | 5 | 1 | - | 1 | 7 |
| Total | 39 | 13 | 32 | 5 | 89 |

Feed requirement. Of prime concern to most operators is the securing of sufficient and appropriate feeds to increase the weight and value of the cattle fed with the least amount of cost and effort in the shortest amount of time. Typical rations of beef cattle consists of barley and/or wheat, alfalfa, corn silage, and beet pulp.

Labor requirement. With capital and feed at an operator's disposal, his next major input is labor. Operations vary widely as to the amount of labor used.

Higher investment costs in the form of feeders or mangers can reduce labor requirement significantly. Organization of corrals, shutes, buildings, scales, and feed storage facilities have an effect on the labor requirement.

No attempt was made to classify labor into its individual operations and thus was presented as a single cost figure for each size group.

Analysis of costs

Feed cost. Feed costs were the largest single cost in all size groups and accounted for 79.3 percent of total costs. Feedlots, which fed from 50-99 head, had the highest feed cost per pound of gain, Table 11, but accounted for only 63.8 percent of total costs indicating other costs higher than average. There was no observable relationship between size of feedlot and feed costs. Feedlots in the 500-999 head size group had the lowest feed cost per pound of gain. Average feed cost of all lots interviewed was \$18.11 per hundred pounds of gain; or based on the average gain of 428 pounds, feed costs amounted to \$77.51 per head fed.

Table 11. Feed cost per hundred pounds of gain for yearling beef cattle included in sample, Utah, 1968

| Number of head fed | Dollars per hundred pounds of gain |
|--------------------|------------------------------------|
| 50-99 | \$20.68 |
| 100-199 | 18.34 |
| 200-299 | 19.23 |
| 300-499 | 19.06 |
| 500-999 | 17.01 |
| 1000-1999 | 17.79 |
| 2000 & over | 18.40 |
| Average | 18.11 |

Barley was the major constituent of the feed used. Average amount of barley fed per head per day was 13.6 pounds at a cost of \$.31, Table 12. Alfalfa cost accounted for only \$.03 per head per day.

Table 12. Average composition of diet fed to cattle included in sample, Utah, 1968

| Feed | Pounds consumed per day | Cost per day |
|---------------|-------------------------|--------------|
| Barley | 13.6 | \$.31 |
| Wheat | .8 | .02 |
| Corn | .7 | .02 |
| Beet pulp | 2.5 | .06 |
| Alfalfa | 2.1 | .03 |
| Silage (corn) | 1.9 | .01 |
| Supplement | .8 | .04 |
| Total | 22.4 | .49 |

Labor cost. There was an inverse relationship between size of operation and labor cost per pound of gain. Labor cost decreased consistently as size of operation increased, Table 13. Operators who fed larger numbers of cattle were able to increase their efficiency of labor by handling a larger number of animals in the same amount of time as small operators were using. Average labor cost of all operations was \$.97 per hundred pounds of gain and accounted for 4.2 percent of total costs.

Labor cost was the second largest category of cost in the two

smaller size groups and the third largest cost in the remainder of the size groups.

Table 13. Labor cost per hundred pounds of gain for yearling beef cattle included in sample, Utah, 1968

| Number of head fed | Dollars per hundred pounds of gain |
|--------------------|------------------------------------|
| 50-99 | \$3.25 |
| 100-199 | 2.21 |
| 200-299 | 1.30 |
| 300-499 | 1.17 |
| 500-999 | .99 |
| 1000-1999 | .99 |
| 2000 & over | .76 |
| Average | .97 |

Overhead costs. Overhead costs include charges for depreciation, repairs, interest on operating and fixed capital, taxes, and insurance.

Depreciation was charged on capital invested in building, corrals, and equipment. Land values were excluded from depreciation charges due to appreciation in value over the past several years. Depreciation charges were calculated by use of the straight line method and were based on the operator's estimated life of the asset. Depreciation charge per pound of gain decreased significantly from the 50-99 head lots to the 100-199 head size group--a decrease of \$1.54 per hundred pounds of gain. Costs continued to decrease through all size groups as the size increased, Table 14. Operators of lots feeding over 2,000

Table 14. Costs per hundred pounds of gain for yearling beef cattle included in sample, Utah, 1968

| Item | Number of head fed | | | | | | | Average |
|-------------------------------------|------------------------------------|---------|---------|---------|---------|-----------|-------------|---------|
| | 50-99 | 100-199 | 200-299 | 300-499 | 500-999 | 1000-1999 | 2000 & over | |
| | Dollars per hundred pounds of gain | | | | | | | |
| Fixed costs | | | | | | | | |
| Depreciation | \$ 2.40 | \$.86 | \$.75 | \$.72 | \$.54 | \$.55 | \$.22 | \$.46 |
| Taxes, insurance ^a | .24 | .12 | .11 | .09 | .09 | .09 | .03 | .07 |
| Int. on fixed cap. ^b | 1.68 | .89 | .74 | .63 | .62 | .61 | .23 | .46 |
| Total fixed costs | 4.32 | 1.87 | 1.60 | 1.44 | 1.25 | 1.25 | .48 | .99 |
| Nonfeed variable costs | | | | | | | | |
| Labor | 3.25 | 2.21 | 1.29 | 1.17 | .99 | .99 | .76 | .97 |
| Utilities | .11 | .08 | .05 | .08 | .10 | .12 | .11 | .11 |
| Fuel | .35 | .09 | .26 | .37 | .16 | .20 | .13 | .19 |
| Veterinary | .29 | .29 | .17 | .10 | .15 | .28 | .20 | .20 |
| Repair | .89 | .35 | .38 | .26 | .20 | .25 | .17 | .22 |
| Other | .01 | .01 | .01 | .01 | .01 | .01 | .01 | .01 |
| Death loss ^c | .96 | .96 | .95 | .67 | .79 | .60 | .52 | .63 |
| Int. on feed & cattle ^d | 1.42 | 1.41 | 1.40 | 1.40 | 1.44 | 1.40 | 1.39 | 1.40 |
| Total nonfeed variable costs | 7.28 | 5.40 | 4.51 | 4.06 | 3.84 | 3.85 | 3.30 | 3.73 |
| Feed costs | 20.68 | 18.34 | 19.23 | 19.06 | 17.01 | 17.79 | 18.40 | 18.11 |
| Total costs/hundred lbs. of gain | 32.28 | 25.61 | 25.34 | 25.56 | 22.10 | 22.89 | 22.18 | 22.83 |

^aTaxes and insurance figures at 1 percent of present value.

^bInterest on fixed capital figured at 2 percent.

^c830-lb. animal multiplied by percent death loss times \$26/cwt. and divided by average gain of 428 lbs.

^dSeven percent per year interest on investment in feeders at \$26/cwt. and on cost of feed.

head had the smallest cost of \$.27 per hundred pounds of gain. Average cost charged on depreciation amounted to \$.46 per hundred pounds of gain.

Repairs were calculated on a flat rate of 2.0 percent on fixed investment other than land. Average cost of repairs ranged from \$.89 to \$.17 per hundred pounds of gain for the various size groups with an average of \$.22. The general trend of repair costs was to decrease as the number of head increased. There were two exceptions, both of minor significance.

Interest on cattle and feed was calculated at 7.0 percent interest for the time that cattle were in the feedlot. Cost of cattle and feed amounted to \$236.54 per head. Interest charges amounted to \$.599 per head or \$1.40 per hundred pounds of gain.

Interest on fixed capital was calculated at a rate of 7.0 percent and amounted to an average of \$1.97 per head fed or \$.46 per hundred pounds gained.

Taxes and insurance were calculated at 1.0 percent of present value of investment and averaged \$.07 per hundred pounds gained or \$.28 per head.

When depreciation, repairs, taxes, insurance, and interest were added together, overhead cost amounted to \$2.61 per hundred pounds of gain or \$11.15 per head fed.

Power costs. For the purpose of this study, power costs will include utilities and fuel. Combined they amounted to \$.30 per hundred pounds of gain with a range from \$.17 to \$.46. There was no relationship between these costs and size of operations. There was wide variation because some operators use very little electricity compared with

others and/or the use of self-feeders or hand feeding reduced fuel expense compared with those using automatic feed trucks or self-unloading wagons.

Other costs. Cost items included are veterinary services, medicines, water, and death loss. Costs fitting this category amounted to \$.84 per hundred pounds of gain on all operations studied. Veterinary and medicine accounted for nearly 25 percent and ranged from \$.09 to \$.29 per hundred pounds of gain. The largest portion of other cost came in the form of death loss which ranged from \$.52 to \$.96 per hundred pounds of gain.

Total cost. Total cost per hundred pounds of gain ranged from \$22.10 to \$32.28 with an average of \$22.83 per hundred pounds of gain. Feed was by far the largest cost while labor and interest on operating capital shared the largest nonfeed cost position. Total cost of feed per head averaged \$97.69.

Analysis of receipts

Receipts consisted of the value of cattle sold for slaughter plus the value of the manure accumulated during the feeding period.

The major receipt was from the sale of fat cattle which amounted to \$271.18 per head. This figure was calculated by multiplying the average weight of slaughter animals, which was 1,043 pounds, by the average market price of \$26.00 per hundred weight. This price was obtained by averaging prices taken from the Market News Service, 1968, for the state of Utah.

Value of the cattle increased from the gain in weight and quality and also from a slight price spread. Average price paid for choice

feeder cattle was \$25.86 per hundred weight. This figure was multiplied by the average weight of all cattle entering the lots, which was 615 pounds, to arrive at a cost of livestock purchased of \$159.03. The difference between the value of cattle sold and purchased was \$112.15. Total cost of gain of 428 pounds amounted to \$97.68 leaving a net of \$14.47 per head due to the price spread.

Value of the manure was also accredited to the livestock and amounted to \$5.19 per head. This value was arrived at by using estimates of Frank B. Morrison (5). He estimated a 1,000-pound beef animal would produce 15 tons of manure per year. He valued fat cattle manure at \$3.70 per ton on the basis of fertilizer content. A value of \$2.00 was charged for manure removal leaving a net value of \$1.70 per ton which was credited to the enterprise. Value of the manure was also adjusted since the average weight of an animal in the lot was 830 pounds, not 1,000, and the average feeding period was 158 days rather than a full year. This value was then added to primary receipts (\$271.18 + 5.19) to bring total receipts to \$276.37.

Often the full value of the manure is not realized due to a management problem of disposing of the manure. It could even become a cost item if no land is available on which to spread such fertilizer.

Net return. Net return was then calculated by subtracting the total cost of \$256.72 from the total receipts of \$276.37 to provide a net return of \$19.65 per head fed, Table 15.

Table 15. Average receipts, costs, and net return for cattle fattening enterprises included in sample, Utah, 1968

| | Units | Quantity | Price | Amount |
|---------------------------|-------|----------|---------|-----------------|
| Receipts | | | | |
| Primary product | lbs. | 1043 | \$26.00 | \$271.18 |
| Manure | tons | 3.05 | 1.70 | 5.19 |
| Total receipts | | | | <u>\$276.37</u> |
| Costs | | | | |
| Fixed costs | | | | |
| Depreciation | | | | 1.97 |
| Int. on fixed capital | | | | 1.97 |
| Taxes, insurance | | | | .28 |
| Variable costs | | | | |
| Feed | | | | 77.51 |
| Labor | hrs. | 2.8 | 1.50 | 4.15 |
| Vet. & medicine | | | | .85 |
| Utilities | | | | .47 |
| Fuel | | | | .81 |
| Repairs | | | | .94 |
| Int. on operating capital | | | | 5.99 |
| Other | | | | .04 |
| Death loss | | | | 2.70 |
| Cattle purchased | lbs. | 615 | 25.86 | <u>159.04</u> |
| Total cost | | | | <u>\$256.72</u> |
| Net return | | | | <u>\$ 19.65</u> |

Lamb Fattening

Description of lamb fattening enterprises studied

Most of the farmers interviewed for this portion of the study fed on a supplementary and/or complementary basis similar to cattle feeding operations. Feeding lambs provided a market for home grown feeds although many feeders had to purchase additional feed. More than 25 percent of the operators contacted fed only lambs that they had raised. An additional 50 percent of the operators interviewed fed some home-raised lambs. This is not to imply that most of the lambs fed were fed by the original owner. Over 60 percent of lambs fed and included in this study were purchased, not raised by the feeder. Lamb feeding also provides a market for the operator's labor during the winter season.

Size of the enterprises ranged from 225 head to 12,000 head of lamb fed in a year's time. Average size of all operations was 2,875 head. About 65 percent of the operators fed less than 2,875 head per year while nearly 25 percent fed over 5,000 head. Distribution of the sample was bimodal with the same number of operators feeding 1,000 and 5,000 head.

Average weight of lambs entering the feedlot was 79.9 pounds, Table 16. Average daily gain ranged from .273 to .385 pound with the average being .356 pound per day. Average feeding period consisted of 81 days. Operations which fed 5,000 head and over had the lowest average number of days on feed (76 days) and at the same time had lambs gaining the largest amount of weight (29.3 pounds) giving them the highest average daily gain of .385 pound. Farmers who fed between 1,000 and

1,999 head required an average of 104 days feeding period and had the lowest gain per day of .273 pound. Average weight of lambs sold for slaughter ranged from 107.5 to 109.3 pounds with the average being 108.8 pounds per lamb.

Table 16. Average weight, daily gain, and days on feed of lambs included in sample by size group, Utah, 1968

| Size | Avg. days on feed | Avg. in weight | Avg. out weight | Avg. daily gain | Total gain |
|-------------|----------------------|-------------------|--------------------|--------------------|---------------|
| | Number | Pounds | Pounds | Pound | Pounds |
| 225-999 | 80 | 81.8 | 109.3 | .343 | 27.5 |
| 1000-1999 | 104 | 79.0 | 107.5 | .273 | 28.4 |
| 2000-4999 | 85 | 80.1 | 108.5 | .337 | 28.7 |
| 5000 & over | 76 | 79.9 | 109.2 | .385 | 29.3 |
| Average | 81 | 79.9 | 108.8 | .356 | 28.9 |

The majority of the operations were managed by a single owner. This type of ownership accounted for 68 percent of all operations studied. Partnerships were the second largest type of ownership and included 18.5 percent of the operations. Corporations and cooperatives accounted for 10.5 and 2.6 percent respectively, Table 17.

Analysis of inputs

This subsection presents a brief discussion of the major input requirements of lamb fattening enterprises.

Capital requirement. Fixed capital in land, buildings, and equipment amounted to an average of \$7,650.72 invested per enterprise or

Table 17. Type of ownership of lamb fattening operations included in sample by size group, Utah, 1968

| Ownership | Number of head fed | | | |
|-------------------|--------------------|-----------|-----------|-------------|
| | 225-999 | 1000-1999 | 2000-4999 | 5000 & over |
| | Number of feedlots | | | |
| Single proprietor | 10 | 6 | 5 | 5 |
| Partner | - | 2 | 3 | 2 |
| Cooperative | - | 1 | - | - |
| Corporation | - | - | 2 | 1 |
| Total | 10 | 9 | 10 | 8 |

\$2.59 per head fed, Table 18. Average investment per head decreased as size of operation increased with one exception, that being in the group which feed between 2,000 and 4,999. Investment in corrals and mangers accounted for a larger portion in this group than others due to several operators reporting large amounts of capital invested in these items. Investment for operators who fed over 5,000 head was less than 50 percent of the investment reported by feeders of 225-999 lambs per year.

When investment per head capacity was calculated, there was not as much variation. Average investment per head capacity was \$2.73 which was slightly higher than investment per head fed. Only those operators who fed over 5,000 head were utilizing their full capacity. The other three groups would need to expand operations in order to utilize potential capacities. Feeders of over 5,000 head were, therefore, the only group who had a lower investment per head fed than investment on a capacity basis.

Commercial banks supplied the majority of capital for over 70

percent of the operators interviewed. Other sources included production credit associations and the operator's own capital.

Table 18. Investment per head and per head capacity of lamb operations studied by size group, Utah, 1968

| Number of head fed | Per head fed | Per capacity | Total invested | Average |
|--------------------|--------------|--------------|----------------|----------|
| 225-999 | \$4.52 | \$2.84 | \$ 16,626 | \$ 1,847 |
| 1000-1999 | 2.97 | 2.36 | 33,484 | 3,720 |
| 2000-4999 | 3.26 | 3.13 | 93,436 | 10,382 |
| 5000 & over | 2.03 | 2.56 | 108,928 | 15,561 |
| Average | 2.59 | 2.73 | 252,474 | 7,651 |

Feed requirement. Operators who feed lambs seek to increase their weight at the lowest possible cost. Cost of feed is one of the most important factors affecting a feeding operation. Availability of feed is also an important factor.

Rations used to fatten lambs consisted mainly of barley, alfalfa, and dried beet pulp. There were some operators who substituted other feeds.

Labor requirement. Labor is an important input in fattening lambs. All labor was charged at the same rate of \$1.50 per hour regardless of who provided the labor--hired help, family, or operator. Method of feeding influenced the amount of labor required. The same was true of capital invested and arrangement of facilities.

Analysis of costs

Feed cost. Feed cost was the largest single cost of all enterprises and accounted for 79.4 percent of the total cost. Feed cost per hundred pounds of gain averaged \$20.10 for all enterprises studied, Table 19. Feeders who fed 2,000 to 4,999 head had the lowest feed cost per hundred pounds of gain which amounted to \$18.30. There was no apparent relationship between feed costs and size. Operators who fed 1,000-1,999 head had the largest cost, \$22.90 per hundred pounds of gain. Average feed cost per lamb fed amounted to \$5.81 for all enterprises studied or \$16,700 per enterprise. There was an average gain of 28.9 pounds per lamb fed.

Table 19. Feed cost per hundred pounds of gain for lambs included in sample by size group, Utah, 1968

| Number of head fed | Cost per hundred pounds of gain |
|--------------------|---------------------------------|
| 225-999 | \$18.7 |
| 1000-1999 | 22.9 |
| 2000-4999 | 18.3 |
| 5000 & over | 20.3 |
| Average | 20.1 |

Average composition of the diet used to fatten lambs consisted of 1.5 pounds of alfalfa, 1.5 pounds of barley, .25 pound of beet pulp, and trace minerals and vitamins, Table 20.

Table 20. Average composition of diet fed to lambs included in sample, Utah, 1968

| Feed | Pounds per day | Daily cost |
|--------------------------------|----------------|------------|
| Alfalfa | 1.5 | \$.017 |
| Barley | 1.5 | .034 |
| Beet pulp | .25 | .005 |
| Vitamins & minerals (trace) | | .001 |
| Total | | \$.057 |

Labor cost. Labor cost was the largest nonfeed cost item and thus the second largest cost item to the enterprise. Average labor cost was \$1.24 per hundred pounds of gain or \$.36 per lamb fed. Labor cost decreased continually as the size of the operation increased. Smaller feeders had the largest labor cost. Those operators who fed from 225 to 999 head had an average labor cost of \$2.36 per hundred pounds of gain or \$.65 per head. Costs per hundred pounds of gain decreased slightly to \$2.32 for the operator feeding 1,000-1,999 lambs. Cost per head for this group was \$.66 due to a longer period on feed. The decrease was much more significant for the larger groups of 2,000-4,999 and 5,000 head and over, being \$1.24 and \$.97 per hundred pounds of gain respectively. Cost per head fed was \$.36 and \$.28 for these larger size groups respectively, Table 21.

Overhead costs. Overhead costs include charges for depreciation, repairs, interest on operating and fixed capital, taxes, and insurance.

Table 21. Labor cost per hundred pounds of gain for lambs included in sample by size group, Utah, 1968

| Size | Per hundred pounds of gain | Per head fed |
|-------------|----------------------------|--------------|
| 225-999 | \$2.36 | \$.65 |
| 1000-1999 | 2.32 | .66 |
| 2000-4999 | 1.24 | .36 |
| 5000 & over | .99 | .28 |
| Average | 1.24 | .36 |

Depreciation was taken on all capital invested in buildings, corals, and equipment. No depreciation was taken on land value. Lambs were also excluded because of their increased value due to the feeding operation. Depreciation was calculated using the estimated life of the investment and averaged \$.24 per lamb fed. Operators with high investment per head consequently had high depreciation costs per head. The relationship of size and depreciation was similar to size and investment per head. The amount charged for depreciation varied from \$.39 per head for feeders of 225-999 head to \$.18 per head for operations which fed over 5,000 head.

Repairs were calculated on a flat rate of 2.0 percent of initial investment in fixed investment other than land and accounted for \$.08 per head. Cost of repairs ranged from \$.16 per head to \$.05 per head for the smallest and largest size groups respectively.

Interest on lambs and feed was calculated at 7.0 percent for three months on cost of lambs and value of feed required. Cost of lambs and value of feed amounted to \$25.24 per head. Interest charges amounted

to \$.42 per head or \$1.45 per hundred pounds of gain, Table 22. This cost was entered at a single rate in all size operations. Interest on fixed capital was charged at the rate of 7.0 percent and amounted to \$.18 per head fed.

Table 22. Costs per hundred pounds of gain for lambs included in sample by size group, Utah, 1968

| Item | Number of head fed | | | | Average |
|--------------------------------------|--------------------|---------------|---------------|----------------|---------|
| | 225- 999 | 1000- 1999 | 2000- 4999 | 5000 & over | |
| Fixed costs | | | | | |
| Depreciation | \$ 1.42 | \$.96 | \$ 1.07 | \$.62 | \$.83 |
| Taxes, ins. ^a | .16 | .10 | .11 | .07 | .07 |
| Int. on fixed cap. ^b | 1.11 | .73 | .80 | .48 | .62 |
| Total fixed costs | 2.69 | 1.79 | 1.98 | 1.17 | 1.53 |
| Variable costs | | | | | |
| Labor | 2.36 | 2.32 | 1.24 | .97 | 1.25 |
| Utilities | .11 | .22 | .11 | .10 | .13 |
| Fuel | .15 | .32 | .14 | .12 | .15 |
| Vet. & medicine | .31 | .21 | .52 | .32 | .31 |
| Int. on lambs & feed ^c | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 |
| Repairs | .59 | .38 | .38 | .18 | .28 |
| Water | .07 | .07 | .07 | .07 | .07 |
| Death loss ^d | .09 | .10 | .06 | .07 | .07 |
| Total variable costs ^e | 5.13 | 5.07 | 3.97 | 3.28 | 3.71 |
| Feed costs | 18.90 | 22.90 | 18.30 | 20.30 | 20.10 |
| Total cost | \$26.72 | \$29.76 | \$24.25 | \$24.75 | \$25.33 |

^aTax, insurance figures at 1 percent of average present value.

^bTwo percent per year interest on fixed investment.

^cSeven percent per year interest on lambs and feed, 3-month period.

^dLoss/head times number of head lost/total number of pounds gained.

^eTotal variable costs excluding feed costs.

Questions were included in the survey concerning taxes and insurance, but very few responses were obtained. A cost of 1.0 percent was therefore charged against the operation for taxes and insurance and amounted to \$.02 per head.

When depreciation, repairs, interest, taxes, and insurance were added together, overhead costs amounted to \$.91 per lamb fed or \$3.14 per hundred pounds gained.

Power costs. Power costs for the purpose of this study included utilities and fuel and amounted to \$.08 per head fed. These combined costs ranged from \$.07 to \$.16 respectively for the size groups of 5,000 and over and 1,000 to 1,999 head. This large spread resulted from some operators using very little electricity, phone, or fuel while others used a substantial amount.

Other costs. Items included in this classification include veterinary services, medicines, water, and death loss. These other costs amounted to \$.13 per head fed. Veterinary and medicine expense accounted for nearly 70 percent of total material costs of \$.09 per head. Veterinary and medicine expense ranged from \$.21 to \$.52 per hundred pounds of gain. Operators with the lowest veterinary and medicine expenses had the highest average death loss of 2.4 percent, which amounted to a cost of \$.10 per hundred pounds of gain. Those feeders who fed between 2,000 and 4,999 head had the highest veterinary expense of \$.52 per hundred pounds of gain and the lowest death loss of only \$.06 per hundred pounds of gain or 1.5 percent death loss.

Total cost. Average total cost per hundred pounds of gain amounted to \$25.33 with a range of \$24.25 to \$29.76. The group of operators who had the lowest total cost per pound of gain fed from 2,000 to 4,999 head

while those who fed from 1,000 to 1,999 head had the highest total cost. The majority of the difference was caused by higher feed costs of \$22.90 per hundred pounds of gain compared with \$18.30 for the low cost group.

Analysis of receipts

Receipts, as calculated for this study, were derived directly from the sale of lambs and indirectly from the value of manure produced.

The major receipt was from the sale of lambs which amounted to \$28.15 per head. Average price received for fat lambs was obtained by averaging the prices paid for fat lambs in Utah taken from the Market News Service, 1968. This price of \$25.87 per cwt. was then multiplied by the average weight of lambs leaving the feedlots which was 108.8 pounds. Increase in the value of the lambs resulted from an increase in weight and a price spread between the prices of feeder lambs and slaughter lambs. The average price paid for feeder lambs was \$24.35 per cwt. Subtracting this price from the slaughter price of \$25.87 results in a margin of \$1.52 per cwt. The difference between average total cost of lambs and the average value when sold for slaughter amounted to \$8.70. Value of the average gain of 28.9 pounds contributed \$7.48 or 85.7 percent of the increase. The difference of \$1.22 was due to the price spread.

Manure was valued at \$.66 per head. This value was calculated by taking 7.5 tons of manure produced per 1,000 pounds of body weight as estimated by Frank B. Morrison (5) or approximately .75 ton per lamb/year. The average number of days on feed was 81 days, not 365, so only this percentage was used giving us 332 pounds of manure per lamb. Manure was valued by Morrison (5) according to nutrients obtained at \$5.99

per ton. A charge of \$2.00 per ton was taken from this as a charge for manure removal leaving the value of \$3.99 per ton spread on the fields. Price per ton was then multiplied by number of tons produced per lamb to obtain the \$.66 per head.

Direct receipts of \$28.15 and indirect receipts of \$.66 were then added to give the total receipts of \$28.81 per lamb fed, Table 23.

Net return. Net return was calculated by subtracting total costs per lamb from total receipts. Total receipts amounted to \$28.81 while total costs were \$26.75 leaving a net return of \$2.06 per lamb fed.

Table 23. Average receipts, costs, and net return for lamb fattening operations included in sample, Utah, 1968

| | Units | Quantity | Price | Amount |
|---------------------------|-------|----------|---------|---------|
| Receipts | | | | |
| Primary product | lbs. | 108.8 | \$25.87 | \$28.15 |
| Manure | tons | .165 | 3.99 | .66 |
| Total receipts | | | | \$28.81 |
| Costs | | | | |
| Fixed costs | | | | |
| Depreciation | | | | .24 |
| Int. on fixed capital | dol. | 2.59 | 7% | .18 |
| Faxes, insurance | dol. | 2.59 | 1% | .02 |
| Variable costs | | | | |
| Feed | | | | 5.81 |
| Labor | hrs. | .24 | 1.50 | .36 |
| Vet. & medicine | | | | .09 |
| Utilities & fuel | | | | .08 |
| Repairs | | | | .08 |
| Int. on operating capital | | | | .42 |
| Water | | | | .02 |
| Death loss | | | | .02 |
| Lamb purchased | lbs. | 79.9 | 24.35 | 19.43 |
| Total cost | | | | \$26.75 |
| Net return | | | | \$ 2.06 |

Milk Production

Data for this section were obtained from secondary sources.

Description of the enterprise studied

Palmer's (6) study included 91 commercial operations. All were members of the Dairy Herd Improvement Association producing milk on a Grade A basis. Many of the dairies, both in his study and throughout Utah, are complementary operations. Many dairymen raise large amounts of feed and use their dairy herds to market this feed. The milking enterprise also allows for a means of marketing a large portion of the operator's labor.

Average size of dairy herds in Utah was around 31 cows as reported by John J. Barnard, Extension Dairyman, U.S.U. Average production amounted to 10,470 pounds of milk per cow. This figure was obtained from data published by the Statistical Reporting Service, Salt Lake City.

Analysis of inputs

A brief discussion of the major input requirements will be presented.

Capital requirement. Milk production enterprises require a large capital investment in land, buildings, and milking equipment. Secondary data show that an average of \$220.11 was invested in land, buildings, and equipment per cow. This investment ranged from \$301 per cow for the smaller size herds to \$200 for herds of 50 or more cows, Table 24. As size of herd increased, investment per cow in buildings and equipment consistently decreased. There were no data available to indicate the potential capacity of the various size operations or the source of capital presently used by the operator.

Table 24. Investment per dairy cow included in study conducted in Utah, 1967

| Number of cows per herd | Dollar investment per cow in building and equipment |
|-------------------------|---|
| Less than 35 | \$301 |
| 35-49.9 | 218 |
| 50 or more | 200 |
| All herds | 220 |

Source: Cost and Net Return from Milking Enterprise on Selected D.H.I.A. Farms in Northern Utah, 1965.

Feed requirement. Feed was a major input in the milking enterprise. Cows continually had to be fed even though they were nonproductive for a period between lactations. Good quality was essential in the feed required. Cured alfalfa hay made up the major portion of the roughage while barley was the main concentrate used. Herds were pastured during the summer, but most operators fed some hay in conjunction with pasture or green chop. Silage was also fed in many of the milking enterprises.

Labor requirement. The milking enterprise requires consistent labor throughout the year. Labor is generally performed by the operator and his family although several enterprises hired some labor.

Analysis of costs

Feed cost. Feed costs were the largest cost item and amounted to \$243.51 per cow or an average of \$2.32 per hundred pounds of milk produced. Major feeds were alfalfa, hay, and concentrates. Hay accounted for 43.2 percent of total feed costs while concentrates represented

31.6 percent, Table 25. Other feeds included silage, green chop or pasture, and minerals.

Table 25. Amount and cost of feed per cow and per 100 pounds of milk, Utah, 1968

| Feed | Pounds fed per cow/year | Cost/cow ^a per year | Cost/100 lbs. ^a of milk | Percent of total feed cost |
|-----------------------|-------------------------|--------------------------------|------------------------------------|----------------------------|
| Hay | 9697 | \$105.26 | \$1.005 | 43.2 |
| Barley | 3583 | 77.03 | .735 | 31.6 |
| Silage | 9020 | 36.53 | .349 | 15.0 |
| Pasture or green chop | 1720 | 22.66 | .126 | 9.3 |
| Minerals | 39 | 2.03 | .019 | .8 |
| Total | | \$243.51 | \$2.323 | 100.0 |

^aCosts are updated to 1968 by means of price indices.

Source: Cost and Net Return from Milking Enterprise on Selected D.H.I.A. Farms in Northern Utah, 1965.

Labor cost. Labor cost constituted 16 percent of total cost of producing market milk. A uniform wage rate of \$1.50¹ an hour was charged for all labor and was obtained from empirical data. Average labor required was 53.6 man hours per cow per year at a cost of \$80.40 per cow. This amounted to \$.77 per hundred pounds of milk produced. Over 50 percent of the labor required was used in the actual milking operation.

¹The wage of \$1.50 an hour was obtained from primary data collected in both the cattle and lamb fattening enterprises. This was the average wage rate paid.

Overhead costs. Costs here include depreciation, repairs, interest on fixed and operating capital, taxes, and insurance. These combined costs amounted to \$110.20 per cow or \$.95 per hundred pounds of milk produced. Overhead costs accounted for 19.8 percent of total costs.

Depreciation was the largest overhead cost and amounted to \$47.59 or 9.5 percent of total costs. Interest on operating capital was charged at 7.0 percent and accounted for \$35.63. This figure may be reduced in many cases due to the nature of receipts. Payments were received from milk every two weeks and thus capital needed to invest in feed could have been reduced if it were possible to buy feed at regular intervals. However, since some feed was home raised and had to be stored and some purchased, interest was charged on the full value of feed consumed during a year.

Repairs, taxes and insurance, and interest of fixed capital amounted to \$5.89, \$5.69, and \$5.40 per cow respectively. Repairs were calculated at 2 percent of investment while taxes and insurance were taken from secondary sources.

Material costs. Costs included in this category were tractor and truck expense, breeding fees, utilities, veterinary and medicine expense, sanitation supplies, and water costs.

Tractor and truck expense was by far the largest of these costs amounting to \$18.87. This was 3.7 percent of total costs.

Breeding fees amounted to an average of \$8.08 per cow. Costs of artificial insemination ranged from \$6.50 to \$10.00 per head.

Utilities included electricity and phone and amounted to \$6.69 per cow per year while veterinary and medicine costs were \$6.28.

Sanitation supplies such as soap, disinfectants, and brushes used

for cleaning both barns and cows averaged \$4.48 per cow. Water used both for cleaning purposes and stock amounted to \$1.07 per cow per year.

All costs included in this section totaled \$46.57 and accounted for 9.3 percent of total costs of producing milk.

Other costs. Costs not included in the other sections included costs of hauling milk, health inspection, and A.D.A.¹ fees. Cost of hauling milk averaged \$26.42 per cow. This varied per hundred pounds of milk depending on the distance the milk had to be hauled. Hauling accounted for 5.3 percent of total costs. Health inspection and A.D.A. fees accounted for \$1.49 and \$4.45 per cow respectively, Table 26.

Total cost. Total cost of the milking enterprise was \$502.10 per cow. Nearly 65 percent of the costs were feed and labor costs. Other variable and fixed costs accounted for the remainder.

Analysis of receipts

Major receipts came from the sale of milk. Average price of all milk was \$5.02 per cwt. Average production sold per cow was 10,120 pounds, Table 26. Total receipts from milk sold was \$508.02 or 89 percent of total receipts. Other receipts included value of the calves, milk used on the farm, and the value of the manure. Value of the calves averaged \$32.31 for the study conducted in 1967. This same value was used in 1968. Value of milk used on the farm was \$15.82. This milk was used either by the farm family or fed on the farm.

Manure credits amounted to \$9.75 per cow. This figure was obtained by multiplying 15 tons as estimated by Frank B. Morrison (5) by \$.65 per ton which was the difference between the value and the cost of

¹A.D.A. fees are American Dairy Association fees.

Table 26. Average receipts, costs, and net return per cow for milking operations, Utah, 1968

| | Units | Quantity | Price | Amount |
|---------------------------|-------|----------|--------|-----------------|
| Receipts | | | | |
| Primary product | cwt. | 101.2 | \$5.02 | \$508.02 |
| By-products | | | | 32.31 |
| Milk used on farm | cwt. | .175 | 4.52 | 15.82 |
| Manure | | | | 9.75 |
| Total receipts | | | | <u>\$565.90</u> |
| Costs | | | | |
| Fixed costs | | | | |
| Depreciation | | | | 47.59 |
| Int. on fixed capital | dols. | 220 | 7% | 15.40 |
| Taxes, insurance | | | | 5.69 |
| Variable costs | | | | |
| Feed | | | | 243.57 |
| Labor | | | | 80.40 |
| Vet. & medicine | | | | 6.28 |
| Utilities | | | | 6.69 |
| Tractor & truck expense | | | | 18.87 |
| Repairs | | | | 5.89 |
| Int. on operating capital | dols. | 243.57 | 7% | 35.63 |
| Breeding fees | | | | 8.08 |
| Hauling | | | | 26.42 |
| Sanitation supplies | | | | 5.58 |
| A.D.A. fees | | | | 4.45 |
| Health inspection | | | | 1.49 |
| Water | | | | 1.07 |
| Total cost | | | | <u>\$513.10</u> |
| Net return | | | | <u>\$ 52.80</u> |

spreading the manure.

Net return. Net return was calculated by subtracting the total cost from the total receipts and amounted to \$52.80 per cow or \$.61 per hundred pounds of milk.

Comparison

This part will deal with measures of comparison to indicate under what condition the selected enterprises are profitable and which enterprise is more profitable.

Lambs had the highest net return per \$100 worth of feed fed and amounted to \$35.46. Cattle fattening was second with a net return of \$25.35 while dairy accounted for only \$21.68.

Return to labor was calculated by adding labor cost and net return and dividing this total by the number of hours required per head. Lambs had the highest return to labor and amounted to \$10.08 per hour. Cattle fattening was second and could pay \$8.50 per hour of labor while milk production would be able to pay only \$2.49 per hour of labor. Labor requirements were .24 hour per lamb, 2.8 hours per beef animal, and 53.6 hours per dairy cow. An operator may choose dairy over lambs or beef in an attempt to market more of his available labor.

Another measure of comparison is net return per \$100 invested in fixed assets. Fixed investment was highest for the milking enterprise. Investment per cow was \$220.00 representing a high investment compared to the others. Cattle fattening had the second highest investment of \$28.18 per head fed. Lambs had the lowest investment of \$2.59 per head fed.

Return per \$100 invested in fixed assets was highest for lamb

fattening and amounted to \$79.54. Beef was second with a return of \$69.73, and milk production was last with a low of \$24.00 per \$100 invested.

Another measure to use in comparison is feed cost as a percent of total cost. Lambs had the highest percentage feed cost at 79.4 percent. This means that for every \$100 of total cost, feed cost amounted to \$79.40. Cattle fattening was second with 79.3 percent of total cost attributable to feed costs. Milk production feed costs accounted for only 47.5 percent of total costs.

Cattle fattening could pay as high as \$22.70 per hundred pounds of gain for feed. This represents an increase of \$4.59 per hundred pounds of gain.

Lamb fattening could bid the price of feed up to the point that feed costs were \$27.23 per hundred pounds of gain. This is an increase of \$4.73 per hundred pounds of gain over the present feed cost of \$20.10 per hundred pounds gained.

Feed cost for milk production presently amounts to \$2.33 per cwt. Costs of feed could increase to \$2.83 per cwt. of milk without causing a negative net return and represents an increase of \$.50 in feed costs per cwt. of milk produced.

Assuming all costs of feed are constant except barley and alfalfa, beef cattle could bid the price of alfalfa the highest while lambs could pay the highest price for barley. Beef cattle could pay as high as \$32.00 per ton for alfalfa and \$2.60 per cwt. for barley and still cover all costs of production. Lambs could afford to be fed if alfalfa cost was \$30.60 per ton and barley \$3.13 per cwt. Dairy could pay only \$28.00 per ton for alfalfa and \$2.76 per cwt. for barley. Limiting

prices for feed for the dairy enterprise are based on a milk price of \$5.02 per cwt. If it is assumed that all milk is reduced to only Grade A milk at a price of \$5.48 per cwt., then milking enterprises could pay \$35.60 for alfalfa and \$3.34 per cwt. for barley.

Another measure useful for comparison is price of the product. At costs presented in this study, the price of each product could drop without causing net return to drop below zero. Price of fat cattle could drop to \$24.12 from the figure used in this study of \$26.00. At current cost a positive net return will then result from any price above \$24.12 per cwt.

Lamb price could drop to a low of \$23.98 per cwt. and still cover all costs of production. Milk enterprises could get as low as \$4.35 per cwt. of milk without causing net return to be below zero.

Data collected and used for this study indicates that resources should be flowing into lamb fattening and beef fattening operations before resources are allocated to dairy operations. Yet, in the state of Utah the opposite has been true. Resources tend to be allocated to dairy, beef, and lamb enterprises in reverse order to net returns as indicated in this study. Factors other than profit maximization apparently influence farmer's decisions relative to allocation of capital to feeding enterprises.

One of the most important of these factors is price stability. The coefficient of variation for prices was calculated for the three enterprises. Dairy product prices varied the least over the last 11 years. The coefficient of variation for dairy products was 86.7. The amount of variation in fat cattle prices was greater than for dairy products with a coefficient of 109.9. Fat lamb prices had the greatest

amount of variation with a coefficient of 136.2. Thus, while lambs were the most profitable in 1968, uncertainty involved in price fluctuations was also high.

Another influence on decision making is sociological factors. An operator may choose a less profitable enterprise simply because of personal reasons, a great like or dislike of a particular enterprise.

SUMMARY

Enterprises selected for this study included cattle fattening, lamb fattening, and milk production. Data for the cattle fattening enterprise were obtained from 89 operators who finished cattle. Size of operations varied from 25 head to 10,000 head fed per year with an average of 872 head per lot. Average weight of cattle entering the lots was 615 pounds. After 158 days on feed at an average daily gain of 2.7 pounds, cattle were sold for slaughter at an average weight of 1,043 pounds.

Feed was the largest item of cost of finishing beef cattle. Feed cost amounted to \$18.11 per hundred pounds of gain or an average of \$77.51 per head fed based on 1968 prices. This represented over 79 percent of all costs excluding the purchase price of feeder cattle. Labor required to finish cattle was 2.8 hours per head. Cost of labor was \$.97 per hundred pounds of gain or \$4.15 per head fattened. Interest on operating capital was another major cost of cattle fattening and exceeded labor cost on a per head basis. This cost amounted to \$1.40 per hundred pounds of gain or \$5.99 per head fed.

Total cost of fattening cattle was \$22.83 per hundred pounds of gain or \$97.69 per head. Of this amount, feed costs represented 79.3 percent; labor costs accounted for 4.2 percent; overhead charges were 11.5 percent; other costs were 3.7 percent and power cost represented 1.3 percent. Excluded in the above cost was the purchase price of the feeder cattle which amounted to \$159.03 per head or \$25.86 per cwt.

Gross receipts amounted to \$276.37 per head. Receipts for cattle sold was \$271.18 per head. Manure value made up the difference of \$5.19 per head.

Net return, which is the difference between gross receipts and total costs (including purchase price), was \$19.65 per head fed.

Data for the lamb fattening enterprises were obtained from 37 operators who fattened lambs in dry lots. Size of lamb operations surveyed ranged from 225 head to 12,000 head per lot per year. Average size of operation was 2,875 head per lot. Lambs gained an average of .356 pound per day increasing their weight from 79.9 pounds to 108.8 pounds during an 81-day period.

Feed was the largest cost of fattening lambs if the purchase cost of lamb was excluded. Feed costs amounted to \$20.10 per hundred pounds of gain and averaged \$5.81 per head fed. Labor required to fatten lambs was .24 hour per head at a cost of \$.36 per head. Labor cost amounted to \$1.24 per hundred pounds of gain. Interest on operating capital was also a major expense in lamb fattening and was the second largest cost per head. Cost of interest on operating capital was \$1.45 per hundred pounds of gain or \$.42 per head.

Total cost of lamb fattening excluding purchase cost of feeder lambs was \$7.19 per head or \$25.33 per hundred pounds of gain. A breakdown of total cost showed that 79.4 percent were feed costs; labor costs accounted for 4.9 percent; overhead costs were 12.8 percent; other costs accounted for 1.8 percent and power costs represented 1.1 percent. Purchase price of feeder lambs was \$24.35 per cwt. or \$19.43 per head.

Gross receipts were \$28.81 per head Included in gross receipts

were receipts from lambs of \$28.15 and manure credit of \$.66 per head fed.

Net return, calculated by subtracting total costs including purchase price from gross receipts, amounted to \$2.06 per head.

Data for the milking enterprises were taken from secondary sources and updated by means of price indices and other information. Major emphasis was placed on a study conducted by the Agricultural Economics Department at Utah State University (4). The study included 91 commercial operations. Average size of milking herds was 31 cows. Average production per cow was 10,470 pounds.

Feed costs were the large category of costs and amounted to \$2.32 per 100 pounds of milk produced or \$243.57 per cow per year. Labor required for milk production was 53.6 hours at a cost of \$80.40 per cow. Cost of labor was the second largest cost while depreciation was third highest cost. This was due to a large investment per head in the milk production enterprises.

Total costs amounted to \$513.10 per head per year. Feed cost accounted for only 47.5 percent; labor cost represented 15.7 percent; overhead cost was 21.1 percent; material cost, 9.3 percent and other cost, 6.4 percent.

Gross receipts consisted of value of milk sold, value of calf, value of milk used on the farm, and value of manure. Value of the milk sold was \$508.02 and represented 89.0 percent of gross receipts. Value of the calf was \$32.31; milk used on the farm, \$15.82; and the value of the manure was \$9.75.

Net return (gross receipts minus total costs) was \$52.80 per cow per year.

Feed utilization showed that lambs were the most profitable followed by cattle fattening and milk production. This was based on net return per \$100 worth of feed used.

Returns per \$100 invested in fixed assets indicated lamb fattening to be the most profitable. Beef was second and milk production last.

Feed costs could be increased in all enterprises without causing net return to fall below zero. Price of alfalfa and barley could be increased to \$28.00 per ton and \$2.60 per cwt. respectively without causing net returns from any of the selected enterprises to decrease to the point of becoming negative.

Prices of all final products could drop to lower levels and still provide sufficient receipts to cover all costs.

Other factors influencing resource allocation includes price stability and sociological factors. These factors may cause resources to flow into a less profitable enterprise than might be attainable.

CONCLUSION

This study was undertaken in an attempt to estimate the relative profitability and competitive position of cattle fattening, lamb fattening and milk production. Based on 1968 prices, these selected enterprises were all profitable.

Lambs were more profitable than beef or dairy when based on:

- 1) return per \$100 worth of feed used.
- 2) return per hour of labor.
- 3) return per \$100 invested in fixed assets.

Cattle fattening was more profitable than dairy on all three of the above measures.

Prices of feed could increase as high as \$28.00 per ton for alfalfa and \$2.60 per cwt. for barley without causing net return to drop below zero. Lambs and cattle could pay the highest price for barley and alfalfa respectively.

Price of fat cattle, fat lambs, and milk could all drop below the 1968 levels and still provide sufficient return to cover all costs of production.

Cost and return analysis indicates that lamb fattening is the most profitable enterprise of those selected for this study. Other factors such as price variation, capital requirement, and sociological factors may cause farmers to operate other enterprises which are less profitable.

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APPENDIXES

Appendix AFeedlot Survey - Cattle

Date _____ Name _____

Enumerator _____ Address _____ Phone _____

- How many years have you fed cattle? _____
- Typical number fed per year when you started feeding. _____
- What is the present capacity of your lot? _____
- What was your capacity in 1968? _____
- How many head did you feed last year? _____
- Number of pens? _____
- Type of ownership: Single proprietorship, partnership, cooperative, corporation.
- Source of capital: Commercial bank, production credit association, own, or other.
- Feeder Procurement (for feedlot)

| <u>Grade</u> | <u>Percent</u> | <u>Number</u> | <u>Source</u> | <u>Percent</u> | <u>No. of Purchases</u> | <u>Origin</u> |
|--------------|----------------|---------------|---------------|----------------|-------------------------|---------------|
| Fancy | _____ | _____ | Raised | _____ | _____ | _____ |
| Choice | _____ | _____ | Auction | _____ | _____ | _____ |
| Good | _____ | _____ | Order | _____ | _____ | _____ |
| Medium | _____ | _____ | Direct | _____ | _____ | _____ |

Number of cattle purchased by month

| | | | |
|-------------------------------|-----------|-----------|-----------|
| Jan _____ | Feb _____ | Mar _____ | Apr _____ |
| May _____ | Jun _____ | Jul _____ | Aug _____ |
| Sep _____ | Oct _____ | Nov _____ | Dec _____ |
| Total purchase for year _____ | | | |

10. Ownership of cattle fed.

Feedlot owner _____ Packer _____

Rancher _____ Other (Specify) _____

Speculator _____

Total Custom Fed (Number) _____ Percent _____

11. Number of fed cattle sold last year from your feedlot _____

12. Number of sales _____

13. Most common size lot sold _____

14. Terms of sale:

Live Weight _____ Weighing Conditions _____

Grade and Yield _____

| <u>Grade</u> | <u>Per- cent</u> | <u>Num- ber</u> | <u>Price</u> | <u>Sold at</u> | <u>Per- cent</u> | <u>Num- ber</u> | <u>Geographic Destination</u> |
|--------------|----------------------|---------------------|--------------|------------------|----------------------|---------------------|-----------------------------------|
| Prime | ___ | ___ | ___ | Feedlot | ___ | ___ | ___ |
| | | | | Packing Plant | ___ | ___ | ___ |
| Choice | ___ | ___ | ___ | | ___ | ___ | ___ |
| Good | ___ | ___ | ___ | Auction | ___ | ___ | ___ |
| | | | | Other (Spec.) | ___ | ___ | ___ |
| Medium | ___ | ___ | ___ | | ___ | ___ | ___ |

Selected costs for feedlot operation

1. Electricity _____

2. Veterinarian _____

3. Phone _____

4. Other _____

5. What is the going wage rate in this area? _____

6. Management and offices _____

7. Taxes, insurance, and interest _____

8. Equipment depreciation _____

9. Depreciation of other investments _____

10. Death Loss _____

11. Other (Specify) _____

Investment of Inventory

| | Initial Cost | Age | Remm. Life | Cap. Size | Begin. Value |
|---------------------------|-----------------|-----|---------------|--------------|-----------------|
| 1. Feed Yard | | | | | |
| Land | | | | | |
| Corrals & Manger | | | | | |
| Shed | | | | | |
| Water | | | | | |
| Total | | | | | |
| 2. Feed Storage | | | | | |
| Hay | | | | | |
| Grain | | | | | |
| Silage | | | | | |
| Total | | | | | |
| 3. Office & Scales | | | | | |
| Office | | | | | |
| Livestock Scales | | | | | |
| Truck Scales | | | | | |
| Total | | | | | |
| 4. Feed Proc. Equip. | | | | | |
| Hay Mill | | | | | |
| Grain Mill | | | | | |
| Mixers, Augers | | | | | |
| Proc. Feed Bin | | | | | |
| Other (Specify) | | | | | |
| Total | | | | | |
| 5. Feeding & Misc. Equip. | | | | | |
| Auto, feed truck | | | | | |
| Self-unloading wagon | | | | | |
| Pickup | | | | | |
| Truck | | | | | |
| Tractor & Scoop | | | | | |
| Cattle Squeeze | | | | | |
| Sprayer, Dipping Vat | | | | | |
| Other (Specify) | | | | | |
| Total | | | | | |
| TOTAL | | | | | |

Non-Feed Variable Costs for a Specific Pen of Cattle Fed.

1. Number of cattle in pen or lot (Specify pen or lot)? _____
2. What is the length of the feeding period? _____
3. Is this representative on a per head basis of all cattle fed? _____
4. Number of men involved? _____ Time spent per day? _____
5. Labor Required

| Kind of Labor | Manager | Hired | Operator | Family | Total | Total |
|----------------|-----------|-------|----------|--------|-------|-------|
| | Man Hours | | | | | Cost |
| Obtain Cattle | | | | | | |
| Preparing Feed | | | | | | |
| Feeding | | | | | | |
| Bedding | | | | | | |
| Check & Doctor | | | | | | |
| Records | | | | | | |
| Marketing | | | | | | |

6. Average gain of specific pen

| Class | No. | Av. IN Weight | Av. OUT Weight | Av. Days on Feed | Av. No. Lbs/Gain | Av. Gain Lbs/Day |
|------------------|-----|------------------|-------------------|---------------------|---------------------|---------------------|
| Steer Calves | | | | | | |
| Heifer Calves | | | | | | |
| Yearling Steers | | | | | | |
| Yearling Heifers | | | | | | |
| Cows | | | | | | |

7. Grade of Feeders

| Grade | Percent | Source | Percent | No. of Purchases | Origin |
|--------|---------|---------|---------|------------------|--------|
| Fancy | | Raised | | | |
| Choice | | Auction | | | |
| Good | | Order | | | |
| Medium | | Direct | | | |

RATION AND FEED COST

Daily Ration - Composition, Cost and Amount Consumed

| Kind | Starting | | Finish | | Market Price | Cost/lb. ¢ | Total Cost Daily Ration ¢ |
|------------|----------|--------|---------|--------|--------------|------------|---------------------------|
| | Percent | Pounds | Percent | Pounds | | | |
| Barley | | | | | | | |
| Wheat | | | | | | | |
| Milo | | | | | | | |
| Corn | | | | | | | |
| Beet Pulp | | | | | | | |
| Supplement | | | | | | | |
| Alfalfa | | | | | | | |
| Silage | | | | | | | |
| Straw | | | | | | | |
| Water | | | | | | | |
| Other | | | | | | | |

1. What about the future, do you plan to expand, remain constant, or decrease your operation? _____

Why? _____

2. How do you view the future of the cattle feeding industry?

3. Is feed supply in this area adequate for feeding more cattle?

4. What alternative uses are there for this feed?

5. Supply of feeder animals?

Appendix BFeedlot Survey - Lambs

Date _____ Name _____

Enumerator _____ Address _____ Phone _____

1. How many years have you fed lambs? _____
2. Typical number fed per year when you started feeding _____
3. What is the present capacity of your lot? _____
4. What was your capacity in 1968? _____
5. How many head did you feed last year? _____
6. Number of pens _____
7. Type of ownership--single proprietorship, partnership, cooperative, corporation.
8. Source of capital--commercial bank, production credit association, own, or other.
9. Feeder procurement (for feedlot):

| <u>Source</u> | <u>Percent</u> | (or) | <u>No. of lambs</u> | <u>Origin</u> |
|---------------|----------------|------|-------------------------|---------------|
| Raised | _____ | | _____ | _____ |
| Auction | _____ | | _____ | _____ |
| Order | _____ | | _____ | _____ |
| Direct | _____ | | _____ | _____ |

Number of lambs purchased by month:

Jan. _____ Feb. _____ Mar. _____ Apr. _____

May _____ June _____ July _____ Aug. _____

Sept. _____ Oct. _____ Nov. _____ Dec. _____

Total purchase for year _____

10. Ownership of lambs fed:

Feedlot owner _____ Packer _____

Rancher _____ Other (Specify) _____

Speculator _____

Total custom fed (number) _____ Percent _____

11. Number of fat lambs sold last year from your feedlot _____

12. Number of sales _____

13. Most common size lot sold _____

14. Terms of sale:

Live weight _____ Weighing Conditions _____

Grade and yield _____

| <u>Grade</u> | <u>Per- cent</u> | <u>Num- ber</u> | <u>Price</u> | <u>Sold at</u> | <u>Per- cent</u> | <u>Num- ber</u> | <u>Geographic Destination</u> |
|--------------|----------------------|---------------------|--------------|------------------|----------------------|---------------------|-----------------------------------|
| Prime | ___ | ___ | ___ | Feedlot | ___ | ___ | ___ |
| Choice | ___ | ___ | ___ | Packing Plant | ___ | ___ | ___ |
| Good | ___ | ___ | ___ | Auction | ___ | ___ | ___ |
| Medium | ___ | ___ | ___ | Other (Spec.) | ___ | ___ | ___ |

Selected costs for feedlot operation:

1. Electricity _____

2. Veterinarian _____

3. Phone _____

4. Fuel _____

5. What is the going wage rate in this area? _____

6. Management and offices _____

7. Taxes, insurance, and interest _____

8. Equipment depreciation _____

9. Depreciation of other investments _____

10. Death loss _____

11. Other (specify) _____

Investment of Inventory

| | Initial Cost | Age | Remm. Life | Cap. Size | Begin. Value |
|---------------------------|-----------------|-----|---------------|--------------|-----------------|
| 1. Feed Yard | | | | | |
| Land | | | | | |
| Corrals & Manger | | | | | |
| Shed | | | | | |
| Water | | | | | |
| Total | | | | | |
| 2. Feed Storage | | | | | |
| Hay | | | | | |
| Grain | | | | | |
| Silage | | | | | |
| Total | | | | | |
| 3. Office & Scales | | | | | |
| Office | | | | | |
| Livestock Scales | | | | | |
| Truck Scales | | | | | |
| Total | | | | | |
| 4. Feed Processing Equip. | | | | | |
| Hay Mill | | | | | |
| Grain Mill | | | | | |
| Mixers, Augers | | | | | |
| Proc. Feed Bin | | | | | |
| Other (Specify) | | | | | |
| Total | | | | | |
| 5. Feeding & Misc. Equip. | | | | | |
| Auto, feed truck | | | | | |
| Self-unloading wagon | | | | | |
| Pickup | | | | | |
| Truck | | | | | |
| Tractor & Scoop | | | | | |
| Sprayer, Dipping Vat | | | | | |
| Other (Specify) | | | | | |
| Total | | | | | |
| TOTAL | | | | | |

Non-Feed Variable Costs for a Specific Pen of Lambs Fed.

1. Number of lambs in pen or lot (Specify pen or lot)? _____
2. What is the length of the feeding period? _____
3. Is this representative on a per head basis of all lambs fed? _____
4. Number of men involved? _____ Time spent per day? _____
5. Labor required

| Kind of Labor | Man Hours | | | | | Total Cost |
|----------------|-----------|-------|----------|--------|-------|---------------|
| | Manager | Hired | Operator | Family | Total | |
| Obtain Lambs | | | | | | |
| Preparing Feed | | | | | | |
| Feeding | | | | | | |
| Bedding | | | | | | |
| Check & Doctor | | | | | | |
| Records | | | | | | |
| Marketing | | | | | | |

6. Average gain of specific pen

| Class | No. | Av. IN Weight | Av. OUT Weight | Av. Days on Feed | Av. No. Lbs/Gain | Av. Gain Lbs/Day |
|-------|-----|------------------|-------------------|---------------------|---------------------|---------------------|
| Lambs | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

RATION AND FEED COST

Daily Ration - Composition, Cost and Amount Consumed

| Kind | Starting | | Finish | | Mar- ket Price | Cost/ lb. ¢ | Total Cost Daily Ra- tion ¢ |
|------------------|----------|--------|---------|--------|----------------------|----------------|-----------------------------------|
| | Percent | Pounds | Percent | Pounds | | | |
| Barley | | | | | | | |
| Wheat | | | | | | | |
| Oats | | | | | | | |
| Corn Silage | | | | | | | |
| Wet Beet Pulp | | | | | | | |
| Dry Beet Pulp | | | | | | | |
| Alfalfa | | | | | | | |
| Molasses | | | | | | | |
| Protein Supp. | | | | | | | |
| Other | | | | | | | |

| | Starting | Finishing |
|--------------------------|----------|-----------|
| Pounds fed/head/day | | |
| Days fed | | |
| Cost of ration per pound | | |
| Cost per pound of gain | | |

What feeds are purchased

| Kind | Amount | Price | Location |
|------|--------|-------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

1. What about the future? Do you plan to expand, remain constant, or decrease your operation? Why?

2. How do you view the future of the lamb feeding industry?

3. Is feed supply in this area adequate for feeding more lambs?

4. What alternative uses are there for this feed?

5. What is your supply of feeder lambs?

VITA

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Master of Science

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