

AN ECONOMIC ANALYSIS OF FARM ORGANIZATION
IN THE KLATING AREA, BAKER COUNTY, OREGON, 1939

by

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INTRODUCTION

Farm management studies, though dealing with many phases of farming, usually can be classified into two types of research: Those dealing with the cost of producing some farm product, and those analysing the organization and income of the entire farm. This thesis has been directed along the lines of the second phase just mentioned.

Cost studies are very important, but in some respects they can be criticized. They take into account only a segment of the farm business, usually disregarding whether or not the entire farm business meets cost of production and leaves the farm family a liveable income. In other words if a farm is efficient in producing one product it does not follow that it is a successful farm. Farming is usually much more complicated than this. Understanding the organization and operation of a farm involves a detailed study of interrelationships existing between the different farm enterprises. Farm enterprises, in turn, are affected by various interrelationships depending upon soil, climate, topography, the use of labor and equipment, the methods of production and sale of farm products and many other conditioning or modifying factors. It can readily be seen that an accurate appraisal of all these factors for large numbers of farms would be even more difficult. The farm management research worker, when studying either

a segment or the entire farm organization, should keep some of these complicating problems in mind.

Objectives

The objectives of this study of the economic aspects of ranch and farm organization in the Keating Area were:

1. To describe the present land use in its relationship to farm and ranch organization.
2. To determine financial returns by individual farms and by type of farming groups.
3. To analyze the factors responsible for variations in income.
4. To assemble economic information to facilitate planning a land use and soil conservation program.

Source of Data

The basic data in this thesis were obtained from detailed farm organization records collected by the Oregon Agricultural Experiment Station in cooperation with the Soil Conservation Service. These records were procured from 61 farm and ranch operators in the Keating Area of Baker County, Oregon by means of the survey method. The information represents the fiscal year June 1, 1938 to May 31, 1939. The 61 records represent about 80 per cent of the farm operators in the Keating Area. The remaining operators were contacted, but complete records were not obtained. The incomplete records represent the

operators who had lived on their farms for less than a year and those whose records were discarded because of incompleteness of data.

Method and Procedure

In analyzing the information obtained in the field, it has been assumed, for comparative purposes, that all operators are free of debt, that all rented land is owned, and all taxes are paid. As a result, interest and principal payments on mortgages and rent payments have not been considered as expenses. Taxes on rented land, however, are considered as expenses of the farm operator. This procedure places each farm and ranch on a fairly comparable basis.

For the most part, cross tabulation and group averages have been used in presenting the data included in this thesis. On several occasions, however, gross linear correlation and multiple linear correlation were used to check the cross tabulations and also to determine results that could not have been obtained by cross tabulation.^{/1}

^{/1} The use of correlation analysis naturally brings up the question of this method's reliability and usefulness in research work of this type.

It is the author's opinion that correlation analysis does have a place in farm management research, but its use is somewhat limited by the nature of farm management data and the knowledge and ability of the individual research worker. Its chief advantages lies in the fact that it states the relationships in precise terms. It also

As previously stated it is the author's opinion that there is a definite place in farm management research for correlation analysis when properly applied. The individual farm management research worker using this type of analysis, however should have a sound background in the subject matter of the problem at hand as well as a practical working knowledge of statistics.

can be used to estimate the value of the dependent variable at intermediate points which is not feasible by cross tabulation.

Correlation analysis also has certain disadvantages. Stanley W. Warren points out innumerable instances where this method has been employed and unreliable results obtained. In most of the cases he describes, the misuse of this method is due to the selection of the variables. In this regard, he states, "Independent variables which have a causal relationship to one another should not be included in the same multiple correlation problem, whether it be linear, curvilinear, or joint. In multiple linear and curvilinear correlation analysis the factors should be chosen so that the effect on the dependent variable due to a change in one independent variable does not depend on the magnitude of another independent variable." ("Multiple Correlation Analysis as applied to Farm Management Research," Cornell University Agricultural Experiment Station Memoir 141, May 1932.) In farm management data very few variables can be found which do not fall within these limitations. Warren reports that he has "found only two cases in farm management work.....in which multiple or curvilinear correlation seemed to be correctly used." In view of this fact it would appear that farm management data is not so well adapted as data from more precise sciences, such as biology, physics, et cetera.

DESCRIPTION OF THE AREA

Location

The area in which this study was made is located in the Blue Mountain Region in those portions of Baker and Union Counties which form the Lower Powder River Valley. The part lying in Union County includes no farming land and is in the Whitman National Forest.

The Keating Area is, for the most part, located on the valley floor of Powder River and extends from the Powder River Canyon and the dry-farmed Sparta Area on the east to Union County on the northwest, a distance of approximately 15 miles. The farming land is largely irrigated and is used chiefly for hay production and as headquarters for the surrounding range areas.

Topography

The southern part of the area consists of rolling sagebrush hills with occasional buttes rising to 4,000 feet above sea level. The northern part is rugged and mountainous with some elevations over 9,000 feet above sea level.

The valley floor of the Powder River is relatively flat and ranges in elevation from 2,500 to 2,800 feet. The main valley varies in width from one to about three miles. The valleys formed by the tributary streams are much narrower, but are sufficiently flat to permit farming.

Soils

The valley soils of the Keating Area are of alluvial origin and vary in texture from sandy loams to clay loams. Considerable alkali is present in these soils and unless better drainage facilities are made available a serious alkali problem may arise.

The soils on the cultivated but non-irrigated hill or bench land adjacent to the main valley are also alluvial but the slopes are steeper, and in general, the soils are lighter in texture.

Climate

No climatic data are available for the specific area in which this study was made, but information from the United States Weather Bureau at Baker, approximately 15 miles southeast of the Lower Powder River Valley, should be representative of the area under consideration.

The region is semi-arid with total annual precipitation averaging approximately 13 inches. Over a 48-year period, 33 per cent of the precipitation occurred during winter months, 28 per cent during spring, 18 per cent during summer, and 21 per cent during fall months. Most of the winter precipitation is in the form of snow.

The region is subject to considerable extremes in temperature with a long-time average difference of 41 degrees Fahrenheit between the coldest and warmest months. The mean annual temperature (48-year average) is 45.3 degrees.

Summers are characterized by many cloudless, sunny days with relatively high temperatures all of which are conducive to quick maturity of crops. Relatively late spring frosts limit the choice of crops. In 1938 the latest killing frost occurred May 17, and the earliest, October 13.

Economic Development of the Area

Historical Background. The early agricultural development of the area is closely associated with gold mining. Rich gold strikes were made in the adjoining Sparta Area in 1863 and soon Sparta, or Kooster as it was known then, became a typical western gold-rush town.

Food supplies for the miners were transported from Umatilla Landing on the Columbia River by pack-train, so it was natural that local agriculture should be developed to supply this market. By 1868 agriculture had become firmly established with considerable irrigation. The cattle and sheep industries had also started.

By 1890 many of the mines had closed down but the construction of the Union Pacific Railway opened up many new and permanent markets for the agricultural products.

During the early development of the area, irrigation water was plentiful, but as more land came under cultivation, the water supply of Powder River and its tributaries was all utilized and private reservoirs and canals were built. The Thief Valley storage dam was constructed on the Powder River by the United States Bureau of Reclamation in 1932. The reservoir has a capacity of 17,400-acre feet.

This reservoir now supplies irrigation water to the greater portion of the cultivated land in the Valley.

Principal Towns and Communities. There are no incorporated towns located within the area but there are trading centers with postoffices at Keating and at Medical Springs.

Baker is the chief shipping point and shopping center for the area. It is a city of slightly less than 9,000 population and is located 15 miles from Keating and 20 from Medical Springs.

Transportation. The area is served by Oregon State Highway Number 86 which begins at Baker, skirts the edge of the Keating Area and then runs east to Halfway. Several good county roads branch off from the highway and serve the Valley farmers.

The Union Pacific Railroad has one main line and one branch line serving the area. The main line operates through Baker. Here many of the cattle and sheep from the area are shipped to Pacific Coast and midwest markets. The branch line of the Union Pacific operates from Huntington in Southern Baker County to Robinette on the Snake River near the mouth of Powder River. Some of the operators find it closer to bring their livestock from summer and fall range to this shipping point than to Baker.

The Agriculture. The agriculture of the Keating Area is essentially based on livestock with beef cattle and range sheep predominating. Dairy cattle, hogs, and farm sheep, however, are common on most farms. The range livestock enterprises are dependent upon winter feed produced on irrigated farmland and upon spring, summer, and fall grazing

on private and publicly owned rangeland and the national forest. The cropland is almost entirely devoted to hay, grain, and pasture to be consumed by local livestock.

FARM ORGANIZATION

In order to discover and understand the problems of an agricultural area, it is essential to have a basic knowledge of the types of farming, size of farms, the land use, crops grown, and the livestock raised in the particular area. Types of farming are usually associated with a long-time program which the farmers have found to be best suited to the area and to any peculiarities of their own farms. The size of farming unit is largely dependent upon the financial ability of the operator to acquire additional land and capital and by the type of farming pursued. The crops grown are usually limited to the kinds best suited to the area and have been selected as a result of many years of crop experience. The amount, quality, and proximity of grazing land; available livestock marketing facilities; kind of crops grown; and size of the farming unit have a tendency to determine the kinds of livestock produced.

Types of Farming

The largest portion of the cropland in the Keating Area is devoted to alfalfa hay and small grains, yet certain characteristics have developed on groups of farms which distinguish the organization of these farms from the general farm organization of the area as a

whole. The alfalfa and small grains are predominant in acreage on most farms, but their disposal differs a great deal between farms. Some farmers raise these crops for direct sale, others feed their crops to one kind of livestock, while still others feed several kinds.

Farms were classified according to the major source of income.

Five classes or types were found.

<u>Type of farming</u>	<u>Number of farms</u>
Beef cattle	16
Range sheep	6
Dairy	14
General livestock	17
Crop	<u>8</u>
TOTAL	61

Size of Farms

The size of the farming unit may be measured in several ways.

Table 1 shows the size of the farms in the area and the range between the smallest and the largest as measured by total productive man work units, man equivalent, acres in crop, total investment, and animal units.

Land Use

The proportion of the total acres in each class of land will vary a great deal on the individual farm, depending upon the type of farming, size of the farming unit, efficiency of operation, and the financial ability of the operator to make the adjustments he feels are necessary to achieve the correct combination of land classes.

TABLE 1. RANGES IN SIZE OF FARMS AND AVERAGE SIZE OF FARM
BY DIFFERENT MEASURES OF SIZE

Keating Area, Baker County, Oregon, 1939

Measure	No. of farms	Range		Average
		Low	High	
Total productive man work units/1	61	100	4,200	576.5
Man equivalent/1	61	1	16	2.4
Acres in crop	61	2	1,260	162.8
Total investment/1	61	\$1,000	\$230,000	\$28,077.0
Total animal units/1	61	6	1,200	128.5

/1 See pages 110 and 113 appendix for explanation of terms.

Rangeland, even excluding public domain, is by far the largest single class of land, comprising 83 per cent of the total acres operated (Table 37, appendix). Cropland is next in importance, accounting for 11 per cent of the total acres. Of the total cropland, 84 per cent is devoted to crops, 4 per cent is idle or fallow, and the remaining 12 per cent is cropland pasture.

Eight hundred and seven acres, or 7 per cent of the cropland, is without any form of irrigation while the remaining 93 per cent is irrigated either by surface irrigation or by sub-irrigation. Twenty-four of the 61 farms have some cropland that is not irrigated, but the total acres of dry-farmed land is relatively small when compared with the total acreage of irrigated land.

The acreage for rangeland does not include publicly owned grazing land used under a Grazing Service allotment or a Forest Service permit. In addition to operating private grazing land, 29 farms had allotments for cattle, nine had allotments for sheep, and seven had Forest Service permits for both cattle and sheep.

Cropping System

Variation by Types of Farming. The acreage of the different crops varies considerably between types of farming (Table 2).

Hay is the most important crop in respect to acreage on all five farming types. The percentage of cropped acres devoted to hay varies from 80 per cent on the cattle and sheep ranches to 48 per cent on the general livestock farms with an average of 74 per cent for all

TABLE 2. CROP ACREAGES PER FARM BY TYPES OF FARMING

Keating Area, Baker County, Oregon, 1939

	Acres per farm by type of farming					All Crop farms Acres
	Beef cattle	Range sheep	Dairy	General livestock		
<u>Hay:</u>						
Alfalfa hay	112.7	283.0	43.7	29.3	52.8	82.5
Wild hay	80.4	-	7.9	1.7	8.2	24.5
Other hay	16.1	70.3	1.3	3.7	8.9	13.1
TOTAL HAY	209.2	353.3	52.9	34.7	66.9	120.1
<u>Grains:</u>						
Barley	14.9	16.0	4.9	15.3	3.8	11.4
Oats	12.1	25.2	7.2	7.8	5.7	10.2
Wheat	8.8	3.3	5.5	8.5	8.6	7.4
Other grains	3.7	-	3.0	2.4	4.7	3.1
TOTAL GRAIN	39.5	44.5	21.0	34.0	22.8	32.1
<u>Miscellaneous:</u>						
New seedings	10.7	43.7	2.9	2.2	1.8	8.6
Seed	2.4	-	.9	.1	2.2	1.2
Garden	.9	.8	.8	.4	.6	.7
Other	.2	-	.1	.2	-	.1
TOTAL MISCELLANEOUS	14.2	44.5	4.7	2.9	4.6	10.6
TOTAL CROP ACRES	262.9	442.3	78.6	71.6	94.3	162.8

farms. The dairy and crop farms have 67 and 71 per cent, respectively, of their crop acres in hay, so it is apparent that with the exception of the general livestock farms, hay is the major crop. (Table 38, appendix)

Dairy, general livestock, and crop farms have a considerably higher percentage of their crop acres in grain than either the beef cattle or sheep ranches although their total acreage is smaller. This is to be expected since relatively more grain is required for dairy cattle and general livestock than for range cattle or sheep.

Crop Yields. Crop yields may materially affect the income of the farm. The cost of producing the total crop usually remains relatively fixed while the yield may vary considerably. Water charges, taxes, interest on investment, and pre-harvest labor do not change with variations in yield, while harvest labor and certain machine costs vary with changes in the yield, but these changes in expenses are usually comparatively less than the accompanying changes in yield.

Table 3 gives the 1938 yield, the "usual" yield, and the per cent that the 1938 yield is of the "usual." It is entirely possible that the "usual" yield has been slightly overestimated by the operators. The widest difference between the 1938 yield and the "usual" occurred in the case of "two-cutting" alfalfa hay. The 1938 yield for this crop was 25 per cent less than "usual."

Factors Affecting Crop Yields. In this area climatic conditions, soil fertility, drainage, cropping practices, insect pests, and noxious weeds affect yields.

TABLE 3. 1938 AND "USUAL" CROP YIELDS

Keating Area, Baker County, Oregon, 1939

Crop	Unit	1938 yield	"Usual" yield	Per cent 1938 yields are of "Usual" yields
Alfalfa hay (1 cutting)	Tons	1.5	1.7	88.8
Alfalfa hay (2 cuttings)	Tons	2.3	3.1	74.7
Alfalfa hay (3 cuttings)	Tons	3.7	4.0	91.6
Wild hay	Tons	1.4	1.5	96.1
Wheat	Bu.	29.1	31.9	91.4
Barley	Bu.	46.9	52.2	89.8
Oats	Bu.	69.2	66.6	103.5
ALL CROPS	-	-	-	85.1

1. Climatic Conditions. The freezing out of alfalfa stands, wind damage to grains, and rains while the hay is in the shock are about the only climatic conditions which affect yields. Precipitation in this immediate area seems to have little bearing on the water supply under the Thief Valley Irrigation Project. However, several of the operators who have private water sources reported a shortage.

2. Soil Fertility. No data are available at the present time concerning the fertility of soils in the area. However, a comparison of this area's yields with the yields of other irrigated areas similar in climate, topography, and crops grown gives an indication of the fertility of the soil, assuming that other factors affecting yields remain constant. The yields of the Keating Area compare quite favorably with those of the other nearby regions of similar climate and topography (Table 4). These figures suggest that the Keating Area's soils are as fertile as those found in the irrigated districts of Malheur County.

3. Drainage. According to the operators, drainage is becoming a problem on several of the farms in the area. The results of inadequate drainage are showing up in the form of wet and marshy land and also in an increasing alkali content of the soil. Although the acreage which has been retired from cultivation is relatively small, a future, increasingly important problem does exist.

4. Insect Pests. In many irrigated regions of Oregon that raise alfalfa, the alfalfa weevil is quite prevalent. At the present time this is especially true of the Keating Area. According to the farmers of this area, the weevil has reduced alfalfa hay yields to such an

TABLE 4. 1938 CROP YIELDS ON FOUR IRRIGATED
DISTRICTS IN EASTERN OREGON

Crop	Unit	Reating area	Yield per acre		
			Ontario- Nyssa/ ¹ (older districts)	Vale/ ¹ (new districts)	Jordan Valley/ ² (new districts)
Alfalfa hay (3 cuttings)	Tons	3.7	4.4	3.4	2.8
Wheat	Bu.	29.1	36.6	25.6	25.0
Barley	Bu.	46.9	41.8	28.8	25.9
Oats	Bu.	69.2	57.3	35.8	32.1

¹ Heisig, Carl P., and Clawson, Marion, "New Farms on New Land",
Bureau of Agricultural Economics, 1938, Page 100.

² Oregon State Engineer's Report, 1938.

extent that several of the operators have replaced or supplemented their alfalfa with red clover which is not affected by the weevil. In some fields the weevil larvae have made such a vigorous attack on the alfalfa, especially the first cutting, that the growing alfalfa takes on a ragged, grey appearance.

The operators of this area reported that the 1938 yield of alfalfa hay was 22 per cent lower than the yield usually received, while the yield for crops other than alfalfa was 96 per cent of normal. This difference between the 1938 yield of alfalfa and the usual yield suggests that the 1938 yield may have been materially affected by the weevil.

5. Alkali. The alkali problem caused by poor drainage is quite prevalent in most valleys which have been under irrigation for several years. The capacity of a natural drainage system becomes greatly taxed when arid land is reclaimed and brought under irrigation. Because of the inadequate drainage system and relatively impervious subsoil, the water table rises until it is near the soil's surface. The alkali salts that are held in solution cannot escape and tend to accumulate near the soil's surface after the water holding them in solution has evaporated. The extent to which alkali affects crop yields cannot be determined because of the varying alkali salt content of the soil. Nevertheless, the presence of any substantial quantity of alkali salts will limit the choice of crops that may be grown, and as the quantity of salts increases the yields of these crops tend to decrease.

6. Noxious Weeds. As a rule noxious weeds are more commonly found in irrigated regions than in dry farming areas, and a higher degree of infestation usually occurs in the former. This is true because under irrigated conditions summer fallow which would check or destroy weeds is not a common practice; weed seeds are transported by irrigation water; and the actual irrigation conditions seem conducive to the growth of weeds. Trailing of range livestock from one area to another also tends to scatter the weeds. Whitetop, morning glory, Russian knapweed, Canadian thistle, and quackgrass are found. Whitetop is a menace and occurs in varying degrees of infestation on most of the farms. According to an agronomic survey made by the Soil Conservation Service in 1941, the infestation of the 7,461 acres surveyed is as follows: Serious (solid infestation), 1,015 acres; light, 5,485 acres; and 961 acres not infested. The operators report that it is spreading rapidly, but at present has caused no appreciable change in yields. The extent of the infestation of the other weeds is insignificant at the present and the weeds are confined to relatively few farms.

Crop Marketing. The area is relatively self-sufficing with regard to feed crops. Only 70 tons of grain were purchased and 42 tons of grain sold outside the area. One operator purchased and one operator sold his hay outside the area. Apparently the balance between feed crops produced and the number of livestock on the 61 farms is relatively close. On the other hand, over 34,000 pounds of the alfalfa seed produced was sold outside the area. Most of this seed was sold in Baker, but some was sold in La Grande and Ontario.

The Livestock Program

Kinds and Numbers of Livestock. In this area the animal units of livestock per farm vary from 6 to over 1,200 animal units. The average is 128.

Range cattle and range sheep are by far the most important livestock in the area and account for about 75 per cent of the total animal units.

The sheep ranches have the largest number of animal units and are followed by the beef cattle ranches, dairy farms, general livestock farms, and crop farms in respective order (Table 5).

Beef cattle occur on all the types of farming, but are most important on the beef cattle and sheep ranches. Range sheep are confined to the sheep ranches with the exception of one instance where the operator of a beef cattle ranch had range sheep during a short period of the fiscal year. Dairy cattle occur on all farms, and though they account for only 10 per cent of the total animal units of livestock in the area, they are the most important class of livestock on the 39 farms comprising the dairy, general livestock, and crop farms.

The table indicates that range cattle and range sheep are the most important classes of livestock insofar as total animal units are concerned, but dairy cattle are the most important on the largest number of farms.

Beef Cattle Practices

Grazing. The grazing season for beef cattle is divided into three distinct periods; spring, summer, and fall. Spring grazing lasts from

TABLE 5. ANIMAL UNITS PER FARM BY TYPES OF FARMING

Keating Area, Baker County, Oregon, 1939

Kind of livestock	Type of farming					All farms
	Beef cattle	Sheep	Dairy	General livestock	Crop	
	A.U.	A.U.	A.U.	A.U.	A.U.	A.U.
Beef cattle	166.2	94.4	2.1	5.0	2.7	55.1
Range sheep	13.6	376.3	-	-	-	40.6
Dairy cattle	10.1	10.2	22.1	12.3	6.8	13.1
Workstock	15.9	23.2	7.5	5.5	5.8	10.4
Miscellaneous ^{/1}	13.6	13.2	7.5	7.7	4.0	9.3
ALL LIVESTOCK	219.4	517.3	39.2	30.5	19.3	128.5

^{/1} Includes horses not worked, hogs, farm sheep, and poultry.

early April until early June and in all cases consists of sagebrush range, either publicly or privately owned, or both.

Several types of summer grazing are available. Eight operators grazed their cattle on the national forest, six used sagebrush range and private timberland, and two used farm pasture. Those operators using the national forest moved their cattle on in early June and took them off in late October.

Most of the operators use a combination of private and publicly owned rangeland for fall grazing, but several operators have enough farm pasture to carry the cattle until winter feeding begins.

Winter feeding. Winter feeding usually begins in early December and lasts until the early part of April. The operators reported that the cattle are fed about one and a half tons of hay per animal unit or about 750 pounds per month for the four months of winter feeding (Table 42, appendix). Some wild hay and clover hay are fed, but alfalfa constitutes the largest percentage.

Breeding. About one bull for every 20 cows is used. The larger operators keep the bulls well scattered among the cows. Over 70 per cent of the bulls are Herefords, the remainder are Angus and Short-horn.

Production and sale of beef cattle. The per cent calf crop is the number of calves weaned as a per cent of the number of cows at breeding time. The calf crop is for 1938 and not 1939 since the fiscal year covered by the study ended on May 31, 1939 and all the 1939 calves had not been born by that time.

TABLE 6. BEEF CATTLE WEIGHTS AND AVERAGE FARM PRICES

RECEIVED FOR BEEF CATTLE SOLD

Keating Area, Baker County, Oregon, 1939

Class	Weight per head	Prices received in 1938	
		Per hundredweight	Per head/1
Cows	1,041	\$5.40	\$54
Heifers 2's	729	6.70	45
Heifers 1's	638	5.20	27
Bulls	-	-	65
Steers 2's	982	7.20	68
Steers 1's	645	5.50	34

△1 The average price per hundredweight times average weight per head will not give the price per head, since the price per head includes beef cattle whose weights are not known.

The percentage calf crop varies from 50 per cent to 100 per cent with an average of 72 per cent. The data reported by the operators indicate that they "usually" received an average calf crop of 77 per cent. The average number of cows per beef cattle ranch is about 89 head. Over one-third the ranches have less than 50 head. This small number permits a closer watch over the cows during breeding and calving. These practices have a tendency to increase the calf crop on the smaller operating units.

About half the beef cattle are sold grass fat and are shipped in late summer or early fall. The others are grain fed on home ranches. The largest percentage of the cattle are shipped to Portland. Local and midwest markets account for the remainder. The weights of the cattle sold and the average farm prices received per pound for the different classes of cattle are given in Table 6. The operators reported an average farm price of \$7.20 and \$5.50 respectively for two-year old and yearling steers. This compares with an average of \$6.73 for the farm price of fat steers in Baker County during the ten year period 1926-35./1

Range Sheep Practices

Two different methods of lambing are practiced in Eastern Oregon; early lambing and late lambing. Early lambing means lambing while the ewes are on hay during February and March. The lambs are sold in

/1 Oregon Station Circular of Information No. 161.

July and August. Late lambing means lambing in April when the ewes are on the spring range. The lambs are marketed in the fall.

Those operators who practice early lambing must have heavier lambs and a higher percentage lamb crop in order to offset the additional expense entailed by sheds and heavier feeding.

Conditions of the Lower Powder River Area are well adapted to early lambing and the six sheep operators included in this study follow that practice. There appears to be plenty of good hay at a reasonable price for winter feeding, and the grazing is good enough to permit fat lambs to be marketed in late July and early August.

Grazing. The grazing period for sheep is similar to that of cattle. Spring grazing lasts from about the first of April to the first part of June, and consists of grazing on either privately or publicly owned sagebrush range land, or both. Summer grazing extends from June to the middle of September, and is located on the Whitman National Forest. Fall grazing lasts from the time the sheep are moved off the forest until winter feeding begins. During this last period, sheep are grazed on sagebrush rangeland, crop aftermath, or irrigated pasture.

Winter feeding. Winter feeding usually begins near the first of December and lasts until about April first, depending on the weather. During this period the sheep are fed about 600 pounds of alfalfa hay per head or about five pounds per day.

Replacements. Sometime during the fall adjustments are made in the number of breeding ewes for the ensuing year. At this time, ewes, which on account of age or other defects would not be profitable to

keep for another year, are culled out and sold. The method of replacement differs between operators; two operators made no replacements during the year of the study; two made replacements with their own ewe lambs; one purchased ewe lambs; and the other operator purchased yearling ewes. The average addition to ewes made in the fall of 1938 totals 24.9 per cent of the breeding ewes. Seven and three-tenths per cent of replacements occurred because of death loss and 12.4 per cent occurred as a result of culling aged and barren ewes. The remaining 5.2 per cent addition represents an increase in the number of ewes over the number the previous year.

Breeding. After adjustments in the number of ewes have been made, the bucks are turned in with the ewes at the rate of about one buck to 50 ewes. They remain with the ewes for one or two months. The bucks are usually of the Hampshire type.

Lambing. Weather conditions at lambing time are usually quite severe, and the use of heated lambing sheds is an accepted practice. After the lambs are dropped the ewes and lambs are taken from the lambing shed to outside shelters where they remain until the lambs will stay with the ewes in larger pens or corrals.

Shearing. In the latter part of June, the ewes and lambs are trailed from spring range to shearing corrals where the ewes are shorn and the ewes and lambs counted. The shearing is contracted on the head basis to professional shearers. During 1939 the shearing rate averaged about 18 cents per head.

Production and sale. The production of wool per ewe on the different ranches ranged from 8.8 pounds to 10.7 pounds. The average for all ranches is 10.1 pounds. The average for the state during the same period is 8.9 pounds.

The average price received by the six operators in this study for the 1939 clip was 20.4 cents. Over the 10-year period 1926-35 the farm price of wool in Baker County averaged 22.9 cents per pound^{/1}. The wool is usually sold during the summer, either through a wool pool or through private concerns.

The average lamb crop in this study is computed on the number of lambs at shearing time and the number of ewes at breeding time. The 1939 lamb crop per ranch varied from 93 per cent to 126 per cent with an average for all sheep ranches of 113 per cent. The operators reported that they usually received a lamb crop which averaged 112 per cent, so there appears to be very little difference between the 1939 and "usual" lamb crops. The lamb crop is based on the lamb count at shearing time in May and not the number of lambs at market time in July or August. It is evident therefore, that the lamb crop would have been lower if computed when the lambs were marketed, because of the death loss of lambs between shearing and marketing.

Lambs are marketed as fat lambs during the latter part of July and early August. Those to be sold are cut out of the ewes while on the national forest and are either trailed or trucked to the railroad

^{/1} Oregon Station Circular of Information No. 161.

shipping point. The lambs are then consigned to mid-western markets such as Denver, Omaha, Kansas City, and Chicago.

The weight of lambs sold from the different ranches varied from 78 pounds to 87 pounds. The average weight for all lambs sold in 1938 was 82 pounds. This is almost identical with the weight which the operators indicated as "usual".

The average farm price received for lambs sold during the summer of 1938 was \$6.83 per hundredweight or \$5.60 per head. The 10-year average farm price (1926-35) received for fat lambs in Baker County was \$7.57 per hundredweight.^{/1}

Dairy Farm Practices

The dairy cattle are for the most part a mixture of beef and dairy stock. This mixture results from the common practice of using beef bulls on dairy cows. The mixed breeding undoubtedly contributes to the area's low butterfat production.

The dairy cows are pastured during the spring, summer, and fall months on irrigated pasture, or on rangeland if no irrigated pasture is available. On the average, each cow received from two to two and a quarter tons of hay during the year.

Butterfat production per cow ranged from 340 pounds to less than 100 pounds, with an average for the study of 204 pounds. The state average for 1939 is approximately 236 pounds. Of the total butterfat

^{/1} Oregon Station Circular of Information No. 161.

produced, 68 per cent was sold, 17 per cent was used in the home, and 15 per cent was fed to farm livestock. The amount of butterfat, in the form of whole milk fed to calves, averaged 32 pounds per calf, or when measured in terms of value about \$7.60 per calf.

The butterfat is sold in the form of churning cream and is picked up at the farm by the creamery's truck and delivered to Baker. The average farm price received by the farmer for butterfat averaged 24 cents per pound.

Miscellaneous Farm Livestock Practices

Income from poultry, farm sheep, and hogs is important to many of the smaller operators.

1. Poultry. The poultry enterprises consist entirely of farm flocks. None of these flocks have more than 200 hens and average about 50. The average production amounted to 9.8 dozen or 118 eggs per hen. The eggs sold brought an average price of 21 cents per dozen.

2. Farm Sheep. Farm sheep consist of ewes and lambs kept on the farm during the entire year. Most of the flocks have about 50 ewes. Several operators have no ewes, but obtain "orphan" or "bummer" lambs at no cost from range sheep operators.

The weight per fleece and the per cent lamb crop for the ewes in the farm flocks were lower than for range ewes. The fleece weight averaged 8.7 pounds and the lamb crop, based on lambs on hand June 1, 1939, averaged 97 per cent. The operators indicated that their "usual" lamb crop was 100 per cent.

The farm lambs sold were heavier than the range lambs. On the average they weighed 86.6 pounds and brought a farm price of 6.9 cents. The operators reported that their lambs "usually" weighed 84.4 pounds when sold.

5. Hogs. The production of hogs is important on many of the farms and much of the grain, especially barley, is marketed through hogs.

Approximately 60 per cent of the sows farrow in the spring and the remainder farrow in the fall. The spring litters averaged 6.4 pigs saved per litter while the fall litters averaged 6.8 pigs. The average number of pigs saved per litter for both spring and fall was 6.6 which is exactly the 10-year state average for Oregon.

Most of the hogs are sold in Baker, and then shipped to Portland. The fat hogs sold averaged 196 pounds per head and brought an average of \$7.37 per hundredweight.

DISTRIBUTION OF FARM INVESTMENT

There is a wide variation in total farm investment between range livestock ranches and other types of farming (Table 7). The total capital invested in sheep ranches is almost twice greater than the capital invested in cattle ranches, and cattle ranches in turn are over four times larger by investment than dairy, general livestock, and crop farms.

TABLE 7. DISTRIBUTION OF TOTAL FARM INVESTMENT BY TYPES OF FARMING /1

Keating Area, Baker County, Oregon, 1939

Item	Type of farming									
	Beef cattle		Sheep		Dairy		General livestock		Crop	
	Per		Per		Per		Per		Per	
	Average	cent	Average	cent	Average	cent	Average	cent	Average	cent
Land	\$27,757	59.9	\$43,044	53.9	\$ 6,025	56.5	\$ 6,149	59.7	\$ 7,731	70.2
Livestock	11,725	25.3	27,227	29.9	1,728	16.2	1,420	13.8	903	8.2
Buildings	4,217	9.1	7,242	7.9	1,846	17.3	1,679	16.3	1,157	10.5
Machinery & equipment	2,124	4.6	4,217	4.6	919	8.6	947	9.2	1,107	10.0
Miscellaneous	477	1.1	3,259	3.7	147	1.4	101	1.0	124	1.1
TOTAL FARM INVESTMENT	\$46,300	100.0	\$90,989	100.0	\$10,665	100.0	\$10,296	100.0	\$11,022	100.0

/1 As of June 1, 1938.

Land

Land represents 58 per cent of the total farm investment. By types of farming, the investment in land varied from 54 per cent on sheep ranches to 70 per cent on crop farms. All livestock farms had relatively less of their total farm capital invested in land than did the eight crop farms. It should be noted that although the sheep and cattle ranches had a smaller proportion of their total investment in land than the crop farms, the total investment in land was much greater--the sheep ranches' investment in land being seven times larger and the cattle ranches' four times larger than the crop farms.

Livestock

Livestock represents the second largest item included in total farm investment. It varies from 8 per cent on crop farms to 30 per cent on sheep ranches. The percentage investment in livestock on sheep and cattle ranches may be considerably lower than on similar types of ranching in other parts of the country. However, it must be remembered that the ranch outfits in this area winter feed their livestock for a period of four months, and practice shed lambing. These methods of handling livestock entail a considerably higher investment in land, buildings, and equipment (therefore a lower percentage investment in livestock) than would be necessary on outfits depending on winter range, with small amounts of hay and grain being fed.

Buildings

The sheep and cattle ranches had a much greater investment in buildings, but when expressed as a percentage of the total ranch investment this item was smaller than for any of the other three farming types. This condition is ordinarily expected on large farms, because of the operator's tendency to have as much of the total capital as possible invested in the direct productive agents, land and livestock. The per cent investment in buildings varied from 8 per cent on sheep ranches to 17 per cent on dairy farms, with an average of 10 per cent for all farms.

Machinery and Equipment

Farm machinery and equipment consisting of non-power and power equipment; tractors, combines, farm trucks, and the farm share of the automobile, accounted for 6 per cent of the total capital investment for all farms. By types of farming the per cent of total investment ranged from 4 per cent on sheep ranches to 10 per cent on crop farms. The sheep ranches had the largest investment while dairy farms had the smallest. For the most part, the relatively large investment in machinery and equipment on sheep ranches results from these outfits having so many more acres in crop than the other types of farming. Also they have a considerable investment in camp and pack equipment which usually does not occur on the other types of farming.

FINANCIAL SUMMARY

Farm Receipts

The receipts on the sheep and cattle ranches were much larger than on the other types of farms (Table 8 and Tables 39 and 40, appendix). Of the total \$328,624 cash receipts for 61 farms, \$276,154 or 84 per cent is derived from the sale of livestock and livestock products, 10 per cent is from the sale of crops, and 6 per cent is from miscellaneous sources. Agricultural Adjustment Administration payments made up the largest share of the miscellaneous items, being 3 per cent of the total cash receipts or 55 per cent of the miscellaneous receipts.

The cash sale of livestock and livestock products accounted for 95 per cent of the total receipts on the sheep ranches, 82 per cent of the total receipts on the cattle ranches, 51 per cent on the dairy, and 58 per cent on the general livestock farms. On the crop farms, 50 per cent of the total receipts were derived from sales of crops.

Farm Expenses

The sheep and cattle ranches are larger and they spend relatively less for machinery and equipment expenses. However, they spend a higher percentage for labor and board, since the operators cannot do as much of the work themselves. The average expense for each farming type includes a wage estimated by the operator for the work performed by the unpaid members of the operator's family.

TABLE 8. FINANCIAL SUMMARY BY TYPES OF FARMING /1

Keating Area, Baker County, Oregon, 1939

Item	Type of farming					All farms
	Beef cattle	Range sheep	Dairy	General live-stock	Crops	
<u>Receipts:</u>						
Total cash receipts	\$ 8,381	\$20,396	\$ 1,883	\$ 1,762	\$ 2,075	\$ 5,460
Inventory increase	356	277	834	233	435	440
TOTAL FARM RECEIPTS	\$ 8,737	\$20,673	\$ 2,717	\$ 1,995	\$ 2,560	\$ 5,841
<u>Expenses:</u>						
Total cash expense	5,149	13,923	1,660	1,153	1,262	3,593
Unpaid family labor	511	470	164	190	168	293
Inventory decrease	-	-	-	-	-	-
TOTAL FARM EXPENSES	\$ 5,660	\$14,393	\$ 1,844	\$ 1,343	\$ 1,430	\$ 3,886
NET FARM INCOME	3,077	6,280	873	652	1,130	1,955
Farm furnished living	592	616	404	359	317	450
Interest on investment @ 4%	1,869	3,645	443	417	451	1,123
OPERATOR'S LABOR INCOME	1,218	2,635	430	235	679	832
Value of operator's time	973	1,351	677	663	600	807
Return on investment	2,104	4,929	196	-11	530	1,148
PER CENT RETURN ON INVEST.	4.5	5.4	1.8	-.1	4.7	4.1
Total investment	\$46,478	\$91,127	\$11,082	\$10,413	\$11,264	\$28,077

/1 For a detailed listing of receipts and expenses see Tables 39 and 40, appendix.

Net Farm Income

Net farm income is secured by subtracting the total farm expenses from the total farm receipts after all inventory changes have been accounted for. It is the income from which the operator's wage for his labor and management and the interest on total farm capital must be paid. The net farm income received by the operators varied from \$6,280 on the range sheep ranches to \$662 on the general livestock farms. The average for all farms was \$1,966.

Farm-Furnished Living

In addition to the net farm income, these families also received non-cash items in the form of farm-furnished food and a home to live in. The average value per farm for farm-furnished living is \$450, of which \$64 is garden produce, \$78 livestock, \$124 livestock products, \$38 wood, and the remaining \$146 is rent on the farm dwelling. The farm-furnished food is valued at wholesale. The rental value of the home is figured at 10 per cent of the inventory value of the house.

Labor Income

Labor income measures the income of the farm operator after the influence of size of business; namely, total farm capital, has been removed. When 4 per cent of the total capital per farm is subtracted from the net farm income the remainder or labor income is the amount

which the operator has earned for his year's labor and management, not including farm-furnished living.

There is a wide variation in labor income between the different types of farming (Table 8). The probable reasons for this variation will be discussed later. The range sheep ranches received the highest labor incomes whereas the general livestock farms received the lowest. The average for all farms was \$832. It is interesting to note that the average labor income received by the operators is \$25 greater than the average amount which they estimated their labor and management to be worth.

Value of Operator's Wage for Labor and Management

In many economic studies an arbitrary wage for the operator's labor and management has been assigned to the operator, usually depending on the size of his business. In this study the operators estimated the wage for their own labor and management. The average value of the operator's wage for each type of farming is as follows: beef cattle ranches, \$973; sheep ranches, \$1,351; dairy farms, \$677; general livestock farms, \$663; and crop farms, \$600.

Return on Farm Investment

The per cent return on farm investment averaged 4.1 per cent for all farms. This figure is calculated by subtracting the value of the operator's wage from net farm income and dividing the remainder by the total farm investment.

REPRESENTATIVENESS OF DATA

The previous discussion has pointed out that on the average the operators for the one year made no extremely large nor extremely small incomes, but earned a fair rate of return on their investment, about 4 per cent, and were paid a wage which was slightly more than they considered their year's labor and management to be worth.

Since the data in this report represent only the one year, June 1, 1938 to May 31, 1939, it is important to know whether this is a typical year. It is impossible to say whether the period of this study will be representative of future years, but a comparison of the 1938 data with long-time averages may prove helpful.

Crop yields and livestock production. The farmers reported their crop yields in 1938 as being approximately 15 per cent lower than yields "usually" received. Livestock production rates including calf crop, lamb crop, and livestock weights were essentially the same as "usual."

Prices. The prices received for farm products sold during the period varied considerably from the 10-year average farm prices for Baker County (Table 9). Farm prices received for crops in 1938 were much lower than for the 10-year average, but the prices received for livestock in 1938 will average about the same as those received in the period 1926-35. Consequently 1938 appears to be a fairly typical year insofar as prices are concerned, but below normal with respect to crop yields.

TABLE 9. COMPARISON OF 1938 FARM PRICES TO 10-YEAR AVERAGE FARM PRICES
(1926-1935) FOR BAKER COUNTY

Keating Area, Baker County, Oregon, 1939

Item	Unit	Prices reported	10-year average/ ¹
		by farmers for 1938	farm prices received (1926-1935)
Wheat	Bu.	\$.58	\$.82
Oats	Bu.	.32	.43
Barley	Bu.	.45	.59
Steers (fat)	Cwt.	7.14	6.73
Lambs (fat)	Cwt.	6.83	7.57
Hogs (fat)	Cwt.	7.37	7.77
Wool	Lb.	.20	.23
Butterfat	Lb.	.24	.34
Eggs	Doz.	.21	.26

¹ Oregon Station Circular of Information No. 161

SOME REASONS FOR VARIATION IN INCOME

The following discussion deals with the reasons why certain farms receive a greater income than others. Each type of farming has inherent characteristics which distinguish it from other types of farming. Therefore, factors associated with the variation in income on one type of farming may be different or may be of different magnitude than those on another type of farming. For these reasons they analysis will attempt to point out strong and weak points within types of farming. In the following discussion it must be remembered that the period covered by this study represents only one year, and whether or not this year will be typical of future years is beyond our knowledge. However, it has been pointed out in the previous discussion that this is a fairly typical year insofar as the past is concerned.

Beef Cattle Ranches

The average financial income received by the operators of beef cattle ranches is neither extremely high nor low, but it is large enough to pay all ranch expenses, pay the operator \$1,218 for his labor and management, and return four per cent interest on the total ranch investment. The incomes of the individual operators were subject to considerable variation. The highest labor income received was over \$5,000 and the lowest was a loss of approximately \$2,000 with an average for all ranches of \$1,218. Naturally this variation in income is a result of definite causal factors. The following discussion will attempt to point out certain of these factors as revealed by this study.

Per cent of total investment in livestock.^{/1} The per cent invested in livestock gives the relative importance of the investment in livestock to the total ranch investment. The data indicate that increases in percentage investment in livestock are accompanied by increased labor income (Table 10). Gross returns per cattle unit were considerably lower on ranches having the largest relative investment in livestock. This, however, was more than offset by lower feed, labor, and land charges per cattle unit. The outfits with the highest percentage investment in livestock had livestock returns above feed and labor costs averaging \$6.40 per cattle unit, whereas the group of ranches having less than 10 per cent invested in livestock received a minus 40 cents for the same item.

The results obtained from multiple linear correlation are quite similar to those presented in Table 10. Applying the regression equation obtained by correlation analysis, the estimated labor income for these three groups is \$45, \$1,150, and \$2,620.^{/2} When the

^{/1} See table 41, appendix, for a list of investments per cattle unit.

^{/2} Multiple linear correlation results:

$$X_1 = -\$3,727 + \$32.27X_2 + \$8.29X_3 - \$10.22X_4 + \$39.97X_5$$

$$R = .7352$$

$$F = \$1,434.40$$

The symbols in the above equation represent the following factors:

X_1 = Labor income

X_2 = Per cent calf crop

X_3 = Per cent invested in livestock

X_4 = Value feed fed per cattle unit

X_5 = Cattle units per man

Note: In this correlation analysis, number of cattle units per ranch (size of ranch) was not included as an independent variable because of the causal and joint relationships which probably would exist between this factor and the several independent variables selected.

TABLE 10. PER CENT INVESTMENT IN LIVESTOCK AND
INCOME ON 16 BEEF CATTLE RANCHES

Keating Area, Baker County, Oregon, 1939

Per cent investment in livestock		Number ranches	Labor income	Number cattle units/1	Livestock/1	Land/1
Group	Average				returns per cattle unit	charge per cattle unit
0 - 20	9.6	4	\$ 434	114.7	\$34.00	\$14.20
20 - 30	22.9	8	942	189.0	30.80	8.50
30 and over	42.3	4	2,553	321.2	22.50	4.80
<hr/>						
All Beef Cattle Ranches	25.3	16	\$1,218	203.5	\$28.00	\$ 7.40

1 See pages 113 and 115, appendix for explanation of terms.

percentage calf crop, value of feed fed per cattle unit, and the number of cattle units per man are held constant at the average, each increase of one per cent in the investment in livestock is accompanied by an increase of \$8.29 in labor income.

It is commonly said that the investment in livestock should be equal to the investment in land. These ranches did not attain this ideal but the nearer they came to it the higher the labor income.

Feeding. Relatively heavier feeding of breeding stock was associated with a larger calf crop and higher gross returns per cattle unit, but the added returns were not enough to pay the added cost. In this area, labor income is affected very little by the amount of hay fed per hay-consuming animal unit even though the calf crop and returns per cattle unit were higher on the ranches feeding the most hay, (Table 11). The group of ranches feeding 2.4 tons of hay per hay-consuming animal unit received the highest livestock return per cattle unit, but higher feed costs reduced the livestock return above feed costs to a figure below that of the group feeding 1.77 tons per animal unit.

Hay fed is not the best measure for the feed consumed on beef cattle ranches since several of the operators fatten their steers before marketing. For this reason the total value of feed fed (including hay and grain) may be better than hay fed as an indicator of any relationship existing between the amount or value of feed fed and the labor income received.

The ranches spending the least amount for feed per cattle unit received the largest labor income, although their per cent calf crop

**TABLE 11. TONS HAY FED PER HAY-CONSUMING ANIMAL UNIT AND
INCOME ON 16 BEEF CATTLE RANCHES**

Keating Area, Baker County, Oregon, 1939

Tons hay fed per hay- consuming animal unit		Number ranches	Labor income	Number cattle units	Per cent calf crop	Livestock returns per cattle unit	Livestock returns above feed costs per cattle unit
Range	Average						
Under 1.5	1.11	6	\$1,070	234.5	67.0	\$24.00	\$14.20
1.5 - 2.0	1.77	6	1,526	235.5	73.7	29.30	18.40
2.0 and over	2.40	4	975	108.9	71.0	36.60	16.50

and gross returns per cattle unit were less than on the ranches feeding the heaviest (Table 12). The lower feed and labor costs and the larger number of cattle per ranch more than offset the larger returns. This indicates that heavy feeding may be carried too far.

The results of multiple correlation analysis substantiate the material presented in Table 12. The estimated labor income for each of the three rate of feeding groups is \$3,107, \$677 and \$496, respectively. The correlation results indicate that every increase of one dollar in the value of feed fed per cattle unit is associated with a decrease of \$10.22 in labor income. Here the influence of the other three independent variables has been removed, or in other words held constant at the average.

Cattle units per man. The labor expense per cattle unit, including a wage for the operator, amounts to more than the value of feed fed. The average labor expense per cattle unit is \$12.40, while the average value of feed fed per cattle unit (value of grazing on range and pasture not included) amounts to \$11.60. This accounts for all men, including the operator, whether they took care of livestock or worked in the field.

The ranches having more than 60 cattle units per man were far more profitable than ranches having less than 50 cattle units per man (Table 13). The ranches using the most labor (least number of cattle units per man) had a five per cent higher calf crop and had higher livestock returns per cattle unit than ranches using the least labor, but the added returns did not offset the added cost. Ranches with

TABLE 12. RATE OF FEEDING AND INCOME ON 16 BEEF CATTLE RANCHES

Keating Area, Baker County, Oregon, 1939

Value feed fed per cattle unit						Livestock returns above feed costs per cattle unit	Acres private range per cattle unit
Group	Average	Number ranches	Labor income	Number cattle units	Livestock returns per cattle unit		
Under \$10	\$ 7.20	4	\$2,896	372.0	\$23.70	\$16.50	13.5
\$10 - \$15	12.60	7	899	152.7	31.20	18.60	22.9
\$15 and over	19.50	5	321	139.7	31.60	12.40	28.3

TABLE 13. LABOR EFFICIENCY AND INCOME ON 16 BEEF CATTLE RANCHES

Keating Area, Baker County, Oregon, 1939

<u>Cattle Units per man</u> <u>Group</u>	<u>Average</u>	<u>Number</u> <u>ranches</u>	<u>Labor</u> <u>income</u>	<u>Number</u> <u>cattle</u> <u>units</u>	<u>Livestock</u> <u>return per</u> <u>cattle unit</u>	<u>Labor</u> <u>cost</u> <u>per</u> <u>cattle</u> <u>unit/1</u>	<u>Livestock</u> <u>return above</u> <u>feed and</u> <u>labor costs</u> <u>per cattle unit</u>	<u>Total</u> <u>ranch</u> <u>investment</u>
Under 50	41.1	6	\$ 686	109.8	\$34.40	\$17.80	\$ 1.80	\$32,255
50 - 60	56.8	6	722	171.7	27.60	13.50	-1.10	43,549
60 and over	106.0	4	2,759	398.5	25.50	9.50	7.90	72,206

/1 See page 115, appendix, for explanation of terms.

more than 60 cattle units per man received a livestock return of \$7.90 per cattle unit above feed and labor costs. The ranches with less than 50 cattle units per man received only \$1.80 per cattle unit above feed and labor costs.

The correlation results indicate that, holding the other independent variables constant at the average, an increase of one cattle unit per man is associated with a \$39.97 increase in labor income. On the basis of the regression equation given at the foot of page 41, the 6 ranches having the least number of cattle units per man had an estimated labor income of \$346. The estimated labor incomes for the other two groups is \$758 and \$3,013, respectively.

In general the more efficient ranches were able to take care of more livestock per man due to the fact that they had over twice as many livestock as the least efficient ranches. A larger number of cattle units per man usually occurs on the larger ranches, for it is one of the internal efficiencies normally resulting from large scale operation.

Size of ranch. The data show that the larger ranches were distinctly the more profitable (Table 14). A study of the various items, however, indicates that the larger ranches differed not only in size, but in organization and management as well. Compared with the smaller ranches, they spent much less per head on feed and labor. They also use more public range and less private range, thus making their land costs less. The expenses of the larger ranches are therefore much smaller throughout. These economies are accompanied by a

TABLE 14. NUMBER OF CATTLE UNITS PER RANCH AND INCOME ON 16 BEEF CATTLE RANCHES

Keating Area, Baker County, Oregon, 1939

Cattle units per ranch		Number ranches	Labor income	Value	Labor	Livestock	Per cent calf crop	Acres private range per cattle unit	Land charge per cattle unit
Group	Average			feed fed per cattle unit	cost per cattle unit	returns above feed and labor costs per cattle unit			
Under 125	101.2	6	\$ 588	\$15.50	\$18.80	\$-1.80	73.9	29.0	\$10.00
125 - 200	167.7	5	1,357	14.20	12.90	2.30	70.0	25.3	8.70
200 and over	362.0	5	1,834	9.10	10.10	6.60	70.5	14.1	6.00

slightly smaller calf crop and a lower gross livestock return per head, but the livestock return above feed and labor costs per head was very much greater. In other words, the larger ranches were able to make major reductions in their expenses with only slight reductions in returns. These differences would seem to be due to management as well as to size of business; at least the data show no reason why the smaller ranches should have such heavy expenses. The indications are that the smaller ranches are being operated on the plan of using a large amount of feed and labor per head of livestock with the hope that the returns would be enough larger to make the operation profitable. Whether this program is intentional or unintentional, the results are unsatisfactory.

Per cent calf crop. Cross tabulation shows little if any relationship between the per cent calf crop and labor income. By correlation analysis, however, the results indicate that an increase of one per cent in the calf crop is associated with an increase of \$32.27 in labor income. The estimated labor income for different calf crops (with the effect of the other three variables held constant at the average) would be as follows:

Per cent calf crop	Labor income
60	\$ 802
70	1,125
80	1,447

Relative Importance of Factors Affecting Income. According to

correlation analysis the relative importance of the different factors in explaining variations in labor income is as follows:

Factor	Per cent determination
Per cent calf crop	1.01
Per cent invested in livestock	2.95
Value of feed fed per cattle unit	-(1.33)
Cattle units per man	48.77
Total determination	54.06

It can readily be seen that having an efficient labor program (more cattle units per man) is the most important factor which has been considered in the correlation problems. It accounts for about 49 per cent of the variation in income among the 16 beef cattle ranches. The other three variables are much less important.

Comparison of high and low income ranches. A detailed comparison of these two groups is given in Table 15. This table brings out some striking facts. The first is that the returns per cattle unit on the high-income ranches are not higher but are lower than on the low-income ranches. The larger net income must therefore come from lower costs rather than from a larger gross return. This is confirmed by further examination of the data. Those data show that the high net income ranches have (1) a lower investment per cattle unit; (2) lower feed costs; (3) lower labor costs; (4) lower land charges; and (5) lower machine costs. In spite of these lower costs they get larger calf crops and larger calf yields. The conclusion seems

TABLE 15. COMPARISON OF HIGH AND LOW INCOME BEEF CATTLE RANCHES

Keating Area, Baker County, Oregon, 1939

Item	Five high income ranches	Five low income ranches	All 16 beef cattle ranches
Labor income	\$ 3,138.00	\$ -368.00	\$ 1,218.00
Per cent return on investment	7.1	-1.0	4.5
Capital accumulation per year/ ¹	\$ 1,302.00	\$ 15.00	\$ 721.00
Total ranch investment	\$65,267.00	\$44,500.00	\$46,478.00
Acres in crop	388.4	213.4	262.9
Number cattle units	344.8	167.1	203.5
Investment per cattle unit	\$ 189.00	\$ 266.00	\$ 228.00
Per cent calf crop	72.7	67.0	71.0
Livestock returns per cattle unit	\$ 26.30	\$ 27.80	\$ 28.00
Value feed fed per cattle unit	\$ 7.80	\$ 14.50	\$ 11.60
Livestock returns above feed costs per cattle unit	\$ 18.50	\$ 13.30	\$ 16.40
Labor costs per cattle unit	\$ 9.20	\$ 15.10	\$ 12.40
Livestock returns above feed and labor costs per cattle unit	\$ 9.30	\$ -1.80	\$ 4.00
Land charges per cattle unit	\$ 5.50	\$ 9.70	\$ 7.40
Acres private range per cattle unit	15.0	20.0	19.9
Grazing fees per cattle unit	\$ 0.50	\$ 0.38	\$ 0.45
Cattle units per man	95.0	54.6	66.8
Machine cost per crop acre/ ¹	\$ 2.30	\$ 4.70	\$ 3.10
Crop index/ ¹	117.1	111.0	112.4

¹ See page 115, appendix, for explanation of terms.

inescapable that good cattle management in this area requires the most rigid economy as to feed, labor and land charges, and that these economies can be and often are combined with a gross livestock return per head that is at least average, although not necessarily top. This type of management was found most commonly on the larger ranches, but not exclusively so. The opposite type of management was found most commonly on the smaller ranches, but here again there are exceptions for the five low-income ranches were approximately average in size as measured by the total ranch investment.

Sheep Ranches

The high income sheep ranches were not only the most successful during the one year, but also were more successful over a long period of time (Table 16). They had increased their net worth \$2,315 per year for a period of sixteen years. The low-income ranches had a capital accumulation averaging \$716 for twelve years.

The high income ranches included a one band and a two band outfit. Each of the low income ranches had one band. The general plan of management for both groups is similar. The investment per head, the number of sheep per crop acre, and the number of sheep units handled per man are about the same in both cases. The weight of lambs, the wool clip, and the total of feed and labor costs also were almost identical for each group. The high income ranches, however, had a higher lamb crop, a lower death loss, lower land charges, higher crop yields and smaller machine costs per crop acre.

TABLE 16. COMPARISON OF HIGH AND LOW INCOME SHEEP RANCHES

Heating Area, Baker County, Oregon, 1939

Item	Two high income ranches	Two low income ranches	All six sheep ranches
Labor income	\$ 3,302.00	\$ 645.00	\$ 2,635.00
Per cent return on investment	7.0	2.2	5.4
Capital accumulation per year	\$ 2,315.00	\$ 718.00	\$ 868.00
Total ranch investment	\$69,910.00	\$47,506.00	\$91,127.00
Acres in crop	248	177	442
Number sheep units/ ¹	2,038.5	1,422.0	2,470.5
Number ewes	1,775.0	1,225.0	1,842.0
Man equivalent	6.95	4.12	6.8
Sheep units per man	343	345	363
Per cent lamb crop	120.9	114.3	113.4
Weight of lambs marketed	81.0	82.0	82.1
Pounds wool per ewe	9.6	9.7	10.1
Per cent death loss	5.5	8.5	7.3
Livestock returns per sheep unit	\$ 7.70	\$ 6.50	\$ 6.70
Value of feed fed per sheep unit	\$ 2.40	\$ 2.10	\$ 2.20
Labor cost per sheep unit	\$ 2.60	\$ 3.10	\$ 2.30
Livestock returns above feed and labor costs per sheep unit	\$ 2.70	\$ 1.40	\$ 2.20
Land charges per sheep unit	\$.89	\$ 1.20	\$ 1.09
Acres of private range per sheep unit	2.4	3.2	2.5
Grazing fees per sheep unit	\$.10	\$.14	\$.08
Machine cost per crop acre	\$ 7.50	\$ 8.00	\$ 5.00
Crop index	97.7	85.0	84.0

¹ See page 113, appendix, for explanation of terms.

The high income ranches were not especially outstanding in any one particular phase of management, but in several; so that when all these factors are taken together the more successful ranches had gross livestock returns averaging \$2 higher, and net livestock returns averaging \$1.30 higher than the low income ranches. Considering the complete ranch business, the high income ranches received a labor income of \$1.60 per sheep unit, as compared to \$.45 for the less successful outfits.

Dairy Farms

Dairy farms received next to the lowest average labor income of any of the five types of farming. The labor income varies from \$-248 to \$1,126 with an average of \$430.

Feeding. The rate of feeding has a very definite effect on the labor income (Table 17). Increases in feed are accompanied by increases in labor income, pounds of butterfat per cow, labor expense per cow and crop yields.

Although the group of farms feeding the most received the largest labor income, and highest butterfat production per cow, the livestock return above feed costs per productive animal unit was highest in the middle group. An inspection of the individual records reveals that increases in the value of feed fed per productive animal unit up to \$20 are accompanied by relatively steady increases in net returns. Feeding above \$20 per productive animal unit was on the average unprofitable. Of the seven farms feeding more than \$20, the increased

TABLE 17. RATE OF FEEDING AND INCOME ON 14 DAIRY FARMS

Keating Area, Baker County, Oregon, 1939

Value feed fed per animal unit productive livestock/1		Number farms	Labor income	Livestock return per productive animal unit	Livestock returns above feed costs per productive animal unit	Pounds butterfat per cow	Crop index
Group	Average						
Under \$15	\$11.70	5	\$289	\$42.40	\$30.70	167.5	77.4
\$15 - \$25	20.00	4	436	62.20	42.20	193.6	88.4
\$25 and over	31.10	5	566	65.40	34.20	233.8	102.5
All dairy farms	\$19.30	14	\$430	\$55.00	\$35.70	196.0	90.0

1 See page 113, appendix for explanation of terms.

feeding was profitable in five cases and unprofitable in two. The cows on these two farms may have been of such poor quality that heavy feeding would not increase the returns to any great extent.

Undoubtedly the efficiency of management and labor, the quality of livestock, and the peculiarities found on the individual farm will determine the feeding policy, but it may prove helpful to know some of the problems which arise in case a change in feeding is contemplated.

Size of farm. The five largest dairy farms received a labor income of \$483, while the five smallest dairy farms received \$361. The largest farms have a much better opportunity of earning a better income since they have larger dairy herds, smaller machine costs per crop acre, and a greater labor efficiency (Table 18). The smaller farms, however, have a higher net return per cow than the larger farms. This situation is opposite to that occurring on beef cattle ranches, where the smallest ranches had the lowest net returns per animal unit.

Other factors affecting income. In the earlier preparation of this thesis the author attempted to determine the relative effect of certain factors on labor income on dairy farms by means of multiple correlation analysis. The variables selected were considered to be very important on dairy farms. These variables were: Pounds of butterfat produced per cow, number of dairy cows, value of feed fed per animal unit of productive livestock, and productive man work units per man. This combination of variables should not have been used because of causal relationships existing between them. In other words

TABLE 18. SIZE OF FARM AND INCOME ON 14 DAIRY FARMS

Keating Area, Baker County, Oregon, 1939

Total productive man work units per farm		Number farms	Labor income	Num- ber milk cows	Machine cost per crop acre	Produce- tive man work units per man	Livestock returns above feed costs per productive animal unit
Group	Average						
Under 300	229.8	5	\$361	8.8	\$8.00	227.9	\$41.50
300 - 500	380.6	4	450	17.0	6.30	270.4	38.40
500 and over	575.6	5	483	20.7	4.10	276.2	31.30

these variables were not entirely independent (see page 4). The results of the analysis indicate that the more butterfat produced per cow the lower the labor income. Also the larger the dairy herd the lower the income. In both instances the effects of the other independent variables were held constant at the average. Neither of these relationships is verified by other analysis or by practical knowledge. Also, according to the multiple correlation analysis the more feed fed per animal unit of productive livestock, the greater the labor income. This would appear to be reasonable and substantiate the data presented in Table 17, if it were not for the fact that butterfat per cow is held constant. In other words, how can one increase the feed fed per cow obtaining no more butterfat per cow and yet receive an increase in labor income? In view of these facts this particular analysis has not been presented.

Comparison of high and low labor income farms. A comparison of some of the factors on four dairy farms receiving the highest labor incomes and the four receiving the lowest labor incomes is given in Table 19. On the high income farms, crop yields are approximately 25 per cent better than on the low income farms, machine costs per crop acre are less, and butterfat production per cow is higher.

Although the high income group uses \$11 more feed per productive animal unit, they receive \$8.30 more returns above feed costs. The practice of feeding more may be the result of the quantity of feed available. The high income group, though feeding 40 per cent more feed, produced a surplus of \$481 worth of feed crops, while the low income farms did not produce enough for their own use. On an average

TABLE 19. COMPARISON OF HIGH AND LOW INCOME DAIRY FARMS

Keating Area, Baker County, Oregon, 1939

Item	Four highest income	Four lowest income	All 14 dairy farms
Labor income	\$842.00	\$-37.00	\$430.00
Total productive man work units	392.	406.	396.
Man equivalent	1.34	1.77	1.51
Productive man work units per man	292.3	228.8	263.1
Animal units productive livestock	25.4	37.3	31.8
Animal units productive livestock per crop acre	0.24	0.62	0.40
Acres in crop	103.7	78.6	78.6
Number of milk cows	16.0	14.1	15.4
Livestock returns per productive animal unit	\$ 64.50	\$ 45.20	\$ 55.00
Pounds of butterfat per cow	207.3	195.0	195.0
Value of feed fed per productive animal unit	\$ 27.20	\$ 16.20	\$ 19.30
Livestock returns above feed costs per productive animal unit	\$ 37.30	\$ 29.00	\$ 35.70
Crop index	105.6	79.0	90.0
Machine cost per crop acre	\$ 3.20	\$ 7.10	\$ 5.40

the low income farms purchased about \$70 worth of feed per farm.

The higher income group had more acres in crop, but had fewer animal units, so when size is measured by productive man work units the two groups of farms are relatively the same size. The more successful farms had an average of 1.34 men working, as compared with 1.77, but accomplished approximately the same amount of work. Each man took care of 229 days of work on the low income farms as compared with 292 days on the high income farms.

The machinery cost per crop acre on the high income farms was \$3.20 as compared with \$7.10 on the low income group, yet the crop yields were higher. This difference is greater than can be explained by the size of the farms and would therefore seem to be due to management.

General Livestock Farms

The average labor income on general livestock farms was the lowest of any of the five farming types. It varied from \$1,500 to a minus \$1,700 with an average of \$235 for all farms.

General livestock farms received about 58 per cent of their income from the sale of livestock and livestock products. These, however, were of several different kinds. Returns and costs per animal unit consequently vary considerably, depending to a large extent upon the kind of livestock. Since it was common practice for a farm to have a mixture of several different kinds of livestock, it becomes

impracticable to draw conclusions concerning the specific influence which livestock may have had on the farm income. For this reason the analysis will attempt to point out the factors responsible for variation in income which are least affected by the livestock program.

Size of farm. In most of the other types of farming, size of farm has been an important factor in explaining some of the variation in income. However, on general livestock farms, it does not appear to be so important. The data indicate that farms of 60 acres or less were just as successful as farms of over 80 acres, and farms having over 30 animal units of livestock were no more successful than those having less than 15 animal units. When size of farm is measured by productive man work units the results indicate no relationship between size and income.

Productive man work units per man. In order for the operator to receive a fair wage for his labor and management, it is necessary for him to have a full-time job and to accomplish the largest possible amount of work during the time employed. This is clearly indicated in Table 20. The farms having about 150 days of average work per man received a minus labor income of \$148. The farms accomplishing 350 days per man received \$786. The most efficient farms were considerably larger, had higher livestock returns above feed and labor costs, but had higher machine costs. The farms with less than 200 work units per man were smaller than the most efficient farms but were larger than the group having 244 work units per man.

TABLE 20. LABOR EFFICIENCY AND INCOME ON 17 GENERAL LIVESTOCK FARMS

Keating Area, Baker County, Oregon, 1939

Productive man work units per man	Average	Number farms	Labor income	Machine cost per crop acre	Livestock returns above feed and labor costs per productive animal unit	Productive man work units per farm
Groups						
Under 200	150.4	7	\$-148	\$5.20	\$-26.20	272.2
200 - 300	243.8	6	315	6.50	2.80	259.6
300 and over	350.0	4	786	6.60	9.90	411.3
All general livestock farms	215.0	17	\$ 235	\$6.00	\$-6.20	300.5

Crop yields. The farms having less than 75 per cent of average yields received a labor income averaging \$144 (Table 21). The higher yields were accompanied by higher machine costs per crop acre, but the farms having the highest yields received a higher livestock return per animal unit above feed and labor costs and were more efficient in their labor program.

Crop Farms

The crop farms have the third largest average labor income of the five types of farming. The labor income varies from \$115 to \$1,861 with an average of \$679 for the eight farms.

Size of farm. The farms having less than 150 productive man work units per farm received labor incomes averaging \$165 and capital accumulations per year averaging \$-64 (Table 22). On the other hand, the largest farms received \$1,465 labor income and accumulated \$393 per year. The largest farms had more cropped acres, more productive livestock, a lower labor cost per crop acre, lower machine costs per crop acre, and accomplished more work per man. The smaller farms had larger yields, but this factor was not enough to offset their high labor and machine costs. Their labor income was less in total and also per acre.

Comparison of high and low income farms. The three most successful farms received labor incomes averaging \$1,247 and a capital accumulation for eight years of \$361 per year (Table 23). The three least successful farms had labor incomes averaging \$207 and accumulated

TABLE 21. CROP INDEX AND INCOME ON 16 GENERAL LIVESTOCK FARMS

Keating Area, Baker County, Oregon, 1939

Crop index Group	Average	Number farms	Labor income	Livestock	Machine cost per crop acre	Pro- ductive man work units per man
				returns above feed and labor costs per productive animal unit		
Under 75	68.2	5	\$144	\$-11.70	\$4.70	190.5
75 - 125	104.3	8	252	3.40	6.10	231.5
125 and over	164.7	3	998	6.40	6.90	262.3

TABLE 22. SIZE OF FARM AND INCOME ON 8 CROP FARMS

Keating Area, Baker County, Oregon, 1939

Total productive man work units per farm		Number farms	Labor income	Crop index	Machine cost per crop acre	Acres in crop	Labor cost per crop acre	Animal units produc- tive live- stock	Capital accumu- lation per year
Group	Average								
Under 150	119.0	2	\$ 165	128.4	\$4.60	39.6	\$13.00	3.0	\$-64
150 - 350	239.6	4	546	110.4	3.60	82.1	11.00	10.0	208
350 and over	472.1	2	1,463	97.6	3.90	173.6	6.60	31.0	393
All crop farms	267.6	8	\$ 679	109.0	\$3.90	24.3	\$10.10	13.5	\$201

TABLE 23. COMPARISON OF HIGH AND LOW INCOME CROP FARMS

Keating Area, Baker County, Oregon, 1939

Item	Three highest income farms	Three lowest income farms	All eight crop farms
Labor income	\$ 1,247	\$ 207	\$ 679
Per cent return on investment	7.3	-0.9	4.7
Capital accumulation per year	\$ 361	\$ 169	\$ 201
Total farm investment	\$17,171	\$5,947	\$11,264
Acres in crop	128.0	63.4	94.3
Animal units of productive livestock	23.6	4.5	13.5
Total productive man work units	365.0	179.9	267.6
Total man equivalent	1.88	1.44	1.69
Productive man work units per man	194.5	124.6	158.7
Livestock return per productive animal unit	\$ 53.70	\$ 67.60	\$ 58.20
Value of feed fed per productive animal unit	\$ 16.10	\$ 32.70	\$ 18.20
Returns per productive animal unit above feed costs	\$ 42.60	\$ 34.90	\$ 40.00
Machine cost per crop acre	\$ 3.90	\$ 4.60	\$ 3.90
Crop index (1938)	104.1	102.6	109.0

an average of \$169 per year for 18 years. The high income farms were larger, had low feed costs and low machinery costs, but had larger crop yields. They also accomplished 194 days of work per man while the low income farms accomplished 125 days of work per man.

All Farms

The preceding analysis shows that size of farm, labor efficiency, crop yields, and feeding rates affect income to varying degrees, depending on the type of farming. In order to gain a general impression of the factors affecting income for the area as a whole (regardless of type of farming) the following discussion will deal with factors affecting incomes on all 61 farms.

Size of farm. In this study it was found that as the size of farm increased the income also increased. The larger farms have a better opportunity to obtain a well-balanced farm organization which can be operated with a relatively high degree of efficiency. Farm labor, the use of machinery, selection of enterprises, and the layout of fields can be carried out to a better advantage on the large farms than on the small farms.

Productive man work units are probably the best measure of size of farm since they account for both animal units and acres in crop, and places each on a fairly comparable basis. The farms having over 1,100 productive man work units per farm received a labor income averaging \$3,186 while the smallest farms received the lowest labor income, averaging \$300 per farm (Table 24).

TABLE 24. SIZE OF FARM AND INCOME

Keating Area, Baker County, Oregon, 1939

Total productive man work units per farm		Number farms	Labor income	Capital accumu- lation per year	Animal units of productive livestock	Total farm in- vestment	Acres in crop
Group	Average						
Under 200	154.1	8	\$ 300	\$ 66	9.3	\$ 5,173	41.4
200 - 500	339.8	30	380	446	40.1	13,108	88.5
500 - 800	617.8	12	937	346	97.0	30,805	177.0
800 - 1,100	952.2	6	1,628	1,238	288.2	59,536	366.8
1,100 & over	2,121.9	5	3,186	924	606.8	110,243	524.3
ALL FARMS	576.5	61	\$ 832	\$ 561	118.0	\$ 28,077	162.8

The relationship between size of farm and capital accumulation is very significant. It shows that over a long period of time the larger farms made a greater average net gain per year than the smaller farms. Although the large farms stand the chance of losing more than the smaller units in a relatively poor year, the data show that over a long period of time the larger farms accumulate considerably more than the smaller farms. For the most part, this higher increase in net worth per year can be attributed to the larger amount of capital to work with and the attainment of an efficiency of operation which is not ordinarily possible on the smaller farms.

Simple correlation analysis shows that size of farm has an important effect on labor income. The correlation coefficient of .409 with a standard error of \$1,131 indicates that insofar as the two variables, productive man work units per farm and labor income are concerned, an increase of 100 productive man work units is associated with an increase of \$91 in labor income. For the different sized farms presented in Table 24, the labor income estimated from the regression equation would be \$434, \$603, \$856, \$1,116, and \$2,180, respectively.

The smaller farms were considerably more efficient in crop production, having yields about 23 per cent higher than the larger farms (Table 25). The larger farms, however, had lower machinery and equipment costs per crop acre. The discrepancy in machine costs on the largest farms can be attributed to the type of farming in which these farms are classified. Four of the five farms are sheep ranches and

TABLE 25. SIZE OF FARM AND EFFICIENCY

Keating Area, Baker County, Oregon, 1939

Total productive man work units per farm		Number farms	Crop index	Machine costs per crop acre	Productive man work units per man
Group	Average				
Under 200	154.1	8	115.6	\$5.70	140.9
200 - 500	339.8	30	106.4	5.20	216.4
500 - 800	617.8	12	115.4	4.10	228.5
800 - 1,100	952.2	6	91.2	2.60	263.5
1,100 and over	2,121.9	5	92.4	4.80	280.7
ALL FARMS	576.5	61	100.0	\$4.30	237.9

machine costs are considerably higher than on other types of farming due to expenses such as sheep shearing and frequent travel between livestock on the range and the home ranch. These expenses would not be common to the other farm types.

Labor efficiency. Increases in labor efficiency are accompanied by relatively steady increases in labor income (Table 26). Farms having less than 150 productive man work units per man received labor incomes averaging \$221, while those farms having over 300 days of work per man had labor incomes of \$1,460. The former group increased their net worth \$379 per year on the average, whereas the most efficient farms accumulated \$1,218 per year.

The group of farms having an average of 259 days of work available per man had almost twice as many animal units of livestock as the most efficient farms, but the latter managed their farm business in such a manner that they received a higher labor income, and over a period of years obtained a larger increase in net worth per year.

A comparison of 10 high income and 10 low income farms. The 10 farms receiving the highest income received a labor income of \$3,206 or, figured in another way, they earned 6.6 per cent on their average farm investment (Table 27). The operators of the low income farms received a minus \$568 labor income, or a loss of 1.8 per cent on their farm investment. Over a period of twenty-two years the high income farms accumulated on the average \$1,065 per year. The low income farms accumulated \$408 per year for eighteen years. The high income farms were larger, were more efficient in their labor program, received a

TABLE 26. LABOR EFFICIENCY AND INCOME

Keating Area, Baker County, Oregon, 1939

Productive man work units per man		Number farms	Labor income	Capital	Animal
Group	Average			accumu- lation per year	units of productive livestock
Under 150	135.6	10	\$ 221	\$ 379	36.4
150 - 225	192.5	19	424	143	58.7
225 - 300	258.9	23	1,189	739	206.2
300 and over	374.3	9	1,460	1,218	108.5

TABLE 27. COMPARISON OF HIGH AND LOW INCOME FARMS

Keating Area, Baker County, Oregon, 1939

Item	Ten highest income farms	Ten lowest income farms	All farms
Labor income	\$ 3,206	\$ -568	\$ 832
Per cent return on investment	6.6	-1.8	4.1
Capital accumulation per year	\$ 1,065	\$ 408	\$ 561
Total farm investment	\$80,765	\$21,304	\$28,077
Average acres in crop	444.6	110.0	162.8
Animal units of productive livestock	414.8	63.4	118.1
Total productive man work units	1,400.7	426.3	576.5
Total man equivalent	5.37	2.10	2.42
Productive man work units per man	260.8	202.6	237.9
Livestock returns per productive animal units above feed and labor costs	\$ 9.80	\$ -5.00	\$ 5.60
Machine cost per crop acre	\$ 3.50	\$ 5.50	\$ 4.30
Crop index (1938)	101.1	94.9	100.0
Years of farming experience	34.7	28.1	27.1
Years on this farm	22.1	18.1	13.5
Age of operator	56.0	51.0	50.0
Operator's education (years)	10.8	8.8	9.7

higher net livestock return, had higher crop yields, but lower machine costs.

Not all the difference in income can be attributed to size and efficiency. The type of farming which the individual farm in each group represents has a very definite influence on the income of these farms. The low income group consists of two beef cattle ranches, three dairy farms and five general livestock farms. The high income group is composed of five beef cattle ranches, four sheep ranches and one crop farm. As previously indicated, range livestock ranches were, for the one year, the most successful type of farming, and general livestock and dairy farms were as a whole the least successful.

Personal data concerning the operator show that the operators on the high income farms had attended school for almost 11 years, had about 35 years' of farming experience, and were approximately 56 years old. The operators of the low income farms had fewer years of education and farming experience, and were younger by five years.

DESCRIPTION OF ACTUAL FARMS

In the preceding analysis the farms and ranches have been combined into type of farming groups and into other groups according to size, et cetera, and then discussed from the standpoint of averages. Individual farms have not been discussed. To give the reader a better understanding of the organization and returns on individual units, an actual farm for each of the 5 types of farming has been selected and described. These farms are not necessarily typical of their respective

farm types. They are, however, as representative as could be found.

Beef Cattle Ranch

This particular beef cattle operator came on his present ranch in 1925 (Table 28). He purchased it for \$6,600 paying \$3,000 down and bringing \$1,600 worth of livestock and equipment with him. At the present time his net worth is \$18,993 or an average increase of \$1,028 per year for the 14 years he has lived on his place.

The operator does not have a Forest Service permit for summer range, but uses Grazing Service land. In the spring and fall he grazes the cattle on his private sagebrush range. Of the 3,344 acres of grazing land he operates, 640 acres were leased for \$19. Like other cattle ranchers, he has milk cows and sells a few head of hogs. Cattle sales and inventory increases account for over 60 per cent of his returns from livestock. In 1938 his calf crop was 90 per cent, which he reported was higher than he usually received. For the most part he sells grain fattened two year old steers which average about 1,000 pounds when sold. During the one year of the study the productive livestock returned \$30 per animal unit, which is slightly above average. His feed costs were \$17.64 per animal unit and were considerably higher than most of the other operators. After paying feed and all labor costs the operator received a negative return of \$5 per animal unit from his livestock. Apparently feeding heavier was

TABLE 28. ORGANIZATION OF AN ACTUAL BEEF CATTLE RANCH

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Keating Area, Baker County, Oregon, 1939

RANCH INVESTMENT

Land:			
Cropland	acres	173	
Farmstead	acres	3	
Rangeland	acres	3,344	
Grazing service allotment (125 head)		-	
TOTAL	acres	3,520	\$12,780
Buildings			1,440
Machinery and equipment			2,198
Livestock:			
Dairy - 14 cows and 6 youngstock			\$ 672
Beef cattle: Cows	45	\$1,715	
Heifers 2's	7	210	
Heifers 1's	11	262	
Bulls	2	120	
Steers 2's	19	900	
Steers 1's	15	375	
TOTAL BEEF CATTLE			\$3,582
Horses - 10 workstock and 9 youngstock			518
Sheep - 6 lambs			27
Swine - 2 sows and 26 pigs			198
Chickens - 60 hens and 100 young chickens			39
TOTAL LIVESTOCK			\$5,036
Crops			361
Operating cash			150
Miscellaneous			145
TOTAL RANCH INVESTMENT			\$22,110

CROP ACREAGE AND PRODUCTION

Wheat - 26 acres @ 35.5 bushels	bushels	924
Barley - 30 acres @ 40 bushels	bushels	1,200
Alfalfa hay (2 cuttings) 77 acres @ 3 tons	tons	230
Alfalfa seed - (77) acres @ 41.6 pounds	pounds	3,200
Rye hay - 9 acres @ 1.1 tons	tons	10
Garden 2.0 acres	acres	-
Alfalfa pasture - 17 acres	acres	-
Crested wheat grass pasture - 11 acres	acres	-
Bluegrass pasture - 1 acre	acres	-

Table 28. Organization of an Actual Beef Cattle Ranch (Continued) 78

RANCH RECEIPTS

Alfalfa seed - 2,448 pounds @ 15¢	\$ 367	
Beef cows - 1 head	45	
Steers 2's - 24 head @ \$56.67	1,360	
Fat hogs - 16 head @ \$5.90 per hundredweight	189	
Market chickens	30	
Butterfat - 2,221 pounds @ 24¢	533	
Eggs - 140 dozen @ 21¢	29	
AAA payments	273	
Off farm labor	60	
Increase in inventory of crops	112	
Increase in inventory of livestock	1,314	
TOTAL RANCH RECEIPTS		\$ 4,312

RANCH EXPENSES

Livestock purchased	\$ 233	
Miscellaneous feed purchased	25	
Fertilizer purchased	32	
Labor and board - 19 months	1,006	
Threshing	60	
Taxes	191	
Irrigation water	148	
Grazing fees	161	
Power equipment operating expenses	283	
Other equipment repair	50	
Building repairs	25	
Fences repairs	40	
Interest on short term credit	59	
Miscellaneous general operating expense	59	
Depreciation on all equipment	183	
Depreciation on buildings	60	
TOTAL RANCH EXPENSES		\$ 2,634

NET RANCH INCOME \$ 1,678

Less 4% interest on ranch investment 884

OPERATOR'S LABOR INCOME \$ 794

RETURN ON RANCH INVESTMENT (net ranch income minus value
of wage for operator's labor and management esti-
mated by the operator - \$840) \$ 838

PER CENT RETURN ON RANCH INVESTMENT (return on ranch
investment divided by ranch investment) 3.8%

no more profitable for this operator than for others in the study, as previously discussed.

The operator was considerably more efficient in his crop production than in the case of livestock. He had yields which were 14 per cent above average and yet had low machinery costs per acre. Machinery costs averaged \$4.50 per acre while the investment per crop acre in machinery, equipment and workstock was \$12.33.

Harvest expenses were financed through the bank. He borrowed a total of \$736 for the equivalent of a year, paying 7 per cent interest.

The operator has an efficient labor program. He and his son plus about 6 man months of additional hired labor accomplished the 660 days of work available on the ranch. Thus, on the average, each of the men worked about 255 average days during the year.

After paying his son a regular wage as if he were hired, the operator received \$90 per month in addition to 3.3 per cent on the total ranch investment. Also in addition the farm family received farm privileges valued at \$491.

Sheep Ranch

This particular range sheep operator purchased this ranch in 1928 for \$12,000, paying \$2,000 down and having only \$1,000 in stock and equipment. At the present time his net worth is in excess of \$39,000 or an average increase in equity of \$3,345 per year for 11 years (Table 29).

TABLE 29. ORGANIZATION OF AN ACTUAL SHEEP

80

RANCH OPERATING ONE BAND OF EWES

Keating Area, Baker County, Oregon, 1939

RANCH INVESTMENTLand:

Cropland	acres	243.2	
Farmstead	acres	6.0	
Rangeland	acres	3,110.8	
Forest Service permits (1,250 ewes)	acres	-	
Grazing Service allotments (1,250 ewes)	acres	-	
TOTAL	acres	3,360.0	\$21,232

Buildings 3,053

Machinery and equipment 2,490

Livestock:

Dairy - 7 cows, 2 youngstock, and 1 bull \$ 341

Beef cattle:	Cows	10	\$ 750
	Heifers 2's	5	200
	Heifers 1's	4	121
	Bulls	1	75
	Steers 2's	2	100
	Steers 1's	1	30
	TOTAL BEEF CATTLE		\$1,276

Horses - 16 workstock and 3 colts 1,670

Pack mules - 4 200

Range sheep:	Ewes	1,250	\$10,000
	Rams	16	325
	Wethers	6	30
	Lambs	1,414	5,656
	TOTAL RANGE SHEEP		\$16,011

Chickens - 62 hens and 40 young chickens 67

TOTAL LIVESTOCK 19,565

Crops 560

Operating cash 600

TOTAL RANCH INVESTMENT \$47,500

CROP ACREAGE AND PRODUCTION

Oats - 12 acres @ 50 bushel	bushels	600
Alfalfa hay (2 cuttings) 180 acres		
@ 1.9 tons	tons	341
Alfalfa seeding - 20 acres	acres	-
Garden - .25 acres	acres	-
Idle - 25 acres	acres	-
Permanent plowable pasture - 6 acres	acres	-

Table 29. Organization of an Actual Sheep Ranch Operating
One Band of Ewes (Continued)

RANCH RECEIPTS

Cows - 4 head @ \$30.50	\$ 122	
Calves - 3 head @ \$18	54	
Beef steers 2's - 3 head @ \$52	156	
Beef calves - 3 head @ \$20	60	
Cull ewes - 200 head @ \$1.50	300	
Rams - 10 head @ \$10	100	
Lambs - 1,300 @ \$6.80 per hundred	7,688	
Market Chickens	14	
Butterfat - 556 pounds @ 24¢	133	
Wool - 12,000 pounds @ 21.9¢	2,625	
Pelts - 192 pounds @ 12¢	23	
AAA payments	120	
Increase in inventory of livestock	783	
TOTAL RANCH RECEIPTS		\$12,178

RANCH EXPENSES

Livestock purchased:		
Bulls 2	\$ 125	
Ewes 250	1,500	
Rams 22	550	
TOTAL LIVESTOCK PURCHASED		\$2,175
Crops and seed purchased:		
Hay 255 tons	1,658	
Wheat 33 bushels	23	
Miscellaneous seed	40	
TOTAL		\$1,721
Fertilizer purchased	25	
Labor and board - 41 months	2,365	
Sheep shearing	220	
Salt	100	
Taxes - real estate and personal property	263	
Irrigation water	112	
Grazing fees	128	
Interest on short-term credit	75	
Insurance on buildings	16	
Miscellaneous general expense	33	
Power equipment operating expense	220	
Other equipment repairs	250	
Depreciation on ranch equipment	267	
Depreciation on buildings	206	
Decrease in crops inventory	229	
TOTAL RANCH EXPENSE		\$ 8,406

NET RANCH INCOME	\$ 3,773
Less 4% interest on ranch investment	1,900
OPERATOR'S LABOR INCOME	\$ 1,873

Table 29. Organization of an Actual Sheep Ranch Operating One Band of
 Ewes (Continued) 82

RETURN ON RANCH INVESTMENT (Net farm income minus value of wage for labor and management estimated by the operator - \$1,200)	\$ 2,573
PER CENT RETURN ON RANCH INVESTMENT (return on ranch investment divided by ranch investment)	5.4%

His livestock operations are similar to those of the other sheep operators. He grazes his sheep on public domain in the spring, on the national forest during the summer, and uses private and leased sagebrush range for fall grazing. During the year he used a section and a half of leased range for which he paid 10 cents per acre. Also like other sheep ranchers, he has a few head of beef cattle and a few milk cows. The beef cattle and farm livestock returned a total of less than \$1,000 while the gross sheep return was over \$10,000.

On the average he received a livestock return of \$8.12 per ewe. His expenses for feed and labor charges totaled \$5.33 leaving a balance of \$2.79 per ewe for returns above feed and labor costs. This is about 60 cents above the average. The wool clip averaged 9.6 pounds which is slightly below average. The lamb crop and lamb weights were good, however, being 118 per cent and 87 pounds respectively.

Though this operator is relatively efficient in livestock production his crop yields were below those reported by most operators. The yields of alfalfa and oats, the only crops, were below average. Altogether his 1938 yields were 82 per cent of average yields in the area for the same year. The lower yields may have been due to the fact that his cropland is located on benchland and not in the valley floor. This, however, cannot be substantiated at this writing.

He had about 4½ men available during the year with which to accomplish about 1,100 man days of work. Thus each man accomplished about 248 days of work during the year.

The total investment in machinery and workstock was \$4,343 or \$20.46 per crop acre. The machinery cost per crop acre was \$5.05.

The operator financed his operations through a private bank. He borrowed \$5,000 for 3 months paying 6 per cent interest. One half of his long term or mortgage indebtedness has been paid off since he has been on the ranch.

This is a very successful ranch especially in view of the net worth accumulation of over \$3,000 per year. This would not have been possible had the operator hired all the work done. As the situation exists the father and 3 grown sons operate the ranch as a partnership, with the father in charge, and only hire the equivalent of one man for six months. The earnings of the partnership have been used to stock and equip the ranch and pay off the indebtedness.

After allowing his sons a total of \$2,000 as their combined wage the operator received \$100 a month in addition to 5.4 per cent on the total ranch investment. The living furnished by the farm was valued at \$498.

Dairy Farm

The cropland on this farm is located on the benchland and is well drained. The non-crop pasture land is located on the valley floor, but because of seepage is too wet and marshy to be suitable for crop production. It does, however, furnish pasture for the dairystock.

TABLE 30. ORGANIZATION OF AN ACTUAL DAIRY FARM

85

Keating Area, Baker County, Oregon, 1939

<u>FARM INVESTMENT</u>			
Land:			
Crop-land	acres	40.5	
Permanent pasture non-plowable	acres	36.5	
Farmstead	acres	3.0	
TOTAL	acres	80.0	\$3,250
Buildings			1,811
Machinery and equipment			862
Livestock:			
Dairy - 14 cows, 1 bull, and 10 head youngstock		\$ 985	
Horses - 5 workstock and 1 colt		335	
Sheep - 18 lambs		78	
Swine - 2 sows and 12 pigs		98	
Chickens - 60 hens and 165 young chickens		112	
TOTAL LIVESTOCK			1,608
Crops			90
Operating cash			50
TOTAL FARM INVESTMENT			\$7,671
<u>CROP ACREAGE AND PRODUCTION</u>			
Oats - 5 acres @ 50 bushels	bushels	250	
Alfalfa hay (2 cuttings) 33 acres @ 3 tons	tons	99	
Garden - .5 acres	acres	-	
Idle or fallow - 1 acre	acres	-	
Native pasture - 1 acre	acres	-	
<u>FARM RECEIPTS</u>			
Cows - 4 head @ \$45		\$ 180	
Bull - 1 @ \$70		70	
Steers - 2 head @ \$40		80	
Lambs - 14 head @ \$4.70 per head		66	
Fat hogs - 18 head @ \$7.70 per hundredweight		277	
Market chickens		117	
Butterfat - 2,720 pounds @ 24¢		653	
Eggs - 1,448 dozen @ 21¢		304	
AAA payments		57	
Increase in inventories of crops and livestock		143	
TOTAL FARM RECEIPTS			\$1,947

Table 30. Organization of an Actual Dairy Farm (Continued)

85

FARM EXPENSES

Livestock purchases	\$ 141	
Feeds purchased:		
Poultry feed	81	
Wheat - 100 bushels @ 54¢	54	
Oats - 250 bushels @ 32¢	80	
Barley - 42 bushels @ 48¢	20	
Seed purchased	20	
Fertilizer purchased	13	
Labor and board - 10 days	23	
Taxes - real estate and personal property	60	
Irrigation water	64	
Farm automobile operating expense - 6,750 miles	119	
Electricity - farm share	23	
Insurance on buildings	24	
Interest on short term credit	28	
Miscellaneous general operating expense	39	
Depreciation on farm equipment	69	
Depreciation on buildings	122	
TOTAL FARM EXPENSES	\$ 930	
<hr/>		
NET FARM INCOME	\$ 967	
Less 4% interest on farm investment	\$ 307	
OPERATOR'S LABOR INCOME	\$ 660	
<hr/>		
RETURN ON FARM INVESTMENT (net farm income minus value of wage for labor and management estimated by the operator - \$540)	\$ 427	
PER CENT RETURN ON FARM INVESTMENT (return on farm investment divided by farm investment)	5.6%	

This farm was purchased by its present operator in 1936 for \$5,300. A down payment of \$3,000 was made. His present equity is \$5,754 which represents an increase in net worth averaging \$915 per year for 3 years.

The sale of butterfat is the most important source of income, accounting for over a third of the total income. The sale of dairy-stock, hogs, eggs, and chickens, however, are also important.

The operator is above average from the standpoint of both crop and livestock production. His crop yields are 24 per cent above the average.

The cows produced about 265 pounds of butterfat per cow, which is not very high, but is still about 60 pounds above the average for dairy cows in the area. His livestock returns averaged \$78.55 per animal unit of productive livestock. After deducting feed costs of \$29.30 and labor charges of \$24.80 he has \$24.45 for income above feed and labor costs.

This farm apparently is a well organized one man business, providing year round work on the livestock enterprise for the operator and thereby keeping hired labor costs at a minimum. The operator hired 10 man days of labor and provided himself with 280 days of work on the farm.

The acreage in grain is rather small for the number of livestock carried. The operator fed about 7 tons more grain during the year than he produced. At the same time, however, he produced 25 more tons of alfalfa than was fed. If the acreage of hay were reduced and more acreage devoted to grain, then there would be a better balance

between the feed produced and the requirements of the livestock.

Machinery and equipment costs totaled \$279 or \$7.25 per crop acre. The investment in machinery and workstock averaged \$31.60 per crop acre.

The operator, though not having a large amount of gross income kept his expenses down and received a net farm income of \$907. After paying himself \$45 per month out of this amount he had a return of 5.6 per cent on his investment. The farm-furnished living was valued at \$389.

General Livestock Farm

The operator purchased this farm in 1937 for \$13,500. He paid \$5,900 down and assumed a Federal Land Bank mortgage for the unpaid balance. Stock and equipment which he brought on the place were valued at \$1,200. During the 2 years he has been there he has increased his net worth by \$814 or an average of \$407 per year.

During the one year of this record, the operator was below average in respect to yields for all his crops. His crop index was 32 per cent below the average for the area. Although he has 30.7 animal units of productive livestock, he sold over \$700 worth of hay and grain. His present intentions are to have more dairy stock and also a few head of beef cattle. In this way he expects to be able to sell his surplus hay and grain through his own livestock.

Farm receipts are mainly derived from the sale of butterfat, hogs, lambs, wool, and the crops which have been previously mentioned.

TABLE 31. ORGANIZATION OF AN ACTUAL GENERAL LIVESTOCK FARM 89

Keating Area, Baker County, Oregon, 1939

FARM INVESTMENT

Land:			
Cropland	acres	152	
Permanent pasture non-plowable	acres	20	
Farmstead	acres	3	
Rangeland	acres	5	
TOTAL	acres	180	\$12,000
Buildings			1,502
Machinery and equipment			1,111
Livestock:			
Dairy - 10 cows and 11 youngstock		\$ 707	
Horses - 2 head workstock		100	
Sheep - 50 ewes and 39 lambs		406	
Swine - 5 sows and 20 pigs		171	
Chickens - 76		57	
TOTAL LIVESTOCK			\$ 1,441
Crops			52
Operating cash			100
TOTAL FARM INVESTMENT			\$16,206

CROP ACREAGE AND PRODUCTION

Oats - 35 acres @ 46 bushels	bushels	1,610
Barley - 24 acres @ 40 bushels	bushels	960
Alfalfa hay (2 cuttings) 57 acres		
@ 1.4 tons	tons	80
Permanent plowable pasture - 36 acres	acres	-

FARM RECEIPTS

Oats - 1,300 bushels @ 31¢	\$ 410
Barley - 180 bushels @ 50¢	90
Alfalfa hay - 40 tons @ \$6	240
Lambs - 43 head @ \$5 per head	215
Fat hogs - 35 head @ \$7.50 per hundredweight	525
Butterfat - 1,371 pounds @ 24¢	329
Wool - 448 pounds @ 25¢	112
AAA payments	128
Pasture rent	100
Increase in inventories of crops and livestock	74
TOTAL FARM RECEIPTS	\$ 2,223

Table 31. Organization of an Actual General Livestock Farm (Continued)

FARM EXPENSES

Seed purchased	\$ 112	
Poultry feed purchased	12	
Livestock purchased	27	
Machine work hired	56	
Labor and board - 47 days	120	
Taxes - real estate and personal property	163	
Irrigation water	144	
Ditch maintenance	72	
Farm automobile operating cost - 7,920 miles	147	
Repairs on farm equipment	50	
Building repairs	50	
New buildings	100	
Insurance on buildings	17	
Interest on short term credit	16	
Miscellaneous general expenses	22	
Depreciation on farm equipment	146	
Depreciation on buildings	5	
TOTAL FARM EXPENSES		\$ 1,269

NET FARM INCOME	\$ 964
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Less 4% interest on farm investment	<u>648</u>
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LABOR INCOME	\$ 316
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RETURN ON FARM (net farm income minus value of wage for labor and management estimated by the operator - \$720)	\$ 244
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PER CENT RETURN ON FARM INVESTMENT (return on farm investment divided by farm investment)	1.5%
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Livestock production rates as well as crop yields are relatively low. Butterfat production averages only 177 pounds per cow, the lamb crop is 80 per cent and the lambs weighed 75 pounds when sold. The low butterfat production for 10 cows obviously gives a low livestock return. In fact the operator receives a minus \$3.39 return per animal unit of productive livestock after all labor and feed costs are paid. The operator feeds about \$21 worth of feed per animal unit, which is about \$4 below the average for this type of farming. It would appear that the cows are fed too little or are inferior in quality. The cows are a mixture of Shorthorn and Jersey, while the bull is a Shorthorn.

The farm offers about 416 days of productive work and the operator does most of this work himself. He hired only about a month and a half of extra help, so he has a full time job.

During the year the operator borrowed \$500 from the bank to finance his harvest expenses. The credit was used for about 6 months.

The expenses on this farm are not large in relation to the investment, yet the receipts are also not large. The difference between the two, the net farm income, is not enough to pay the operator a fair wage and also return him 4 per cent on his investment.

The two factors of poor crop yields and low production of butterfat per cow are the main reasons for this farm having a relatively low income. The study does not reveal ways of increasing crop yields, but undoubtedly the butterfat per cow could be increased by buying

better quality cows to replace the inferior animals he now has or by a better feeding program.

Crop Farm

This crop farm, presented in Table 32, is located on the valley floor of the Keating Area. It was purchased by the present operator in 1927 at a cost of \$6,500. The operator paid \$4,900 down, had stock and equipment valued at \$5,000 and non-farm assets of \$2,500. His present net worth is \$7,563 or an average decrease in net worth of \$403 per year for 12 years. This decrease in net worth is the loss incurred when the owner was in the range sheep business and should be no reflection on the productivity of the farm. In fact the farm is very productive, averaging 6 tons of hay per acre. Altogether the yields were 22 per cent above the average of the yields for the area.

Though the farm has been classified as a crop farm, about 40 per cent of the receipts are from sources other than crops. These sources are various kinds of livestock, livestock products, rent of sheep sheds, off farm labor, and AAA payments. The operator rents his lambing shed to a sheep operator from outside the area. He also sells his hay to this operator. Feeding the sheep on his farm is a good arrangement for keeping up the productivity of the soil.

Short term credit amounting to \$375 for 2 months was borrowed from the Baker Production Credit Association. His real estate mortgage indebtedness amounted to \$2,612 as of May 31, 1939. It consists of Federal Land Bank and Land Bank Commissioner loans.

TABLE 32. ORGANIZATION OF AN ACTUAL CROP FARM OF 80 ACRES

95

Keating Area, Baker County, Oregon, 1939

FARM INVESTMENT

Land:

Cropland	acres	57.5	
Permanent pasture non-plowable	acres	19.5	
Farmstead	acres	3.0	
TOTAL	acres	<u>80.0</u>	\$ 6,550

Buildings- 984

Machinery and equipment 486

Livestock:

Dairy - 2 cows and 2 youngstock		\$ 120	
Horses - 5 workstock and 2 colts		374	
Sheep - 14 lambs		40	
Chickens - 100 hens and 130 young chickens		80	
Turkeys - 2 hens and 23 young turkeys		<u>29</u>	
TOTAL LIVESTOCK			\$ 643

Crops 99

Operating cash 30

TOTAL FARM INVESTMENT \$ 8,792

CROP ACREAGE AND PRODUCTION

Oats - 19.25 acres @ 45.5 bushels	bushels	876
Alfalfa hay - 28 acres @ 6 tons	tons	167
Garden - .25 acres	acres	-
Bluegrass pasture - 10 acres	acres	-

FARM RECEIPTS

Oats - 750 bushels @ 29¢		\$ 216
Alfalfa hay - 143 tons @ \$6		858
Cows - 1 @ \$40		40
Calves - 1 @ \$14		13
Lambs - 9 head @ \$6		54
Fat hog - 1 @ \$5.80 per hundredweight		14
Market chickens		36
Market turkeys		25
Butterfat - 400 pounds @ 24¢		96
Eggs - 1,170 dozen @ 21¢		246
AAA payments		39
Off farm labor		28
Rent of sheep sheds		<u>140</u>
TOTAL FARM RECEIPTS		\$ 1,805

Table 32. Organization of an actual Crop Farm of 80 Acres (Continued)⁹⁴

FARM EXPENSES

Livestock purchased	\$ 36	
Poultry feed purchased	100	
Machine work hired	54	
Labor and board - 52 days	149	
Taxes - real estate and personal property	70	
Irrigation water	60	
Farm automobile - operating expense - 6,000 miles	134	
Repairs on farm equipment	15	
Interest on short term credit	8	
Miscellaneous general operating expense	18	
Depreciation on farm equipment	88	
Depreciation on buildings	67	
Decrease in inventories of crops and livestock	19	
TOTAL FARM EXPENSE		\$ 818
<hr/>		
NET FARM INCOME		\$ 987
Less 4% interest on farm investment		<u>352</u>
OPERATOR'S LABOR INCOME		\$ 635
<hr/>		
RETURN ON FARM INVESTMENT (net farm income minus value of wage for labor and management estimated by the operator - \$540)		\$ 447
PER CENT RETURN ON FARM INVESTMENT (return on farm investment divided by farm investment)		5.1%

The operator has machinery, equipment and workstock valued at \$779 or \$16.40 per crop acre, machinery costs averaged \$6.57 per crop acre. The farm is rather small, having only 190 days of average work available. This of course does not provide a full time job for the operator. In fact, on the average the 1.17 men working on the farm for the equivalent of a year averaged 163 days of work per man. It might be a good plan to have more livestock, especially dairy or poultry, on the farm to provide more work but the operator indicated he planned no such addition.

This farm does not have a large gross income, but on the other hand it does not have high expenses. The operator has kept the expenses down far enough, so that he received \$540 for his own wage and in addition receives farm-furnished living amounting to \$207 and 5.1 per cent on his investment.

PRESENT ECONOMIC STATUS

In the preceding analysis all farms have been considered from a basis which lends itself to comparing one farm with another or one group of farms with another group. This procedure assumes that all farms are free of debt, that all land operated on each farm is owned by the operator, and that all taxes have been paid. Of course, this situation is unreal. Most of the farms do have debts of one kind or another, many farms have rented land, and a few farms have delinquent taxes.

The 61 operators included in this area, according to their own estimates, had an average total farm capital or investment of \$28,077. Of this amount, \$7,372 was liabilities of the operator in the form of real estate mortgages, short-term credit, delinquent taxes, and unpaid interest. In addition to the liabilities, \$3,721 of the total average capital is the value of rented property. The average operator's equity per farm is \$16,984 after all deductions for liabilities and the value of rented property have been made.

The Credit Situation

Mortgage indebtedness. Of the 61 farms in the Keating Area, 45 were mortgaged by 63 individual loans. Of the 63 loans made, 28 were made by the Federal Land Bank and 6 by the Land Bank Commissioner. Federal Land Bank and Commissioner loans constituted 78 per cent of the total amount of outstanding mortgages. The remaining 29 mortgages were held by private individuals and institutions and the State Land Board. These loans accounted for the remaining 22 per cent of mortgage indebtedness.

The degree of indebtedness naturally varies a great deal between individual farms, some farms have no mortgage outstanding, while on other farms the mortgage indebtedness amounts to more than the operator's equity. Considering the area as a whole, the total mortgage indebtedness on real estate owned by the operators represents 36.8 per cent of the total value of this property.

The average amount of loans outstanding per mortgaged farm varied from \$1,528 on dairy farms to \$25,777 on sheep ranches with an average of \$7,391 for all farms actually mortgaged. (Table 33) The original amount of the mortgage indebtedness on all 61 farms (unmortgaged farms included) was \$6,290 which has been paid off until the present amount outstanding is \$5,452 per farm.

The weighted average rate of interest on real estate mortgages was 4.6 per cent. The Federal Land Bank and Land Bank Commissioner loans received 3½ and 4 per cent respectively while the private mortgages, State Land Board, and banks received from 4 to 8 per cent.

The age of the individual mortgages ranged from less than one year to more than twenty years with an average of seven years.

The percentage of the original amount of the mortgages that has been paid off varies from 8.8 per cent on the general livestock farms to 35.5 per cent on dairy farms with an average of 13.3 per cent for all farms. Thus on the average 1.8 per cent of the original amounts of the present mortgages has been paid off each year during the seven years which the mortgages have been outstanding. During the year covered by this study, the operators paid off 3.3 per cent of their original principal. Since most of the mortgages are Farm Credit Administration loans which operate on an amortization basis, the amount of the yearly installment which is applied on the principal becomes larger each year and conversely the amount paid as interest becomes less.

TABLE 33. REAL ESTATE MORTGAGE INDEBTEDNESS ON MORTGAGED FARMS BY TYPE OF FARMING

Keating Area, Baker County, Oregon, 1939

Type of farming	Number farms mortgaged	Original amount out-standing	Present amount out-standing	Age of present mortgage years/1	Per cent paid off	Fiscal year's payments		Rate of interest paid	Per cent principal paid off each year
						Prin- cipal	In- terest		
Beef cattle	13	\$10,550	\$ 9,201	5.4	12.8	\$293	\$460	4.9	2.4
Sheep	5	29,700	25,777	9.6	13.2	912	1,183	4.4	4.6
Dairy	8	2,935	1,828	7.7	35.5	94	92	4.8	1.4
General Livestock	13	4,410	4,020	6.1	8.8	247	194	4.6	1.4
Crop	6	3,342	2,865	9.9	14.2	98	150	5.1	1.4
ALL FARMS	45	\$ 8,527	\$ 7,391	7.2	13.3	\$287	\$ 357	4.6	1.8

/1 Represents the average number of years the present mortgage has been outstanding.

The delinquency in principal and/or interest payments amounted to 9.5 per cent of the number of loans outstanding or 3.5 per cent of the total amount outstanding.

The ability of the operator to repay his debts depends a great deal upon the size of farm; the volume of business, gross receipts; the efficiency of operation; and his general attitude toward debt repayment. In order to have a good debt carrying capacity an operator should have a business large enough to permit efficient operation and to provide a gross income that will pay all farm and living expenses and all interest charges and principal payments on his indebtedness.

The data indicate that on the average, after all the operator's farm expenses had been met, he had \$1,797, farm-furnished living not included, with which to pay living expenses and interest and principal payments on his indebtedness. The size of farm, efficiency of operation, and income for the present year indicate that the repayment capacity appears to be satisfactory. However, crop yields, range conditions, and changes in prices received by farmers may considerably modify the farm income and for this reason a one-year's income is not entirely sufficient to measure an area's loan repayment ability.

Short-term credit. Short-term credit is extended in the form of loans which are to be repaid within a relatively short period of time-- usually within a year. The credit is normally used to pay current farm operating expenses and for purchasing livestock and farm equipment. Chattel mortgages on crops, livestock, and equipment represent the

usual type of security.

Short-term credit consisted of 48 loans on 46 of the farms. Bank loans were largest in number, but ranked second in importance with respect to total year-dollars of credit.^{/1} (Table 34). Production Credit Association loans accounted for 75 per cent of the total year-dollars of credit, bank loans accounted for 15 per cent, and other loans 10 per cent. Over half the Production Credit Association loans were on beef cattle and sheep ranches. Ten of the 19 bank loans were on beef cattle ranches.

The total year-dollars per farm varied from \$11,035 on sheep ranches to \$274 on general livestock farms. The average for all farms was \$1,745 (Table 35). It must be remembered that the rates of interest do not account for inspection charges and the cost of owning stock in connection with Production Credit Association loans.

Land Tenure

Thirty-one of the 61 operators studied in this area rent land. Of these 31, seven rent all the land they operate, and 24 rent land in addition to the land they own.

Approximately 37 per cent of all the rangeland operated (not including publicly owned land), about 26 per cent of the non-cropland pasture and about 13 per cent of the cropland are rented. In terms

^{/1} See page 116 appendix, for explanation of terms.

TABLE 34. SHORT-TERM CREDIT BY SOURCE OF CREDIT

Keating Area, Baker County, Oregon, 1939

Source of credit	Number loans	Year- dollars per loan	Interest per loan	Rate of interest per cent
Baker Production Credit Association/ <u>1</u>	17	\$4,724	251	5.0
Bank	19	850	52	6.1
Other <u>2</u>	12	832	45	5.4
TOTAL LOANS	48	\$2,217	-	-

1 P.C.A. borrowers paid on the average \$12 per loan for inspection charges. This amounts to .26 per cent of the total year-dollars of P.C.A. credit. These borrowers also must own stock in the P.C.A. The amount of interest and the rate of interest is, therefore, not comparable to the other rates quoted.

2 Includes private, F.S.A., etc.

TABLE 35. YEAR-DOLLARS OF SHORT-TERM CREDIT AND INTEREST
PAID PER FARM BY TYPE OF FARMING

Keating Area, Baker County, Oregon, 1939

Type of farming	Number farms	Year-dollars credit/1	Interest per farm	Rate of interest
Beef cattle	16	\$ 1,566	\$ 88	5.6
Sheep	6	11,036	559	5.1
Dairy	14	524	27	5.2
General Livestock	17	274	15	5.3
Crop	8	397	20	5.2
ALL FARMS	61	\$ 1,745	-	-

/1 See page 116, appendix for explanation of terms.

of acres these percentages represent 36,825 acres of grazing land, 310 acres of non-cropland pasture, and 2,106 acres of cropland.

Although over a third of all the acres operated is rented, the value of these acres amounts to only 13 per cent of the total property valuation of the area. The high percentage of rangeland with its relatively low valuation per acre accounts for this apparent discrepancy. When measured by value, the largest percentage of the rented property is operated by beef cattle ranches. These outfits lease about 47 per cent of all rented land.

Nine of the 31 renters had crop share leases while the remaining 22 paid cash rent. The operators renting on the share basis usually paid one-half the hay and one-third the grain produced on the rented property. The landlord would pay the taxes and water charges and in some cases would furnish some of the seed.

Most of the grazing land rents for cash, but in a few cases the renter pays the taxes on the property or makes fence improvements for his rental fee. The grazing land rented for five to fifteen cents per acre with an average of about nine cents.

On the basis of the valuation placed on the rented property by the renters, the landlords received \$5.50 rent per \$100 valuation of the rented property. In turn the landlords paid about \$1.57 taxes per \$100 valuation. This would leave the landlord almost \$4.00 (for every \$100 worth of property he rents), to pay other expenses he incurs in operating the land and to pay interest on investment.

Taxation

No attempt was made in the field work to ascertain the degree of tax delinquency. In the Keating Area the taxes payable in 1939 were 14.2 per cent higher than the taxes payable in 1938. Figures for all of Baker County indicate that taxes payable in 1939 were 15.3 per cent higher than those of 1938. This suggests that the increase in tax assessments in the Keating Area is quite comparable to the increase for the county as a whole.

Capital Accumulation

Capital accumulation per year is undoubtedly one of the best measures of the long-time economic progress of an area. It shows the average annual increase in operator's net worth for the length of time the operator has been on the present farm.

Capital accumulation varied from \$868 per year on sheep ranches to \$201 on crop farms with an average for all farms of \$561 per year (Table 36). This average means that the operators increased their net worth \$561 per year for an average of 13 years after paying all farm expenses, all living expenses, all interest and principal payments on indebtedness and any personal contributions.

The two types of range livestock ranches had a considerably higher capital accumulation per farm and also per year, but it must be remembered that they were also much larger than the dairy, general livestock and crop farms, and therefore had a better opportunity to accumulate

TABLE 36. FINANCIAL PROGRESS BY TYPE OF FARMING

Keating Area, Baker County, Oregon, 1939

Type of farming	Net worth		Capital accumulation			Per cent capital accumulation per year is of original net worth
	Original	Present	Total	Per year	Years	
Beef cattle	\$15,514	\$30,756	\$15,242	\$721	18	4.6
Sheep	35,600	52,520	16,920	868	20	2.4
Dairy	3,406	7,794	4,388	426	10	12.5
General livestock	2,910	6,221	3,311	350	9	12.0
Crop	3,584	6,402	2,818	201	12	5.6
ALL FARMS	\$10,129	\$18,153	\$ 8,024	\$561	13	5.5

larger amounts. The sheep and cattle ranches accumulated 2.4 per cent and 4.6 per cent per year respectively of their original net worths. Other farm types accumulated 5.6 per cent to 12.5 per cent per year of their original net worth. This indicates that on the average the dairy, general livestock, and crop farms though not accumulating as much per farm or per year were just as successful in relation to their original investment or net worth as were the sheep and cattle ranches.

The average net worth of the operator when he moved onto his present farm varied from over \$35,000 on sheep ranches to less than \$3,000 on general livestock farms, with an average of \$10,129 for all farms. The operator's net worth when he moved onto his present farm (including down payment on purchase price, equipment, livestock and other assets) represents about 42 per cent of the present value of the operator's holdings. The average down payment per farm, \$3,657, accounted for about 50 per cent of the purchase price.

CONCLUSIONS

Farming in this area appears to be founded on a sound basis insofar as income is concerned. As might be expected, there were some individual farm operators who incurred losses during the year of this study, while many others received relatively high incomes.

During the year, June 1, 1938 to May 31, 1939, the farmers received an average return of four per cent on their investment and \$832 for their labor and management. Also over a long period of time,

representing a total of some 800 man-years of farm experience, these operators increased their net worth on the average by \$561 per year. About twenty per cent of the farms are too small to produce a satisfactory income under present methods of farming. Since practically all irrigable land is now in cultivation, increases in the size of these smaller units, in terms of acres, can only be obtained through subdivision of larger farms or through consolidation of small farms.

Other alternatives for increasing income are available and are more practical. Increasing the number and quality of dairy cows would be desirable for many of the smaller farms, especially those selling surplus hay. Obtaining higher quality cows would definitely increase the gross income. As the situation exists, the dairy cows in the Keating Area are inferior in butterfat production. During the year of this study they produced, on the average, only slightly more than 200 pounds of butterfat per cow, whereas the state average was 236 pounds. If rigid culling and purchasing, or raising of good quality replacements were practiced, there is no apparent reason why the production per cow could not be raised with little if any additional expense to the operator.

Management is just as important in many respects as size of farm. This is especially true in the case of beef cattle ranches. The more successful cattle ranches were operated under a plan of rigid economy. They had much lower expenses but received almost average gross receipts per animal unit. The low expense per animal unit was effected by economical feed and labor programs and low land charges.

The cost of labor, including the amount allowed the unpaid family and the operator, is one of the largest expenses. It averages over \$1,800 per farm for the Keating Area. On many farms economies in the use of labor can be accomplished. A change in farm enterprises which will permit a better distribution of labor throughout the year, the use of labor-saving machinery, better field arrangement, and a careful supervision of hired help may warrant considerable thought on the part of the operator.

Crop yields and machine costs are important factors affecting farm income. Some farms receive high crop yields and yet have relatively low machine costs. In fact this situation occurs on the more successful farms on all types of farming. Crop yields on the individual farm undoubtedly are influenced by physical factors such as soils and irrigation water supply. However, crop yields are also affected by the operator's methods of tillage, seeding, irrigating, and harvesting the crop.

Machine costs per farm, including interest and depreciation, average almost \$700, and it is entirely possible that this sum can be reduced. On many farms the machinery investment and costs are too large to give adequate returns and are a definite financial burden on the operator. If a more efficient and economical use of machinery is obtained, it will not necessarily mean a reduction of yields, for as previously stated, the more successful farms have relatively high yields with low machine costs.

One of the most serious problems in the area, is the rapidly spreading infestation of white-top. Unless the spread of this weed is

controlled it is very likely that the productivity of much of the cropland will be seriously affected. Its control is for the most part beyond the resources of the individual farmer. Consequently, it appears that cooperative action of all farmers in the area with aid from local, state, or federal governments will be required.

EXPLANATION OF TERMS

Total farm investment is the average of the beginning and ending inventories and represents the value of all land, buildings, and improvements, livestock, machinery and equipment, feeds, farm supplies, and cash required to operate the farm business. This figure includes the total value of all farm property owned, leased or rented by the operator, and does not include any deduction for indebtedness.

Productive man work unit is the average amount of work accomplished by one man in a day at usual farm tasks and under average conditions. The average labor requirements for various crops and various kinds of livestock have been determined by a long series of farm management studies. For example, a dairy cow in Eastern Oregon ordinarily requires 12 days of man labor per year while about two days of man labor are required to grow and harvest an acre of irrigated wheat. If, for a certain farm, we know the number of acres of different crops and the numbers of different kinds of livestock, we can calculate the number of productive man work units that would be required to operate the farm. The actual amount of work expended on this particular farm, however, may be larger or smaller than this calculated amount, depending upon the efficiency with which the work was done.

The following is a list of the labor requirements (productive man work units per acre and per head of livestock) used to determine the total productive man work units per farm in this thesis.

CROPS

	Productive Man Work Units per acre	
	<u>Irrigated</u>	<u>Dry land</u>
Grain:		
Spring wheat	2.0	1.0
Winter wheat	2.0	1.0
Winter wheat (volunteer)	1.2	-
Spring oats	2.1	1.0
Spring barley	2.1	1.0
Winter rye	1.5	1.0
Corn-grain	-	2.0
Hay:		
Alfalfa (1 cutting)	1.0	0.5
Alfalfa (2 cuttings)	1.7	0.7
Alfalfa (3 cuttings)	2.8	-
Alfalfa (no cuttings listed)	-	-
Wildhay	0.4	-
Red clover	1.2	-
Clover and timothy	1.2	-
Alfalfa and grass	1.0	-
Oat hay	2.0	1.0
Other grain hay	1.4	1.0
Crested wheat grass hay	0.3	-
Corn fodder	-	0.8
New seedings:		
Alfalfa (with nurse crop)	0.4	0.2
Alfalfa (without nurse crop)	1.6	1.0
Clover (with nurse crop)	0.3	-
Clover (without nurse crop)	1.0	-
Crested wheat grass (with nurse crop)	0.4	0.2
Crested wheat grass (without nurse crop)	1.0	1.0
Alfalfa, timothy, and fescue (without nurse crop)	1.6	-
Seed crops:		
Alfalfa seed	1.2	0.6
Crested wheat grass seed	1.0	0.6

Crops (continued)

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Productive Man Work Units
per acre
Irrigated Dry land

Miscellaneous:

Potatoes	-	2.0
Mangels	9.0	-
Crested wheat grass failure (hay or seed)	-	0.1

LIVESTOCK

Productive Man Work Units
per Head

Dairy cattle:

Cows	12.0
Bulls	5.0
Heifers and steers	2.0
Calves	0

Beef cattle:

Cows	1.0
Bulls	1.0
Two year old heifers and steers	0.6
Yearling heifers and steers	0.4
Calves	0

Horses:

Stallions	4.0
Unbroke horses	1.3

Sheep:

Ewe	0.5
Ram	0.5
Wether	0.4
Lambs	0

Hogs:

Sows	3.0
Other hogs	0.5
Boars	1.0

Livestock (continued)

	Productive Man Work Units per Head
Poultry:	
Chickens	0.2
Turkeys	0.2
Ducks	0.2
Geese	0.2

Man equivalent is the sum of the total labor that was required to accomplish the work on the farm (or farms) reduced to the equivalent of yearly full-time workers. In this study, the entire time of the operator is charged against the farm.

Productive man work units per man are the number of average days work to be done on the farm by each man in a year. It is determined by dividing the total "productive man work units" by the "man equivalent." The number of productive man work units per man, therefore, indicates, at least in a general way, the accomplishments of the available labor.

Animal unit is one cow, five mature sheep, 100 hens, or their equivalent in other livestock including workstock. An animal unit of productive livestock does not include workstock. A cattle unit is an animal unit of productive livestock on a beef cattle ranch. A sheep unit is one-fifth of an animal unit of productive livestock on a sheep ranch.

The following is a list of the number of the individual kinds of livestock which constitute one animal unit:

Number Head Equaling One
Animal Unit

Dairy cattle:

Cows	1.0
Bulls	0.75
Heifers and steers (one year old or older)	1.67
Calves	0

Beef cattle:

Cows	1.0
Bulls	0.75
Two-year old heifers and steers	1.0
Yearling heifers and steers	1.67
Calves	0

Horses:

Workhorses	0.8
Saddlehorses	0.8
Pack horses and pack mules	0.8
Stallions	0.8
Unbroke horses (including colts)	1.3

Sheep:

Ewes	5.0
Rams	4.0
Wethers	7.0
Lambs	0

Hogs:

All hogs	5.0
Pigs	15.0

Poultry:

Chickens	100.0
Turkeys	50.0
Ducks	100.0
Geese	50.0

Livestock returns is the value of the net increase in livestock during the year. It is obtained by subtracting the sum of the value of livestock at the beginning of the year plus the cost of livestock purchased from the sum of the value of livestock at the end of the year plus the receipts from livestock and livestock products sold.

Crop index is a measure of the physical productivity of the farm. The crop index on one farm or group of farms is expressed as a percentage of the average yields of the area. If the crop index is 120 for one farm, this would indicate that its yields are 20 per cent above the average yields for the area.

Machine cost is the total of all cash and non-cash expenses incurred in the use of farm machinery and equipment. It consists of machinery and equipment operating expenses, depreciation, machine work hired, and interest on the current value of machinery at four per cent.

Land charge is the sum of taxes on land, grazing fees, and four per cent interest on the value of all privately owned land operated.

Labor cost is the total value of all farm labor. It includes the value of hired labor and the cash cost of their board, and the wage estimated by the operator for his own time and the time of any unpaid members of his family.

Capital accumulation per year is the amount of net worth (value of property) which the operator has been able to accumulate per year on the average during the entire time he has been on his farm. It is computed by subtracting the operator's net worth at the time he moved onto (or purchased) the farm from his present net worth and

dividing the remainder by the number of years he has been on the farm.

Year-dollars of short-term credit is the amount of credit used for the equivalent of a full year. A loan of \$1,000 for six months would be equivalent to \$500 year-dollars.

APPENDIXTABLE 37. UTILIZATION OF PRIVATELY OWNED LAND

Keating Area, Baker County, Oregon, 1939

Land use	Total acres	Per cent of total acres
In crop	9,931.8	9.0
Idle or fallow	489.8	.4
Cropland pasture	1,465.0	1.3
TOTAL CROPLAND	11,886.6	10.8
Permanent non-plowable pasture	1,178.7	1.0
Farmstead, roads and waste	340.0	.3
Private rangeland	97,883.8	87.9
TOTAL ACRES	111,089.1	100.0

APPENDIX

TABLE 38. RELATIVE IMPORTANCE OF DIFFERENT CROPS
BY TYPES OF FARMING

Keating Area, Baker County, Oregon, 1939

Crop	Type of farming				Crop	All 61 farms
	Beef	Range	Dairy	General		
	cattle	sheep		livestock		
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
<u>Hay:</u>						
Alfalfa hay	42.9	64.0	55.6	40.9	56.0	50.7
Wild hay	30.6	-	10.0	2.4	8.7	15.0
Other hay	6.1	15.9	1.6	5.1	6.2	8.1
TOTAL HAY	79.6	79.9	67.2	48.4	70.9	73.8
<u>Grain:</u>						
Barley	5.7	3.6	6.3	21.4	4.0	7.0
Oats	4.6	5.7	9.2	10.9	6.0	6.3
Wheat	3.4	.8	7.0	11.9	9.1	4.5
Other grains	1.3	-	4.3	3.4	5.0	1.9
TOTAL GRAIN	15.0	10.1	26.8	47.6	24.1	19.7
<u>Miscellaneous:</u>						
New seedlings	4.0	9.8	3.7	3.0	1.8	5.3
Seed	1.0	-	1.2	.2	2.4	.8
Garden	.4	.2	1.0	.6	.7	.4
Other	-	-	.1	.2	-	-
TOTAL MISCELLANEOUS	5.4	10.0	6.0	4.0	5.0	6.5
TOTAL	100.00	100.00	100.0	100.0	100.0	100.0

APPENDIX

TABLE 39. FINANCIAL SUMMARY BY TYPES OF FARMING

Keating Area, Baker County, Oregon, 1939

Item	Type of farming					All farms
	Beef cattle	Sheep	Dairy	General livestock	Crop	
<u>Farm Receipts:</u>						
Crops sold	\$ 653	\$ 168	\$ 362	\$ 419	\$1,279	\$ 556
Livestock sold	6,789	13,114	749	794	364	3,512
Livestock products sold	375	6,467	633	369	251	1,015
AAA payments	293	517	83	67	66	174
Miscellaneous	271	130	56	113	115	144
TOTAL CASH RECEIPTS	\$8,381	\$20,396	\$1,883	\$1,762	\$2,075	\$5,401
Inventory increase	356	277	834	233	485	440
TOTAL FARM RECEIPTS	\$8,737	\$20,673	\$2,717	\$1,995	\$2,560	\$5,841
<u>Farm expenses:</u>						
Labor and board	\$1,043	\$ 3,870	\$ 132	\$ 48	\$ 186	\$ 722
Crop purchases	256	1,369	158	94	50	271
Livestock purchases	1,621	3,740	432	247	287	999
Machinery and equipment	1,007	1,357	482	321	341	643
Buildings and improvements	196	662	57	50	8	144
General	1,026	2,925	419	393	390	814
TOTAL CASH EXPENSES	\$5,149	\$13,923	\$1,680	\$1,153	\$1,262	\$3,593
Unpaid family labor	511	470	164	190	168	293
TOTAL FARM EXPENSES	\$5,660	\$14,393	\$1,844	\$1,343	\$1,430	\$3,886
NET FARM INCOME	\$3,077	\$ 6,280	\$ 873	\$ 652	\$1,130	\$1,955

APPENDIX

TABLE 40. FINANCIAL SUMMARY BY TYPES OF FARMING

Keating Area, Baker County, Oregon, 1939

Item	Type of farming					
	Beef cattle per cent	Sheep per cent	Dairy per cent	General livestock per cent	Crop per cent	All farms per cent
<u>Farm receipts:</u>						
Crops sold	7.5	0.8	13.3	21.0	50.0	9.5
Livestock sold	77.8	63.4	27.6	39.8	14.2	60.1
Livestock products sold	4.3	31.3	23.3	18.5	9.8	17.4
AAA payments	3.4	2.6	3.1	3.4	2.6	3.0
Miscellaneous	2.9	0.7	2.0	5.7	4.5	2.5
TOTAL CASH RECEIPTS	95.9	98.7	69.3	88.4	81.1	92.5
Inventory increase	4.1	1.3	30.7	11.6	18.9	7.5
TOTAL FARM RECEIPTS	100.0	100.0	100.0	100.0	100.0	100.0
<u>Farm expenses:</u>						
Labor and board	18.4	26.9	7.2	3.6	13.0	18.6
Crop purchases	4.5	9.5	8.6	7.0	3.5	7.0
Livestock purchases	28.6	26.0	23.4	18.4	20.1	25.7
Machinery and equipment	17.7	9.4	26.2	23.8	23.8	16.5
Buildings and improvements	3.5	4.6	3.1	3.7	0.6	3.7
General	18.3	20.3	22.6	29.4	27.3	21.0
TOTAL CASH EXPENSES	91.0	96.7	91.1	85.9	88.3	92.5
Unpaid family labor	9.0	3.3	8.9	14.1	11.7	7.5
TOTAL FARM EXPENSES	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 41. DISTRIBUTION OF INVESTMENT ON 16 BEEF CATTLE AND
6 SHEEP RANCHES

Keating Area, Baker County, Oregon, 1939

Item	16 beef cattle ranches		6 sheep ranches		
	Investment per		Investment per		
	Ranch	Cattle unit/2	Ranch	Sheep unit	Productive animal unit (5 sheep)
Land	\$27,757	\$136.40	\$49,220	\$19.90	\$ 99.70
Buildings	4,217	20.70	7,175	2.90	14.50
Equipment	2,124	10.50	4,024	1.60	8.10
Work stock	698	3.40	1,131	.50	2.30
Productive livestock	11,027	54.20	19,914	8.10	40.30
Operating cash	211	1.00	800	.30	1.60
Miscellaneous	266	1.30	404	.20	.80
TOTAL INVESTMENT/1	\$46,300	\$227.50	\$82,668	\$33.50	\$167.30
Receipts			Receipts		
Total receipts (in- cluding inventory changes)	\$ 8,737	-	\$20,673	-	-
Receipts per \$100 of investment	18.90	-	25	-	-

/ 1 As of June 1, 1938

/ 2 A cattle unit is comparable to a productive animal unit.

APPENDIXTABLE 42. HAY FED PER ANIMAL UNIT

Keating Area, Baker County, Oregon, 1939

Class of livestock	Hay per animal unit			
	By group average		By regression coefficient/1	
	Tons	Pounds	Tons	Pounds
Dairy	2.28	4,560	2.00	4,000
Beef cattle	1.58	3,160	1.46	2,920
Sheep	1.58	3,160	1.46	2,920
Horses	-	-	0.43	860

△1 The regression equation is as follows:

$$X_1 = 32.70 + 2.009X_2 + 1.455X_3 + 1.4583X_4 + 0.43X_5$$

$$R = .9728$$

$$\bar{Y} = 69.2$$

The symbols in the above equation represent the following factors:

X_1 = total tons of hay fed per farm

X_2 = tons hay fed per animal unit of dairy stock

X_3 = tons hay fed per animal unit of beef cattle

X_4 = tons hay fed per animal unit (5 head) sheep

X_5 = tons hay fed per animal unit of horses