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Influence of Tenancy on Types of Farming

AND

Agricultural Income by Soil Types Minidoka Irrigation Project

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Summary

1. The number of tenants in Idaho increased 21.8 per cent during the 5-year period, 1930 to 1935, yet Idaho with 28.5 per cent of all farms operated by tenants is considerably below the national farm tenancy average of 42 per cent.

2. The Minidoka Irrigation Project attained a peak of 49 per cent of farms operated by tenants in 1926. Since that date tenancy gradually decreased to about 27 per cent for the two counties, Cassia and Minidoka, in 1930. Since 1930 this percentage has again increased, and was about 30 per cent in 1935.

3. The uneven distribution of tenancy on the Minidoka Irrigation Project seems to be due to various ways in which location and soil conditions have affected the economic forces which go to develop tenant farming. In general it may be said that farm management is too complex on most parts of this project to promote a high percentage of tenancy.

4. Tenants tended to operate larger farms than owners, especially on the poorer soils and in locations near the boundaries of the project.

5. In general there was a tendency for tenants to farm the larger places with less intensive crops than did owner-operators. On smaller farms there was less difference in the relative acreage of crops on owner-operator and tenant farms.

6. Tenants' crop yields on the various soil types ranged from 2.5 per cent to 15.6 per cent lower than owner-operators' yields. The difference between owner-operators' and tenants' yields was greater on sandy soils than on heavy soils.

7. A measure of the relative stability of tenancy in the various soil areas showed that on those areas where tenants shifted frequently, tenants' yields were considerably lower in relation to owner-operators' yields than in those areas where tenancy was relatively stable.

8. Owner-operators, as a general rule, produced crops of a greater gross value per acre than did the tenants. On the average for all soils, this was true for each important crop. When all crops are added together and the average gross value of these crops calculated, it was found that the gross value of crops per acre on the smaller farms was $74.00 for owner-operators and $66.00 for tenants, and for the larger farms $72.00 for owner-operators and $64.00 for tenants. The deficiency by tenants below owner-operators on the poorest soils, however, was as much as $17.00 gross value per acre.

9. Tenants kept approximately two-thirds as much productive livestock as owner-operaters.

10. Tenants operated with a relatively smaller number of horses than did owner-operators.

11. Owner-operators had a higher investment in farm machinery and equipment than did tenants.

12. There are two general classes of tenant farms found on the project:

On the *first class* there is an unbalanced proportion of soil-building to soil-depleting crops with a large acreage of low paying cash crops. Livestock numbers are relatively small and surplus hay is sold from the farm to the detriment of soil fertility and crop yield.

On the *second class* the farms are organized very much the same as owner-operators' farms. There is a fairly well balanced acreage of soil-building and soil-depleting crops with rather large acreages of high-paying cash crops. Livestock is kept in reasonable numbers and soil fertility and yields of crops are relatively high even though somewhat below that of owner-operator farms.

Influence of Tenancy on Types of Farming
and
Agricultural Income by Soil Types Minidoka Irrigation Project[1]

Introduction

FARM tenancy increased in Idaho during the depression. The United States census indicates that 12,861 farms in Idaho were operated by tenants in 1935 as compared to 10,559 farms so operated in 1930. In terms of the total number of farms in the state, these tenant farms equaled 28.5 per cent in 1935 and 25.3 per cent in 1930. This may be compared to 42 per cent for the United States as a whole. As compared to the tenancy in most states, this percentage of tenancy is not alarming, but a percentage increase of 21.8 per cent in five years is not to be ignored.

From the standpoint of soil conservation, high yield, efficient production, and satisfying country living, tenancy has been deplored for several decades. Consistent with Mark Twain's observation that "There has been much talk about the weather, but to date there has been very little done about it," we find tenancy an unsolved problem. If anything is to be done about this situation in an organized manner, more facts about tenancy will be required. These facts will need to be collected for various types of farming in various geographical locations. This study shows that soil types within the same type of farming area are quite significant in their influence on the degree and type of tenancy.

During the year 1932, many facts were assembled about tenancy on the Minidoka Irrigation Project.[2] The project is located in south-central Idaho. The applicability of these findings to the present tenancy situation is apparent. The predominant forces which brought about the characteristics of tenancy in this area and similar irrigated tracts in southern Idaho still prevail.

The widespread interest in soil conservation has directed attention to tenancy as one of the most important obsacles to widespread acceptance of better soil management practices. A recent study made in Iowa and Mississippi by Rainier Schickele and John P. Himmel[3] shows the practical impossibility of practicing adequate soil conservation unless farm lease contracts can be modified to give security of tenure for a period of a few years. In lieu of such possible change in lease contracts, ownership would need to be expedited.

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1 A large part of the material found in this bulletin was first written in 1933 by Harold F. Brown in the form of a thesis in partial fulfillment of the requirements for the degree of Master of Science. Under the direction of Dr. Paul A. Eke, and on department expense, Harold F. Brown assembled the data during the summer of 1932. Departmental facilities of supervision and clerical assistance were made available during the winter of 1933, which permitted completion of the thesis that year. The bulletin manuscript has been written by Paul A. Eke in 1937. The authors are indebted to Professors Harold A. Vogel and C. O. Youngstrom for their suggestions during analysis of the data and their help with the order of presentation.

2 Emergency farm relief demands since 1933 have delayed publication of these findings.

3 Land-use Planning Publication No. 9, Resettlement Administration, Land Utilization Division. Land-Use Planning Section.

Area Covered by Study

This study is confined to the Minidoka Irrigation Project which is located in Minidoka and Cassia counties of Idaho. These counties lie in the south-central portion of the state and this project is located in the aproximate middle of a semi-circular band of irrigated land stretching from Weiser on the west to West Yellowstone on the east. This project consists of 112,000 acres of irrigated land on which about 100,000 acres are being cropped. The topography is nearly level with a slight decline toward the west. The altitude is between 4,200 and 4,400 feet above sea level. Annual precipitation averages about 12 inches per year which guarantees much clear, sunny weather during the growing season. Summer temperatures seldom get over 100 degrees Fahrenheit and winter temperatures are seldom more than twenty below zero. The average frost-free period is about 126 days and the nights are cool. Certain areas near the south boundary of the project are frosty and this precludes the growing of beans although potatoes is an important crop in all parts of the project.

Early History of Project Development. The irrigation water was first supplied to the area north of the Snake River in 1907 and to the area south of the river two years later. This project went through a period of trial and error comparable to other projects in Idaho. With high overhead costs, farming was not on the road to success until such high gross value crops as potatoes, sugar beets, and beans came to be important.

The tracts allowed most of the early settlers were 80 acres in size, and this size still predominates. Tenancy was not important during the early years of the project, but after the World War tenancy began to increase rapidly. Speculation in lands together with excessive farm loans caused wholesale foreclosures after the depression of 1921. In 1926, 49 per cent of all farms were operated by tenants. Since that date, until 1930, tenancy gradually decreased. Beginning with the first year of the depression, 1930, increases again occurred and the United States census shows an increase from 26.6 per cent in 1930 to 30 per cent in 1935 for Cassia county and from 27.1 per cent to 30 per cent for Minidoka county. A yearly census taken by the Federal Reclamation Service gives unusually reliable and detailed history of farm trends on this project. For most years, figures on annual shifts in tenancy can be obtained from this census.

Markets. Markets for farm products are found in the main in California and east of the mountains. High freight rates to distant markets have made necessary the production of high-quality products and of concentrated products such as seeds, livestock, and livestock products.

Soil Types. The soils of this project are like other desert soils in that they were originally low in organic matter before legumes were grown, but high in total essential mineral elements. They range in texture from blow sand to silty clay. Both water and wind-laid material are intermingled. A great diversity is found but eight distinct types of soil are of importance. Figure 1 shows the location of these soils.[1]

View fine sandy loam (Vf) soil is underlain by a layer of hard pan at a depth ranging from six to twenty-four inches. The underlying sub-

[1] From publication by Bureau of Chemistry and Soils of United States Department of Agriculture in cooperation with the University of Idaho, Agricultural Experiment Station, No. 27—Series 1923.

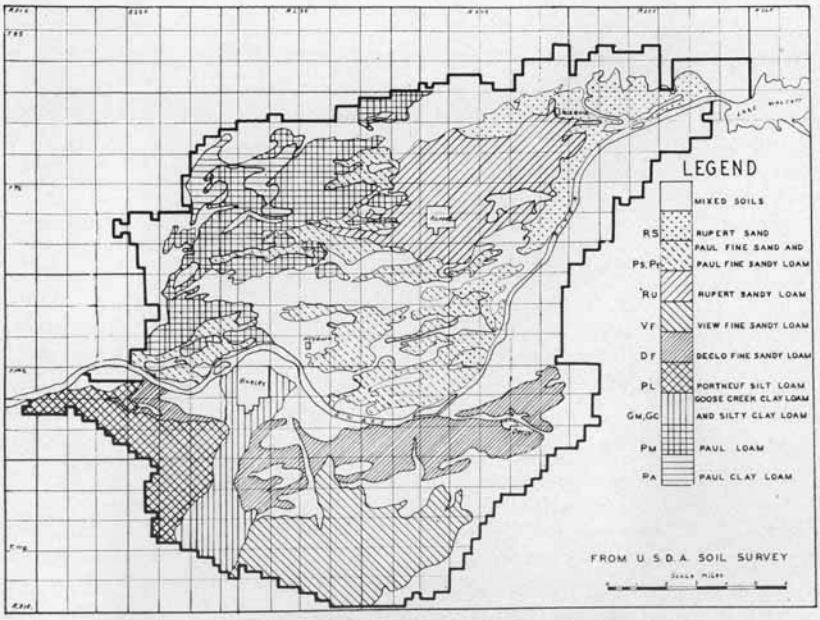

Fig. 1.—Soil map of Minidoka Irrigation Project, Idaho.

stratum is a bed of porous gravel. This soil type requires frequent irrigations and is easily depleted of fertility.

Declo fine sandy loam (Df) is a fairly deep soil with a tight subsoil and good water holding properties. It is well adapted to the production of intensive crops.

Portneuf silt loam (Pl) is a fertile aeolian silt. It is underlain by a tight calcareous subsoil with good underdrainage. It is adapted to intensive crops.

Goose Creek clay loam (Gm, Gc) is a dark, heavy creek bottom soil of excellent productive capacity.

Paul fine sand (Ps) and Paul fine sandy loam (Py) are two similar soils which overlay a clay subsoil to the depth of six to eighteen inches. These soils have a tendency to blow and fertility is easily exhausted. Seepage water is a serious problem on these soils.

Rupert sand (Rs) is a loose sand ranging from twelve to forty inches in depth. This soil blows badly and is leached of its lime and low in fertility. Abandoned farms are found in this soil type.

Rupert sandy loam (Ru) is a fairly deep soil, well adapted to all important crops of the area. It requires somewhat more water and more attention to fertility than the heavier soils.

Paul loam (Pm) is a rich, somewhat heavy, dark loam. It is well adapted to a wide variety of crops.

Paul clay (Pa) is a heavy soil better adapted to grain and hay than to cultivated row crops.

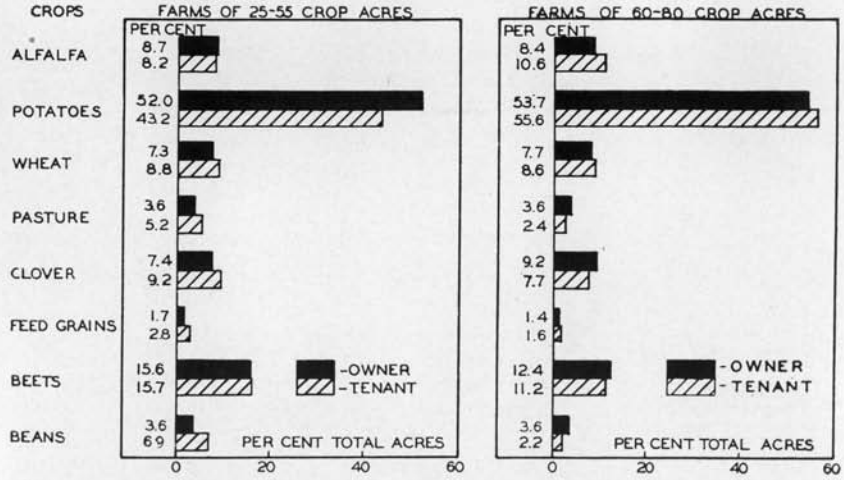

Fig. 2.—Relative importance of crops on owner and tenant farms in typical soil area (Declo soil area) on the basis of total gross value, Minidoka Irrigation Project, 1927-1931 (1), (2), (3).

(1) Only those farms which had some livestock have been included in computing the percentages of total gross value of all crops represented by each crop. These figures represent the average for all the farms included in the computations. Very few farms will have all those crops at any one time.

(2) The prices used in computing the gross value of the crops grown in 1927-1931 crop seasons were the average farm prices received by producers on the Minidoka Irrigation Project for the years 1925 to 1930, inclusive. These prices are as follows: Alfalfa hay, $8.67 per ton; clover seed, $.19 per pound; wheat, $1.02 per bushel; barley, $.64 per bushel; oats, $.42 per bushel; sugar beets $7.34 per ton; beans, $4.86 per hundred weight; and potatoes per hundred weight for No. 1's, $1.37; No. 2's, $.78; and for culls, $.20.

(3) Average farm prices for years 1925-1930 used with production seasons of 1927-1931.

In the discussion to follow, it is necessary to make frequent reference to soil types. The key for each soil type is shown in the legend of the soil map (*Fig.* 1.).

Importance of Crops. This project produces both crops and livestock, but it may be characterized as a *cash crop* area because of the high percentage of the farm income derived from such crops as potatoes, sugar beets, clover seed, wheat, and beans. Figure 2 gives the percentage of the total *gross crop value* for each of the important crops on Declo fine sandy loam during the seasons, 1927-1931, when average farm prices for crop years, 1925-1930[1], inclusive, are used. The percentages shown in Table II for this soil type may be considered fairly average or representative of the whole project. Income from potatoes is somewhat higher than would be normal because of the high prices received in 1925 and 1929.

[1] Average prices for 1925 to 1930 are used because they are typical for prices of the predepression period.

Sources, Accuracy, and Limitations of Data

The materials out of which this study is made consist largely of the crop and livestock reports gathered each fall by the ditch riders of the local irrigation companies. These data will be referred to as the *project irrigation census.* A separate report was taken for each farm to which water was supplied. These reports give the acres of each crop, pasture and idle land, the number and kinds of livestock, the approximate yield of all crops, the exact location of each farm, and they also indicate whether the operator of the farm for each year, was an owner or tenant.

The project irrigation census data were used for tabulating the acreages of crops and numbers of livestock on all farms on the project for three years, 1929 to 1931, inclusive. Yields were obtained for the last five years, 1927 to 1931, on all farms of certain selected survey sections. These sections were selected by soil type so that yields were not taken from farms of mixed soils. In addition to the yields, the acreages of crops were tabulated on these selected sections for the years 1927 to 1931, giving a five-year record of crop acreages on these selected sections. *Survey records* were taken in 1932 to give the rotation and yield records of many fields found on the different soil types of the project. These yield records were used as a check against the project irrigation census.

The acreage of crops is probably the most accurate figure of the project irrigation census. The numbers of livestock were reported accurately on nearly all records. The yields given are unquestionably biased downward because water charges have theoretically been fixed on a yield basis. It was in connection with the yield records that the *survey records* became of great importance.

These data are sufficient to describe rather completely the relationship of tenancy to types of farming on these soil types. Additional information would be necessary, however, to explain fully the reasons for the facts found. The types of lease contracts used, the kinds of landlords, annual financial returns, and a budgetry analysis of the various kinds and sizes of farms would be necessary to explain the differences in organization and management. Whatever the reasons, the differences of organization are shown to be of great importance to soil conservation, efficient production, farm income, size of farms, number of farm homes, and the total volume and value of agricultural commodities.

Extent of Tenant Operation by Soil Types

Each dot in Figures 3 and 4 represents 40 acres of crop land farmed by owners and tenants, respectively during the year 1929. Through close attention to the outline of the soil types, it is found that the greatest concentration of tenant farming is found on View soil along the southern part of the project. The Declo soil area and the Paul clay loam area rank second in the per cent of tenant operation.

A great variety of factors influence the growth of tenancy. Concentration of tenancy near the towns of Declo, Paul, and Burley can be explained in part at least by the probability that many of these farms are owned by retired farmers or by business men in town who hold these farms as an investment.

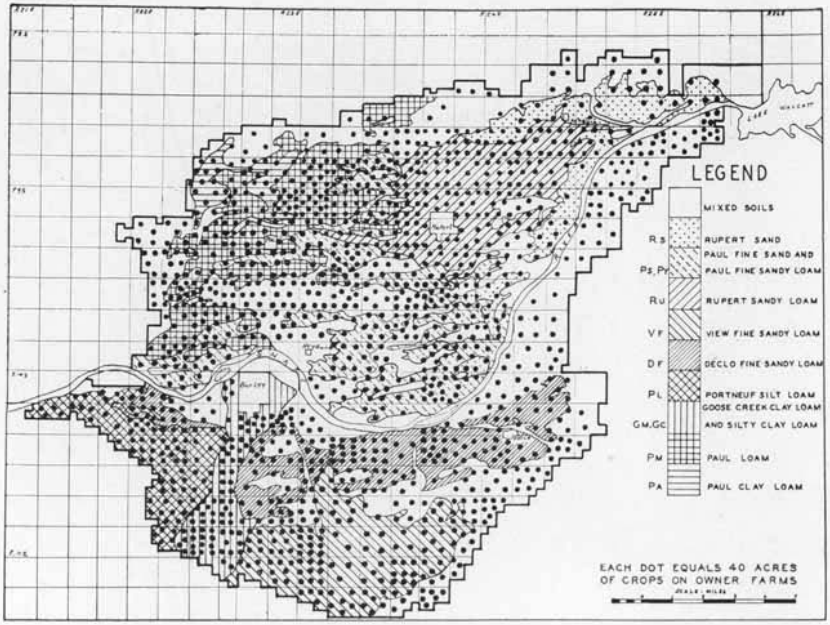

Fig. 3.—Distribution of owner-operator farms, Minidoka Irrigation Project, in 1929.

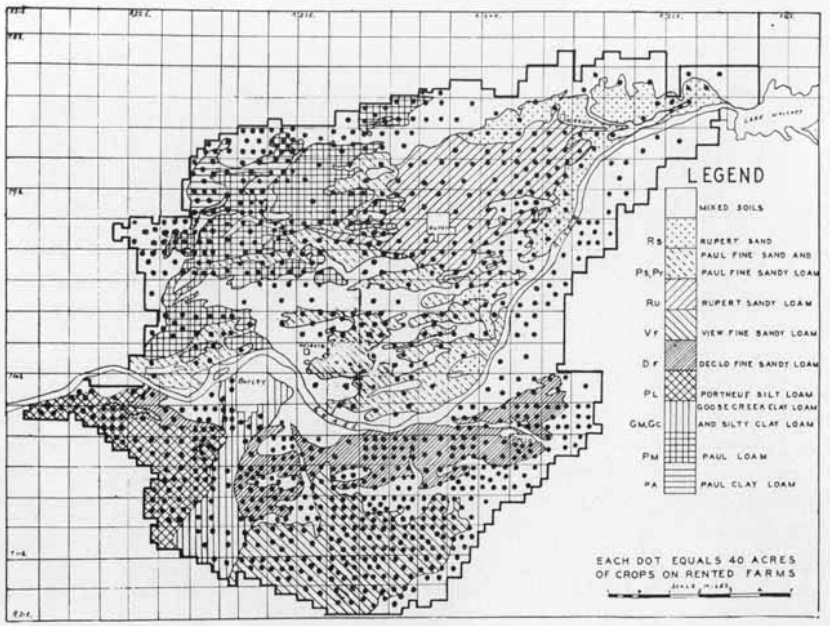

Fig. 4.—Distribution of tenant farms, Minidoka Irrigation Project, in 1929.

The relative scarcity of rented land on the sandy soils of the north side of the river can be explained in part at least by the inability of these soils to produce high paying crops. This has made necessary the production of feed crops and the keeping of livestock, and livestock is not very adaptable to tenant farming. These farms are also relatively low in price which permits purchase by many people with insufficient funds to buy the better lands. Moreover, seepage and uncertain crop production have prevented large mortgage loans and excessive speculation on these lands. Original owners in large numbers have been compelled to remain in hopes that in the future they might be able to obtain a price comparable to their investment. The rental from farms in this area would ordinarily be insufficient for retirement of the operator.

The low tenancy on Goose Creek soil is not easily explained. This area has highly productive soils adapted to crops which fit tenant operation. The explanation is probably social in large part. This fertile soil was some of the land first settled and farm improvements, paved roads, schools, power lines, telephone lines, and nearness to town makes these farms highly desirable for homes. Many pioneer families or their descendants who have inherited the property live there at present. Incomes from these farms are frequently comparable to professional incomes in town. Some of these farmers are the most prosperous and substantial citizens of the project. Many sons and daughters of these families are highly educated and skilled in the arts of agriculture and of country living. This soil type area is a good mirror for reflecting the deficiencies of tenancy and the productivity of other less desirable soil types.

Relation of Tenancy to Type of Farming

In most types of farming areas, tenants are prone to organize and manage their farms differently than do the owner-operators of the area. This was found to be true for the Minidoka project. To display this influence of tenancy on the type of farming, certain characteristics need to be isolated and measured. There are several important characteristics which differentiate types of farming and among these the following have been statistically treated: size of farms, crop acreage, crop yield, animal units per 100 acres of crop land, gross value of crops, and capital investment. Factual materials are given in all these categories by soil type because it has been found that tenants have varied their farm organization and management to fit natural and economic conditions found associated with the different soil types. The effect of tenancy on the kind and volume of products grown is highly significant. If tenant farms were greatly reduced in number or were operated in the same manner as owner-operated farms, some hundreds of thousands of dollars would be added to annual sales from the project. Likewise, a continued increase of the present kind of tenancy will tend to bring about the opposite trend of events. This direct effect of tenancy on the economy of the tract is of importance to all inhabitants.

Size of Farm. The tendency for tenants to operate larger farm units than owner-operators is found in nearly all states and farming regions. Table I shows that on the Minidoka project owners operate a relatively greater number of small farms than do tenants. When average size is

calculated, the average size of tenant farms is appreciably larger than owner farms on some soils, but the difference is not very great for all soils combined.

It is to the interest of the tenant to secure a farm which will use his limited capital and his labor to the best advantage. The economic law of diminishing returns will naturally induce the tenant to prefer a larger than average farm. Other considerations may also make the larger farm preferable. The farm owner is faced by the same problem, but frequently his limited capital does not permit him to buy the optimum size of farm unit. He tends, therefore, to farm somewhat more intensively and to secure part of his living from interest on his equity in the farm.

For purposes of analysis, farms were divided into two groups, (1) those ranging from 25 to 55[1] acres of crops, and (2) those ranging from 60 to 80 acres of crops. Table I and Figure 5 give distribution of the

TABLE I

Average Size of Owner and Tenant Farms and Percentage of Total Number in the 25 to 55 Acre Class on Each Soil Type of the Minidoka Irrigation Project, 1927-1931[1]

Soil Types[2]	Average Size of Farms		Percentage of Farms Having 25 to 55 Acres of Crops	
	Owners	Tenants	Owners	Tenants
	Acres	Acres	Per Cent	Per Cent
Vf	49.7	51.7	60	56
Df	49.7	58.7	51	37
Pl	64.0	57.1	29	43
Gm, Gc	50.2	54.8	65	50
Ps, Py	46.8	46.6	67	61
Ru	39.0	40.3	86	83
Pm	62.1	59.7	29	33
Pa	57.3	61.7	48	32
Average	**50.9**	**52.7**	**57**	**52**

[1] Data from Project Irrigation Census.
Included only the acreage on farms having livestock.
[2] Key to soil types given on soil map, Figure 1.

smaller farms by soil types and by tenure on these soil types. There are some striking differences. Paul loam (Pm) has the lowest percentage of small farms and Rupert sandy loam (Ru) has the largest percentage. The reasons for this situation are very complex, but the basic facts reviewed in this bulletin do give, in part at least, the casual connections.

Kinds of Crops Grown. Soil types had a marked influence on the kinds of crops grown in different parts of the project. Moreover, tenants and owner-operators even on the same soil type differed rather markedly in the same respect. It was found also that small farms had proportionately different acreages of crops from that of larger farms. Table II gives percentage differences between owner-operator and tenant farms of 25 to 55 acres and farms of 60 to 80 acres for all soil types and for each important crop. A plus sign shows that the tenants on the average had a higher percentage of their total crop acreage in that particular crop than did owner-operators. A minus sign indicated that tenants were below owner-operators.

[1] In order to obtain more clear differences of farms by acreages of crops, farms which had acreages of crops ranging from 35 to 60 acres were omitted.

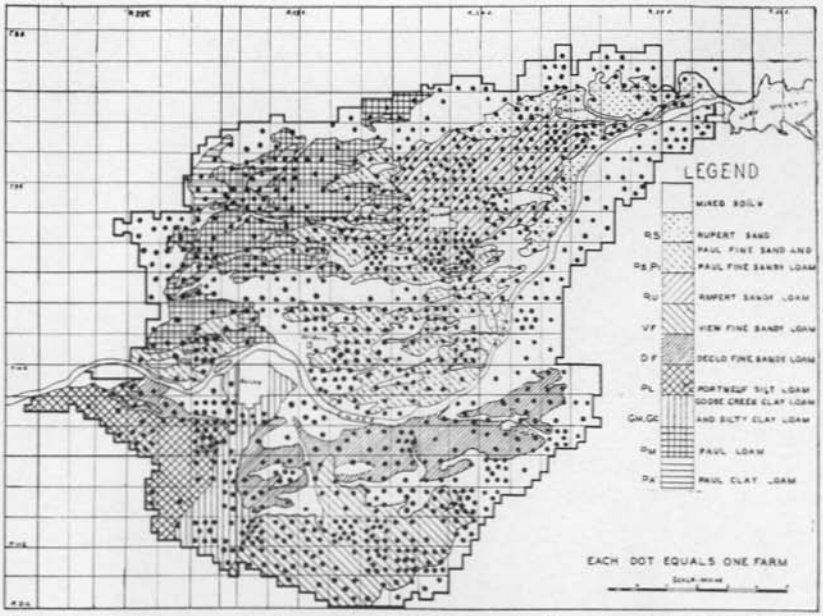

Fig. 5.—Distribution of farms with 25-55 acres of crops, Minidoka Irrigation Project.

On farms 60 to 80 acres (*Table II*), there was a decided tendency for tenant farms to have a larger acreage of alfalfa and beans than for owner farms. Most tenants had a smaller acreage of potatoes, pasture, clover, feed grains, and sugar beets. Owner-operators had a larger acreage of wheat than did tenants on five out of the eight soil types. This larger wheat acreage is, no doubt, related as a nurse crop to the larger acreages of clover on owner-operator farms.

On farms of 25 to 55 acres, there is a tendency for tenant farms to have a smaller acreage of alfalfa, potatoes, and pasture than for owner-operator farms. Some tenant farms tend to have a larger acreage of wheat and clover; the exact opposite of the condition on the larger tenant farms. There appears to be no consistent tendency for tenants to have any larger or smaller acreages of feed grains, beets, or beans than for owner-operators.

In general, there is a tendency for tenants to farm the larger places less intensively than owner-operators. On smaller farms there is less difference in the relative acreages of crops on owner-operator and tenant farms. Both owners and tenants on small farms are forced to practice more intensive cultivation on their farms because the acreage is limited in proportion to the labor and equipment at hand.

This description of the relative organization of owner-operator and tenant farms has brought out the tendency for a certain type of cash crop farming to increase as tenancy increases. The cash crops grown by tenants tend to be an extensive, low value per acre type which require a minimum of capital to produce. This tendency is accentuated as the size of farms increases. It is seen, however, that various changes in environ-

TABLE II

Summary of the Differences in Percentage of Crop Acres on Owner-operator and Tenant Farms of the Minidoka Irrigation Project, 1927-1931[1]

Farms with 25 to 55 Acres of Crops

Soil Type	Kind of Crop															
	Alfalfa		Potatoes		Wheat		Pasture		Clover		Feed Grain		Beets		Beans	
Vf	+	9.2	—	.8	+	2.1	—	3.8	—	.3	—	1.4	—	4.9	—	.1
Df	—	2.3	—	4.8	+	.1	+	2.5	+	1.9	+	2.2	—	1.9	+	2.3
Pl	—	3.8	+	10.5	—	4.7	—	.5	+	2.7	—	5.5	+	.9	+	.4
Gm, Gc	—	7.1	—	3.0	+	10.6	—	2.9	+	3.3	+	2.2	—	2.5	—	.6
Ps, Py	—	1.2	—	.4	+	1.7	—	4.0	+	1.2	+	1.0	+	2.9	—	1.2
Ru	—	5.5	—	4.3	+	.5	—	1.4	—	1.3	+	.6	+	7.6	+	2.8
Pm	+	1.9	—	3.4	+	3.9	—	2.5	+	1.2	+	.4	—	2.3	+	.8
Pa	+	6.2	—	1.7	—	2.5	+	2.3	+	1.0	—	5.3	+	.7	—	.7
Average	—	.3	—	1.0	+	1.5	—	1.3	+	1.2	—	.7	+	.06	+	.5

Farms with 60 to 80 Acres of Crops

Vf	+	14.0	—	5.8	—	1.2	—	2.2	—	6.0	—	.8	+	.7	+	1.3
Df	+	8.2	—	.1	+	.5	—	4.7	—	1.6	+	.6	—	1.8	—	1.1
Pl	—	.3	—	2.8	—	.9	+	4.5	—	0	—	1.5	—	1.0	+	2.0
Gm, Gc	+	11.3	+	3.9	+	4.9	—	8.8	—	2.0	—	2.3	—	7.3	+	.3
Ps, Py	+	10.8	—	3.4	—	3.3	—	2.8	—	.9	—	.9	—	.3	+	.8
Ru	+	1.0	—	2.1	—	1.2	—	6.5	—	1.7	—	2.0	—	4.3	+	16.8
Pm	+	1.6	+	3.5	—	1.1	—	2.9	—	.7	—	.7	—	.7	+	1.0
Pa	+	4.6	—	.3	+	12.1	—	7.1	—	6.1	—	3.5	—	.3	+	.7
Average	+	6.4	—	.9	+	1.2	—	3.8	—	2.4	—	1.4	—	1.9	+	2.6

[1] A plus quantity is amount that tenant acreage is above owner acreage. A minus quantity indicates tenants below owners. Only those farms reporting livestock are included.

ment (mainly soil type) alter the relationship of tenancy to type of farming in different areas.

The percentage of the total crop acreage devoted to the various crops by soil type, size of farms and tenure are shown in Figures 6 to 13. A close scrutiny of these figures reveals some differences in crops grown on farms grouped as above described, but of greater interest is the percentages of the total crop acres devoted to various crops. Frequently the reasons for such an acreage are clearly evident if the actual physical conditions of these soil types are known. Figure 6 covers the View fine sandy loam soil which is rather shallow above a hardpan formation. This soil lies farthest from a shipping point. These two situations, for example, are sufficient to make sugar beets a minor crop. Alfalfa, wheat, potatoes, and clover seed are important crops. Owner-operators tend to raise more beets because more owner-operator farms are small and lie closer to beet dumps. On the larger farms (60 to 80 acres of crop land) tenants raise mostly alfalfa, wheat and potatoes, but owner-operators grow less alfalfa and more potatoes. The insecurity of the tenants and the run-down condition of the tenanted farms probably account for this difference. Tenants raise much more alfalfa hay per animal unit which indicates that they sell a large part of the alfalfa hay as a cash crop. This hay frequently is fed off the farm and the manure is not used on the land. In a like manner the situation on each soil type could be described and explained.

Farmers experienced in farming on these eight soil types can point out in even more detail than is indicated by this study the factors tending to force farmers into raising these crops under a combination of circumstances which were found during the period 1927-1931. The main purpose of this publication is to show how tenancy has influenced farm organization on a typical irrigated project and to give a mathematical measure of these differences for a typical period of time. Inferences can be drawn as to what will be the influence of tenancy in the future under similar Idaho conditions. In this connection it is well to mention that tenancy relationships here found to exist have been found to agree in a broad general way with relationships found in such widely distant points as Iowa and Delaware.

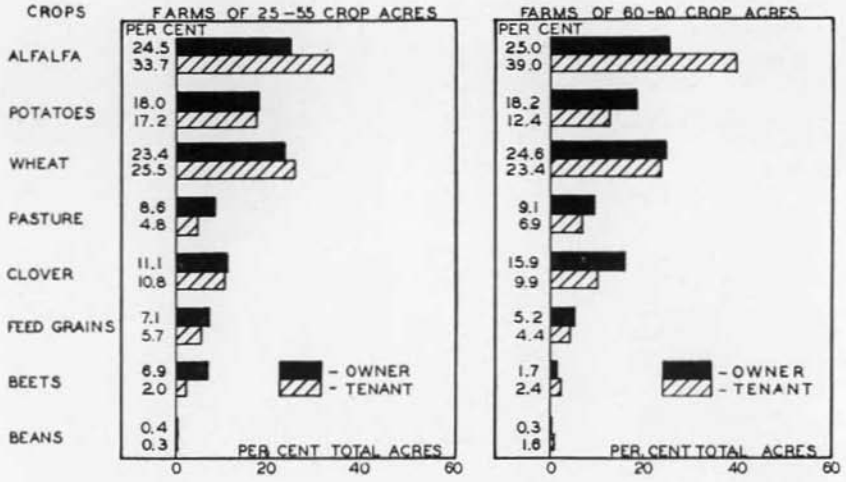

Fig. 6.—Relative importance of crops on owner and tenant farms in the View Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

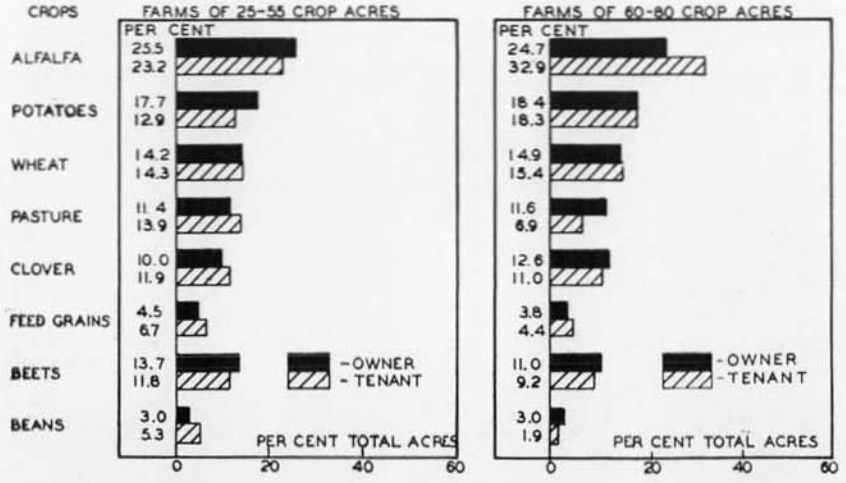

Fig. 7.—Relative importance of crops on owner and tenant farms in the Declo Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

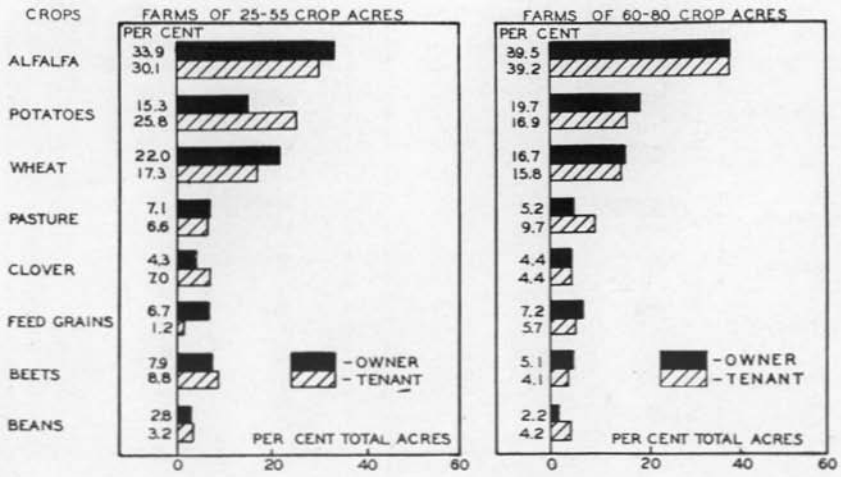

Fig. 8.—Relative importance of crops on owner and tenant farms in the Portneuf Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

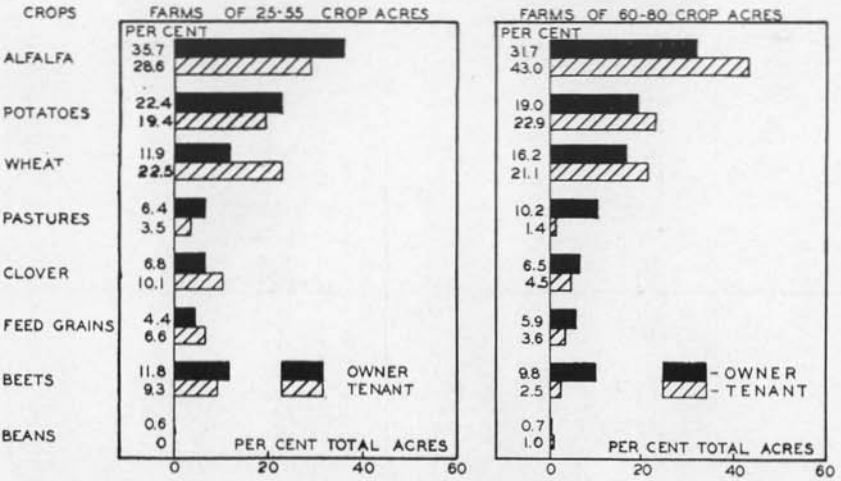

Fig. 9.—Relative importance of crops on owner and tenant farms in the Goose Creek Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

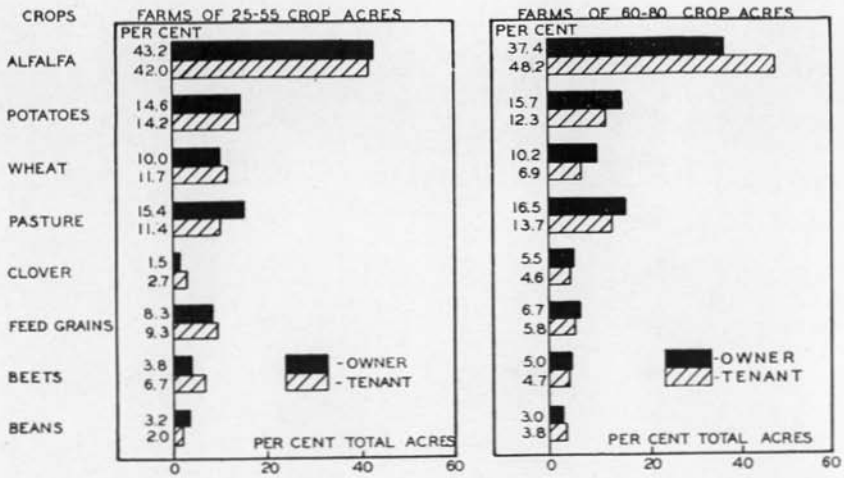

Fig. 10.—Relative importance of crops on owner and tenant farms in Paul Fine Sand and Sandy Loam Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

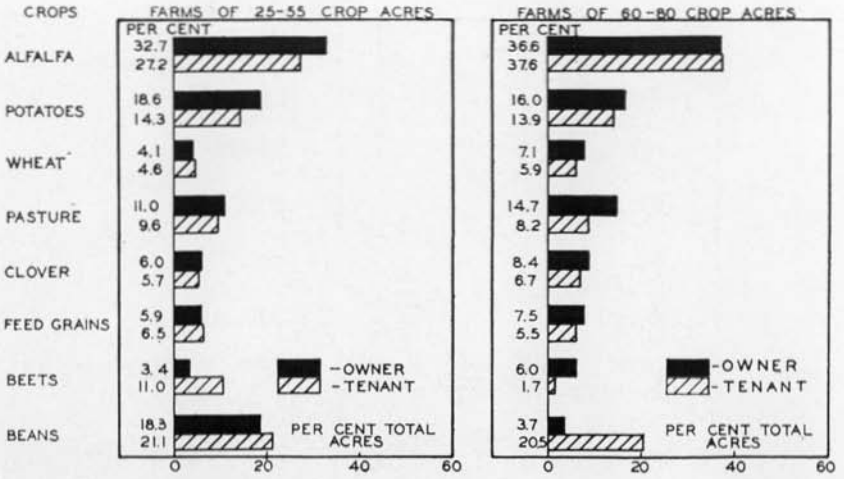

Fig. 11.—Relative importance of crops on owner and tenant farms in the Rupert Sandy Loam Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

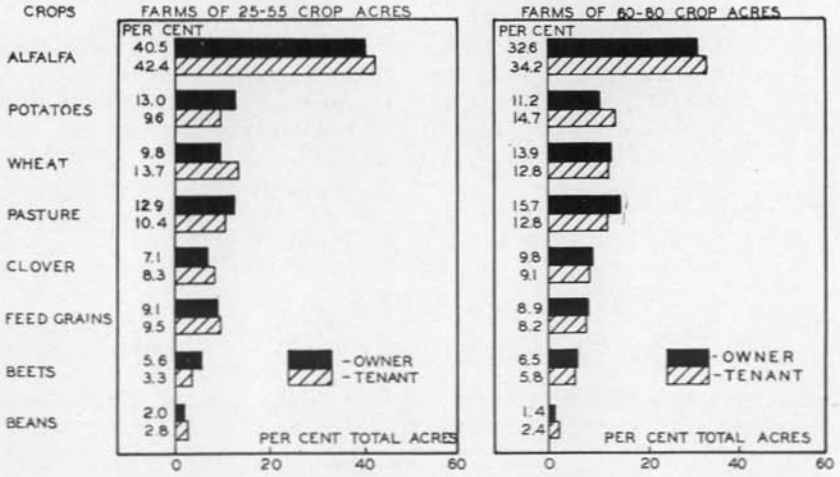

Fig. 12.—Relative importance of crops on owner and tenant farms in the Paul Loam Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

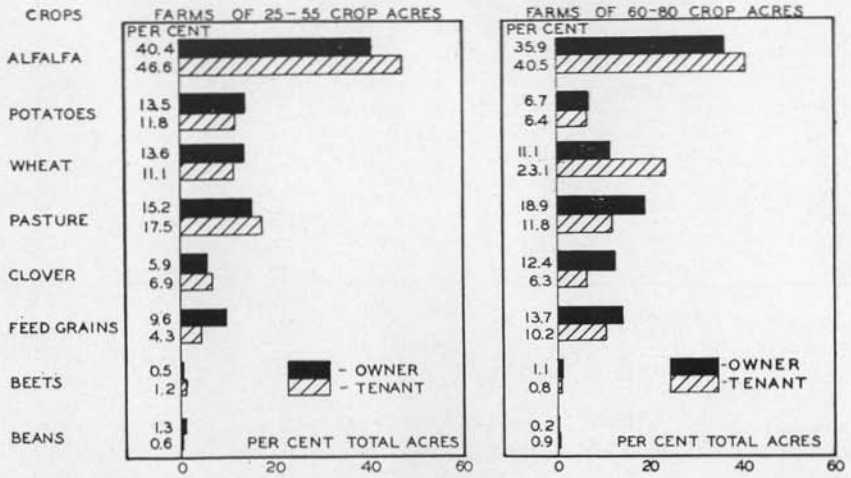

Fig. 13.—Relative importance of crops on owner and tenant farms in the Paul Clay Loam Soil Area on the basis of total acreage, Minidoka Irrigation Project, 1927-1931.

Crop Yields. The annual project irrigation census served to give a comparison between owner yields and tenant's yields by soil types.* The results of these comparisons are found in Table III. The average ratio of tenants' yields to owner-operators' yields on heavy soils was 91.6 per cent or 8.4 per cent lower. The sandy soils gave a lower ratio of 87.4 per cent or 12.6 per cent lower. The ratio of tenants' yields to owners' yields on sandy soils was, therefore, 4.2 per cent less than this ratio on heavy soils. This difference may be taken as an approximate measure of the difference in the extent to which the sandy and heavy soils of the project have been depleted in yielding ability under the influence of tenancy. A faster depletion of sandy soil is a result which might be expected under a system of farming in which there is a tendency to neglect soil fertility and conservation.

TABLE III

Ratio of Tenants' Yields to Owners' Yields by Types of Soil on the Minidoka Irrigation Project 1927-1931[1]

Kind of Crop	Average of Sandy Soils PS. PyRs; Vf and Df[2] [3] Per cent of Owners' Yields	Average of Heavy Soils Pl; Pm & Pa & Gm, Gc (2) Per cent of Owner's Yields
Alfalfa	89.2	94.0
Potatoes	88.4	91.0
Wheat	83.1	91.5
Beets	83.0	87.5
Barley	91.2	92.3
Clover Seed	85.0	91.9
Average ratio for all crops[4]	**87.4[5]**	**91.6[5]**

The volume and value of production which is being eliminated by the presence of tenancy is of great interest and importance to the citizen of the Minidoka Irrigation Project. Tenancy in 1935 equaled 30 per cent of the farms of Cassia and Minidoka counties and probably a somewhat larger percentage of the irrigated crop acreage. If the percentage decrease in yields for sandy soils (12.6) and for heavy soils (8.4) are averaged to obtain an approximate average reduction figure of 10.5 per cent, an estimate can be made as to the loss from farm tenancy. Of course some farm tenancy is natural and defensible largely for transferring ownership from one generation to another and usually tenancy under these conditions produces yields about as high as does owner-production. On the Minidoka project, however, much tenancy has arisen from foreclosures and ownership by investors. Assuming that all the decrease in yields occasioned by tenants was eliminated by better lease contracts or by owner-operation, the net increase to production in 1935 would have been 10.5 per cent increase on 30 per cent or more of the acreage. In terms of average gross acreage incomes for the years 1927-1931 when the average farm prices of

* As a check on the project irrigation census, a survey of many owner-operator farms was made to obtain yield estimates.

1 Yield data from Project Irrigation Census. Tenants' yields expressed as a per cent of owners' yields.

2 Key to soil types given on soil map, Figure 1.

3 Ratios on Rupert sandy loam soil (Ru) are not included in the average of sandy soils because of inadequate yield data and because of particular conditions which make tenant yields relatively high.

4 There were not enough yield data to determine percentages for oats, beans, and corn.

5 A geometric average.

1925-1930 are used, this saving could be figured as follows: Tenants averaged a gross return of $65.00 per acre of crop land for the above period. (*See Table VI*) They farmed about 30,000 acres of land which gave a gross value of $1,950,000. Ten and one-half per cent of this amount is a saving of $204,750. This means that for each per cent of tenancy during these years, $6,825.00 in production was sacrificed. The decrease in tenancy from about 49 per cent in 1926 to about 27 per cent in 1930 might be estimated in monetary terms as having a potential productive value in gross farm income of 22×$6,825.00 or $150,150.00 annually. These estimates do not account for the organizational shifts involving shifts from crops of low gross value to crops of high gross value per acre when owner-operation takes the place of tenancy. In addition, more farm livestock would be kept to still further increase gross returns. For comparative illustration it may be said that the gain in gross return could exceed all water maintenance charges of the project.

The figures in Table IV show the relative number of moves by tenants over a five-year period (1927-1931). These moves or turnovers are lowest for Rupert sandy loam (Ru) soil and highest for View fine (Vf) sandy loam soil. In fact, View fine sandy loam (Vf) soil shows about three times the amount of tenant turnovers found on Rupert sandy loam (Ru) soil. For these same soils the ratios of tenants' yields to owner-operators' yields are shown. The inverse order of these ratios shows that a relationship exists between a rapid turnover of tenants and low yields. The influence of the sandy and heavy soils and perhaps other factors are bound up in these figures; consequently, a mathematical measurement is precluded. The casual relation is not made clear because the low yields may promote a rapid tenant turnover as well as a rapid tenant turnover may reduce yields. It seems logical to assume that a vicious circle is present in the situation to make for progressively lower yields on the poorer and more easily depleted soils. Customary share leases, which allow the tenant about the same share of the crop regardless of the yielding capacity of the soil, apparently aggravate and insure the continuance of the above trend.

Gross Value of Crops. Gross value of crops per acre is a better measure for some purposes than net returns or labor income per farm. In measuring the influence of tenancy on the productivity of the whole

TABLE IV

An Index of the Rate of Turnover of Tenants and the Ratio of Tenant Yields to Owner Yields on Each Soil Type.

Minidoka Irrigation Project 1927-1931[1]

Soil Type[2]	Index of Average Turnover of Tenants (Average = 100)	Ratio of Tenants' Yields (Owners = 100)
Vf	154	87.9
Gm, Gc	129	89.3
Ps, Py	115	84.4
Df	90	91.8
Pl	88	97.5
Pm	73	89.9
Ru	52	94.3

1 Data from Project Irrigation Census. Ratio of yields from Table X.
2 Key to Soil Types Described on soil map, Figure 1.

TABLE V

Average Gross Value per Acre of Each Crop on Owner and Tenant Farms of Each Soil Type on the Minidoka Irrigation Project, 1927-1931[1]

Soil Types[2]	Alfalfa		Potatoes		Wheat		Clover		Feed Grains		Beets		Beans[3]		Pasture[4]	
	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.
	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
Vf	28	25	210	187	43	37	46	39	26	23	78	64	91	80		
Df	26	23	223	213	40	39	56	49	28	26	87	85	91	83		
Pl	28	29	222	218	51	46	53	50	32	29	67	65	91	89		
Gm, Gc	35	32	227	191	55	51	76	69	32	33	91	73	91	81		
Ps, Py	33	29	215	178	41	27	56	48	26	21	95	79	91	73		
Ru	35	34	230	205	39	39	54	47	31	27	92	77	91	91		
Pm	36	31	232	211	53	49	51	46	33	29	82	70	91	82		
Average	**32**	**29**	**223**	**200**	**46**	**41**	**56**	**50**	**30**	**27**	**85**	**73**	**91**	**83**	**24**	**24**

1 Data computed from the farm survey records with tenants' yields corrected by the ratios in Table X.
2 Key to soil types explained on soil map, Plate I.
3 Yields of beans on Rupert sandy loam is used on all soil types. Tenants yields of beans are adjusted by the average ratio of all crops on each respective soil.
4 An average gross value of pasture is computed on the basis of the average yield of four-year-old alfalfa hay less the labor cost in haying. The same estimated figure is used for both owners and tenants on all soil types.

project as a unit, gross value of all crops has considerable merit. At present, data are not available for the refinements necessary to give comparisons of net returns per acre and labor income on tenant versus owner-operator farms. Table V shows the average gross acre value of each crop on owner and tenant farms by soil type. The figures in Table V are obtained by finding the total production of each crop on owner and tenant farms of each class. The gross value of each crop is the product of the total production of that crop and the average farm price from 1925 to 1930, inclusive. The total value of each crop was then converted to an average per acre basis by dividing the gross value by the total acreage of each crop.

Owner-operators, as a general rule, obtained higher gross values per acre. The differences in gross value per acre between tenant and owner farms shown in Table V is due to differences in average yields. This table permits a comparison of the gross value per acre of the important crops of the project. Potatoes were by far the most valuable crop during this period. Two years of high prices during the period makes these figures relatively higher than they would be over a longer period of time. Figure 2 shows graphically the relative importance of these crops in terms of gross value for the Declo soil area. This soil area represents about average returns for all soil type areas, and illustrates the average situation very well. Sugar beets and beans represent fairly high acre values, while wheat, clover seed, alfalfa hay, pastures and feed grains were the low value crops.

Table VI gives the average gross value per acre of all crops on owner and tenant farms by soil type and size of farm. On most soil types the average gross value of crops on owner farms was greater than on tenant farms. This is due to higher yields received by owners, and to the tendency for owners to raise more potatoes but less alfalfa hay. This advantage in potato acreage is, however, cancelled to a considerable extent by a greater acreage of pasture and feed grains. The differences in gross values per acre on tenant and owner farms vary widely by soil types even though the average for all soil types is rather moderate. This shows that a reduction of tenancy or improved lease arangements would result in greater increase in gross returns on some soils than on others.

TABLE VI

Average Gross Income Per Acre from Crops on Owner and Tenant Farms of Each Soil Type on the Minidoka Irrigation Project 1927-1931[1]

Soil Types[2]	Farms with 25 to 55 acres of crops		Farms with 60 to 80 acres of crops	
	Owners	Tenants	Owners	Tenants
	Dollars	Dollars	Dollars	Dollars
Vf	69	59	68	51
Df	76	64	77	70
Pl	69	73	75	68
Gm, Gc	89	74	82	76
Ps, Py	63	54	66	51
Ru	83	75	72	70
Pm	66	54	64	64
Average	**74**	**66**	**72**	**64**

[1] Computed from average yields of owners and tenants, the relative acreage of all crops within each class of farms and the average prices 1925-1930 inclusive.
[2] Key to Soil Types explained on Soil map, Fig. 1.

No figures are included with these tables to show the relative income from livestock on owner and tenant farms. The inclusion of livestock would raise owners' gross income per acre relatively more than for tenants. However, the added returns from livestock above the value of the feed was rather moderate for this project during the period covered. The value of feed crops (which are relatively unimportant on this project) reflects the value of these crops for livestock feeding and for the purpose of comparing gross values on owner and tenant farms, total crop values serve alone quite well.

Livestock Production. A comparison of the number of livestock on owner and tenant farms of each soil type is shown in Tables VII and VIII. These tables show the numbers of each class of livestock for each 100 acres of crops on farms of 25 to 55 and farms of 60 to 80 acres respectively. Averages for all soil types are given at the bottom of each table. The numbers of all livestock (excluding horses) per 100 acres of crop land is given as productive animal[1] units by soil types in the right-hand column. This last column gives figures which can be compared directly with respect to the influence of tenancy on numbers of livestock. On farms having 25 to 55 acres of crops, owners had 20.8 productive animal units while tenants had 13.7 animal units per 100 acres. On the larger farms owners had 15.0 animal units and tenants 10.1. In nearly all cases the owner farms have more livestock of all kinds. On farms of both sizes tenants had an average of two-thirds as much livestock as owners. In those areas where tenancy was greatest and the turnover of tenants most rapid, the ratio was less than two-thirds. Both owner-operators and tenants kept relatively more livestock on small farms than on larger farms. The number of livestock units (excluding horses) per 100 acres of crop in 60 to 80 acre farms was approximately 72 per cent of the number on the smaller farms. This ratio is nearly the same on both the owner and tenant farms. One may conclude that a reduction of tenancy will not only raise the gross value per acre of crops but also increase livestock numbers and gross livestock income per farm. In 1935, 30 per cent of the farms were operated by tenants, and if productive livestock numbers were increased one-half on these farms by becoming owner-operated farms, total livestock would probably be increased about one-ninth for the project. Tables VII and VIII show that owners keep more horses than do tenants. This may show some greater efficiency in use of horses by the tenants, but another element which may account for most of the difference in numbers and efficiency is the safe assumption that owners rented more land in addition to the home farm than did tenants.

Alfalfa is an extensive cash crop on most of this area. Table IX gives a good indication of the relative amounts of alfalfa for sale by soil types. This is done by dividing the total tonnage of alfalfa hay by the number of animal units (including horses) for each soil type. The amount of hay required per animal unit varies from 2.5 to 4 tons per year. The amounts raised per animal unit ranged from 3.0 tons to 12.8 tons. It is, therefore, easy to see that much more alfalfa hay was raised than was fed to farm

1 An animal unit is a measure of livestock numbers on the basis of approximate feed consumption. One animal unit is equal to one grown horse or cow, 5 sows, 7 ewes, or 100 hens. The number of dairy cattle shown in Tables VII and VIII includes young stock reduced to cow equivalents through reducing the original number by 20 per cent.

TABLE VII

Numbers of Livestock and Animal Units per 100 Acres of Crops on Owner and Tenant Farms of 60 to 80 Acres, Minidoka Irrigation Project, 1927-1931[1]

Soil Types[2]	Horses		Dairy Cattle		Sheep		Hogs		Fowls		Productive Animal Units[3]	
	O.[4]	T.[4]	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Vf	6.0	5.0	6.9	4.2	21	40	19.6	7.8	83	44	13.2	11.1
Df	6.5	5.6	11.2	6.3	48	14	9.2	10.4	87	71	18.7	9.8
Pl	6.6	5.5	9.1	5.7	21	6	18.4	7.3	85	51	14.8	7.5
Gm, Gc	6.3	7.7	10.6	6.6	22	3	12.9	9.6	65	34	14.9	7.9
Ps, Py	6.0	6.2	7.7	13.7	37	7	4.1	3.1	62	54	12.9	13.1
Ru	6.3	5.2	8.2	6.4	51	7	5.4	9.6	80	49	15.8	8.5
Pm	6.1	5.4	8.8	7.9	40	18	13.0	8.2	38	44	15.9	10.9
Pa	5.6	5.7	5.9	7.3	47	30	8.0	5.3	60	74	13.6	11.8
Average	**6.2**	**5.8**	**8.6**	**7.3**	**35.9**	**16.6**	**11.3**	**7.7**	**73**	**53**	**15.0**	**10.1**

1 Data compiled from Project Irrigation Census. See footnote, page 24 for definition of animal units.
2 Key to Soil types is explained on the Soil map, Plate I.
3 Productive animal units does not include horses.
4 O. and T. used as abbreviations for owners and tenants.

TABLE VIII

Numbers of Livestock and Animal Units per 100 Acres of Crops on Owner and Tenant Farms of 25 to 55 Acres, Minidoka Irrigation Project, 1927-1931[1]

Soil Types[2]	Horses		Dairy Cattle		Sheep		Hogs		Fowls		Productive Animal Units[3]	
	O.[4]	T.[4]	O.	T.	O.	T.	O.	T.	O.	T.	O.	T.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Vf	9.9	8.3	11.8	6.7	51	9	15.1	13.9	147	108	21.3	10.6
Df	9.8	8.3	11.0	10.4	33	10	15.2	19.5	128	1107	17.8	14.7
Pl	8.3	7.6	8.8	7.1	53	9	26.9	13.1	101	84	21.0	10.0
Gm, Gc	8.9	8.9	16.0	8.8	16	....	18.0	20.6	164	148	20.3	12.6
Ps, Py	9.2	9.6	13.9	13.9	43	12	9.0	8.2	142	81	20.3	15.2
Ru	9.3	8.2	13.4	12.5	8	10	6.6	7.9	168	100	14.8	14.0
Pm	9.7	8.2	11.9	14.4	36	38	13.9	7.1	122	82	18.6	19.1
Pa	9.2	6.9	10.6	10.3	141	17	13.4	13.6	111	43	32.4	13.7
Average	**9.3**	**8.3**	**12.2**	**10.5**	**47.6**	**13.1**	**14.8**	**13.0**	**135**	**94**	**20.8**	**13.7**

1 Data compiled from Project Irrigation Census. See footnote, page 24 for definition of animal units.
2 Key to Soil types is explained on Soil map, Plate I.
3 Productive animal units does not include horses.
4 O. and T. used as abbreviations for owners and tenants.

livestock. On the smaller farms on all soil types tenants raised an average of .7 tons more and on the larger farms 3 tons more per animal unit than did owners. Some of this surplus hay was sold to an alfalfa mill at Rupert, but the great bulk was fed to range sheep wintered on the project. Since much of the manure from sheep feeding was never returned to the farms furnishing the hay, it can be seen that a real reason existed for smaller yields on tenant farms than on owner farms and on large farms than on small farms. Studies of tenant farming in Missouri[1] and Delaware[2] bear out these tendencies and conclusions with respect to soil depletion. In some areas in Iowa[3] a correct balance of livestock, soil-depleting and soil-building crops permitted as large a crop of grain per farm as was raised normally when soil-building crops and livestock were deficient. The net returns above expenses on this additional stock became net gain from a better balanced farm system. Opportunities exist for similar results on the cash crop irrigation projects of Idaho.

TABLE IX

Tons of Alfalfa Hay per Animal Unit on Owner and Tenant Farms of Each Soil Type in the Minidoka Irrigation Project. 1927-1931[1]

Soil Types[2]	Farms with 25 to 55 acres of crops		Farms with 60 to 80 acres of crops	
	Owners	Tenants	Owners	Tenants
	Tons	Tons	Tons	Tons
Vf	3.0	6.6	5.5	8.1
Df	3.3	3.3	3.3	6.7
Pl	4.7	7.0	7.5	11.6
Gm, Gc	6.0	6.7	7.1	12.0
Ps, Py	6.2	6.4	8.1	9.1
Ru	6.2	5.4	7.2	12.8
Pm	6.8	6.1	7.1	8.7
Pa	4.4	9.7	8.9	9.3
Average	**5.7**	**6.4**	**6.8**	**9.8**

1 Data compiled from Project Irrigation Census and survey records. Animal units include horses, cattle, and sheep.
2 Key to Soil Types explained on Soil Map, Plate I.

Capital Investment. A tenant does not usually have any capital invested in real estate. The rent which he pays over a period of years tends to equal the fixed costs borne by the landowner, including interest on the investment. An unbalanced situation between rents and capitalized land values is one force which tends to increase or decrease the amount of tenancy over a period of time.

Tenants of the Minidoka Project tend to have a smaller amount of operating capital than do owners. Figures have already been given with respect to numbers of horses. Table X gives the machinery and equipment investment for owners and tenants of Cassia and Minidoka counties for the years 1925 and 1930, and the percentage change over this five year period. These census figures are typical of the project, particularly of Minidoka county, because nearly all crop land is found on the project.

1 Study by O. R. Johnson and W. E. Ford, "Land Tenure," Missouri Agr. Experiment Station Bulletin No. 121, 1914.
2 Study by R. O. Bausman, "Farm Tenancy in Delaware," Delaware Experiment Station Bulletin No. 178, 1932.
3 Study by Schickele and Himmel, "Problems of Land Tenure in Relation to Land Use Adjustments," Land-Use Planning Publication No. 9, December, 1935.

TABLE X

Average Value per Acre of Machinery and Equipment on Owner and Tenant Farms in Cassia and Minidoka Counties. 1925 and 1930[1]

Year	Cassia County		Minidoka County	
	Full Owner Dollars	Tenants Dollars	Full Owner Dollars	Tenants Dollars
1925	13.72	9.40	14.56	7.23
1930	14.41	10.75	20.89	13.05
Per Cent increase	**Per Cent 5.0**	**Per Cent 14.3**	**Per Cent 43.5**	**Per Cent 80.5**

1 Compiled from the United States Agricultural Census.

The value of machinery and equipment per acre increased from 5 to 80 per cent between 1925 and 1930. This increase was greater on tenant farms and also greater in Minidoka county than in Cassia county. There was very little change in the price per unit of farm machinery during this time. This increase in value of machinery on farms is probably due to the fact that the 1925 census was taken at the end of a period of low farm prices when much farm machinery was in need of replacement. The 1930 census followed a period of fairly high farm prices, and particularly high potato prices in 1925 and 1929. These prices enabled farmers, particularly on irrigated land, to purchase new equipment. The greater percentage increase on tenant farms simply indicates the poorer quality and quantity of the machinery existing on tenant farms in 1925, and the relatively greater prosperity of the tenants after two years out of five of high potato prices.

Concluding Statement

Reviewing the differences between owner-operator and tenant farms and between tenant farms on different soil types and on smaller and larger farms, we may classify tenant farms into two general types.

The first class of tenant farms are those which tend to be exploited under tenant management. On these farms there is an unbalanced proportion of crops with a larger acreage of low paying cash crops. They are lightly stocked with cattle, sheep, hogs, and poultry. A surplus of alfalfa hay is grown and sold as a cash crop. This type of farm organization indicates a lack of crop rotation. It requires a minimum of capital for operation. Tenants' yields are lower than owners' yields. The farm income is also low as a result of low yields and a relatively large acreage of low value crops. The tendency is for the farm units to be enlarged by additional leasing because of insufficient income for a fair standard of living. Tenants on these low-yielding farms usually are required to give the same or nearly the same share of the crop as rental as on the better farms, consequently, tenants fail to operate profitably and move frequently.

The type of tenant farming is found mostly in certain outlying parts of the project, and is usually on relatively poor soil. Exploitive farming and this type of tenancy appear to have been brought about as a result of too high land prices, too large mortgage loans, too high taxes, and too high customary share rentals for this relatively poor soil. The trend of events have been foreclosure, frequent change of ownership, much absentee landlordism, and exploitation both of the soil and of the tenant.

Ownership in many cases has been acquired by persons with no intention of owning the farms permanently and who have adopted a shortsighted policy in making rental agreements. In these areas where the land has been sold to operating tenants on a sales contract, the terms have frequently been too onerous to permit anything but exploitive agriculture. For many years tenancy has been accentuated through a surplus population and of farmers seeking opportunities on this definitely limited irrigated area.

The second type of tenant farms is organized very much the same as owner-operator farms. The organization of these farms shows evidence of a fairly well balanced management program either as cash crop farms or as crop livestock farms. They have a relatively large acreage of high paying cash crops such as potatoes, beets, and beans. The acreage of alfalfa, wheat, feed grains, and pasture are in such proportion to the acreage of row crops and numbers of livestock as to indicate a fairly well balanced crop rotation. Tenants' yields are nearly as high as owners' yields. Their investment in working capital is also high. There is comparatively little shifting of tenants. While there was a tendency to enlarge the farm units of the first class of tenant farms, this second class is more frequently found on the smaller units. This type of tenant farming is found close to towns and on highly productive soil, which is well adapted to a variety of crops. The owners of these farms probably have closer supervision over them and select their tenants more carefully. This type of landlord is more likely to make favorable terms with their tenants by which they enable tenants to adopt more of a long-time policy of planning the farm organization and operation.

It can be concluded that a large part of the tenant farming on the project is detrimental to soil conservation, and a hindrance to realizing the full productive capacity of the project. The customary leasing arrangements are not in the "long run" interest of the landlord nor do they offer opportunities to the tenant to become a better farmer and improve his financial position. Educational efforts among landlords and tenants to acquaint them with more workable and equitable leasing contracts seem necessary in the interest of themselves, and of the people of the project as a whole. Education along lines of the appraisal of lands for sale, for assessment and for lending purposes, together with some organized efforts to encourage the purchase of land by worthy tenants seems desirable.