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Organization and Efficiency of Dry-Land Wheat Farms In Eastern Idaho

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Summary

THE dry-land wheat farmers of eastern Idaho have been faced with droughts and low prices at intervals over the past decade or so. More recently certain of the maladjustments caused by these conditions have been corrected. By having large and highly mechanized operating units, many of the farmers in the area are able to maintain a fairly high level of living by raising wheat. The A.A.A. wheat program also has materially assisted the farmers in this area. In view of the foreign market situation, the wheat outlook is none too bright, however.

An analysis of the records, taken on 234 dry farms in eastern Idaho show several things. The wheat farms are relatively large and average capital investments are substantial, averaging from eight to twenty thousand dollars per farm for the counties studied. The type of farming carried on is one of wheat and fallow. Winter wheat is the major crop grown.

Operator's earnings varied considerably by counties with Fremont having the lowest and Madison County the highest. The part owners with their large units had higher earnings than any other tenure group. The year under consideration proved favorable from the standpoint of wheat yields. Of the factors affecting earnings, farm size was of major importance. Farmers having less than 480 acres of cropland had, on an average, earnings too low to maintain desirable levels of living. An increase in size of farm has been taking place in this region. This has forced some operators off the land.

The dry-farm areas have been largely limited to wheat production because of climatic and rainfall conditions. In some individual cases the growing of legumes and the keeping of livestock was observed. Diversification possibilities should be further explored. A shift to grazing would mean a still more extensive type of agriculture than that now already practiced.

The data gathered by the survey method have been analyzed and have been made available to the county agricultural planning committees in each county studied. The committees have used these data in their land use planning work. The findings are, as presented here, a brief summary of the larger, unpublished reports used by the county planning committees.

Organization and Efficiency of Dry-Land Wheat Farms In Eastern Idaho

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LEO J. FENSKE and PAUL A. EKE¹

Introduction

THE dry-land farming areas of eastern Idaho are a significant factor in the agricultural economy of the state because of their extensive wheat production. The typical dry farm of this section is large and highly mechanized. A one-crop system of farming prevails, the rotation usually consisting of winter wheat and summer fallow. The dry farms may be further characterized by their small numbers of livestock and by the absence of any considerable acreages in soil-building and forage-producing legumes. These conditions are also fairly typical of wheat farms elsewhere in the Pacific Northwest.

Many major economic and social problems have confronted the dry-land wheat farmers of this section since the late twenties. Wheat production has fluctuated considerably because of alternating droughts and good growing seasons. Prices were extremely low in the early thirties. Poor crops coupled with low prices caused many farmers to suffer severe losses in this period. In addition to this, constant cropping with wheat, and erosion, have caused soil fertility and organic matter content to decline, thus bringing on a problem of soil maintenance and conservation.

The last few years have been favorable from the standpoint of crop yields, and better prices have prevailed. Some of the maladjustments of earlier years have been eliminated but often at the expense of a loss in farm population. Farm size has steadily increased in the dry-land areas. Larger farms mean fewer farmers. A decrease in rural population has brought on several social problems such as the adequate maintenance of rural schools, roads, and other community services. Serious economic problems still exist because not all farms are of a sufficient size to support the operator and his family at a comfortable level of living.

With a view of helping the dry-land farmers with their problems and of assisting the county agricultural planning committees in their work, the Agricultural Economics Department of the University of Idaho conducted a farm management survey in four counties in eastern Idaho. The data gathered from 234 dry-farm operators are briefly presented in this report to show the type of farming, size of business, financial returns, and factors that make for success on such farms.

Areas Studied

The major dry-farming sections in Teton, Madison, Fremont, and Oneida counties were included in the study. The wheat sections studied have a relatively high altitude. In the Teton area the altitude ranges from

¹Assistant Agricultural Economist and Agricultural Economist, respectively.

5,000 to 6,000 feet above sea level, and from 4,900 to 5,500 in western Oneida County. Characteristic of such an altitude, the growing seasons are quite short, with summer frosts adding to the hazards of farming in particular localities.

In general the topography of these wheat areas is gently rolling, although parts are cut up by canyons and rough broken tracts. The soils are of loessial origin, and are mainly of the Ritzville silt loam type. They are fairly well adapted to the growing of wheat when moisture is sufficient. Erosion by wind and water is prevalent throughout the region to some degree. Many of the lighter soils have been seriously damaged by erosion.

The annual rainfall in the areas surveyed ranges from 8 to 20 inches. The 1940 annual report of the High Altitude Branch Experiment Station at Teton shows a mean annual rainfall of 12.58 inches for the period 1919-1940. Farmers in the Teton area reported that drought causes at least partial damage to the wheat crop in about 1 out of every 4 years, while farmers in the area embracing Oneida County reported damage by drought once in every 5 years.¹ Moisture conditions are such that summer fallowing is necessary. The availability of moisture rather than a lack of soil fertility is the limiting factor to satisfactory crop production in this area.

Figure 1 shows the location and the tenure of operators on farms surveyed in the Teton region. The area surveyed in the western part of Oneida County is not shown on this map, not being adjacent to the three counties illustrated.

Farm Organization

Tenure

Of the 174 farm operators interviewed in Teton, Madison, and Fremont counties, 38 were owner operators, 51 were renters and 85 were part owners. The latter group represents those that own a portion of the land operated by them and rent the balance. These men were usually the larger operators. In Madison County and Teton County large acreages of wheat land were rented from the State of Idaho. The Oneida County situation was somewhat different as only 4 renters were interviewed, compared with 27 owner operators and 29 part-owner operators. Little or no state land was available for farming purposes in western Oneida County.

Capital Investment

One indication of size in the farm business is the amount of capital that the operator has invested in it. The dry-farm operators in the areas studied had substantial amounts of capital invested in their farms as is shown in Table 1. The average farm investment varied somewhat by counties, the farmers in Oneida County having the highest average. This can be accounted for by the higher percentage of land under ownership here than in the other areas surveyed.

The average investment shown in Table 1 is not classified by tenure groups. An analysis of the data showed that the part owners as a group

¹Washburn, R. S. ORGANIZATION AND CROP PRODUCTION PRACTICES ON GRAIN FARMS IN SELECTED AREAS OF THE PACIFIC NORTHWEST, U. S. Dept. Agr., Bureau Agr. Econ. 83 p., 1939 (mimeographed).

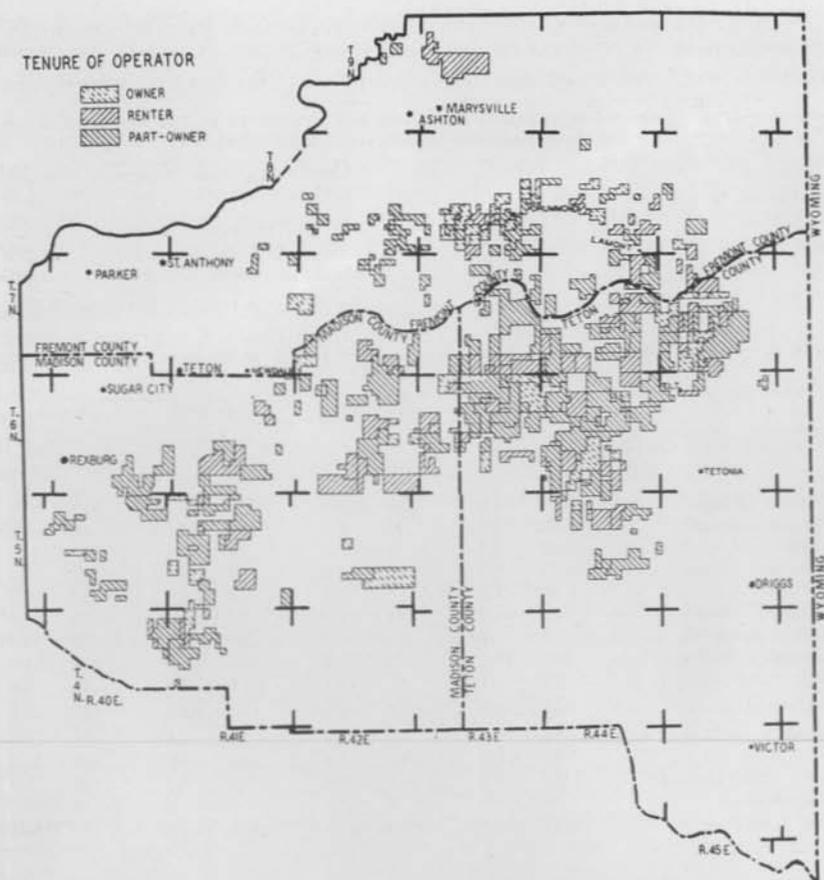


Figure 1.—Tenure of operators and location of farms surveyed in Teton, Madison, and Fremont counties.

had the highest capital investment; owners, second; and renters, lowest. Other than land, investment in machinery is of major importance. The operators in Madison and Oneida counties averaged more than four thousand dollars each in machinery inventories. This indicates one of the requirements that must be met in order to farm on a large scale in the dry-land wheat areas.

Land Utilization

Table 2 indicates how the land is used on the dry-farms in the four counties included in the survey. Winter wheat is the chief crop raised in all the counties studied, with the exception of Fremont County, where spring wheat outranks the winter varieties. Both alfalfa and crested wheat grass are grown to some extent. The Agricultural Adjustment Administration and Soil Conservation programs have encouraged the growing of these crops in recent years.

A high percentage of the farm land is devoted to crop production. Approximately 70 per cent of the total farm acreage surveyed in Teton, Fremont, and Oneida counties was classified as cropland by the farmers.

Table 1.—Average capital investment, liabilities and net worth of 234 dry-land farmers in four counties in eastern Idaho, 1939

| | Teton | Madison | Fremont | Oneida |
|------------------------|-----------|-----------|-----------|-----------|
| Number of farms | 72 | 51 | 51 | 60 |
| | (dollars) | (dollars) | (dollars) | (dollars) |
| Farm assets | 10,182 | 16,156 | 11,911 | 23,155 |
| Farm liabilities | 1,612 | 2,839 | 1,995 | 3,065 |
| Net worth | 8,570 | 13,317 | 9,916 | 20,090 |

Table 2.—Land utilization on 234 dry-land wheat farms in four counties in eastern Idaho, 1939

| Item | Teton | | Madison | | Fremont | | Oneida | |
|------------------------------|------------|--------------|--------------|--------------|------------|--------------|--------------|--------------|
| Number of farms | 72 | | 51 | | 51 | | 60 | |
| | (acres) | (%) | (acres) | (%) | (acres) | (%) | (acres) | (%) |
| Crop | | | | | | | | |
| Winter wheat | 155 | 18.8 | 272 | 26.6 | 37 | 5.8 | 313 | 27.1 |
| Spring wheat | 47 | 5.7 | 19 | 1.9 | 118 | 18.6 | 6 | .5 |
| Oats | 22 | 2.7 | 4 | .4 | 32 | 5.0 | | |
| Barley | 22 | 2.7 | 23 | 2.2 | 17 | 2.7 | 11 | .9 |
| Alfalfa | 25 | 3.0 | 15 | 1.5 | 15 | 2.4 | 17 | 1.4 |
| Crested wheat | 37 | 4.5 | 41 | 4.0 | 22 | 3.5 | 10 | .9 |
| Other crops | 6 | .7 | 7 | .7 | 34 | 5.3 | 22 | 1.9 |
| Summer fallow | 237 | 28.7 | 391 | 38.2 | 147 | 23.1 | 369 | 31.9 |
| Idle crop land | 34 | 4.1 | 42 | 4.1 | 16 | 2.5 | 39 | 3.4 |
| Total crop land | 585 | 70.9 | 814 | 79.6 | 438 | 68.9 | 787 | 68.0 |
| Plowable pasture | 15 | 1.8 | 20 | 1.9 | 19 | 3.0 | 46 | 4.0 |
| Other pasture | 163 | 19.8 | 121 | 11.8 | 120 | 18.9 | 281 | 24.3 |
| Waste, miscellaneous | 60 | 7.3 | 65 | 6.4 | 57 | 8.9 | 41 | 3.5 |
| Farmstead | 2 | .2 | 3 | .3 | 2 | .3 | 2 | .2 |
| Total acres | 825 | 100.0 | 1,023 | 100.0 | 636 | 100.0 | 1,157 | 100.0 |

This figure amounted to 79.6 per cent in Madison County. All farms surveyed in Madison County averaged 814 acres of cropland and those in Oneida County averaged 787 acres. The Teton and Fremont farms were smaller as Table 2 indicates.

Farm Earnings

Table 3 shows the average receipts, expenses, and operator's earnings per farm by counties for the year under consideration. Ranking first in average earnings were the Madison County farmers with an average of \$2,566 per operator. The Oneida County group ranked second with an average of \$2,103 in operator's earnings. Teton and Fremont County operators averaged \$1,406 and \$846, respectively, in this measure of financial success. In general the larger farms had the higher earnings. This accounts for the higher earnings in Madison and Oneida counties.

Crop sales were the major source of income on the dry farms included in the survey, ranging from \$2,206 in Fremont County to \$4,980 in Madison County. About 70 per cent of total farm receipts came from the sale of crops, chiefly wheat. In all counties A.A.A. receipts were fairly sub-

stantial. The Madison County operators averaged \$908 from government payments. For all farms combined, 15 per cent of the total farm receipts were derived from conservation and parity payments. Income from the sale of livestock and livestock products was relatively unimportant. The Oneida County farms averaged highest in this respect.

A breakdown of farm expenses is also shown in Table 3. Fuel for the tractor, truck, and farm share of the automobile was in general the largest single item of expense on these farms. Wages for hired labor, machinery repairs, and rent were also important items. All farms showed a net decrease in inventory indicating that depreciation charges on machinery and improvements were greater than value increases in livestock and supplies inventories.

Table 3.—Average receipts, expenses and operator's earnings on 234 dry-land wheat farms in four counties in eastern Idaho, 1939

| Item | Teton | Madison | Fremont | Oneida |
|---|---------|---------|---------|---------|
| Number of farms | 72 | 51 | 51 | 60 |
| Cropland, acres | 585 | 814 | 438 | 787 |
| Receipts: | | | | |
| Crop sales ¹ | \$2,653 | \$4,980 | \$2,206 | \$4,124 |
| Livestock sales | 216 | 216 | 254 | 522 |
| Livestock product sales | 151 | 40 | 157 | 48 |
| A.A.A. | 699 | 908 | 531 | 751 |
| Labor off farm | 74 | 25 | 56 | 24 |
| Other cash income | 164 | 84 | 149 | 128 |
| Total cash receipts | 3,957 | 6,253 | 3,353 | 5,597 |
| Farm produce used in home | 123 | 126 | 184 | 143 |
| Total farm receipts | 4,080 | 6,379 | 3,537 | 5,740 |
| Operating expenses: | | | | |
| Hired labor | 274 | 299 | 226 | 294 |
| Board for hired labor | 61 | 66 | 62 | 57 |
| Gas and oil | 452 | 611 | 360 | 494 |
| Custom work | 144 | 161 | 140 | 123 |
| Machinery repairs | 165 | 293 | 144 | 155 |
| Feed and seed | 108 | 61 | 69 | 52 |
| Livestock purchased | 142 | 90 | 134 | 225 |
| Miscellaneous | 162 | 268 | 161 | 264 |
| Capital expenses: | | | | |
| Cash and share rent ² | 327 | 426 | 374 | 189 |
| Taxes and insurance | 179 | 211 | 161 | 185 |
| Interest paid on farm debts | 70 | 185 | 89 | 163 |
| Improvement repairs | 24 | 17 | 23 | 57 |
| Total cash expenses | 2,108 | 2,688 | 1,943 | 2,258 |
| Net decrease in inventory | 39 | 253 | 82 | 211 |
| Value unpaid family labor | 97 | 200 | 170 | 157 |
| Total farm expenses | 2,244 | 3,141 | 2,195 | 2,626 |
| Net farm income | 1,836 | 3,238 | 1,342 | 3,114 |
| Interest on investment ³ | 430 | 672 | 496 | 1,011 |
| Operator's earnings | \$1,406 | \$2,566 | \$ 846 | \$2,103 |

¹Includes value of landlord's share of crop.

²Includes value of landlord's share turned over as rent.

³Calculated at five per cent on net investment.

Figure 2.—Reconnaissance conservation survey of Madison-Teton County dry-f

SOIL TYPE

- 61 Ritzville silt loam.* Brown mellow silt loam, loessial soil material, low in organic matter.
- S61 Ritzville silt loam, shallow phase. Two feet to shale or rhyolitic rock.
- 82 Portneuf very fine sandy loam. Light brown very fine sandy loam, loessial soil material, subject to severe blowing.
- 63 Athena silt loam. Dark brown mellow silt loam, loessial soil material, subject to severe blowing.

*Soil names temporary.

Composite Symbol Soil type
Slope-Erosion

- 64 Pincock silt loam. rhyolitic rock.
- 65 Tetonia silt loam. material. Shallow t
- g65 Tetonia gravelly sil

EROSION CLASSES

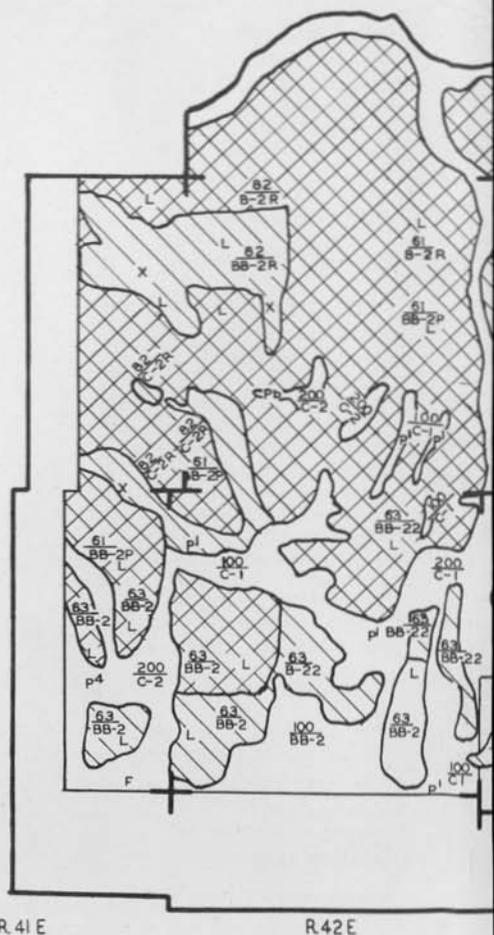
- 1 Slight water erosion—less than 25% topsoil removed.
- 2 Moderate water erosion—from 25% to 50% of topsoil removed.
- 22 Moderate severe erosion—50% to 75% of topsoil removed.
- 3 Severe water erosion—75% of all top soil removed.
- P Slight wind erosion.
- R Moderate wind erosion.

SLOPE GROUPS

- A 0-2 per cent.
- B 2-10 per cent.
- BB 10-15 per cent.
- C 15-20 per cent.
- D 20 per cent plus.

LAND USE

- L Cultivated.
- P4 Sagebrush predominating.
- P1 Perennial grasses predominating.
- F Woodland.
- Pb Brush.
- X Idle.



R. 41 E

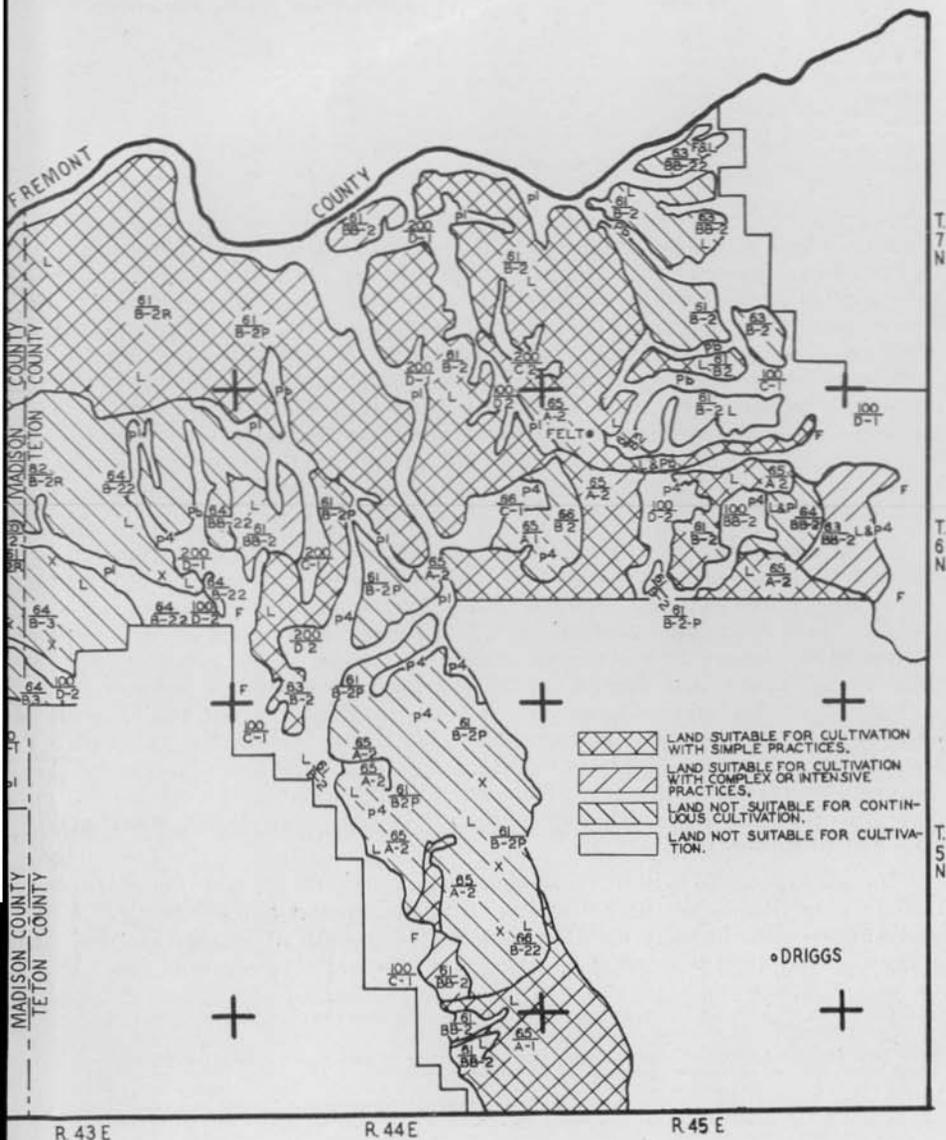
R. 42 E

Source: United States Department of Agriculture, Soil Conservation Service.

use factor shown separately.

silt loam, 20 inches to
silt loam, alluvial soil
droughty.

666 Felt gravelly silt loam. Light brown gravelly silt loam, gravelly counterpart of Portneuf silt loam.
100 Rough broken land.
200 Rough stony land.



R. 43 E

R. 44 E

R. 45 E

DRIGGS

Wheat Yields

One year's record alone cannot be used to judge the productivity of an area. The year for which the records were taken (1939) proved to be a fairly good one for the dry farmers interviewed. Wheat yields were above average except in Fremont County as is shown in Table 4.

Table 4.—Wheat yields on the farms surveyed in eastern Idaho.

| County | Bushels per acre | |
|---------------|------------------|-------------------|
| | 1939 average | Long-run average |
| Teton | 20.7 | 18.6 ¹ |
| Madison | 26.5 | 19.0 ² |
| Fremont | 18.6 | 21.0 ² |
| Oneyda | 21.1 | 16.9 ³ |

¹A.A.A. reports, 1935-1939.

²Average of farmers' reports on survey record.

³A.A.A. reports, 1930-1937.

Budgets were compiled to show probable earnings under the long-run situation. This was done primarily to aid agricultural program planning committees in the respective counties. The average yields for each farm were applied to the acreages in question to determine normal production. The income from crop sales was computed by using the average price of wheat received by Idaho farmers for the period, 1935-1939. This amounted to 68 cents per bushel.¹ Farm expenses were left constant as obtained from the survey records. This procedure showed that in general the farmers in the areas studied would, under average conditions, make a fairly good living provided the units were large enough. It appears that under present systems of farming, 480 acres or more of cropland are needed to comprise an economic unit.

In Oneyda County, calculations based on available farm records showed that it would take on an average 14.6 bushels of wheat per acre to cover operating expenses and land charges,² when figuring wheat at 68 cents per bushel. The costs in this analysis include all cash farm expenses, depreciation on machinery and buildings, value of unpaid family labor other than the operator's, and interest on the net capital investment computed at 5 per cent. To have included in the costs an allowance for the farm operator for his labor and management would have raised the margin required to cover costs, and likewise to have excluded the land charges in the form of interest on the investment would have lowered the necessary margin to approximately 11 bushels per acre. Income from A.A.A. sources was omitted in these calculations.

The average of 14.6 bushels per acre does not apply to any one particular farm, because of the variability in farm expenses and efficiency of operation from farm to farm. It represents the margin of production required for the area as a whole to meet expenses. Any production above

¹Youngstrom, C. O. INDEX NUMBERS OF IDAHO FARM PRICES. Idaho Agr. Expt. Sta. Mimeo-Leaflet 34, 23 p., 1941.

²Farm organizations were unchanged. Receipts from livestock and miscellaneous sources were left as found on the survey record. This income was deducted from total expenses to get the amount of cash needed from wheat sales to cover expenses. The resulting sum was divided by \$0.68 to get the bushels required. To this requirement were added seed and feed wheat, and the total bushels were divided by total wheat acreage to arrive at the necessary yield per acre to cover costs, including interest on the investment.

this would go to the operator for labor and management return. With yields around 15 bushels per acre farm families can be maintained in this area at a fairly high level of living. The average operator would have, under the conditions assumed, the interest on the investment and the sum allocated to unpaid family labor for family living. In this area, the average interest on the investment amounted to \$1,011, and the unpaid family labor \$157. The two total \$1,168, a sum that seems large enough in most instances to maintain a reasonable level of living. Depreciation, although not a cash cost, should be allowed in order to maintain the capital investment in machinery, and not be figured as part of family living except under extremely unfavorable conditions.

Average wheat yields in western Oneida County were 16.9 bushels per acre for the period 1930-1937. Yields have also continued to be good in the more recent years. Under price and cost conditions that have recently prevailed, the dry-land farmers here seem to be well above the margin of production required to meet expenses and maintain family living on a reasonable scale. Prices and cost factors are constantly changing, hence, the foregoing analysis must be interpreted in that light.

Factors Affecting Earnings

Size of Farm

One of the chief factors affecting farm earnings on the dry farms in eastern Idaho is the size of the operating unit. A study of operator's earnings on farms classified by acres of cropland revealed that there was a steady increase in operator's earnings for each successive size group until about 1,200 acres of cropland were reached. At this point earnings were about constant until farm size increased to near 2,000 crop acres. Table 5 shows the situation for all counties surveyed. The number of cases in the size groups beginning with 961-1,120 acres are somewhat limited and they can be used only to indicate general tendencies.

Under normal conditions of yields and prices the farmers with the larger units will tend to have higher earnings than those with smaller units. On the other hand, it is well known that if conditions become so unfavor-

Table 5.—Relationship of acres of cropland to operator's earnings on 234 dry-land wheat farms in eastern Idaho, 1939

| Acres of cropland ¹ per farm, classified | Number of farms | Average per farm | | |
|--|--------------------|-------------------|-------------------------------|------------------------|
| | | Acres cropland | Wheat yields, bu. per acre | Operator's earnings |
| 160 or less | 27 | 107 | 21.2 | \$ 450 |
| 161-320 | 39 | 248 | 20.4 | 657 |
| 321-480 | 38 | 403 | 21.3 | 1,098 |
| 481-640 | 32 | 552 | 23.0 | 1,474 |
| 641-800 | 33 | 730 | 21.0 | 1,500 |
| 801-960 | 24 | 885 | 22.3 | 2,418 |
| 961-1,120 | 8 | 1,040 | 25.2 | 3,094 |
| 1,121-1,280 | 10 | 1,211 | 24.6 | 2,994 |
| 1,281-1,440 | 4 | 1,376 | 18.6 | 3,078 |
| 1,441 and over | 19 | 1,922 | 23.9 | 5,261 |
| All farms | 234 | 655 | 21.9 | \$1,716 |

¹Includes summer fallow.

able as to cause practically all farmers to be operating at a loss, the larger farms will show greater negative earnings or losses than the smaller ones.

The size of farm can also be measured by the total productive man work units employed on the farm. A productive man work unit is the average amount of work accomplished by one man in 10 hours on crops or livestock or both. It was found that the farms with the higher number of productive man work units per farm had the higher average earnings. To illustrate this, Table 6 is presented.

Crop Yields

Crop yields influence farm earnings because per unit costs of production are lowered with higher yields. To compare yields for the different crops, the measure crop production index can be used. This gives in a single percentage ratio a comparison of yields per acre of all crops on a given farm with the average yield of the same crops on all farms in a given area. Table 7 shows how crop yields affect farm earnings in one county. In this case the farms with the poorest yields were also the smallest in size.

High yields per acre are of considerable importance in determining amount of earnings along with size of farm. It was found that large farms with average production may have higher earnings than small farms with somewhat higher yields. The relationship shown in Table 7 held true for all counties except Madison, where the farms having average yields had higher earnings than those with the highest average crop index. In this case the farms in the 85-114 crop-index class averaged 1,017 acres in size compared to 754 acres for the farms in the 115 and over class. This shows how size of farm may offset superior yields. On the whole good yields are desired and substantially influence earnings.

Land Use Capability Classes

One of the main reasons that farm earnings vary is the difference in the nature and fertility of the soil. An opportunity presented itself to study this factor in some detail in Madison and Teton counties because of

Table 6.—Relationship of total productive man work units to operator's earnings on 234 dry-land wheat farms in eastern Idaho, 1939

| Productive man work units per farm, classified | Number of farms | Average per farm | |
|--|-----------------|---------------------------|---------------------|
| | | Productive man work units | Operator's earnings |
| Less than 150 | 70 | 106.4 | \$ 936 |
| 150-299 | 101 | 217.8 | 1,553 |
| 300 and over | 63 | 431.0 | 2,843 |
| All farms | 234 | 241.9 | \$1,716 |

Table 7.—Relationship of crop yields to operator's earnings, Oneida County, 1939.

| Crop index per farm, classified | Number of farms | Average per farm | | |
|---------------------------------|-----------------|------------------|------------|---------------------|
| | | Acres cropland | Crop index | Operator's earnings |
| Less than 85 | 17 | 628 | 70.3 | \$1,330 |
| 85-114 | 26 | 840 | 98.4 | 2,177 |
| 115 and over | 17 | 858 | 132.7 | 2,851 |
| All farms | 60 | 787 | 100.0 | \$2,103 |

the availability of data on soils from the Soil Conservation Service. A reconnaissance soil survey map prepared by the Soil Conservation Service is shown in Figure 2. Two main classes of land, according to use capability, are recognized in the area. Class II land is described as being suitable for cultivation with simple practices, and Class IV is not suitable for continuous cultivation.

The farms located on each class of land in this area were sorted by size groups, and an analysis made of earnings for each group. These data are presented in Table 8. An examination of this table shows that the farmers on the better land had the higher earnings. Other factors than soil enter in, but it is apparent that soil type and fertility play an important part in determining earnings.

Efficiency Factors

The 60 farms surveyed in western Oneida County were divided into three equal groups on the basis of operator's earnings. These were analyzed to show what factors caused the differences in earnings. Table 9 shows the averages obtained in each income group for the different measures that show size of business and which indicate efficiency of operation. The highest income-group operators had average earnings of \$4,466, the middle group averaged \$1,531, and the lowest income-group averaged only \$312 in operator's earnings.

A study of the data indicating size of business reveals that the 20 farms in the highest income bracket excelled in total acres, acres of cropland, livestock numbers, total productive man work units and in amount of capital invested. The 20 poorest farms ranked last in all of these measures. Size of business, whether measured by land area or some of the other measures used to indicate it, is an important factor in determining earnings.

Table 8.—A comparison of average receipts, expenses and earnings of dry-farm operators on different classes of land, Teton and Madison counties, 1939

| Item | 480-1,200 acres cropland | | Less than 480 acres cropland | |
|---|--------------------------|---------------------|------------------------------|---------------------|
| | Capability class II | Capability class IV | Capability class II | Capability Class IV |
| Number of farms | 30 | 9 | 17 | 10 |
| Crop land, acres | 748 | 598 | 322 | 271 |
| Wheat yields, bu. per acre .. | 24.3 | 14.7 | 20.6 | 17.4 |
| Receipts: | | | | |
| Cash | \$5,388 | \$4,103 | \$2,773 | \$1,874 |
| Non-cash ¹ | 105 | 244 | 97 | 74 |
| Total farm receipts | 5,493 | 4,347 | 2,870 | 1,948 |
| Expenses | | | | |
| Cash | 2,374 | 1,838 | 1,210 | 977 |
| Non-cash ² | 351 | 462 | 145 | 152 |
| Total farm expenses | 2,725 | 2,300 | 1,355 | 1,129 |
| Net farm Income | 2,768 | 2,047 | 1,515 | 819 |
| Interest on investment ³ | 524 | 548 | 213 | 267 |
| Operator's earnings | \$2,244 | \$1,499 | \$1,302 | \$552 |

¹Value of farm products consumed in the home.
²Unpaid family labor and net decrease in inventories.
³Five per cent charged on net investment.

Table 9.—Earnings, size of business and efficiency factors compared on western Oneida county dry farms, 1939

| | Upper ¹ one-third | Middle ¹ one-third | Lower ¹ one-third |
|---|---------------------------------|----------------------------------|---------------------------------|
| Number of farms | 20 | 20 | 20 |
| Earnings | | | |
| Total farm receipts | \$10,418 | \$4,738 | \$2,775 |
| Total farm expenses | 4,434 | 2,468 | 1,692 |
| Net farm income | 5,984 | 2,270 | 1,083 |
| Operator's earnings | 4,466 | 1,531 | 312 |
| Size of business | | | |
| Total acres operated | 1,742 | 899 | 816 |
| Acres of cropland | 1,107 | 758 | 540 |
| Total animal units | 26.5 | 19.3 | 14.6 |
| Total investment | \$34,531 | \$17,326 | \$17,010 |
| Total productive man work units | 326.3 | 207.8 | 178.1 |
| Efficiency factors | | | |
| P.M.W.U. per worker | 186.4 | 156.2 | 149.6 |
| Crop production index | 107.2 | 106.2 | 88.6 |
| Gross ratio ² | 42.6 | 52.1 | 60.9 |
| Gross income per \$100 capital used | \$30.17 | \$27.35 | \$16.31 |
| Gross income per crop acre | 9.41 | 6.25 | 5.14 |

¹Based on operator's earnings.²Percentage of receipts utilized by expenses.

In those factors indicating efficiency of operation, the twenty best farmers also excelled. A more efficient use of labor is shown on these farms by the fact that they used 186.4 productive man work units per man compared with 156.2 and 149.6 for the other two groups. Using the average yields of the 60 farms as a base, the farms in the upper one-third group had a crop production index of 107.2. This, however, was only slightly above the middle group which averaged 106.2 in crop index. The poorest farms in earnings had the lowest average yields, being below average of all farms studied.

The measure termed "gross ratio" indicates the percentage of farm income consumed by farm expenses. It is a measure of aggregate financial efficiency. The group of farmers with the highest earnings had the lowest ratio, thereby indicating a relatively more efficient financial organization. Turnover of invested capital was faster on the better farms. These farms showed a gross income of \$30.17 for each \$100 of capital used compared with \$27.35 and \$16.31 for the two remaining groups. A further examination of this table will reveal more fully how the income groups compared with respect to receipts and expenses, size of operating unit, and the use of production factors.

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