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# AN ECONOMIC STUDY OF LAND UTILIZATION

# MIDDLE GRAYSON COUNTY,

# VIRGINIA

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## Purpose of Study

The purpose of this study was two-fold: first, to determine the reliability of the reconnaissance method of land classification as indicated by various farm management, home economic, and other economic factors; second, to determine the economic conditions existing on each class of land, attempting to measure the relative importance of the major factors affecting farm financial success on land of different classes.

## DESCRIPTION OF THE AREA [1]

### Location

Grayson is one of three counties in the Blue Ridge Mountain plateau region of Virginia. It is bounded on the north by Smyth and Wythe Counties; on the east by Carroll County; on the south by the State of North Carolina; and on the west by the State of Tennessee and by Washington and Smyth Counties, Virginia. The county seat is located at Independence near the center of the county. It is 94 miles northwest of Winston-Salem, North Carolina, and 36 miles south of Wytheville, Virginia. Most of the middle part of the county was included in this study (see map).

### Area and Topography

The area of the county is 425 square miles. The topography is rough, the area being deeply cut by streams and the terrain broken by mountains and high hills with round tops and steep slopes. It has been called the "roof of Virginia," for here are located the highest points in the state, Mt. Rogers and Whitetop. Other prominent elevations are Buck and Lookout Mountains in the center of the county and the Iron Mountain ridges along the northwest side.

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[1] Vernon, J. J., Dean, T. M., and Hawthorne, H. W., A Study of the Organization and Management of Farms in Grayson County, Virginia. Va. Agri. Exp. Sta. Bul. 304, 1936.

The upper streams are generally swift-flowing with moderately wide bottoms, except for New River, the largest stream in the county. These bottom areas include some of the best crop land in the county.

## Climate

The climate of Grayson County is not influenced by any large bodies of water. Both the temperature and the rainfall are affected to a certain extent by the high altitude. The difference between winter and summer temperatures is often extreme. Owing to the high altitude, the days in summer are seldom sultry, and the growing season is usually short. Severe weather is often experienced in the winter. Rainfall is plentiful and fairly well distributed throughout the growing season.

## Towns

Fries and Galax are the only towns of any size in the county, both located in the eastern part, several miles from the edge of the area surveyed. Textile mills and furniture factories give employment to the people of these two towns. Galax, the larger, with a population of 2544 in 1930, is the most important trading center for the farmers of Grayson County. In recent years, a condensery has been established there, furnishing a milk market for the farmers of the surrounding region. Since Independence is no more than a country village, it has little importance as a market. Most of the beef cattle and sheep are marketed outside the county.

## Roads

Only within the last ten years have the roads of the county been improved to a point where they are capable of serving the interests

of the people to the best advantage. U. S. highway number 58 runs the length of the county from Galax through Independence to Troutdale, while U. S. highway number 21 traverses the county in a north-south direction, also passing through Independence. In addition, many of the farm-to-market roads have been given new surfaces, either gravel or soil, within the last few years.

## Railroads

Brenches of the Norfolk and Western Railroad touch the county at Galax, Fries and Whitetop. None of these places are located in the area, but at the extreme edges of the county. The products of the milk condensing plant, as well as most of the fat cattle sent to northern markets, are shipped over this line.

TABLE 1. Population of Grayson County Since 1800

| Census Year | Number of Persons | | | Percent of Population |
|---|---|---|---|---|
| | Total | White | Colored | Colored |
| 1800 | 3,912 | 3,741 | 171 | 4.4 |
| 1810 | 4,941 | 4,641 | 300 | 6.1 |
| 1820 | 5,598 | 5,170 | 428 | 7.6 |
| 1830 | 7,675 | 7,161 | 514 | 6.7 |
| 1840 | 9,087 | 8,542 | 545 | 6.0 |
| 1850 | 6,677 | 6,142 | 535 | 8.0 |
| 1860 | 8,252 | 7,653 | 599 | 7.3 |
| 1870 | 9,587 | 8,833 | 754 | 7.9 |
| 1880 | 13,068 | 12,071 | 997 | 7.6 |
| 1890 | 14,394 | 13,473 | 920 | 7.4 |
| 1900 | 16,853 | 15,894 | 959 | 5.7 |
| 1910 | 19,856 | 18,917 | 939 | 4.7 |
| 1920 | 19,816 | 18,915 | 901 | 4.5 |
| 1930 | 20,017 | 19,322 | 695 | 3.5 |

Source: U. S. Census 1880-1930

## Population

The population of Grayson County has steadily increased since its formation in 1792, though not as rapidly since 1910 as during the period preceding that date (Table 1). Before 1850, the negro population increased more rapidly than the white, but the percentage of negroes has since declined. A large decrease in the number of negroes has occurred since 1920. In 1930, the population was predominantly native-born whites. Many of those operating farms at the time of this study were descendants of original settlers, mostly of Scotch and Irish descent.

## CHANGES IN THE TYPES OF FARMING IN GRAYSON COUNTY

The first settlers who came into the area that is now Grayson County engaged in hunting, fishing, and trapping, rather than agricultural pursuits. Small clearings were made around the homes for the production of food and feed crops, and for many years a type of subsistence agriculture was practiced. As the land became "worn out" by cropping, new land was taken up. The original timber was somewhat ruthlessly destroyed by burning or cutting, since it had little or no market. The worn-out fields came into grass which furnished good pasturage for livestock. For a few years during the first part of the twentieth century, lumbering was practiced in the more rugged, western part of the county until the supply of merchantable timber was exhausted. At the time of this study, agriculture was the most important means

of livelihood. Owing to the topography, soils, climate, inaccessibility of markets, and other factors, present-day agriculture consists mostly of livestock raising. In general, not enough grass and feed are produced on which to raise cattle to maturity. The farmers have found it profitable to breed cattle and raise the offspring to an age of 15 to 30 months and then sell them as stockers or feeders, usually to the farmers in the limestone valleys of the adjoining counties on the north.

Sheep are next to cattle in importance. The main source of such income is the spring lamb crop. The breeding flocks furnish a good supply of wool, most of which is used by local and nearby mills. Hogs are kept mainly for home use. Turkeys are an important source of income on some farms.[1/]

## Land in Farms

The peak in acreage of land in farms in Grayson County occurred in 1910. In the period 1910-1930, about 18,000 acres, or 7.5% of the farm area, were abandoned (Table 2). Most of this land was reclaimed for agricultural purposes during the following five years, owing no doubt to the back-to-the-farm movement during the economic depression of that period.

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1/ Devereux, R. E., and Patteson, G. W., Soil Survey of Grayson County, Virginia. Bureau of Chemistry and Soils, U. S. D. A., Series 1930, Number 19.

Table 2. Number and Average Size of Farms in Grayson County 1880-1935

| Census Year | Number of Farms | Area in Farms | |
|---|---|---|---|
| | | Total | Average Size |
| | | Acres | Acres |
| 1880 | 1,477 | 238,069 | 161.0 |
| 1890 | 1,812 | 231,074 | 128.0 |
| 1900 | 2,608 | 254,248 | 97.5 |
| 1910 | 2,655 | 258,813 | 97.5 |
| 1920 | 2,625 | 249,896 | 95.2 |
| 1925 | 2,883 | 249,779 | 86.6 |
| 1930 | 2,557 | 240,245 | 94.0 |
| 1935 | 3,291 | 253,623 | 77.1 |

Sources: Fippin, W. H., Unpublished Manuscript, 1935
U. S. Census, 1880 - 1935

A marked increase in the number of farms occurred from 1880 to 1935, amounting to more than 200 percent. This was accompanied by a decrease of more than one half in the average size of farm. More part-time and subsistence farms have been the result, because the amount of livestock business possible, except perhaps for poultry, is frequently not great enough to make a unit of economical size.

## Crops

The production of hay has become relatively more important than formerly (Table 3). Almost twice as many acres were harvested in 1935 as in 1880 with a slight increase in yield. Hay acreage has increased because of the greater adaptability of the land to its production than to other crops in the face of increased economic competition. Being very bulky, its price in a region distant from market is determined largely by local supply and demand for livestock feeding.

Table 3. Acreages of Important Crops and Number of Apple Trees in Grayson County, by Census Years, 1880-1930[1/]

| Census Year | Acres Corn | Acres Wheat | Acres Oats | Acres Rye | Acres Hay | No. of apple trees of bearing age |
|---|---|---|---|---|---|---|
| 1880 | 14,273 | 7,998 | 4,711 | 4,648 | 9,793 | - |
| 1890 | 14,780 | 9,910 | 5,765 | 3,872 | 13,440 | 75,481 |
| 1900 | 18,811 | 8,535 | 5,212 | 1,831 | 13,964 | 104,620 |
| 1910 | 17,025 | 6,140 | 2,908 | 1,508 | 18,886 | 80,736 |
| 1920 | 15,958 | 13,256 | 4,737 | 2,366 | 18,304 | 114,697 |
| 1925 | 15,703 | 5,339 | 2,588 | 2,174 | 20,674 | 109,921 |
| 1930 | 13,842 | 5,175 | 2,527 | 2,089 | 20,369 | 97,384 |
| 1935 | 14,422 | 5,530 | 4,060 | 1,467 | 18,823 | - |

Wheat acreage has decreased slowly since 1890 except for a very great increase in 1920 that was due to the high prices after the war. Yields have generally been very low, but show a slightly upward trend (Table 4).

Table 4. Yields of Important Crops in Grayson County 1880-1930 [1/]

| Year | Bushels per Acre: Corn | Wheat | Oats | Rye | Tons Per Acre: Hay | Bu. Per Tree: Apples |
|---|---|---|---|---|---|---|
| 1880 | 17.8 | 6.7 | 14.6 | 6.8 | .86 | - |
| 1890 | 19.2 | 8.5 | 16.5 | 7.4 | .87 | 3.31 |
| 1900 | 21.9 | 5.8 | 17.6 | 7.0 | .91 | 3.28 |
| 1910 | 25.2 | 8.4 | 13.5 | 8.1 | .84 | .84 |
| 1920 | 27.1 | 8.2 | 15.4 | 7.7 | 1.03 | 1.10 |
| 1925 | 25.4 | 8.7 | 19.1 | 9.3 | .94 | 1.87 |
| 1930 | 30.4 | 9.8 | 18.2 | 8.7 | 1.16 | .57 |
| 1935 | 28.1 | 10.2 | 20.6 | 8.2 | .83 | - |

1/ Sources: Fippin, W. H., Unpublished Manuscript, 1935
U. S. Census, 1880-1935

Oats and rye were never of great importance and are grown less than formerly. The acreage of oats, however, was 60 percent greater than in 1930.

Corn acreage decreased considerably after it reached a peak in 1900. About 25 percent less was grown in 1935 than in 1900. This decline was largely offset by the steady upward trend in yields. Increased yields per acre of corn and other crops were probably due to abandonment of less productive lands, improved cultural practices, better varieties of crops, and the use of lime and fertilizer on the better land.

No consistent trend in the number of apple trees is evident, since apples are not a commercial crop in Grayson County. Yields per tree have decreased and many old family-sized orchards have been abandoned.

## Livestock on Farms

Comparisons of the number of livestock in the decennial census years with the years 1925 and 1935 are difficult to make because of the difference in the time of the year when the census was taken.

The decennial census years show an irregular increase in the number of beef cattle for the period (Table 5). The 1935 figure was also larger than that for 1925.

The number of dairy cattle also increased gradually. Probably the increase has continued since the last census, as indicated by the establishment of the milk condensing plant at Galax in 1937.

Table 5. Numbers of Livestock on Grayson County Farms 1880-1930

| Census Year | Poultry | Horses | Dairy Cattle | Beef Cattle | Swine | Sheep | Animal Units Per 10 Acres Improved Land |
|---|---|---|---|---|---|---|---|
| 1880 | 31,681 | 3,402 | 3,875 | 5,410 | 12,777 | 13,194 | 1.66 |
| 1890 | 75,661[1] | 3,497 | 4,157 | 7,318 | 10,681 | 11,815 | 1.63 |
| 1900 | 38,123 | 3,587 | 6,870 | 6,080 | 12,739 | 13,182 | 1.51 |
| 1910 | 64,286 | 4,030 | 8,188 | 8,660 | 8,973 | 10,562 | 1.59 |
| 1920 | 92,988 | 3,946 | 6,761 | 7,341 | 7,056 | 9,421 | 1.35 |
| 1925 | 88,647 | 3,957 | 3,057 | 12,305 | 4,919 | 9,654 | - |
| 1930 | 74,953 | 3,227 | 9,506 | 9,824 | 8,918 | 16,788 | 1.78 |
| 1935 | - | 2,858 | 6,800 | 14,700 | 5,323 | 16,090 | - |

[1] Enumerated as of June 1.

Sources: Pippin, W. M., Unpublished Manuscript, 1935
U. S. Census, 1880-1935

Swine numbers in 1935 were only half what they were in 1880, due to the inability of Grayson County farmers to compete with other sections in the production of cheap hog feed. Since most of the hogs were kept for home use, a few hams were the only hog product sold.

Sheep declined in numbers from 1880 to 1920, but have since increased considerably. In the early post-war years, cotton and wheat brought relatively higher prices than lambs and wool.

Poultry increased greatly from 1880 to 1920, but has since declined. Turkeys have been responsible for much of the increase, because of the wide range afforded by this rough grazing country.

Horse numbers increased until 1910, but have since declined.

# LAND CLASSIFICATION

## Purpose of Land Classification

Part of the land in Grayson County is adapted to permanent agriculture; some of this is suited to the production of specialized crops while the rest is best adapted to livestock grazing. Other lands are better adapted to forestry, recreational and wild-life uses than to agriculture. Much of this land has already been abandoned for agriculture, but on a considerable part of it the farmers are still trying to earn a living.

Areas which are destined through merit of past performance and future possibilities to remain in permanent agricultural uses may profitably support electric and telephone lines, good school and rural health facilities, and other things for which these areas are able to pay. Credit and fire insurance may be made available profitably at reasonable rates. For those areas which are not inherently agricultural, a gradual curtailment of these services for which the region cannot pay may be desirable in the interest of public economy.

Land classification serves to supply persons responsible for public programs with needed information on the location and characteristics of areas suited to various uses so that they can plan their programs intelligently. Some of the agencies of government which are benefited in this way are the Bureau of Public Roads, Bureau of Agricultural Economics, the Agricultural Adjustment Administration, Soil Conservation Service, Farm Security Administration, Rural Electrification Administration and many others. States and counties may find it cheaper in the

long run to provide the opportunity for people on poor land to move to areas of better lands than to continue supplying roads and schools at a high cost.

As important as it is to these public agencies to have the facts concerned with land use, it is even more important to the farmers and other local persons who are benefited by effective applications of public programs to their particular needs and conditions. These persons may be enabled to obtain a better understanding of the use capabilities of their land and themselves correct, in a large measure, many ills attendant to misused land.

## Methods of Classifying the Land

The accompanying reconnaissance land use map of Grayson County was prepared by the writer, with the assistance and supervision of Mr. T. H. Pippin, State Representative of the Bureau of Agricultural Economics, U. S. Department of Agriculture, in September, 1938. The land use map was made by driving over all passable roads and visiting other areas on foot so that all the land could be seen. The soil map prepared by the Bureau of Chemistry and Soils, U. S. Department of Agriculture, was used as a base.

The reconnaissance type of land classification is based on two assumptions: "first, the present use of land in old agricultural areas is the result of a long period of experimentation by farmers in attempting to find the most profitable uses for land of different

character; and second, the size and condition of the farmstead in old agricultural areas is an indication of the productivity of the land and the returns from farming." 1/ Intensity of present use with consideration of the probable best future use was the basis for the classification. The factors which were considered were topography, soil, degree of erosion, vegetation, accessibility, size and condition of the farmstead, and present use of the land. Areas as small as 40 acres in extent were mapped originally, but in the subsequent revision many of these isolated areas, where they occurred in a section predominantly of another land class, were changed to conform with the section as a whole.

After the field work was finished, the land class was transferred to an office map of the same scale (1 inch equals 1 mile) on which the woodland was shown. These woodlands were mapped freehand with the aid of aerial photographs as a guide. It was found that this gave a fairly accurate picture of existing woodland.

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1/ Drewry, L. A., Economic Study of Land Utilization, Russell County, Virginia, 1938.

## Definition of Land Classes

Land in class I is at the present time in woods. It is used for this purpose because it has been found unprofitable to clear and use it for crops or for pasture. It is primarily adapted to forestry, wild life, and recreational uses.

Land in class II is that which is now in farms or other cleared land. Considerable farming is being done, but much poor, steep, rough, rocky land is included in this class. The size and condition of the buildings, the crops grown, and the condition of the pastures indicate that, in general, the land is better adapted to forestry, wild life, and recreational uses than to agriculture.

Land in class III-A is adapted to permanent agriculture of a very extensive type such as livestock grazing.

Land in class III-B is the best agricultural land found in Grayson County and constitutes the best grazing and crop lands. It is suited to a permanent agriculture.

Land in class VI is commercial orchard land.

Land in class IX is that which is used for rural residential or commercial purposes.

## Extent of Land Classes

The accompanying map shows the location and extent of areas of land in each class in the middle part of the county, the part surveyed. Land in class I, or woodland, constituted about 31 percent, and land in class II about 29 percent of the total area studied (Table 6). The most important agricultural land class, III-A, accounted for 38 percent, and class III-B, only 2 percent of the total. Classes VI and IX together comprised less than one tenth of one percent, and were unimportant for this study.

Table 6. Distribution of Land by Land Use Classes

| Land Class Number | Area in Acres | Percent of Total | Percent of Agr.Land | Percent of Farms in Each Group |
|---|---|---|---|---|
| I | 35,802 | 30.54 | - | - |
| II | 34,125 | 29.10 | 41.93 | 42.5 |
| III-A | 45,069 | 38.44 | 55.38 | 51.5 |
| III-B | 2,169 | 1.85 | 2.67 | 6.0 |
| VI | 19 | .02 | .02 | - |
| IX | 70 | .06 | - | - |
| Total | 117,254 | 100.00 | 100.00 | 100.00 |

After the map was completed and other counties were visited, it became apparent to the writer that land class III-A was too often used as a catch-all, and that it would probably be better in a rough grazing county to designate as class III- that land which is too steep and rough for cultivation, but which is adapted to grazing of fair quality. Perhaps a more practical thing to do would be to increase

generally the land class designation, including in class III-B more of the better land now designated as of class III-A.

The size of each area was measured on the map by use of a planimeter. Three measurements of each area were taken, and unless two were identical, the average for the three was used as the final estimate of the area.

## ANALYSIS OF VARIOUS FACTORS IN RELATION TO LAND CLASS

### Soil Composition of Land Classes

Soil types and topography influence land classification because they influence crops and the general type of agriculture practiced on them. Since data were not available to determine the different uses to which the several soils were put, except in the case of the Muskingum and Ranger groups which were used largely for forest, it was thought best to group the soils on the basis of the geological source of the parent material. The influence of the parent materials was revealed in the agriculture as well as in the soils themselves. Since practically all the land in the area was well drained, drainage played little part in the differentiation of soil types and land classes. The degree of slope and other topographical features were of greater relative importance. Approximately 85 percent of the area was of soils derived from granite, including principally the Ashe and Porters series; 12 percent were derived from sandstone and slate, the Muskingum and Ranger series; and 3 percent were alluvial in origin (Table 7).

Table 7. Soil Composition of the Five Land Classes, Middle Grayson County, Virginia, 1938

| | Land Class | | | | | |
|---|---|---|---|---|---|---|
| | I | II | III-A | III-B | VI | Total |
| Total Acres | 35,802 | 34,125 | 45,069 | 2,169 | 19 | 117,184 |
| | Percent | Percent | Percent | Percent | Percent | Percent |
| Soils from Granites | | | | | | |
| Ashe stony loam | 21.33 | 17.44 | 6.05 | - | - | 13.92 |
| Ashe stony loam, steep phase | 6.94 | 4.48 | .64 | - | - | 3.67 |
| Ashe loam | 30.21 | 40.15 | 31.52 | 3.64 | 66.67 | 33.13 |
| Ashe coarse sandy loam | 1.95 | 2.05 | 7.87 | 38.64 | 33.33 | 4.93 |
| Ashe coarse sandy loam, stp.phase | 5.40 | 4.88 | 8.04 | .89 | - | 6.17 |
| Ashe loam, smooth phase | .54 | .58 | 4.10 | 4.72 | - | 2.00 |
| Cecil loam | - | - | .08 | .30 | - | .02 |
| Porters loam | 11.24 | 16.20 | 23.09 | 6.78 | - | 17.16 |
| Porters loam, smooth phase | 1.30 | .66 | 7.21 | 20.35 | - | 3.74 |
| Total | 78.91 | 86.42 | 88.55 | 75.52 | 100.00 | 84.74 |
| Soils from Schist | | | | | | |
| Talladega loam | .05 | .13 | .48 | - | - | .24 |
| Soils from Sandstone and Slate | | | | | | |
| Muskingum loam | .14 | .36 | .45 | - | - | .32 |
| Muskingum stony loam | 12.39 | 7.99 | 2.67 | - | - | 7.14 |
| Muskingum stony loam, stp.phase | 2.38 | .45 | - | - | - | .86 |
| Ranger silt loam | 5.13 | 3.25 | 2.93 | - | - | 3.64 |
| Total | 20.04 | 12.05 | 6.05 | - | - | 11.96 |
| Alluvial Soils | | | | | | |
| Congaree loam | .39 | .45 | 2.39 | 6.49 | - | 1.29 |
| Wehadkee silt loam | .34 | .84 | 2.47 | 17.99 | - | 1.63 |
| Total | .73 | 1.29 | 4.86 | 24.48 | - | 2.92 |
| Miscellaneous Soil Materials | | | | | | |
| Rock outcrop | .27 | .11 | .06 | - | - | .14 |
| GRAND TOTAL | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Of the soils of land class I, about 79 percent were of granitic origin, 20 percent of sandstone and slate, and less than 1 percent alluvial. It is significant that, relative to the total amount of each soil group, a much lower percentage of class I soils were derived from granite than from sandstone and slate, while the productive alluvial soils were seldom left in woods. The soils of class II were even more predominantly of granitic origin, including slightly less of the sandstone and slate, and slightly more of the alluvial soils. In general, the stony loams and steep phases of other types were relatively prominent among the soils of land classes I and II.

In class III-A, granitic and alluvial soils were very important, making up 89 and 5 percent, respectively, while the sandstone and slate group contributed only 6 percent of the total in spite of the fact that their area was four times that of the alluvial group. In class III-B, 76 percent of the area was composed of soils derived from granites, and a larger proportion (24 percent) was of alluvial origin than any other land class. The proportion of granitic and alluvial soils increased with the land class designation, while the sandstone and slate group declined in importance. The agricultural land classes were characterized by a relative scarcity of stony loams and steep phases although containing a large proportion of soils derived from granitic rocks.

## Land Classification of Soil Types

Perhaps the best single measure of the economic value of most soils is their average land class. It was obtained by weighting the percentage of a soil in each land class by the corresponding land class number. This method presupposes, of course, that the economic differences between successive land classes are approximately the same. As has been indicated previously, the difference between classes I and II was not generally so great as between other successive classes.

The average land class of soils derived from granites varied from 1.49 for Ashe stony loam, steep phase, to 2.79 for Porters loam, smooth phase, and 2.77 for Ashe loam, smooth phase(Table 8). The extent of the Cecil loam was too small to provide an adequate basis for describing its economic worth. The granitic soils were all well drained and constituted the most important agricultural areas of the county, especially for grazing. The Ashe stony loams, which made up 20 percent of these soils, were largely responsible for bringing the average land class of the group as a whole to the low figure of 2.14. Ashe loam, while the best and most extensive soil in the county for the growing of blue grass, because of its texture, structure, and the fact that it lies at high altitudes, had 35 percent of its area in land class II on account of its general inaccessibility by road. The Porters series was of high average land class because a large part of it was of low altitude and was extensively used for crops.

Table 8. Land Classification of Different Soils, Middle Grayson County, Virginia

| | Acres | Land Class I Per-Cent | II Per-Cent | III-A Per-Cent | III-B Per-Cent | VI Per-Cent | Total Per-cent | Average Land Class of the Soil |
|---|---|---|---|---|---|---|---|---|
| **Soils from Granites** | | | | | | | | |
| Ashe stony loam | 16,514 | 46.80 | 36.49 | 16.71 | - | - | 100.00 | 1.70 |
| Ashe stony loam, st.ph.[1] | 4,301 | 57.74 | 35.56 | 6.70 | - | - | 100.00 | 1.49 |
| Ashe loam | 38,822 | 27.86 | 35.50 | 36.60 | .21 | .03 | 100.00 | 2.09 |
| Ashe coarse sandy loam | 5,779 | 13.07 | 11.96 | 61.35 | 14.51 | .11 | 100.00 | 2.71 |
| Ashe coarse sandy loam, st.ph. | 7,236 | 26.70 | 22.99 | 50.04 | .27 | - | 100.00 | 2.24 |
| Ashe loam, sm.ph.[2] | 2,342 | 8.20 | 8.47 | 78.96 | 4.37 | - | 100.00 | 2.77 |
| Cecil loam | 19 | - | - | 66.67 | 33.33 | - | 100.00 | 3.17 |
| Porters loam | 20,109 | 20.02 | 27.50 | 51.75 | .73 | - | 100.00 | 2.33 |
| Porters loam, sm.ph. | 4,384 | 10.66 | 5.11 | 74.16 | 10.07 | - | 100.00 | 2.79 |
| Total | 99,308 | 28.45 | 29.69 | 40.19 | 1.65 | .02 | 100.00 | 2.14 |
| **Soils from Schist** | | | | | | | | |
| Talladega loam | 282 | 6.82 | 15.91 | 77.27 | - | - | 100;00 | 2.70 |
| **Soils from Sandstone and Slate** | | | | | | | | |
| Muskingum loam | [illegible] | 13.56 | 32.20 | 54.24 | - | - | 100.00 | 2.41 |
| Muskingum stony loam | 8,365 | 53.02 | 32.60 | 14.38 | - | - | 100.00 | 1.61 |
| Muskingum stony loam, st.ph. | 1,005 | 84.71 | 15.29 | - | - | - | 100.00 | 1.15 |
| Ranger silt loam | 4,262 | 43.10 | 25.97 | 30.93 | - | - | 100.00 | 1.88 |
| Total | 14,010 | 51.21 | 29.33 | 19.46 | - | - | 100.00 | 1.68 |
| **Alluvial soils** | | | | | | | | |
| Congaree loam | 1,810 | 9.32 | 10.17 | 71.19 | 9.32 | - | 100.00 | 2.76 |
| Wehadkee silt loam | 1,914 | 6.36 | 15.05 | 58.19 | 20.40 | - | 100.00 | 2.82 |
| Total | 3,424 | 7.68 | 12.88 | 63.93 | 15.51 | - | 100.00 | 2.80 |
| **Miscellaneous Soil Materials** | | | | | | | | |
| Rock outcrop | 160 | 60.00 | 24.00 | 16.00 | - | - | 100.00 | 1.56 |
| GRAND TOTAL | 117,184 | 30.55 | 29.12 | 38.46 | 1.85 | .02 | 100.00 | 2.11 |

[1] steep phase

[2] smooth phase

The soils from sandstone and slate, comprising the Muskingum and Ranger series, averaged low in land class for several reasons. The underlying sandstone rocks, low in potash and iron-bearing minerals, and located near the surface, were responsible for a thin subsoil very susceptible to erosion. Only 49 percent of the soils in this group had been cleared and an even smaller percentage brought under cultivation. The crop yields were low and the pasture grasses were of poor quality. Less than 20 percent of the area of these soils was thought capable of supporting a permanent agriculture. This fact has been recognized by the Forest Service and much of the Muskingum stony loam is included in the Unaka National Forest.

For the production of hay and corn, the most prized soils in the county were the two alluvial types, Congaree loam and Wehadkee silt loam. Being composed of materials washed from the uplands, they lie in narrow strips along the streams. Wehadkee silt loam was in some places poorly drained, but like the better drained Congaree loam, it was very productive and required no fertilization. The average land class of these alluvial soils was highest of all the groups, being 2.80, owing to the fact that they were used most intensively for crops.

Topography was an important factor affecting the average land class of each soil. The steep phases of Ashe stony loam, Ashe coarse sandy loam, and Muskingum stony loam averaged lower in land class than the more level soils of the same types, while the smooth phases of Porters loam and Ashe loam averaged higher in land class than did the other soils of these two types. Furthermore, the more level types

averaged higher in land class than the other soil types. This might generally be expected in an area such as Grayson County in which all soils are comparatively well drained. Levelness of topography was associated with an increase in the land class designation, because the more level areas were used more intensively for crops and grazing.

## DATA OBTAINED FROM FARM MANAGEMENT RECORDS

In the summer of 1931, complete farm business records were obtained by the survey method for 538 farms in the middle part of Grayson County.[1/] Six of these were discarded because they were incomplete, leaving 532 usable records. The results of this study were published in June, 1936, by the Virginia Agricultural Experiment Station as a bulletin entitled A Study of the Organization and Management of Farms in Grayson County, Virginia, by Messrs. J. J. Vernon, T. M. Dean and H. W. Hawthorne.

Approximately 87 percent of the area mapped in the land use survey was included in the land in farms in the farm management study. The data in the tables of this section were drawn from the farm management study.

### Distribution of Farms

The number of records on land classes II and III-A were approximately proportionate to the amount of agricultural land in each group. Class II land occupied 41.9 percent of the land used for farming

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1/ These records were kindly loaned to the writer by Mr. J. J. Vernon, Agricultural Economist, Virginia Agricultural Experiment Station.

and 42.5 percent of the records taken were located on this land class. While land class III-A occupied 55.3 percent of the agricultural land, 51.5 percent of the records taken were on farms in that land class. Only 30 records were taken on land class III-B, making up 6.0 percent of the total records, but 2.7 percent of the total agricultural land of the area was in this class. Because of the small number of farms in land class III-B, they were often not statistically important.

Classification of the farms into part-time and full-time farms was made on the same basis as used in the above mentioned published bulletin. Those with more than 15 percent of receipts from sources other than the farm business were classified as part-time, while those with less than 15 percent of receipts from other sources were classified as full-time farms. Using 15 percent of the total man-work units on the farm as a determinant of part-time or full-time farming, instead of the percentage of receipts as above, this gave results which changed only 10 percent of the farms either to one type of farming or the other.

About 45 percent of the part-time farms were located on class II land, as compared to 40.1 percent of the full-time farms (Table 9). The relative numbers on class III-A were approximately the same for both types of farming. Full-time farms on class III-B are almost twice as numerous as are the part-time group. There is a slightly higher proportion of the full-time farms located on the higher land classes than of the part-time farms.

Table 9. Distribution of Farms by Land Classes, Grayson County, Virginia

| | Land Class | | | | | | All Farms | |
|---|---|---|---|---|---|---|---|---|
| | II | | III-A | | III-B | | | |
| | No. of Farms | % of Total | No. of Farms | % of Total | No. of Farms | % of Total | Number | Percent |
| Full-Time | 65 | 40.1 | 84 | 51.9 | 13 | 8.0 | 162 | 48.8 |
| Part-Time | 76 | 44.7 | 87 | 51.2 | 7 | 4.1 | 170 | 51.2 |
| All Farms | 141 | 42.5 | 171 | 51.5 | 20 | 6.0 | 332 | 100.0 |

Table 10. Distribution of Farms by Type According to Land Class, Grayson County, Virginia

| | Full-Time Farms | | Part-Time Farms | | Total | |
|---|---|---|---|---|---|---|
| Land Class | No. of Farms | % of Total | No. of Farms | % of Total | No. of Farms | % of Total |
| II | 65 | 46.1 | 76 | 53.9 | 141 | 100.0 |
| III-A | 84 | 49.1 | 87 | 50.9 | 171 | 100.0 |
| III-B | 13 | 65.0 | 7 | 35.0 | 20 | 100.0 |

Full-time farms accounted for 46.1 percent of farms in land class II, 49.1 percent in class III-A, and 65.0 percent in class III-B (Table 10). The increasing proportion of the full-time farms in the higher land classes is at least partially accounted for by the larger acreages of pasture and crops. In a livestock country, it is important that a farmer have good-sized acreages for each, especially the first, of these purposes, if he is to spend his entire time profitably employed on the farm.

## Topography

Level or rolling land is generally easier to farm than land which is hilly or rugged. Crops are easier tilled, machinery requires less draft power, and livestock usually consume less energy in getting the same amount of forage. Organic matter has a tendency to accumulate in the flatter areas, making for larger crop yields and more pasturage per acre.

Table 11. Percentage Distribution of Land Class Acreages According to Topography

| Type of Farm and Land Class | Nature of Topography | | | | |
|---|---|---|---|---|---|
| | Level | Rolling | Hilly | Rugged | Total |
| Full-Time | | | | | |
| II | 3.7 | 19.9 | 32.6 | 23.8 | 100.0 |
| III-A | 7.7 | 33.3 | 44.5 | 14.5 | 100.0 |
| III-B | 14.2 | 35.0 | 39.9 | 10.9 | 100.0 |
| Part-Time | | | | | |
| II | 5.6 | 20.7 | 56.4 | 17.3 | 100.0 |
| III-A | 5.8 | 25.1 | 49.1 | 20.0 | 100.0 |
| III-B | 12.7 | 28.2 | 40.1 | 19.0 | 100.0 |
| All Farms | | | | | |
| II | 4.5 | 20.2 | 54.1 | 21.2 | 100.0 |
| III-A | 6.9 | 29.7 | 46.5 | 16.9 | 100.0 |
| III-B | 13.6 | 33.2 | 39.9 | 13.1 | 100.0 |

The better farms were located on the smoother terrain in both types of farms (Table 11). Class III-A had considerably more level land than class II, while class III-B contained twice as much as class III-A. Rolling land made up 20.2 percent of class II, 29.7 percent of class III-A, and 33.2 percent of class III-B. Generally, the

proportions of level and rolling land increased, and the proportions of hilly and rugged land decreased with increased land class designation.

## Distance to Source of Services

Good farm land is able to support churches, schools, stores, doctors, hospitals, and other essential services which are useful to the people of an area. Good roads are usually built in such areas and further enhance the value of the land. Consequently, one would expect the farms on this better land to be closer to the source of these services than those on poorer land. For most services this was found to be true.

In both types of farming, a shorter distance separated the farm from the post office, bus stop, store, church, grade school, mail box, nearest neighbor, trained nurse, and hospital on the higher land class than on class II (Table 12). For the full-time farms, the distance to high school and to the doctor decreased as land class increased, but showed no consistent relationship on the part-time farms. There was no relationship to distance to railroad station owing to the fact that only two stations existed in the county, and both were outside the area. For the same reason, the indicated relation of land class to distance to hospital is probably of no significance. No reason suggests itself for explaining the fact that longer distances had to be covered by the higher land class farmers to haul milk, unless the vertical distance was more important than the horizontal.

Table 12. Distance from Farm to Source of Services by Land Class

| | Land Class II | | Land Class III-A | | Land Class III-B | |
|---|---|---|---|---|---|---|
| | Farms Reported | Av. Dist. Per Farm Reporting | Farms Reported | Av. Dist. Per Farm Reporting | Farms Reported | Av. Dist. Per Farm Reporting |
| **162 Full-Time Farms** | | | | | | |
| Post office | 65 | 3.6 | 84 | 2.6 | 13 | 1.1 |
| Railroad station | 65 | 12.3 | 84 | 13.4 | 13 | 9.7 |
| Haul milk | 51 | 10.1 | 69 | 15.1 | 6 | 22.0 |
| Bus stop | 65 | 9.9 | 84 | 7.2 | 13 | 4.0 |
| Store | 65 | 1.8 | 84 | 1.6 | 13 | 1.0 |
| Mail box | 57 | .4 | 70 | .1 | 9 | .1 |
| Church | 65 | 1.5 | 84 | 1.4 | 13 | 1.1 |
| Grade school | 65 | 1.4 | 83 | 1.4 | 13 | 1.1 |
| High school | 65 | 5.7 | 84 | 4.8 | 13 | 2.0 |
| Doctor | 65 | 7.0 | 84 | 6.6 | 13 | 2.6 |
| Trained nurse | 65 | 27.0 | 84 | 25.4 | 13 | 21.5 |
| Hospital | 65 | 29.8 | 84 | 26.0 | 13 | 23.0 |
| Nearest neighbor | 64 | .3 | 82 | .3 | 12 | .2 |
| Road: Graded dirt | 37 | .7 | 30 | .4 | 3 | .1 |
| Soil surfaced | 62 | 4.6 | 77 | 4.0 | 8 | 1.3 |
| Rock or gravel surf. | 52 | 14.7 | 78 | 13.1 | 11 | 12.6 |
| Macadam | 6 | 15.8 | 4 | 12.0 | 1 | 1.5 |
| **170 Part-Time Farms** | | | | | | |
| Post office | 76 | 3.3 | 87 | 2.5 | 7 | .7 |
| Railroad station | 76 | 11.2 | 87 | 12.2 | 7 | 10.6 |
| Haul milk | 49 | 8.2 | 65. | 17.6 | 5 | 23.4 |
| Bus stop | 76 | 12.9 | 85 | 8.5 | 5 | 7.3 |
| Store | 76 | 1.5 | 84 | 1.5 | 4 | 1.2 |
| Mail box | 72 | .3 | 72 | .2 | 4 | .1 |
| Church | 76 | 1.4 | 87 | 1.2 | 7 | .9 |
| Grade school | 76 | 1.4 | 87 | 1.3 | 7 | 1.1 |
| High school | 76 | 5.0 | 87 | 5.3 | 7 | 3.4 |
| Doctor | 76 | 5.7 | 87 | 6.2 | 6 | 4.1 |
| Trained nurse | 76 | 27.9 | 87 | 24.8 | 7 | 19.3 |
| Hospital | 76 | 30.2 | 87 | 26.0 | 7 | 24.0 |
| Nearest neighbor | 75 | .3 | 85 | .2 | 5 | .2 |
| Road: Graded dirt | 41 | .8 | 44 | .3 | 4 | .1 |
| Rock or gravel surf. | 62 | 15.8 | 74 | 14.8 | 7 | 13.9 |
| Soil surfaced | 67 | 3.8 | 80 | 4.8 | 6 | 2.6 |
| Macadam | 10 | 12.7 | 4 | 10.0 | - | - |

(continued on next page)

| | All Farms | | | | | |
|---|---|---|---|---|---|---|
| | Land Class II | | Land Class III-A | | Land Class III-B | |
| Post office | 141 | 3.4 | 171 | 2.6 | 20 | 1.0 |
| Railroad station | 141 | 11.7 | 171 | 12.8 | 20 | 10.0 |
| Haul milk | 100 | 9.2 | 134 | 16.3 | 11 | 22.7 |
| Bus stop | 141 | 11.5 | 169 | 7.8 | 18 | 4.9 |
| Store | 141 | 1.6 | 168 | 1.6 | 17 | 1.1 |
| Mail box | 129 | .5 | 142 | .2 | 13 | .1 |
| Church | 141 | 1.4 | 171 | 1.3 | 20 | 1.0 |
| Grade school | 141 | 1.4 | 170 | 1.4 | 20 | 1.1 |
| High school | 141 | 5.3 | 171 | 5.0 | 20 | 2.5 |
| Doctor | 141 | 6.3 | 171 | 6.4 | 19 | 3.1 |
| Trained nurse | 141 | 27.5 | 171 | 25.1 | 20 | 20.8 |
| Hospital | 141 | 30.0 | 171 | 26.0 | 20 | 23.4 |
| Nearest neighbor | 139 | .3 | 167 | .2 | 17 | .2 |
| Road:Graded dirt | 78 | .8 | 74 | .3 | 7 | .1 |
| Soil surfaced | 129 | 4.2 | 157 | 4.4 | 14 | 1.9 |
| Rock or gravel surf. | 114 | 15.3 | 152 | 13.9 | 16 | 13.1 |
| Macadam | 16 | 13.1 | 8 | 11.0 | 1 | 1.5 |

Distance to all types of roads was much less for the farms on the better land of the full-time farms. The same relationship generally held true for the part-time farms also.

## Utilization of Land

With both types of farms, those on the higher land classes averaged larger in total acreage, but the full-time farms in each group were considerably larger than the part-time farms in the corresponding group (Table 13). The percentage of the total acreage devoted to crops increased with land class designation on the full-time farms, but remained constant for those in the part-time group. Insufficient land for growing crops with which to winter stock was a factor limiting the size of many farm businesses in Grayson County.

Table 13. Utilization of Land by Land Class

| | Full-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 65 | 84 | 13 |
| Total Acres Operated | 130.1 | 174.8 | 187.3 |
| | Percent | Percent | Percent |
| **Land Uses** | | | |
| Crops | 19.41 | 21.52 | 26.33 |
| Idle crop land | .23 | .25 | .21 |
| Rotation pasture | 7.66 | 8.14 | 8.26 |
| Permanent pasture tillable | 20.82 | 28.07 | 15.99 |
| Open pasture not tillable | 17.27 | 17.72 | 18.02 |
| Woods pastured | 18.27 | 14.69 | 17.71 |
| Woods not pastured | 12.03 | 6.41 | 10.30 |
| Waste, roads, garden, etc. | 4.31 | 3.20 | 3.18 |
| Total | 100.00 | 100.00 | 100.00 |
| | **Part-Time Farms** | | |
| Number of Farms | 76 | 87 | 7 |
| Total Acres Operated | 70.7 | 132.4 | 131.9 |
| | Percent | Percent | Percent |
| **Land Uses** | | | |
| Crops | 21.92 | 21.08 | 21.86 |
| Idle crop land | .60 | .37 | - |
| Rotation pasture | 8.12 | 4.90 | 6.28 |
| Permanent pasture tillable | 25.42 | 22.35 | 25.32 |
| Open pasture not tillable | 9.89 | 16.73 | 24.57 |
| Woods pastured | 21.91 | 15.38 | 19.16 |
| Woods not pastured | 7.45 | 16.39 | .54 |
| Waste, roads, garden, etc. | 4.69 | 4.80 | 2.27 |
| Total | 100.00 | 100.00 | 100.00 |
| | **All Farms** | | |
| Number of Farms | 141 | 171 | 20 |
| Total Acres Operated | 98.1 | 153.8 | 167.9 |
| | Percent | Percent | Percent |
| **Land Uses** | | | |
| Crops | 20.39 | 21.32 | 25.10 |
| Idle crop land | .37 | .30 | .15 |
| Rotation pasture | 7.84 | 6.72 | 7.71 |
| Permanent pasture tillable | 22.61 | 25.55 | 18.56 |
| Open pasture not tillable | 14.40 | 17.28 | 19.82 |
| Woods pastured | 19.68 | 14.12 | 18.11 |
| Woods not pastured | 10.25 | 10.80 | 7.62 |
| Waste, roads, garden, etc. | 4.46 | 3.91 | 2.93 |
| Total | 100.00 | 100.00 | 100.00 |

The percentages of the total area devoted to rotation pasture, permanent pasture tillable, or to woods not pastured were not consistently related to land class. Generally, the higher the land class the smaller the proportion of the farm devoted to woods pasture and to waste, roads, garden, etc., although the differences were not great. The proportion of the total area of the farms studied that was pasture not tillable increased with land class, and accounts for much of the increased acreage of part-time farms.

## Distribution of Capital Investment

Average total capital invested in farms in each land class increased in a one-two-three ratio; that is, twice as much capital was invested in class III-A as in class II, and three times as much in class III-B as in class II (Table 14). These same general relationships held for each class of capital without significant exceptions. Land in the higher classes was more valuable and able to support better farm buildings and dwellings and to use profitably more livestock and machinery.

Table 14. Distribution of Capital Investment

| | 162 Full-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 65 | 84 | 13 |
| | Dollars | Dollars | Dollars |
| Items | | | |
| Fixed Capital | | | |
| Dwellings | 710 | 1,291 | 2,942 |
| Tenant houses | 40 | 157 | 107 |
| Other buildings | 295 | 578 | 706 |
| Land | 3,352 | 6,463 | 9,010 |
| Working Capital | | | |
| Livestock | 669 | 1,305 | 1,878 |
| Machinery and equipment | 152 | 318 | 398 |
| Feeds and supplies | 108 | 187 | 132 |
| Cash to run farm | 51 | 85 | 142 |
| Total Capital | 5,377 | 10,293 | 15,516 |

| | 170 Part-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 76 | 87 | 7 |
| Items | Dollars | Dollars | Dollars |
| Fixed Capital | | | |
| Dwellings | 467 | 868 | 1,821 |
| Tenant houses | 15 | 122 | 128 |
| Other buildings | 209 | 530 | 797 |
| Land | 1,898 | 3,739 | 6,781 |
| Working Capital | | | |
| Livestock | 368 | 748 | 833 |
| Machinery and equipment | 86 | 315 | 214 |
| Feeds and supplies | 42 | 75 | 53 |
| Cash to run farm | 36 | 72 | 193 |
| Total Capital | 3,118 | 6,467 | 10,820 |

| | All Farms | | |
|---|---|---|---|
| Number of Farms | 141 | 171 | 20 |
| Items | Dollars | Dollars | Dollars |
| Fixed Capital | | | |
| Dwellings | 579 | 1,075 | 2,549 |
| Tenant houses | 26 | 130 | 115 |
| Other buildings | 249 | 553 | 738 |
| Land | 2,567 | 5,077 | 8,230 |
| Working Capital | | | |
| Livestock | 507 | 1,022 | 1,512 |
| Machinery and equipment | 116 | 316 | 334 |
| Feeds and supplies | 72 | 96 | 104 |
| Cash to run farm | 43 | 78 | 160 |
| Total Capital | 4,159 | 8,347 | 13,743 |

Table 15. Distribution of Capital Investment by Land Class

| | Full-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 65 | 84 | 15 |
| Average Total Capital | $ 5,377 | $10,298 | $15,316 |
| Items | Percent | Percent | Percent |
| Fixed Capital | | | |
| Dwellings | 13.20 | 12.54 | 19.21 |
| Tenant houses | .75 | 1.35 | .70 |
| Other buildings | 5.48 | 5.61 | 4.61 |
| Land | 62.34 | 62.79 | 58.83 |
| Working Capital | | | |
| Livestock | 12.45 | 12.48 | 12.26 |
| Machinery and equipment | 2.82 | 3.09 | 2.60 |
| Feeds and supplies | 2.02 | 1.14 | .86 |
| Cash to run farm | .94 | .82 | .93 |
| | 100.00 | 100.00 | 100.00 |

| | Part-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 76 | 87 | 7 |
| Average Total Capital | $3,118 | $ 6,467 | $10,820 |
| Items | Percent | Percent | Percent |
| **Fixed Capital** | | | |
| Dwellings | 14.99 | 13.41 | 16.83 |
| Tenant houses | .43 | 1.89 | 1.19 |
| Other buildings | 6.70 | 8.19 | 7.56 |
| Land | 60.81 | 57.82 | 62.67 |
| **Working Capital** | | | |
| Livestock | 11.81 | 11.57 | 7.70 |
| Machinery and equipment | 2.77 | 4.84 | 1.98 |
| Feeds and supplies | 1.34 | 1.16 | .49 |
| Cash to run farm | 1.15 | 1.18 | 1.78 |
| | 100.00 | 100.00 | 100.00 |

| | All Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of Farms | 141 | 171 | 20 |
| Average Total Capital | $ 4,159 | $ 8,347 | $13,743 |
| Items | Percent | Percent | Percent |
| **Fixed Capital** | | | |
| Dwellings | 13.92 | 12.88 | 18.55 |
| Tenant houses | .62 | 1.55 | .84 |
| Other buildings | 5.98 | 6.63 | 5.37 |
| Land | 61.72 | 60.83 | 59.89 |
| **Working Capital** | | | |
| Livestock | 12.19 | 12.24 | 11.00 |
| Machinery and equipment | 2.80 | 3.78 | 2.43 |
| Feeds and supplies | 1.74 | 1.15 | .76 |
| Cash to run farm | 1.03 | .94 | 1.16 |
| | 100.00 | 100.00 | 100.00 |

Distribution of the total capital within each land class was about the same for all. The only difference large enough to be significant was in the high proportion (18.6 percent) of the capital of farms in class III-B invested in the dwellings (Table 15). Generally, the farmers of Grayson County, regardless of the total amount invested or of the economic worth of land on which it was invested, were agreed as to the proportion to go to each kind of capital outlay, although farms composed largely of class III-B land were better able to support a high investment in operators' dwellings, because they were better farms.

## Size of Business

It has been found, through many farm management studies, that size of business is one of the most important factors affecting the success of farming. Large businesses are able to use both capital and labor more efficiently than small ones. There are a number of ways of measuring the size of the farm business. One of the best ways is to compute the number of days of productive work on the farm. Others include the number of men employed (man equivalent), total capital, total receipts, total acres operated, acres of crops, and particularly in a livestock grazing country such as Grayson, acres of pasture and animal units of productive livestock.

Every measure of size indicated a decidedly larger business on the higher land classes (Table 16). The man equivalent did not vary so much as the others. Considering all the farms, productive-man-work units ranged from 182 for class II farms to 298 for class III-B; total capital varied from $4159 for class II farms to $15,743 for class III-B, etc. The larger businesses on the higher land class farms were due to increased acreages and more business per acre.

Table 16. Relation of Land Class to Size of Business

| Type of Farm and Land Class | Number of Farms | Productive man-work-Units | Man Equiva- | Total Capital | Total Receipts | Total Acres Operated | Acres of Crops | Acres of Pasture | Animal Units of Produc-tive Live-stock |
|---|---|---|---|---|---|---|---|---|---|
| **Full-Time** | | | | | | | | | |
| II | 65 | 166 | 1.5 | $ 5,377 | $ 518 | 130 | 25 | 62 | 11.5 |
| III-A | 84 | 212 | 1.6 | 10,293 | 720 | 175 | 38 | 97 | 20.3 |
| III-B | 13 | 281 | 1.8 | 15,316 | 1,065 | 187 | 49 | 83 | 26.8 |
| **Part-Time** | | | | | | | | | |
| II | 76 | 195 | 1.4 | 3,118 | 371 | 71 | 15 | 32 | 5.7 |
| III-A | 87 | 265 | 1.6 | 6,467 | 748 | 132 | 28 | 60 | 11.8 |
| III-B | 7 | 312 | 1.5 | 10,820 | 1,055 | 132 | 29 | 77 | 12.3 |
| **All Farms** | | | | | | | | | |
| II | 141 | 182 | 1.5 | 4,159 | 439 | 98 | 20 | 46 | 8.4 |
| III-A | 171 | 259 | 1.6 | 8,347 | 735 | 153 | 33 | 78 | 15.9 |
| III-B | 20 | 292 | 1.7 | 13,743 | 1,062 | 168 | 42 | 80 | 21.4 |

## Distribution of Man-Work Units

As the land class increased, a larger proportion of the farmer's time was given to livestock and crop enterprises and less time was spent on off-the-farm and other miscellaneous jobs. This relation held true even with the part-time farmers, except on land class III-B. Considering all the farms, the proportion of man-work units on miscellaneous enterprises decreased from 29.9 percent for farms of class II to only 18.7 percent for those in class III-B (Table 17). Evidently it was found profitable, by the farmers who had relatively large farms on the better land, to spend more time actually farming than on odd jobs.

Table 17. Distribution of Man-Work Units by Land Class

| Type of Farm and Land Class | Man-Work Units: On Crops | On Livestock | On Miscellaneous | Total | Average Man-Work Units Per Acre of Crops |
|---|---|---|---|---|---|
| **Full-Time** | | | | | |
| II | 81.0 | 70.7 | 14.5 | 166.2 | 3.2 |
| III-A | 106.0 | 96.3 | 10.0 | 212.3 | 2.8 |
| III-B | 152.6 | 122.4 | 6.2 | 281.2 | 3.1 |
| **Part-Time** | | | | | |
| II | 61.0 | 45.8 | 88.6 | 195.8 | 3.9 |
| III-A | 85.4 | 68.1 | 111.2 | 264.7 | 3.1 |
| III-B | 79.6 | 87.3 | 144.7 | 311.6 | 2.8 |
| **All Farms** | | | | | |
| II | 70.2 | 57.5 | 54.5 | 182.0 | 3.5 |
| III-A | 95.5 | 81.9 | 61.5 | 259.0 | 2.9 |
| III-B | 127.1 | 110.1 | 54.7 | 291.8 | 3.0 |
| | Percent of Man-Work Units | | | | |
| **Full-Time** | | | | | |
| II | 48.7 | 42.6 | 8.7 | 100.00 | |
| III-A | 49.9 | 45.4 | 4.7 | 100.00 | |
| III-B | 54.3 | 43.5 | 2.2 | 100.00 | |
| **Part-Time** | | | | | |
| II | 31.2 | 23.5 | 45.3 | 100.00 | |
| III-A | 32.3 | 25.7 | 42.0 | 100.00 | |
| III-B | 25.6 | 28.0 | 46.4 | 100.00 | |
| **All Farms** | | | | | |
| II | 38.6 | 31.5 | 29.9 | 100.00 | |
| III-A | 40.0 | 34.3 | 25.7 | 100.00 | |
| III-B | 43.6 | 37.7 | 18.7 | 100.00 | |

As the land class designation and size of business increased, the intensity of the crops grown decreased because of off-the-farm projects which represented a smaller proportion of the total business conducted.

## Labor Efficiency

The more successful farmers usually care for more crop acres and more units of livestock per man than those less successful. The effect of increased economic worth of the land, as measured by land class, was to increase the labor efficiency as measured by work units, acres of crops, and animal units of productive livestock per man (Table 18).

Table 18. Relation of Land Class to Labor Efficiency

| Type of Farm and Land Class | Number of Farms | Work Units Per Man | Acres of Crops Per Man | Animal Units of Productive Livestock Per Man |
|---|---|---|---|---|
| **Full-Time** | | | | |
| II | 65 | 111 | 16.9 | 7.7 |
| III-A | 84 | 138 | 23.4 | 12.6 |
| III-B | 13 | 160 | 26.1 | 15.0 |
| **Part-Time** | | | | |
| II | 76 | 137 | 10.8 | 4.0 |
| III-A | 87 | 165 | 17.4 | 7.3 |
| III-B | 7 | 210 | 19.4 | 8.3 |
| **All Farms** | | | | |
| II | 141 | 125 | 13.7 | 5.7 |
| III-A | 171 | 149 | 20.4 | 9.9 |
| III-B | 20 | 176 | 25.4 | 12.9 |

Factors other than harder work may have been responsible for increases in labor efficiency. The business units were larger which permitted use of more labor-saving machines. The farms on land class III-B were the largest and could, consequently, use labor most efficiently. Labor efficiency was in a large measure the result of increased size of business. The topography was less hilly and rugged on the higher land

classes which may have resulted in easier working conditions, and consequently, more efficiency. Man-work units per acre of crops (Table 17) were lower on the higher land classes and partially bears out this contention.

## Production Efficiency

One factor essential to successful farming is an economical rate of production for the farm enterprises. Farms which get better crop yields per acre, more eggs per hen, more pounds of milk per cow, and higher receipts per animal unit are usually the most successful farms in an area if the increased rates of production are obtained economically.

Without exception, crop yields, as measured by crop index, were larger on the farms in the higher land classes (Table 19). Generally, the acres required to pasture each animal unit pastured decreased in relation to land class. These two results were primarily due to better land.

Table 19. Relation of Land Class to Rates of Production

| Type of Farm and Land Class | Number of Farms | Crop Index | Acres of Pasture Per Animal Unit Pastured | Cattle Receipts Per Cattle An. Unit | Poultry Receipts Per Poultry An. Unit | Sheep Receipts Per Sheep An. Unit |
|---|---|---|---|---|---|---|
| Full-Time | | | | | | |
| II | 65 | 90.8 | 5.14 | $ 20.05 | $179.25 | $ 36.16 |
| III-A | 84 | 104.7 | 5.12 | 18.48 | 189.45 | 44.92 |
| III-B | 13 | 124.4 | 3.56 | 20.67 | 205.83 | 42.36 |
| Part-Time | | | | | | |
| II | 76 | 87.2 | 6.14 | 9.14 | 187.52 | 34.12 |
| III-A | 87 | 95.2 | 5.36 | 14.14 | 169.60 | 34.75 |
| III-B | 7 | 103.9 | 6.54 | 28.87 | 214.23 | 45.52 |
| All Farms | | | | | | |
| II | 141 | 88.9 | 5.48 | 16.15 | 183.01 | 35.37 |
| III-A | 171 | 99.9 | 5.21 | 16.86 | 179.99 | 41.85 |
| III-B | 20 | 117.2 | 4.01 | 22.24 | 207.94 | 43.11 |

Cattle receipts per cattle animal unit showed no relation to land class in the full-time group, but a very distinct relationship on part-time farms. An increase in poultry receipts per poultry animal unit was shown by the data on full-time farms, but no such consistent relationship was noted in the part-time group. For all the farms together, larger receipts were realized for each sheep animal unit on the higher land classes than on the lower.

## Distribution of Receipts

A continuous increase in the total crop receipts, receipts from each kind of livestock, and total receipts was associated with increased land class designation for both types of farms (Table 20). Receipts from crops on class III-A were 164% and on class III-B 292% as great as on class II. For the total of all livestock receipts, class III-A had 83 percent more than class II while class III-B had 190 percent more than class II. Each kind of livestock showed similar relationships to land class. Increased receipts were accounted for in part, at least, by larger business units.

Table 20. Distribution of Receipts by Land Class

| Item | 162 Full-Time Farms | | | 170 Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Class II | Class III-A | Class III-B | Class II | Class III-A | Class III-B | Class II | Class III-A | Class III-B |
| Average receipts per farm | | | | | | | | | |
| Crops | $77 | $118 | $209 | $ 47 | $ 82 | $120 | $ 61 | $100 | $178 |
| Livestock | | | | | | | | | |
| Cattle | 179 | 299 | 445 | 39 | 132 | 275 | 103 | 214 | 385 |
| Sheep | 67 | 148 | 163 | 34 | 62 | 100 | 49 | 104 | 141 |
| Poultry | 74 | 88 | 112 | 55 | 69 | 80 | 64 | 78 | 101 |
| Total | 320 | 535 | 720 | 128 | 263 | 455 | 216 | 396 | 627 |
| Other sources | 25 | 26 | 17 | 183 | 376 | 459 | 110 | 204 | 172 |
| Total farm 1/ | 518 | 720 | 1065 | 371 | 748 | 1055 | 439 | 735 | 1062 |
| Average receipts per crop acre | | | | | | | | | |
| Crops | 3.07 | 3.14 | 4.23 | 3.06 | 2.95 | 4.14 | 3.06 | 3.06 | 4.21 |
| Crops and livestock | 15.72 | 17.35 | 18.84 | 11.26 | 12.37 | 19.85 | 13.87 | 15.19 | 19.08 |
| Percent of crop and livestock receipts from livestock | 80.5 | 81.9 | 77.5 | 72.9 | 76.1 | 79.1 | 77.9 | 79.9 | 77.9 |
| Total receipts per acre operated | $3.98 | $4.12 | $5.69 | $5.26 | $5.65 | $8.00 | $4.48 | $4.79 | $6.32 |
| Livestock receipts per $100 invested in productive livestock | $ 58 | $ 48 | $ 44 | $ 45 | $ 43 | $ 68 | $ 53 | $ 46 | $ 48 |
| Value farm products furnished | $316 | $415 | $667 | $277 | $355 | $502 | $295 | $385 | $609 |

1/ Includes increase in feeds and supplies

Little difference existed in the amounts received per crop acre for crops between classes II and III-A, but a considerable increase occurred for class III-B. This was true, because farms on classes II and III land were not able to make large enough crops to find it profitable to sell any. However, when receipts per crop acre from both crops and livestock were considered, the usual relationship of increased receipts

with higher land class held true. While farmers on class II land were able to take in only $13.87 from crops and livestock for each crop acre, those on classes III-A and III-B received $15.19 and $19.08, respectively. Receipts per acre operated showed the same relationship, though not so great.

Although the farms of higher land class had more capital invested in productive livestock, returns per $100 invested in them was slightly less than those on class II land, owing to the fact that farms on land class II had a higher proportion of the total livestock capital invested in poultry and other intensive livestock enterprises. Increased value of farm products furnished the household on better land class farms may have accounted for part of the livestock products.

## Returns from farming

In an attempt to measure the success of farm businesses, a number of measures have been devised. The two most commonly used are labor income and returns to capital. The validity of labor income in an economic depression year is sometimes questioned on the grounds that interest rates on capital are higher than can be obtained in other enterprises, and that the capital on which the interest is computed is often valued at its pre-depression level. Consequently, two other measures will be used in this discussion, returns to capital and operator's time, or net farm income, and operator's earnings, the latter of which includes the value of farm products and services furnished by the farm to the household. This last item is important in any farming region, but is

doubly so in a part-time, subsistence type of agriculture of which some of the farms in this study were examples.

On the full-time farms, returns to capital and operator's time decreased as land class rose (Table 21). The interest on capital being greater for the larger capital investments on the higher land classes increased this difference between classes as shown in labor income. While class II farms averaged -$209 labor income, classes III-A and III-B averaged -$541 and -$807, respectively. Even though the value of farm products and services furnished the household increased with land class, it was insufficient to offset the increased interest on capital, and the average operator's earnings decreased. However, the total earnings of capital and operator's time (including farm products and services used by the household) increased consistently with land class, both for part-time and full-time farms.

Table 21. Relation of Various Measures of Profit to Land Class

| Items | Full-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of farms | 65 | 84 | 13 |
| Average capital | $5,377 | $10,293 | $15,316 |
| Total receipts | 518 | 720 | 1,065 |
| Total expenses | 448 | 728 | 1,081 |
| Returns to capital and operator's time | 70 | -8 | -16 |
| Interest on capital | 279 | 533 | 791 |
| Labor income | -209 | -541 | -807 |
| Value of farm products and services furn. | 316 | 415 | 667 |
| Operator's earnings | 107 | -126 | -140 |
| Total earnings of capital & operator's time | 386 | 407 | 651 |
| Value of operator's time | 230 | 268 | 326 |
| Return on capital | -160 | -271 | -342 |
| Percent of return on capital | -2.98 | -2.63 | -2.23 |

| Items | Part-Time Farms | | |
|---|---|---|---|
| | II | III-A | III-B |
| Number of farms | 76 | 87 | 7 |
| Average capital | $ 3,118 | $ 6,467 | $10,820 |
| Total receipts | 371 | 748 | 1,055 |
| Total expenses | 370 | 635 | 638 |
| Returns to capital and operator's time | 1 | 113 | 417 |
| Interest on capital | 161 | 335 | 554 |
| Labor income | -160 | -222 | -137 |
| Value of farm products and services furn. | 277 | 355 | 502 |
| Operator's earnings | 117 | 133 | 365 |
| Total earnings of capital and operator's ti. | 278 | 468 | 919 |
| Value of operator's time | 167 | 224 | 298 |
| Return on capital | -166 | -111 | 119 |
| Percent of return on capital | -5.32 | -1.72 | 1.10 |
| | All Farms | | |
| Number of farms | 141 | 171 | 20 |
| Average capital | $ 4,159 | $ 8,547 | $13,742 |
| Total receipts | 439 | 735 | 1,062 |
| Total expenses | 406 | 681 | 926 |
| Returns to capital and operator's time | 33 | 54 | 136 |
| Interest on capital 1/ | 215 | 432 | 708 |
| Labor income | -182 | -378 | -572 |
| Value of farm products and services furn. | 295 | 385 | 609 |
| Operator's earnings | 113 | 7 | 37 |
| Total earnings of capital and operator's ti. | 328 | 439 | 745 |
| Value of operator's time | 195 | 243 | 316 |
| Return on capital | -162 | -189 | -180 |
| Percent of return on capital | -3.90 | -2.26 | -1.31 |

1/ Interest was charged at 5 percent on real estate investment and 6 percent on working capital.

Operators on the better land classes valued their time at more than those on class II so that when this was subtracted from operator's earnings, the return on capital showed the same downward trend. However, owing to larger capital investment, the percent return on capital showed a smaller loss on the higher land classes.

Since returns to capital and operator's time increased very greatly with land class on the part-time farms, due no doubt to the fact that more receipts were obtained from the farm in relation to farm expenses, the trend for most profit measures was upward with land class. Labor income was the single exception, showing no relationship. Operator's earnings averaged $117, $133, and $365 for classes II, III-A, and III-B, respectively, while percent return on capital increased from minus 5.32 for class II to minus 1.72 for class III-A and to plus 1.10 for class III-B.

In a depression year, it is not uncommon for the larger farms with larger outlays for fixed capital and labor to lose more money than the smaller farms. This result cannot be attributed to the land in most cases as much as to the unfavorable price level of agricultural products.

## RELATIVE IMPORTANCE OF VARIOUS FARM MANAGEMENT FACTORS ON DIFFERENT LAND CLASSES

An attempt was made to measure the relative importance of some of the more important farm management factors on land classes II and III-A. (Class III-B was not included because of the small number of cases.) Just what effect increasing the size of business on land class II had as compared to doing the same thing on class III-A, and how much more or less profitable it was to get higher labor efficiency, better crop yields, and larger returns per animal unit of various kinds of livestock on class II farms than on class III-A, were the objects of this part of the analysis. The results here presented should be considered only as indicative or preliminary, rather than conclusive. It would be desirable to sub-sort many of these factors in order to obtain reliable conclusions.

## Size of Business

With an increase in size of business as measured by total man-work units, the number of acres of crops and animal units of productive livestock cared for by one man increased as would be expected (Table 22). The increase was greater on class III-A than on class II. No consistent relationship existed between crop yields and size of business on either land class. The effect of increased size of business on work units per man was about the same for both land classes.

Net farm income (return to capital and operator's time) was about the same for each size group of the two classes, increasing consistently with increased size of business. Owing to the much larger capital invested in the larger farms, however, the interest charges were so high that, when subtracted from farm income, the labor income decreased with increased size of business in both land classes, but decreased further with class III-A than with class II because of larger relative size. The increase in the value of farm products furnished the household, as size of business was expanded, was enough on class II to change the relationship to an upward trend, but not on class III-A.

Table 22. Relation of Size of Business to Various Factors

| Productive man-work units | Farms | Average man-work Units | Work Units Per Man | Acres of Crops Per Man | Animal Units of Productive Livestock Per Man | Crop Index | Average Farm Income | Average Interest | Average Labor Income | Average Value of Products for Home Use | Average Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | No. | No. | Acres | No. | % | $ | $ | $ | $ | $ |
| Land class II farms | | | | | | | | | | | |
| Less than 150 | 73 | 111 | 86 | 9.7 | 3.5 | 85 | -20 | 127 | -147 | 289 | 82 |
| 150 - 299 | 46 | 207 | 129 | 14.5 | 5.4 | 96 | 24 | 253 | -209 | 329 | 120 |
| 300 or more | 22 | 366 | 210 | 21.9 | 11.7 | 87 | 223 | 472 | -249 | 444 | 195 |
| Average | 141 | 182 | 125 | 13.7 | 5.7 | 89 | 32 | 215 | -183 | 295 | 112 |
| Land class III-A farms | | | | | | | | | | | |
| Less than 150 | 48 | 112 | 84 | 10.5 | 4.8 | 101 | -21 | 190 | -211 | 262 | 51 |
| 150 - 299 | 83 | 218 | 139 | 19.6 | 8.9 | 99 | 17 | 366 | -349 | 375 | 26 |
| 300 or more | 40 | 436 | 216 | 29.4 | 15.8 | 100 | 282 | 861 | -639 | 552 | -87 |
| Average | 171 | 239 | 149 | 20.4 | 9.9 | 100 | 54 | 432 | -378 | 385 | 7 |
| All Farms | 312 | 213 | 138 | 17.5 | 8.1 | 95 | 44 | 334 | -290 | 344 | 54 |

In this particular year, an increase in size of business brought about equal net returns for each unit of increase for both land classes, but owing to larger interest charges on class III-A, increased size resulted in larger losses.

## Crop Yields

Acres of crops per farm decreased slightly but consistently as crop index increased on class II farms, at least partially resulting in slightly fewer work units per man (Table 23). This was due perhaps to the fact that only the best land was used for crops by those who got the highest yields. An increase in acres of crops occurred on class III-A because more good level land was available for crops.

The proportion of total receipts received from crops increased slightly on class II and greatly on class III-A. The proportion from outside sources increased on class II, but decreased on class III-A. Evidently, farmers on class III-A were able to increase their crop yields more cheaply, as more livestock was kept, and to spend more time actually farming than those on class II. Cheap fertilizer in the form of manure from larger amounts of livestock made increased yields profitable for class III-A farmers, but lack of manure made it necessary to achieve larger yields by more expensive methods for class II farmers.

Table 23. Relation of Crop Yields to Returns

| Crop Index | Farms | Average Crop Index | Percent of Total Receipts From Crops | Percent of Total Receipts From Outside Sources | Acres of Crops Per Farm | Acres of Crops Per Man | Man Work Units Per Farm | Work Units Per Man | Average Farm Income | Average Interest | Average Labor Income | Average Value of Farm Products for Home Use | Average Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | % | % | No. | No. | No. | No. | $ | $ | $ | $ | $ |
| **Land class II farms** | | | | | | | | | | | | | |
| Less than 80 | 62 | 80 | 11.4 | 20.8 | 21 | 14.8 | 178 | 126 | 61 | 215 | -154 | 279 | 125 |
| 80 - 109 | 50 | 95 | 17.5 | 26.3 | 20 | 13.5 | 185 | 124 | -84 | 204 | -288 | 303 | 45 |
| 110 or more | 29 | 138 | 15.8 | 28.1 | 18 | 12.0 | 185 | 122 | 121 | 236 | -115 | 316 | 201 |
| Average | 141 | 89 | 14.0 | 25.1 | 20 | 13.7 | 182 | 125 | 32 | 215 | -183 | 296 | 112 |
| **Land class III-A farms** | | | | | | | | | | | | | |
| Less than 80 | 49 | 62 | 10.3 | 37.6 | 29 | 18.3 | 203 | 130 | -34 | 285 | -319 | 334 | 15 |
| 80 - 109 | 65 | 93 | 12.7 | 28.6 | 34 | 20.9 | 253 | 154 | 82 | 434 | -382 | 401 | 49 |
| 110 or more | 57 | 140 | 16.1 | 28.1 | 34 | 21.4 | 264 | 189 | 98 | 558 | -460 | 411 | -49 |
| Average | 171 | 100 | 13.6 | 27.2 | 33 | 20.4 | 239 | 149 | 54 | 432 | -378 | 385 | 7 |
| All farms | 312 | 95 | 13.7 | 26.9 | 27 | 17.5 | 213 | 138 | 44 | 334 | -290 | 344 | 54 |

Class II farms, having an average crop index of 80 to 109, realized less profit by all measures than those with lower or higher crop yields. Those with an index of 110 or more were in all respects more profitable than those with a crop index of less than 80. Class III-A farms had consistently higher net incomes as crop yields rose, but interest on larger capital investment reversed the trend with labor income and operator's earnings. Apparently, increased crop yields on either land class in a severe depression year had to be obtained by very economical methods, if they were to be profitable.

## Labor Efficiency

More work units per man were accomplished by handling either more acres of crops, more units of productive livestock, or both. In other words, the farms that used labor more efficiently were larger businesses than other farms, and not because of a predominance of either crops or livestock. This better labor efficiency brought much greater receipts per man, the increases on both kinds of land being almost a geometric progression. A slight decrease in crop yields was associated with more work units per man on class II, but not on class III-A.

## Table 24. Relation of Work Units Per Man to Returns

| Work Units Per Man | Farms | Average Work Units Per Farm | Acres of Crops Per Man | Animal Units (except work-stock) Per Man | Receipts Per Man | Per Farm: Man Work Units | Per Farm: Men | Crop Index | Average: Farm Income | Interest | Labor Income | Value of Farm Products for Home Use | Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | No. | Acres | No. | $ | No. | No. | % | $ | $ | $ | $ | $ |
| Land class II farms | | | | | | | | | | | | | |
| Less than 100 | 53 | 76 | 9.5 | 3.4 | 166 | 111 | 1.5 | 90 | -105 | 159 | -264 | 258 | -6 |
| 100 - 149 | 84 | 120 | 13.9 | 5.6 | 286 | 173 | 1.4 | 90 | 66 | 190 | -124 | 289 | 165 |
| 150 or more | 34 | 207 | 19.8 | 9.5 | 551 | 307 | 1.5 | 85 | 191 | 342 | -151 | 383 | 212 |
| Average | 141 | 125 | 13.7 | 5.7 | 300 | 182 | 1.5 | 89 | 32 | 215 | -183 | 295 | 112 |
| Land class III-A farms | | | | | | | | | | | | | |
| Less than 100 | 43 | 76 | 10.0 | 4.9 | 189 | 117 | 1.5 | 96 | -122 | 235 | -357 | 272 | -85 |
| 100 - 149 | 62 | 125 | 18.6 | 8.1 | 349 | 203 | 1.6 | 101 | -39 | 322 | -361 | 375 | 13 |
| 150 or more | 66 | 215 | 28.3 | 14.7 | 722 | 352 | 1.6 | 101 | 257 | 665 | -408 | 468 | 60 |
| Average | 171 | 149 | 20.4 | 9.9 | 458 | 239 | 1.6 | 100 | 54 | 432 | -378 | 365 | 7 |
| All farms | 312 | 138 | 17.5 | 8.1 | 390 | 213 | 1.5 | 95 | 44 | 354 | -290 | 344 | 54 |

Net farm income was greater with higher labor efficiency on both land classes, but only in class II was it sufficient to overcome the increased interest charges. Value of farm products furnished the household mounted with labor efficiency, making operator's earnings consistently larger.

High labor efficiency was important on both land classes.

## Livestock Returns

### Cattle Receipts Per Cattle Animal Unit

There was a positive relationship between cattle receipts per cattle animal unit and the size of business as measured by cattle animal units and man work units (Table 25). Labor efficiency and crop index also increased. For both classes of land each of these factors moved up at about the same rate with the one exception of cattle animal units in the last two groups of class III-A farms, where the increase was more rapid than for class II.

Table 25. Relation of Cattle Receipts Per Cattle Animal Unit to Returns and Other Factors

| Cattle Receipts Per Cattle Animal Unit | Farms | Average Cattle Receipts Per Cattle Animal Unit | Per Farm: Cattle Animal Units | Per Farm: Man Work Units | Per Farm: Work Units Per Man | Crop Index | Percent of Total Receipts from Crops | Average: Farm Income | Average: Interest | Average: Labor Income | Average: Value of Farm Products For Home Use | Average: Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $ | No. | $ | No. | No. | No. | % | % | $ | $ | $ | $ | $ |
| Land class II farms | | | | | | | | | | | | |
| Less than 15 | 80 | 8 | 5.6 | 173 | 118 | 88 | 12.4 | 31 | 184 | -153 | 276 | 123 |
| 15 - 24 | 47 | 20 | 6.9 | 187 | 130 | 89 | 15.2 | 66 | 244 | -178 | 294 | 116 |
| 25 or more | 34 | 38 | 7.1 | 191 | 130 | 100 | 17.4 | -10 | 231 | -241 | 329 | 88 |
| Average | 141 | 19 | 6.4 | 182 | 125 | 89 | 14.0 | 32 | 215 | -183 | 295 | 112 |
| Land class III-A farms: | | | | | | | | | | | | |
| Less than 15 | 67 | 9 | 10.4 | 228 | 144 | 97 | 15.7 | -11 | 371 | -382 | 351 | -31 |
| 15 - 24 | 51 | 20 | 11.1 | 239 | 151 | 96 | 12.2 | 84 | 342 | -258 | 396 | 138 |
| 25 or more | 53 | 37 | 17.1 | 252 | 155 | 108 | 12.9 | 109 | 598 | -489 | 418 | -71 |
| Average | 171 | 21 | 12.7 | 230 | 149 | 100 | 13.6 | 54 | 432 | -378 | 385 | 7 |
| All Farms | 312 | 20 | 9.8 | 213 | 138 | 95 | 13.7 | 44 | 334 | -290 | 344 | 54 |

Farm receipts increased with larger cattle receipts except for the third group of class II. Evidently, it was unprofitable to get more than $25 from each cattle animal unit on class II in spite of the fact that the businesses were larger and labor was efficiently used. Probably this was on account of lack of grass and other cheap feed in sufficient quantity, necessitating the use of more costly feed. Since interest increased, labor income declined, but not consistently on either land class.

Sheep Receipts Per Sheep Animal Unit

Up to an average of $34 per sheep animal unit for class II, and $35 for class III-A, the number of sheep increased and the size of business grew in accompaniment with increased receipts per sheep animal unit (Table 26). Labor was also used more efficiently. The average crop index was higher on class II, but not on class III-A until a higher level of returns for each sheep animal unit were received. Beyond these points of optimum returns, the trend was downward for all factors except the one instance of crop index.

Table 26. Relation of Sheep Receipts Per Sheep Animal Unit to Returns and Other Factors

| Sheep Receipts Per Sheep Animal Unit | Farms | Average Sheep Receipts Per Sheep Animal Unit | Per Farm: Sheep Animal Units | Per Farm: Man Work Units | Work Units Per Man | Crop Index | Percent of Total Receipts From Crops | Average: Farm Income | Interest | Labor Income | Value of Farm Products Used in Home | Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | $ | No. | No. | No. | % | % | $ | $ | $ | $ | $ |
| Land class II farms | | | | | | | | | | | | |
| None | 70 | - | - | 180 | 131 | 83 | 22.1 | 12 | 136 | -124 | 252 | 128 |
| Less than 30 | 32 | 20 | 2.6 | 173 | 116 | 99 | 10.9 | -120 | 256 | -376 | 316 | - 60 |
| 30 - 39 | 14 | 34 | 3.1 | 198 | 127 | 103 | 11.0 | 421 | 224 | 197 | 332 | 469 |
| 40 or more | 25 | 49 | 2.8 | 190 | 117 | 84 | 6.6 | 68 | 347 | -279 | 368 | 89 |
| Average 1/ | 71 | 33 | 2.8 | 184 | 119 | 94 | 9.3 | 53 | 294 | -241 | 338 | 97 |
| Land class III-A farms | | | | | | | | | | | | |
| None | 53 | - | - | 215 | 137 | 98 | 19.1 | -51 | 278 | -329 | 327 | - 2 |
| Less than 30 | 25 | 20 | 2.9 | 211 | 146 | 99 | 9.0 | 75 | 284 | -209 | 329 | 120 |
| 30 - 39 | 36 | 36 | 4.2 | 303 | 179 | 98 | 11.5 | 234 | 608 | -374 | 428 | 54 |
| 40 or more | 57 | 53 | 3.7 | 253 | 141 | 104 | 13.5 | 29 | 530 | -501 | 436 | -65 |
| Average 1/ | 118 | 40 | 3.7 | 250 | 154 | 101 | 12.1 | 101 | 502 | -401 | 412 | 11 |
| All Farms | 189 | 38 | 3.3 | 225 | 141 | 98 | 11.3 | 84 | 424 | -340 | 383 | 43 |

1/ Does not include class designated as "none"

Farm income for both classes followed the same trend as did labor income and operator's earnings for class II. Interest charges were so high as to upset the trend for these two measures for class III-A. It was no more profitable to increase the sheep returns to a level of $40 or more per animal unit on class III-A than on class II land. In fact, relatively high rates of returns from sheep were more profitable on class II than on class III-A land. In both cases, sheep were restricted to the more rocky, steeper, poorer pastures, the best land being reserved for cattle and crops.

Poultry Receipts Per Animal Unit in Poultry

Animal units in poultry decreased slightly on class II and remained constant on class III-A as returns per animal unit in poultry increased (Table 27). The group of farms in both classes which received from $150 to $199 were the smallest sized group when measured by man work units, although they had about the average capital investment. Farm income and operator's earnings from this group were less than in either of the other groups. Size of business seemed to have more effect on the income of both groups than receipts per poultry animal unit. This was due to the fact that the poultry enterprise was too small, in any case, to affect appreciably the returns from the farm business as a whole.

Table 27. Relation of Poultry Receipts Per Animal Unit in Poultry to Returns and Other Factors

| Poultry Receipts Per Poultry Animal Unit | Farms | Average Poultry Receipts Per Poultry Animal Unit | Per Farm: Poultry Animal Units | Per Farm: Man Work Units | Per Farm: Work Units Per Man | Crop Index | Percent of Total Receipts from Crops | Average: Farm Income | Average: Interest | Average: Labor Income | Average: Value of Farm Products for Home Use | Average: Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | $ | No. | No. | No. | % | % | $ | $ | $ | $ | $ |
| Class II farms | | | | | | | | | | | | |
| Less than 150 | 46 | 108 | 0.38 | 190 | 124 | 88 | 13.5 | 48 | 269 | -221 | 302 | 81 |
| 150 - 199 | 43 | 172 | 0.34 | 175 | 125 | 91 | 13.9 | -15 | 201 | -216 | 277 | 61 |
| 200 or more | 52 | 280 | 0.32 | 180 | 125 | 88 | 14.5 | 58 | 180 | -122 | 304 | 182 |
| Average | 141 | 191 | 0.35 | 182 | 125 | 89 | 14.0 | 32 | 215 | -183 | 295 | 112 |
| Class III-A farms | | | | | | | | | | | | |
| Less than 150 | 72 | 97 | 0.43 | 258 | 154 | 98 | 12.2 | 64 | 439 | -375 | 365 | 10 |
| 150 - 199 | 46 | 175 | 0.43 | 217 | 139 | 102 | 15.8 | -16 | 426 | -442 | 372 | -70 |
| 200 or more | 53 | 296 | 0.44 | 233 | 149 | 101 | 14.0 | 101 | 429 | -328 | 397 | 69 |
| Average | 171 | 180 | 0.43 | 239 | 149 | 100 | 15.6 | 54 | 432 | -378 | 385 | 7 |
| All farms | 312 | 185 | 0.39 | 213 | 138 | 95 | 15.7 | 44 | 334 | -290 | 344 | 54 |

Proportion of Receipts from Miscellaneous Sources

When farming is profitable, it is usually done in large enough units to employ the operator, his help, work stock, tools, and equipment throughout most of the year. When it becomes unprofitable, the operators usually turn to other sources of income, including off-the-farm work, if it is available. For both class II and III-A farms, small acreages of crops and reduced acreage of pasture were associated with increased outside work (Table 28). The size of the business, as measured by man work units, was increased by adding non-farm sources of income. For class II farms this was further encouraged by the limitation in the amount of productive livestock that could be kept with only a small acreage of crops and little pasture. These same relationships held true for class III-A farms except for animal units of productive livestock, which showed an increase.

Greater labor efficiency was obtained by farms on both classes with an increase in off-the-farm work, since the total size of the business was enlarged. For both classes, crop index was slightly lower on farms having a large part of their receipts from miscellaneous sources.

As the proportion of off-the-farm work increased, farm income increased except with the group of class II farms which received 10 to 39 percent of their receipts from miscellaneous sources. With this group, not enough work was done off the farm nor enough business done with the farm enterprises to bring in receipts sufficient to pay the expenses of the relatively large farms. Except for this group, labor income and operator's earnings increased with larger proportions of receipts from miscellaneous sources.

Table 28. Relation of the Proportion of Receipts from Miscellaneous Sources to Returns and Other Factors

| Percent of Receipts from Miscellaneous Sources | Farms | Average Percent of Total Receipts from Miscellaneous Sources | Man Work Units Per Farm | Man Work Units Per Man | Acres of Crops | Crop Index | Acres of Pasture | Animal Units of Productive Livestock | Average Farm Income | Interest | Labor Income | Value of Farm Products for Home Use | Operator's Earnings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | No. | No. | % | No. | No. | $ | $ | $ | $ | $ |
| **Land class II farms** | | | | | | | | | | | | | |
| Less than 10 | 52 | 3.0 | 160 | 108 | 26 | 90 | 63 | 11.1 | 94 | 278 | -184 | 309 | 125 |
| 10 - 39 | 47 | 21.6 | 171 | 113 | 20 | 93 | 48 | 8.1 | -95 | 222 | -317 | 309 | -8 |
| 40 or more | 42 | 62.1 | 222 | 161 | 14 | 83 | 23 | 3.5 | 105 | 130 | - 25 | 263 | 238 |
| Average | 141 | 25.1 | 182 | 125 | 20 | 89 | 46 | 8.4 | 32 | 215 | -183 | 295 | 112 |
| **Land class III-A farms** | | | | | | | | | | | | | |
| Less than 10 | 72 | 2.4 | 211 | 132 | 38 | 103 | 105 | 5.9 | - 4 | 566 | -570 | 409 | -161 |
| 10 - 39 | 51 | 22.6 | 227 | 146 | 31 | 94 | 47 | 11.3 | 20 | 301 | -281 | 370 | 89 |
| 40 or more | 48 | 63.5 | 294 | 177 | 27 | 101 | 70 | 11.2 | 178 | 372 | -194 | 365 | 171 |
| Average | 171 | 27.8 | 239 | 149 | 33 | 100 | 78 | 9.6 | 54 | 432 | -378 | 385 | 7 |
| All farms | 312 | 26.9 | 213 | 138 | 27 | 95 | 64 | 9.1 | 44 | 334 | -290 | 344 | 54 |

In a bad depression year, it seems wise for farmers who have low rates of production and small businesses because of poor land to supplement their farm business receipts with income from off the farm. This may frequently be the only opportunity for increased income which is available to the operators of small businesses located on poor land, since increasing the area of such land may serve merely to increase the amount of the loss. On good land, however, the opportunity for increased income through increased size of crop and livestock enterprises may be more attractive than non-farm activities, except in years of severe economic depression. In 1930, the farmers on both of the predominant land classes in this area improved their incomes in comparison with those of their neighbors, by the addition of miscellaneous sources to the business.

## HOME ECONOMICS DATA [1]

### Housing

One of the minor factors used in classifying the land was the outward appearance of the farm house as to size and condition. Because of this and the fact that better land is able to support better homes, it is natural to expect, with an increase in land class, larger homes made of better materials and in better condition.

An increase occurred in the proportion of houses well painted from 17.7 percent on class II to 47.8 percent on class III-A and 76.4 percent on class III-B (Table 29). Weather-worn and shabbily-painted dwellings predominated on the poorest land. Class III-B had most of the few brick structures in the area and fewer of frame construction than did the lower classes. The number of frame-and-log construction varied little from class II to class III-A.

As land class rose, the number of porches increased slightly up to two per house. The number of stories, rooms, bedrooms, and square feet of floor space, all measures of size, were significantly larger with higher land class. Houses on the higher land classes of the full-time group were the oldest, and part-time farms on land classes II and III-A showed a similar trend. This was probably due to the fact that many of the better houses were of the same type of substantial construction and were all built about the same time around the turn of the century. The value of the house rose with land class in almost a 1:2:4 progression.

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[1] These data were kindly loaned the writer by Miss Ilena M. Bailey, formerly Home Economist, Virginia Agricultural Experiment Station.

Table 29. Size, Type, Age, Value and Other Features of Houses by Land Class

| Item | 162 Full-Time Farms | | | 170 Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B |
| | % | % | % | % | % | % | % | % | % |
| No.of houses according to kind of material and outside finish | | | | | | | | | |
| Frame | | | | | | | | | |
| Well painted | 83.7 | 58.7 | 63.6 | 12.7 | 35.8 | 100.0 | 17.7 | 47.2 | 76.4 |
| Shabbily painted | 32.2 | 17.5 | 18.2 | 12.7 | 19.8 | - | 21.5 | 18.6 | 11.8 |
| White washed | - | 1.3 | - | 1.4 | 3.7 | - | .8 | 2.5 | - |
| Weather worn | 44.1 | 22.5 | 18.2 | 73.2 | 40.7 | - | 60.0 | 31.7 | 11.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Total Frame | 92.2 | 94.1 | 84.6 | 93.4 | 93.1 | 85.7 | 92.8 | 93.6 | 85.0 |
| Log | 3.1 | 2.4 | - | 2.6 | 3.5 | - | 2.9 | 2.9 | - |
| Brick | - | 1.2 | 15.4 | - | - | 14.3 | - | .6 | 15.0 |
| Combination | 4.7 | 2.3 | - | 4.0 | 3.4 | - | 4.3 | 2.9 | - |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number of Porches | | | | | | | | | |
| None | - | 2.4 | - | 2.6 | 5.8 | - | 1.4 | 4.1 | - |
| One | 26.2 | 23.5 | 7.7 | 38.2 | 26.4 | - | 32.6 | 25.0 | 5.0 |
| Two | 72.3 | 70.6 | 92.3 | 59.2 | 67.8 | 100.0 | 65.3 | 69.2 | 95.0 |
| Three | 1.5 | 3.5 | - | - | - | - | .7 | 1.7 | - |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Average No.Stories | 1.4 | 1.6 | 1.9 | 1.3 | 1.5 | 1.6 | 1.4 | 1.6 | 1.8 |
| " " Rooms | 5.5 | 6.3 | 8.6 | 4.7 | 5.7 | 7.1 | 5.1 | 6.0 | 8.1 |
| " " Bedrooms | 3.4 | 3.6 | 4.9 | 2.9 | 3.3 | 4.0 | 3.1 | 3.5 | 4.6 |
| " " Square Feet of Floor Space | 1334 | 1858 | 3015 | 1024 | 1721 | 1745 | 1167 | 1769 | 2571 |
| Average Age of House(yrs) | 26 | 29 | 34 | 28 | 35 | 16 | 27 | 32 | 27.5 |
| " Value of House | $ 710 | $1291 | $2942 | $ 467 | $ 868 | $1821 | $ 579 | $1075 | $2549 |
| " No.Room Per Person | 1.3 | 1.4 | 1.9 | .9 | 1.1 | 1.8 | 1.0 | 1.3 | 1.8 |

It is sometimes suggested that one room for each person is the minimum requirement for adequate housing. This standard was achieved in all cases except the part-time farms on class II (Table 28). The number of rooms per person increased with land class, owing both to larger houses and slightly smaller families.

Table 30. Types of Conveniences in Homes

| Item | 162 Full-Time Farms | | | 170 Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B |
| | % | % | % | % | % | % | % | % | % |
| Electricity | - | 7.1 | 7.7 | - | 5.7 | - | - | 6.4 | 5.0 |
| Water facilities | | | | | | | | | |
| Running hot water | - | 9.4 | 23.1 | - | 1.1 | - | - | 5.2 | 15.0 |
| Running cold water | - | 21.2 | 30.8 | 5.3 | 10.3 | - | 2.8 | 15.7 | 20.0 |
| Pump | 3.1 | 5.9 | 7.7 | 1.3 | 6.9 | - | 2.1 | 6.4 | 5.0 |
| Sink | - | 18.8 | 38.5 | 5.3 | 13.8 | - | 2.8 | 16.3 | 25.0 |
| Lavatory | - | 11.8 | 23.1 | 1.3 | 1.1 | - | 1.0 | 6.4 | 15.0 |
| Bathtub | - | 9.4 | 23.1 | 1.3 | 1.1 | - | 1.0 | 5.2 | 15.0 |
| Drain | - | 9.4 | 23.1 | 1.3 | 4.6 | - | 1.0 | 7.0 | 15.0 |
| Telephone | 46.2 | 57.7 | 84.6 | 18.4 | 50.6 | 85.7 | 31.2 | 54.1 | 85.0 |
| Kind of lighting fuel | | | | | | | | | |
| Kerosene lamps | 92.3 | 82.4 | 69.2 | 100.0 | 92.0 | 85.7 | 96.5 | 87.2 | 75.0 |
| Acetylene lamps | 7.7 | 10.6 | 23.1 | - | 2.3 | 14.3 | 3.5 | 6.4 | 20.0 |
| Electricity | - | 7.1 | 7.7 | - | 5.7 | - | - | 6.4 | 5.0 |
| Type of toilet | | | | | | | | | |
| None | 6.2 | 2.4 | - | 15.8 | 8.0 | - | 11.3 | 5.2 | - |
| Privy with pit only | 3.1 | 4.7 | - | 1.3 | 2.3 | 14.3 | 2.1 | 3.5 | 5.0 |
| Privy with pit & vent | 50.8 | 52.9 | 61.5 | 44.7 | 55.2 | 71.4 | 47.5 | 54.1 | 65.0 |
| Flush | - | 8.2 | 23.1 | 1.3 | 1.1 | - | 1.0 | 4.7 | 15.0 |
| Other | 40.0 | 31.8 | 15.4 | 36.8 | 33.3 | 14.3 | 38.3 | 32.6 | 15.0 |
| Doors well screened | 81.1 | 85.9 | 89.1 | 73.9 | 80.8 | 100.0 | 78.1 | 83.7 | 91.9 |
| Windows well screened | 29.4 | 53.6 | 57.4 | 24.0 | 41.7 | 58.4 | 26.8 | 48.1 | 57.7 |

At the time this survey was made, 1931, there was only one electric power line in the area. Since then several others have been constructed and serve a much larger proportion of the population. At that time, no farms on class II land had the use of electricity from either a power line or a home plant, while only 6.4 percent of class III-A and 5.0 percent of class III-B had this service (Table 30). Water facilities, including running hot and cold water, pump, sink, lavatory, bathtub and drain were more prevalent on the higher land classes, with the exception of the part-time farms on class III-B land, which had none of these. The proportion of telephones increased consistently with land class, as did the use of acetylene lamps and electricity for lighting. Sanitary facilities, such as improved toilets and screening of windows and doors, showed similar trends.

In the main, the people on the better land classes had larger, better conditioned, more modernly equipped homes than those on the poorer land.

## Goods and Services Used

For any one area in a particular year, the amounts of various goods and services furnished by the farm and purchased indicate something of the level of living of the people of the area.

Food, housing, and household operations were the largest items furnished by the farm. The last item was mostly wood for fuel. With the exception of household operations, the amount furnished increased consistently with land class (Table 31). The use of other fuels for heating by the families on the higher land classes probably accounted

for lack of an increase in the household operations item.

Table 31. Value of Goods and Services Furnished by the Farm and Purchased

| Item | Full-Time Farms | | | Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B |
| **Furnished by farm** | | | | | | | | | |
| Food | $ 226 | $ 256 | $ 315 | $ 209 | $ 249 | $ 273 | $ 217 | $ 252 | $ 300 |
| Housing | 69 | 126 | 271 | 46 | 83 | 182 | 57 | 104 | 240 |
| Household operations | 27 | 31 | 40 | 30 | 27 | 32 | 29 | 29 | 37 |
| Transportation | 14 | 13 | 19 | 7 | 9 | - | 10 | 11 | 12 |
| Furnishings & equip. | 1 | 1 | 1/ | 1 | 1 | 1 | 1 | 1 | 1 |
| Other 2/ | 1 | 1/ | 1/ | 1 | 1/ | 1/ | 1 | 1/ | 1/ |
| Total furnished 3/ | $ 338 | $ 427 | $ 645 | $ 294 | $ 369 | $ 488 | $ 315 | $ 397 | $ 590 |
| **Purchased** | | | | | | | | | |
| Food | $ 67 | $ 76 | $ 96 | $ 84 | $ 80 | $ 91 | $ 76 | $ 78 | $ 94 |
| Clothing | 101 | 137 | 193 | 104 | 128 | 115 | 103 | 132 | 166 |
| Housing | - | - | - | - | 1/ | - | - | 1/ | - |
| Household operation | 16 | 25 | 52 | 15 | 22 | 33 | 16 | 24 | 45 |
| Transportation | 31 | 66 | 67 | 15 | 39 | 131 | 23 | 53 | 89 |
| Furnishings & equip. | 12 | 19 | 8 | 9 | 14 | 8 | 11 | 16 | 8 |
| Formal education | 10 | 37 | 39 | 3 | 17 | 17 | 6 | 27 | 31 |
| Recreation | 9 | 17 | 36 | 5 | 15 | 15 | 7 | 16 | 29 |
| Medical care | 36 | 36 | 28 | 30 | 22 | 50 | 33 | 29 | 36 |
| Personal care | 3 | 4 | 6 | 3 | 4 | 4 | 3 | 4 | 5 |
| Personal - other | 15 | 12 | 17 | 16 | 12 | 15 | 15 | 12 | 16 |
| Community welfare | 13 | 27 | 39 | 8 | 18 | 29 | 11 | 22 | 35 |
| Gifts to persons outside family | 4 | 10 | 25 | 1 | 3 | 33 | 2 | 7 | 22 |
| Funerals | 3 | 15 | 6 | 3 | 1 | - | 3 | 8 | 4 |
| Miscellaneous | 4 | 9 | 26 | 3 | 7 | 8 | 4 | 8 | 20 |
| Total purchased 3/ | $ 324 | $ 490 | $ 638 | $ 299 | $ 364 | $ 549 | $ 313 | $ 436 | $ 606 |
| **Total Value of Family Living** | $ 662 | $ 917 | $1283 | $ 593 | $ 753 | $1037 | $ 628 | $ 833 | $1196 |

1/ Less than one dollar

2/ Includes recreation, personal care, community welfare, gifts, etc.

3/ Amounts less than one dollar not included.

The amount spent for food was only slightly higher for the families on the better land. Clothing, household operations, transportation, formal education, recreation, and community welfare expenditures showed upward trends in relation to land class. In other words, families on the best land wore better clothes, were able to spend more for hired help and for education and recreation, could travel more, and were able to bear a larger proportion of the expense of community welfare. For most other items, there were no significant differences in amounts spent.

Generally, these factors indicated a higher level of living for the people on the better land.

## Indebtedness

Freedom from indebtedness is not necessarily a criterion of economic success, nor is heavy indebtedness always a sign of failure. It is when the indebtedness becomes higher than the ability to pay that there is danger.

By far the largest debt item for all the farms was the farm mortgage (Table 32). A more meaningful measure than the amount of the mortgage is the proportion it represents of the farm value. In all cases, as land class increased, there was a rise in mortgage indebtedness and this rose at a faster rate than the value of the farm. Relatively, the farms on the poorer land classes were less indebted in proportion to the estimated sale value of the property, but under normal conditions, the better farms, being better able to pay, were also better able to borrow. Under the conditions prevailing in 1930, however, the farms on land class II appeared temporarily to be better off than those on class III-A.

Table 38. Kind of Debts

| Item | Full-Time Farms | | | Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B |
| Farm Mortgages | $ 241 | $ 608 | $1168 | $ 187 | $ 639 | $1137 | $ 212 | $ 624 | $1157 |
| Medical services | 15 | 1 | - | 17 | 1 | 29 | 16 | 1 | 10 |
| Store | 11 | 10 | 18 | 26 | 22 | 1/ | 19 | 16 | 12 |
| Auto | 4 | 20 | - | 3 | 3 | - | 4 | 11 | - |
| Other | 95 | 243 | 450 | 84 | 261 | 137 | 89 | 252 | 341 |
| Total farm debts | 315 | 841 | 1618 | 246 | 850 | 1273 | 278 | 846 | 1498 |
| Total family debts | 51 | 41 | 18 | 71 | 76 | 30 | 62 | 59 | 22 |
| Total debts | $ 366 | $ 882 | $1636 | $ 317 | $ 926 | $1303 | $ 340 | $ 905 | $1520 |
| Percent of Farm Capital Mortgaged | 4.5 | 5.9 | 7.6 | 6.0 | 9.9 | 10.5 | 5.1 | 7.5 | 8.4 |

1/ Less than one dollar

Total family debts showed a slight tendency to decrease with increased land class, although there was little relationship either way with the individual items. On the other hand, farm debts, exclusive of the mortgage, tended to become much larger with higher land class.

So far as family indebtedness was concerned, the poorer farms appeared to be worse off, whereas the business indebtedness was larger for the farms on the better land classes. Loans for household and personal use may be based on the borrower's integrity, but business loans generally require tangible assets as security.

## Age of Persons

The statement is often made and several studies indicate that the poorer agricultural sections, especially those of the southern Appalachian region, are the "breeding grounds" for a large part of the vast movement of rural peoples to cities; that these people leave their homes at the most productive period of life and that the young and old are left on the farm. The idea also persists that within an area the same holds true for the relatively poor soils.

Table 33. Age of All Persons

| Kind of Persons | Full-Time Farms | | | Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B | Land Class II | Land Class III-A | Land Class III-B |
| **Years** | % | % | % | % | % | % | % | % | % |
| Children under 18 | | | | | | | | | |
| Under 6 | 29.5 | 26.4 | - | 32.4 | 34.4 | 33.3 | 31.4 | 30.9 | 14.3 |
| 6 - 10 | 34.1 | 36.0 | 25.0 | 34.1 | 33.7 | 11.1 | 34.1 | 34.7 | 19.0 |
| 11 - 15 | 33.4 | 37.6 | 75.0 | 33.5 | 31.9 | 55.6 | 34.5 | 34.4 | 66.7 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Operators | | | | | | | | | |
| Under 20 | - | - | - | - | - | - | - | - | - |
| 20 - 29 | 6.4 | 1.2 | - | 6.9 | 6.0 | 14.3 | 6.7 | 3.6 | 5.0 |
| 30 - 39 | 7.9 | 12.9 | 15.4 | 16.7 | 18.1 | - | 12.6 | 15.5 | 10.0 |
| 40 - 49 | 22.2 | 23.5 | 30.8 | 29.2 | 34.9 | 14.3 | 25.9 | 29.2 | 25.0 |
| 50 - 59 | 28.6 | 24.7 | 23.1 | 23.6 | 22.9 | 57.1 | 25.9 | 23.8 | 35.0 |
| 60 - 69 | 19.0 | 21.2 | 30.7 | 19.4 | 15.7 | 14.3 | 19.3 | 18.4 | 25.0 |
| 70 - 79 | 14.3 | 11.8 | - | 1.4 | 1.2 | - | 7.4 | 6.5 | - |
| 80 and over | 1.6 | 4.7 | - | 2.8 | 1.2 | - | 2.2 | 3.0 | - |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Homemakers | | | | | | | | | |
| Under 20 | 1.6 | - | - | 1.3 | - | - | 1.4 | - | - |
| 20 - 29 | 9.3 | 8.6 | - | 6.8 | 13.1 | 14.3 | 8.0 | 10.9 | 5.0 |
| 30 - 39 | 18.5 | 22.2 | 15.4 | 27.0 | 20.2 | 14.3 | 20.3 | 21.2 | 15.0 |
| 40 - 49 | 29.7 | 24.7 | 30.8 | 28.4 | 36.9 | 14.3 | 29.0 | 30.9 | 25.0 |
| 50 - 59 | 20.3 | 24.7 | 23.0 | 24.3 | 20.2 | 57.1 | 22.4 | 22.4 | 35.0 |
| 60 - 69 | 17.2 | 13.6 | 30.8 | 5.4 | 8.4 | - | 10.9 | 10.9 | 20.0 |
| 70 - 79 | 7.8 | 6.2 | - | 4.1 | 1.2 | - | 5.8 | 3.7 | - |
| 80 and over | 1.6 | - | - | 2.7 | - | - | 3.2 | - | - |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

(continued on next page)

Table 33 (concluded)

| | Full-Time Farms | | | Part-Time Farms | | | All Farms | | |
|---|---|---|---|---|---|---|---|---|---|
| | II | III-A | III-B | II | III-A | III-B | II | III-A | III-B |
| Others | | | | | | | | | |
| Under 20 | 15.2 | 12.2 | 5.1 | 17.2 | 19.2 | 17.4 | 15.3 | 15.6 | 9.7 |
| 20 - 29 | 34.4 | 35.5 | 64.1 | 40.3 | 46.0 | 60.9 | 37.4 | 40.5 | 62.9 |
| 30 - 39 | 31.3 | 27.9 | 20.5 | 22.7 | 20.9 | 13.0 | 26.9 | 24.5 | 17.8 |
| 40 - 49 | 13.2 | 15.7 | 5.1 | 6.7 | 5.8 | - | 9.9 | 10.0 | 5.2 |
| 50 - 59 | 2.7 | 4.2 | - | 5.5 | 2.1 | - | 4.1 | 3.2 | - |
| 60 - 69 | 1.3 | - | - | 2.1 | 2.1 | - | 1.7 | 1.0 | - |
| 70 - 79 | 1.3 | 1.1 | 2.6 | 4.2 | 4.2 | 8.7 | 2.8 | 2.6 | 4.8 |
| 80 and over | 2.6 | 3.4 | 2.6 | 1.3 | 1.7 | - | 1.9 | 2.6 | 1.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| All Persons | | | | | | | | | |
| Under 10 | 18.6 | 14.1 | 3.9 | 20.1 | 19.7 | 8.7 | 16.8 | 17.0 | 5.7 |
| 10 - 19 | 14.3 | 14.3 | 14.3 | 17.8 | 17.3 | 19.6 | 16.2 | 15.8 | 16.3 |
| 20 - 29 | 19.9 | 18.3 | 32.4 | 19.2 | 22.0 | 34.8 | 19.6 | 20.2 | 33.3 |
| 30 - 39 | 19.0 | 18.4 | 15.6 | 15.6 | 14.3 | 8.7 | 17.1 | 16.3 | 13.0 |
| 40 - 49 | 14.3 | 14.6 | 13.0 | 10.5 | 12.1 | 4.3 | 12.2 | 13.3 | 9.8 |
| 50 - 59 | 8.4 | 9.4 | 7.8 | 8.7 | 7.2 | 17.4 | 8.6 | 8.3 | 11.4 |
| 60 - 69 | 5.9 | 5.2 | 10.4 | 4.2 | 4.4 | 2.2 | 4.9 | 4.8 | 7.3 |
| 70 - 79 | 3.8 | 3.3 | 1.3 | 2.5 | 2.1 | 4.3 | 3.1 | 2.7 | 2.4 |
| 80 and over | 1.8 | 2.4 | 1.3 | 1.3 | .9 | - | 1.5 | 1.6 | .8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

In this study (Table 33), little evidence was found to authenticate this letter view. Age of operator shows no significant trend. There was a slight decline from class II to class III-A, but a slight increase in age was noted for those on class III-B land. Homemakers on class III-A were slightly younger than those on either of the other classes. As for the children under 16, little difference was noted between the two lower land classes while the children in class III-B fall in the older age groups. The ages of all other persons showed little relationship to land class. Only class III-B differs, showing a concentration in the 20 to 29 age group and a drop in the others, especially the older groups.

When all persons were considered, it was evident that almost no difference existed between the lower two classes while class III-B tended to have a somewhat smaller proportion under 20 and a larger proportion from 20 to 29.

## Formal Education

Of the children from 5 to 8 years old, the proportion having no education decreased with the higher land classes (Table 34). This may be due to the fact that they started to school at a younger age. The same trend was even more pronounced in the group from 9 to 12 years. Those having more than 40 months' schooling were a much larger proportion of the total on classes III-A and III-B than on class II. Of the children of high school age, those on the higher land classes had also received more schooling.

Operators on the higher land classes had had a longer period of schooling than those on class II. For the full-time farms this was shown most clearly by the increase from 31.7 percent of those on class II having more than 40 months' grade schooling, to 41.7 percent for class III-A, and 61.5 percent for class III-B. Operators of the part-time group were generally better educated than those of the full-time group, but the same trend as noted for full-time farmers was evident. Those having from 1 to 4 years of high school increased in number from 1.4 percent of the total for class II to 13.3 percent and 42.8 percent, respectively, for the higher land classes. The college group showed the same tendency.

Education of homemakers showed a trend that was almost exactly similar to that of the operators for both types of farms.

Table 34. Education of All Persons on the Different Land Classes

| Amount of Formal Education | Full-Time Farms | | | | | |
|---|---|---|---|---|---|---|
| | Land Class II | | Land Class III-A | | Land Class III-B | |
| | % | Av. Age in Yrs. | % | Av. Age in Yrs. | % | Av. Age in Yrs. |
| Children 5 - 8 years | | | | | | |
| No formal education | 52.4 | 6.0 | 45.5 | 6.1 | - | - |
| Less than 40 months' schooling | 47.6 | 7.4 | 54.5 | 7.1 | 100.0 | 7.5 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Children 9 - 12 years | | | | | | |
| No formal education | 7.4 | 11.0 | 9.4 | 9.0 | - | - |
| Less than 40 months' schooling | 81.5 | 10.4 | 40.6 | 10.2 | 25.0 | 9.0 |
| More than 40 months' grade schooling | 11.1 | 11.0 | 50.0 | 11.5 | 75.0 | 11.7 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Children 13 - 16 years | | | | | | |
| No formal schooling | - | - | - | - | - | - |
| Less than 40 months' schooling | 12.5 | 14.0 | 8.1 | 13.0 | 25.0 | 14.5 |
| More than 40 months' grade schooling | 79.2 | 14.4 | 62.2 | 14.6 | 75.0 | 14.5 |
| 1 - 4 years' highschool | 8.3 | 16.0 | 29.7 | 14.3 | - | - |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Operators | | | | | | |
| No formal schooling | 9.5 | 56.5 | 5.9 | 50.6 | - | - |
| Less than 40 months' schooling | 42.9 | 56.8 | 36.9 | 58.8 | 23.1 | 52.7 |
| More than 40 months' grade schooling | 31.7 | 52.5 | 41.7 | 52.2 | 61.5 | 60.0 |
| 1 - 4 years' high school | 15.9 | 48.1 | 11.9 | 56.8 | 15.4 | 41.5 |
| 1 - 4 years' college | - | - | - | - | - | - |
| Other schooling | - | - | 3.6 | 50.5 | - | - |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Homemakers | | | | | | |
| No formal schooling | 7.8 | 65.2 | 2.5 | 58.5 | - | - |
| Less than 40 months' schooling | 40.6 | 52.6 | 33.3 | 50.1 | 7.7 | 69.0 |
| More than 40 months' grade schooling | 42.2 | 46.8 | 38.3 | 46.5 | 53.8 | 55.1 |
| 1 - 4 years' high school | 9.4 | 34.5 | 16.0 | 46.6 | 23.1 | 47.0 |
| 1 - 4 years' college | - | - | 6.2 | 46.0 | 7.7 | 49.0 |
| Other schooling | - | - | 3.7 | 43.7 | 7.7 | 33.0 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Others | | | | | | |
| No formal schooling | 2.3 | 63.4 | 2.3 | 44.3 | 2.7 | 84.0 |
| Less than 40 months' schooling | 39.3 | 35.2 | 22.6 | 42.7 | - | - |
| More than 40 months' grade schooling | 43.9 | 29.2 | 28.4 | 30.1 | 29.9 | 33.4 |
| 1 - 4 years' high school | 8.9 | 28.4 | 24.1 | 27.6 | 22.9 | 26.8 |
| 1 - 4 years' college | - | - | 8.2 | 28.7 | 13.2 | 26.2 |
| Other schooling | 5.6 | 29.5 | 14.4 | 28.5 | 26.3 | 27.1 |
| Total | 100.0 | | 100.0 | | 100.0 | |

Table 34 (continued) Part-Time Farms

| Amount of Formal Education | II | | III-A | | III-B | |
|---|---|---|---|---|---|---|
| | % | Av. Age in Yrs. | % | Av. Age in Yrs. | % | Av. Age in Yrs. |
| Children 5 - 8 years | | | | | | |
| No formal education | 71.1 | 6.2 | 57.7 | 5.7 | - | - |
| Less than 40 months' schooling | 28.9 | 7.5 | 42.3 | 7.4 | 100.0 | 8.0 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Children 9 - 12 years | | | | | | |
| No formal education | 9.5 | 9.8 | - | - | - | - |
| Less than 40 months' schooling | 83.7 | 10.5 | 78.1 | 10.2 | 50.0 | 11.0 |
| More than 40 months' grade schooling | 7.0 | 11.7 | 21.9 | 11.3 | 50.0 | 11.0 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Children 13 - 16 years | | | | | | |
| No formal schooling | 2.3 | 15.0 | 2.1 | 15.0 | - | - |
| Less than 40 months' schooling | 45.4 | 14.2 | 22.9 | 14.0 | 25.0 | 14.0 |
| More than 40 months' grade schooling | 50.0 | 14.7 | 62.5 | 14.4 | 25.0 | 15.0 |
| 1 - 4 year' high school | 2.3 | 15.0 | 12.5 | 15.2 | 50.0 | 15.5 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Operators | | | | | | |
| No formal schooling | 15.3 | 53.9 | 7.2 | 50.8 | - | - |
| Less than 40 months' schooling | 55.5 | 50.0 | 31.4 | 51.0 | - | - |
| More than 40 months' grade schooling | 27.8 | 46.4 | 39.8 | 44.6 | 28.6 | 49.0 |
| 1 - 4 years' high school | 1.4 | 47.0 | 13.3 | 39.7 | 42.8 | 56.0 |
| 1 - 4 years' college | - | - | 3.6 | 52.7 | 14.3 | 26.0 |
| Other schooling | - | - | 4.8 | 46.8 | 14.3 | 58.0 |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Homemakers | | | | | | |
| No formal schooling | 10.8 | 51.3 | 1.2 | 56.0 | - | - |
| Less than 40 months' schooling | 56.7 | 48.1 | 32.1 | 47.5 | - | - |
| More than 40 months' grade schooling | 29.7 | 39.1 | 50.0 | 43.6 | 57.1 | 46.3 |
| 1 - 4 years' high school | 1.4 | 42.0 | 10.7 | 33.6 | 42.9 | 42.7 |
| 1 - 4 years' college | - | - | 2.4 | 44.5 | - | - |
| Other schooling | 1.4 | 37.0 | 3.6 | 27.0 | - | - |
| Total | 100.0 | | 100.0 | | 100.0 | |
| Others | | | | | | |
| No formal schooling | 6.2 | 55.4 | 3.2 | 64.9 | - | - |
| Less than 40 months' schooling | 52.0 | 33.2 | 22.6 | 33.8 | - | - |
| More than 40 month's grade schooling | 33.9 | 27.1 | 43.0 | 27.4 | 21.1 | 46.0 |
| 1 - 4 years' high school | 4.4 | 30.1 | 22.1 | 26.3 | 31.5 | 24.2 |
| 1 - 4 years' college | 1.3 | 33.0 | 3.2 | 34.4 | 26.3 | 27.6 |
| Other schooling | 2.2 | 28.8 | 5.9 | 27.0 | 21.1 | 26.0 |
| Total | 100.0 | | 100.0 | | 100.0 | |

Table 34 (concluded)

| Amount of Formal Education | All Farms | | | | | | Total |
|---|---|---|---|---|---|---|---|
| | II | | III-A | | III-B | | |
| | % | Av. Age in Yrs | % | Av. Age in Yrs | % | Av. Age in Yrs | Percent |
| Children 5 - 8 years | | | | | | | |
| No formal education | 65.2 | 8.2 | 52.9 | 5.8 | - | - | 57.1 |
| Less than 40 months' schooling | 34.8 | 7.4 | 47.1 | 7.2 | 100.0 | 7.67 | 42.9 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |
| Children 9 - 12 years | | | | | | | |
| No formal education | 8.6 | 10.2 | 4.7 | 9.0 | - | - | 6.4 |
| Less than 40 months' schooling | 82.8 | 10.5 | 89.4 | 10.2 | 33.3 | 10.0 | 70.0 |
| More than 40 months' grade schooling | 8.6 | 11.5 | 35.9 | 11.5 | 66.7 | 11.5 | 23.6 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |
| Children 13 - 16 years | | | | | | | |
| No formal schooling | 1.5 | 15.0 | 1.2 | 15.0 | - | - | 1.2 |
| Less than 40 months' schooling | 33.8 | 14.1 | 16.5 | 13.8 | 25.0 | 14.3 | 24.3 |
| More than 40 months' grade schooling | 60.3 | 14.6 | 62.3 | 14.5 | 58.3 | 14.6 | 61.2 |
| 1 - 4 years' high school | 4.4 | 15.7 | 20.0 | 14.6 | 16.7 | 15.5 | 13.3 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |
| Operators | | | | | | | |
| No formal schooling | 12.6 | 54.8 | 6.6 | 56.2 | - | - | 8.7 |
| Less than 40 months' schooling | 49.6 | 52.8 | 34.1 | 55.2 | 15.0 | 52.7 | 39.4 |
| More than 40 months' grade schooling | 29.7 | 49.5 | 40.7 | 48.5 | 50.0 | 57.8 | 36.7 |
| 1 - 4 years' high school | 8.1 | 46.0 | 12.6 | 47.9 | 25.0 | 50.2 | 11.5 |
| 1 - 4 years' college | - | - | 1.8 | 52.7 | 5.0 | 26.0 | 1.2 |
| Other schooling | - | - | 4.2 | 48.3 | 5.0 | 58.0 | 2.5 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |
| Homemakers | | | | | | | |
| No formal schooling | 9.4 | 56.6 | 1.8 | 57.7 | - | - | 5.0 |
| Less than 40 months' schooling | 49.3 | 49.9 | 32.7 | 48.8 | 5.0 | 69.0 | 38.1 |
| More than 40 months' grade schooling | 38.5 | 43.3 | 44.3 | 44.8 | 55.0 | 52.0 | 41.1 |
| 1 - 4 years' high school | 5.1 | 35.6 | 13.3 | 41.3 | 30.0 | 44.8 | 10.8 |
| 1 - 4 years' college | - | - | 4.3 | 45.6 | 5.0 | 49.0 | 2.3 |
| Other schooling | .7 | 37.0 | 3.6 | 38.3 | 5.0 | 33.0 | 2.5 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |
| Others | | | | | | | |
| No formal schooling | 4.3 | 57.3 | 2.9 | 55.4 | 1.8 | 84.0 | 3.4 |
| Less than 40 months' schooling | 45.8 | 34.0 | 24.5 | 38.6 | - | - | 31.7 |
| More than 40 months' grade schooling | 38.9 | 28.2 | 38.1 | 28.6 | 26.3 | 36.7 | 36.3 |
| 1 - 4 years' high school | 6.6 | 29.0 | 25.2 | 27.0 | 29.8 | 25.9 | 16.1 |
| 1 - 4 years' college | .7 | 33.0 | 6.3 | 30.1 | 17.5 | 26.9 | 4.2 |
| Other schooling | 3.9 | 29.3 | 11.3 | 28.1 | 24.6 | 28.6 | 8.3 |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 |

Of persons other than children, operators, and homemakers, those living on the better land classes were the most highly educated. The only exception was the small group, only 3.4 percent of the total, who had no formal education.

## TAX DELINQUENCY

One farm expense which will be met by the majority of farmers, if they possibly can, is the annual tax payment. Failure to pay, allowing the land to become delinquent, is usually an indication that the land is not producing enough to pay its own way, since few farmers allow this to happen merely through negligence.

In Grayson County, the number of tracts delinquent three or more years in the decade 1928-1937 steadily increased until 1935, remaining almost stationary for the following two years (Table 35). The peak in delinquent acreage occurred in 1935 and was followed by a slight decrease. The year 1932 showed a larger amount of delinquent taxes than any other year, though it was only a little higher than in 1931 and 1937. Seemingly, farmers in Grayson County were not able to meet their tax payments after the economic depression any more than during it; in other words, economic recovery had not come to the agriculture of the county by 1938.

Although the total extent of class III-A land was larger than that of class II in the area studied, the number of tax delinquencies was only a little more than one half those on the lower class for the entire period. Until 1933, about three times as many acres were delinquent on class II as on class III-A land, while the difference was not

so great for the following years. This would seem to indicate that the poorer land (class II) was much less able to withstand the first stages of the depression than was the land of class III-A.

Table 35. Tax Delinquencies for Tracts Delinquent Three or More Years in Middle Grayson County, 1928-37

| Land Class | 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Number Tax Delinquencies by Years | | | | | |
| II | 6 | 32 | 68 | 84 | 104 | 105 | 111 | 123 | 120 | 120 |
| III-A | 3 | 14 | 30 | 49 | 56 | 61 | 67 | 64 | 65 | 65 |
| III-B | - | - | 1 | - | 1 | 1 | 2 | 3 | 3 | 3 |
| | | | | | Acres Tax Delinquent by Years | | | | | |
| II | 302 | 1753 | 3442 | 6470 | 8088 | 7173 | 5421 | 7960 | 5806 | 5703 |
| III-A | 120 | 557 | 1136 | 2481 | 2724 | 3982 | 3495 | 3206 | 3298 | 3005 |
| III-B | - | - | 20 | - | 20 | 20 | 105 | 142 | 142 | 142 |
| | | | | | Amount of Tax Delinquency by Years | | | | | |
| II | $ 40 | $ 244 | $ 474 | $ 895 | $ 126 | $ 697 | $ 567 | $ 814 | $ 616 | $ 772 |
| III-A | 14 | 90 | 190 | 414 | 431 | 465 | 502 | 419 | 474 | 524 |
| III-B | - | - | 6 | - | 5 | 4 | 29 | 32 | 30 | 31 |

The relationship between land class and the acreage on which taxes were delinquent was the same as that between land class and the amount of taxes that were delinquent.

Table 36. Total and Unpaid Tax Delinquencies, 1928-37

| Land Class | Total Delinquency | | Unpaid Delinquencies | | | | |
|---|---|---|---|---|---|---|---|
| | No. | Amount | No. | Amount | Percent of Total Delinquents | Percent of Total Amt. Delinquent | Average Number Years Owing |
| II | 176 | $ 6250.29 | 166 | $2517.82 | 94.3 | 40.3 | 2.5 |
| III-A | 105 | 3521.68 | 93 | 1412.94 | 88.6 | 40.1 | 2.3 |
| III-B | 5 | 137.21 | 5 | 126.94 | 100.0 | 92.5 | 4.0 |

More of the class II than of the class III-A land was unable to pay the accumulated delinquencies (Table 36). However, the proportion of the total amount delinquent that was unpaid and the average number of years for which taxes were delinquent were about the same for both land classes.

## SUMMARY

A rapid reconnaissance type of land classification of the middle part of Grayson County was made to determine the location and area of land suited to varying degrees of intensity of use. Four classes of land were delimited. Classes I and II were lands best adapted, in the writer's opinion, to non-agricultural uses. Classes III-A and III-B were the lands adapted to a permanent agriculture.

Classes I and II constituted about 60 percent of the area studied; class III-A about 38 percent; and class III-B, the best land, only 2 percent. Class I was entirely wooded, and class II, though much of it was being farmed, would probably be in its best use if reserved for forests, game refuges, or other non-agricultural uses, because of its rough topography, eroded soil, and other poor conditions.

The agricultural land classes III-A and III-B were characterized by a relative scarcity of stony loams and steep phases of the soils, and contained a high proportion of soils derived from granitic rocks. The non-agricultural classes were composed of soils of all the types represented, but had relatively large proportions of the stony loams and steep phases of each type and a large proportion of soils from the sandstone and slate group.

Those soils which were generally supposed to be the most productive in the county consistently averaged higher in land class designation than those not considered so productive. Topography was a very important factor affecting the average land class of each soil.

The number of farms in each land class was about proportional to the extent of that class in the area. A slightly larger proportion of the full-time than of the part-time farms were located on the higher land classes.

Proportions of level and rolling land increased, and the proportions of hilly and rugged land decreased with increased land class designation. Levelness of topography was associated with an increase in land class designation.

Farms on the higher land classes were usually located nearer to the sources of services such as schools, churches, doctors, markets, roads, and other conveniences, than those on farms with a lower land class designation.

The average amount invested in each kind of capital increased consistently with land class. The proportion of each kind was the same on land classes II and III-A.

As land class increased, a larger proportion of the farmer's time was given to livestock and crop enterprises and less time was spent on off-the-farm and other miscellaneous sources of income.

Labor efficiency increased consistently with land class.

Higher rates of production for crops, pastures and animals were obtained on the higher than on the lower land classes.

Larger receipts were obtained from all enterprises on the farm as land class increased.

Total earnings of capital and operator's time (including farm products and services used by the household) increased consistently with land class, both for part-time and full-time farms. Labor income and operator's earnings generally decreased owing to greater interest charges on the larger businesses of higher land class.

An increase in size of business brought approximately equal net returns for each unit of increase for both land classes, but owing to larger interest charges on class III-A, increased size resulted in larger losses.

Increased crop yields on either land class in a severe depression year had to be obtained by very economical methods, if they were to be profitable.

Labor efficiency appeared to be as important on one land class as on another.

Class III-A farms were able to profitably get more than $25 from each cattle animal unit, while class II farms were unable to go beyond this maximum profitably.

Relatively high rates of returns per sheep animal unit were more profitable on class II than on class III-A land.

Poultry receipts were too small on both land classes to affect appreciably the returns from the farm business as a whole, size of business being a more important factor.

An increase in proportion of receipts from miscellaneous sources was accompanied by decreased amounts of farm businesses on each land class, but a greater decrease on class II. Total size of

business and labor efficiency increased for both classes. Farm income increased for class III-A, but showed no consistent relationship on class II.

The houses on the better land were larger, in better condition, and had more modern conveniences than those on the poorer land.

The value of goods and services, both furnished by the farm and purchased, was greater for the families on the higher land classes than for those on the lower.

Farm indebtedness was directly correlated with land class, but family debts were smaller for families on the higher land class.

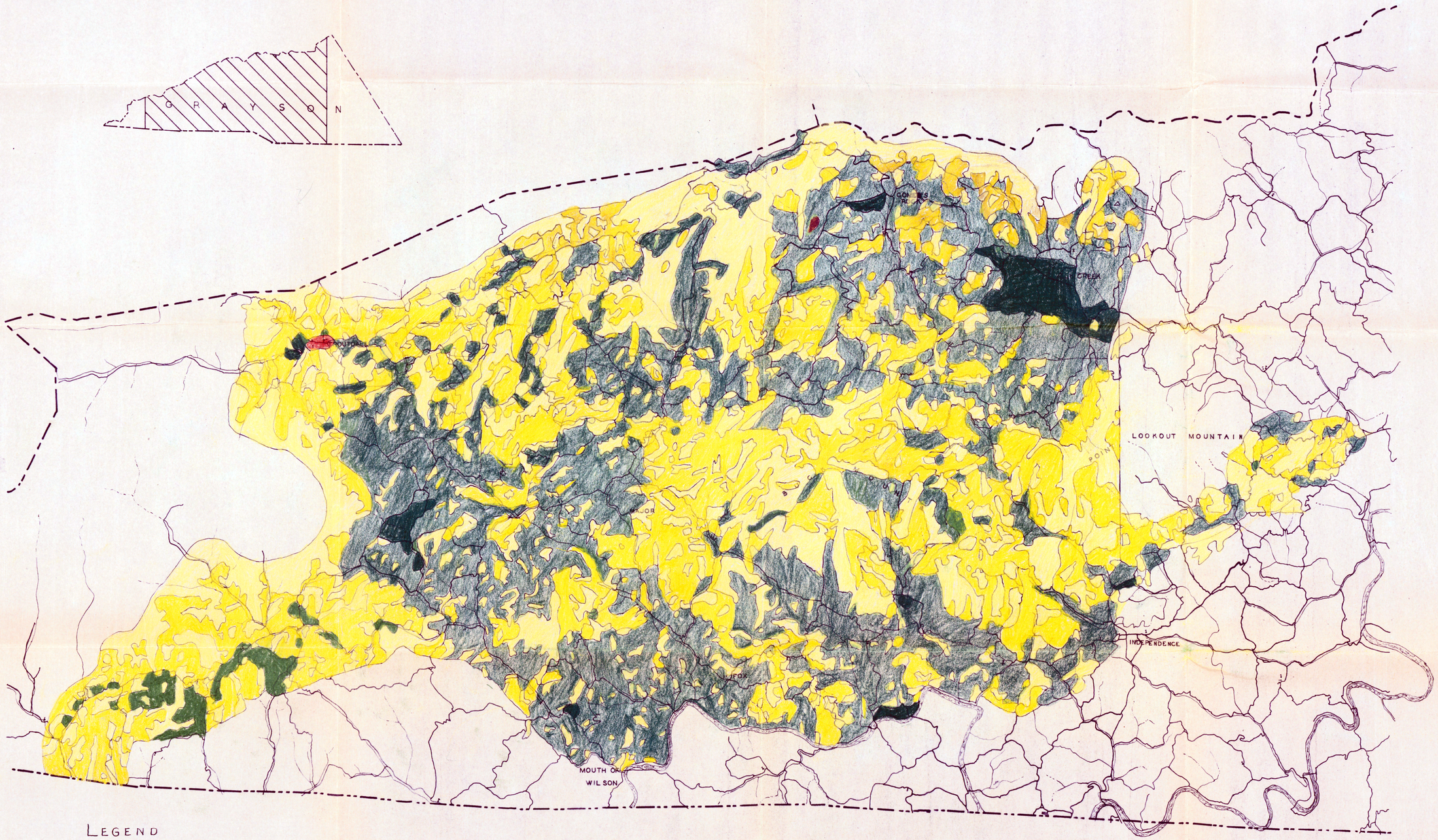
Practically no relationship existed between age of persons and land class, but formal education of all groups of persons showed a positive relationship to land class.

A larger number of tracts containing more acres were tax delinquent during the decade 1928-37 on land class II than on classes III-A or III-B. Fewer delinquencies were paid up on class II than on the other classes.

Further analysis of important factors affecting the management of farms for each land class would be highly desirable. This is the next step needed in land classification studies, as the relative importance of certain factors may be quite different for different land classes.

# MIDDLE PART GRAYSON CO.




## LEGEND

| | | |
|---|---|---|
| LAND CLASS | I | |
| " " | II | |
| " " | III-A | |
| " " | III-B | |
| " " | VI | |
| " " | IX | |

0 1 2 3 4 5 MILES

Mapped and Drawn by:
Jewheen 1938-39