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Organization and Management of Typical West Virginia Farms

A. J. Dadisman

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Agricultural Experiment Station

College of Agriculture, West Virginia University

HENRY G. KNIGHT, Director

Morgantown

ORGANIZATION AND MANAGEMENT OF TYPICAL WEST VIRGINIA FARMS

Large Areas in West Virginia Are Adapted to the Production of Livestock

BY

A. J. DADISMAN

Publications of this Station will be mailed free to any citizen of West Virginia upon written application. Address Director of the West Virginia Agricultural Experiment Station, Morgantown, W. Va.

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Organization and Management of Typical West Virginia Farms¹

West Virginia is important both as an industrial and as an agricultural state. Her 87,000 farms of more than five and one half million acres of improved farm lands with an investment of nearly \$500,000,000 constitute an enterprise worthy of consideration. The farming of the state is general or diversified with livestock as one of the principal enterprises. In a few sections where climate and soil are especially adapted to such, or where markets are easily accessible, specialized farms are found.

The state as a whole is hilly. It is mountainous in the eastern part, with fairly level land along many of the streams and on the tops of the hills and mountains. Much of the hill-side land is not too steep for cultivation and large areas are admirably adapted to pasturing livestock. The soil is made up of a great variety of formations which would be difficult to describe for the state as a whole.²

The state is fairly well provided with railroads, and hard-surfaced roads have been constructed rapidly in the last few years. These transportation facilities make markets for farm products accessible both within and without the state. Livestock and fruit are the principal products shipped out of the state in large quantities. Industrial work, which pays wages higher than farmers usually pay, is widely distributed over the state so that laborers are attracted from the farms causing a shortage of farm labor most of the time.

The chief field crops are corn, oats, wheat, hay, and potatoes. In some sections fruits, tobacco, buckwheat, and truck crops are grown. Beef cattle and sheep are raised throughout the state. Farmers in the best grazing sections buy feeder cattle from other parts of the state and usually sell fat cattle directly from the pastures. Small flocks of sheep are kept on the larger farms in the grazing sections. Hogs for home use are grown on most farms, and a few are shipped from the South Branch Valley. A small flock of poultry is kept on almost every farm and several commercial poultry farms are to be found. The fourteenth Federal census shows that 16.2 percent of the farms were operated by tenants in 1919.

In the summer of 1914 agricultural surveys were made in four sections of the state, each typical of a considerable area. The four areas where the records were taken were selected as typical of the

¹Presented to the faculty of the Graduate School of Cornell University, Ithaca, N. Y., June, 1924, as a major thesis in partial fulfillment of the requirement for the degree of doctor of philosophy.

²See West Virginia Experiment Station bulletin 184, The Chemical Analyses and Fertility of West Virginia Soils.

OUTLINE MAP OF WEST VIRGINIA

The Shaded Areas Show Where the Data Were Obtained.

natural farming regions of the state. While not all farmers in either of the regions were visited the number from whom records were taken represented typical conditions. These surveys were made in Brooke County, typical of the Ohio River valley where general farming, some dairying and some truck farming were practiced; in Greenbrier and Monroe counties, typical of the bluegrass regions where livestock farming with some dairying prevailed; in Preston County, typical of the high altitudes of the state where general farming and some dairying were found; and in Upshur County, typical of the livestock and general farming area of the central part of the state. There were 544 complete farm management survey records taken in these four sections. West Virginia Agricultural Experiment Station bulletins 153 and 173 were based on these survey records. With the exception of the fruit area in the Eastern Panhandle, the surveys included areas typical of most of the farming of the state. These survey records have been used as the basis for studying the farm organization and management of the principal types of farming in the state.

The Federal census does not classify farms according to type, but classifies them according to number of acres per farm. The number of acres per farm is not a good measure of West Virginia farms since a comparatively large part of most of the farms is composed of forests, cut-over land, rough, stony, or steep land which cannot be used for agricultural purposes.

The 544 records used in this study were first classified according to type of farming. Farms that received 50 per cent or more of their incomes from any one source were classified according to that source. On this basis 168 of the farms were livestock farms, 34 were dairy farms, 9 were truck farms, and 333 were farms which did not derive 50 per cent of the income from any one source and were classed as general farms. All the farms were operated by owners except 31 of the general farms which were operated by tenants. There were so few farms in the other groups which were operated by tenants that they were not considered in this study.

General farms operated by owners were grouped according to the number of man work units¹ per farm. Small farms were those with not more than 75 man work units; medium-sized farms from 76 to 150; and large farms more than 150. The tenant farms all came in the groups of medium-sized or large farms. Livestock farms were classified on the basis of animal units.² Small farms contained not more than 50 animal units, medium-sized farms 51 to 100, and large farms more than 100. Dairy farms were classified on the basis of number of dairy cows. Small farms contained not more than 10 dairy cows, medium-sized farms contained from 11 to 25, and large farms more than 25. There were no large dairy farms. The truck farms were not classified. No one basis for classification seemed satisfactory for all kinds of farms.

The purpose of this study was to determine the organization of the common types of farms in West Virginia and to answer many questions which are frequently asked as to the amount of capital needed for farming and its distribution, relative profits in the various

¹A man work unit is the average amount of work a man will do in 10 hours. In addition to the 10 hours farmers do various chores such as feeding livestock, cutting wood, etc.

²An animal unit represents an average mature horse or cow, or the equivalent in other livestock, based upon the amount of feed eaten and manure produced.

Profitable Farming Is Reflected in the Condition of the Home and Keeps the Boy Contented on the Farm

types and sizes of farms, what returns one might expect from a farming enterprise, and other farm management problems.

GENERAL FARMS OPERATED BY OWNERS

About three-fourths of the farms of West Virginia are general or diversified farms; that is, those that do not derive as much as 50 per cent of their income from any one source. There are few good measures of the size of the farm business of general farms in West Virginia because many of these farms have from one-half to one-fourth of their areas in forest or rough or steep land which cannot be used for agricultural purposes. However, in this study the man work

Table 1.—Distribution of Capital on General Farms Operated by Owners.

Distribution of Capital	36 Small Farms		92 Medium-Sized Farms		174 Large Farms	
	Average Amount per Farm	Per cent	Average Amount per Farm	Per cent	Average Amount per Farm	Per cent
Real estate	\$2295.69	82.3	\$4247.15	82.6	\$8890.00	83.8
Machinery and tools	62.10	2.3	144.81	2.8	263.38	2.5
Livestock (Table 2)	408.99	14.7	694.46	13.5	1343.18	12.7
Feed and supplies	0.28	.....	5.22	0.1	24.12	0.2
Cash to run farm	22.92	0.7	47.44	1.0	85.86	0.8
Total	\$2789.98	100.0	\$5139.08	100.0	\$10606.54	100.0

Figure 1.—Average Amount of Capital Used in Each Group of Farms. Tenant Farmers Used Very Little Capital, and Livestock Farmers Needed a Large Amount of Capital.

unit has been used as a measure of the size of business for such farms. Of the 302 general farms operated by owners 36 were small farms, 92 were medium-sized, and 174 were large farms.

Distribution of Capital

The capital invested was represented by real estate, machinery and tools, livestock, feed and supplies, and cash with which to run the farm.

Table 1 shows that the total capital per farm invested in the small farms was \$2789.98, in the medium-sized farms almost twice as much or \$5139.08, and in the large farms a little more than twice the amount invested in the medium-sized farms, or \$10,606.54. The capital invested in real estate, machinery and tools, livestock, and cash to run the farm was approximately twice as much on the medium-sized farms as on the small farms, and three times as much on the large farms as on the small farms.

The distribution of the total capital was very nearly the same on all three groups of general farms. From 82 to 84 per cent was invested in real estate, from 2 to 3 per cent in machinery and tools, from 12 to 15 per cent in livestock, while about 1 per cent was represented by feed and supplies and cash to run the farm.

On the small farms the average value of the dwelling was \$659, the value of the other farm buildings \$204, and the total value of buildings 30 per cent of the total capital. On the medium-sized farms the average value of the dwelling was \$951, the value of the other farm buildings \$399, and the total value of buildings 26 per cent of the total capital. On the large farms the average value of the dwelling was \$1272, the value of the other farm buildings \$663, and the total value of buildings 18 per cent of the total capital. On the large farms the average value of the bulidings was considerably greater than on the smaller farms, but the per cent of total capital invested in buildings was considerably lower.

In addition to the capital available at any one time on the farm, many farmers used short-time credit to a considerable extent, the amount of which was not obtained.

Table 2.—Number and Value of Farm Animals on General Farms Operated by Owners.

Kinds of Animals	36 Small Farms		92 Medium-Sized Farms		174 Large Farms	
	Number per Farm	Total Value per Farm	Number per Farm	Total Value per Farm	Number per Farm	Total Value per Farm
Cows	1.7	\$96.93	2.7	\$156.70	4.8	\$268.39
Heifers	0.4	15.19	1.1	42.62	2.0	69.73
Calves	1.0	17.97	1.5	28.43	3.6	63.47
Bulls .....	....	0.35	0.1	1.96	0.2	13.25
Steers	0.1	3.26	0.6	24.43	2.2	105.23
Stallions	0.0	0.00	....	4.36	....	9.48
Horses	1.4	159.17	2.2	279.99	3.5	464.53
Mules .....	....	1.39	0.1	18.07	0.1	15.46
Colts	0.4	26.18	0.3	19.48	0.9	68.38
Rams	0.1	0.75	0.1	0.64	0.1	0.99
Ewes	5.3	27.96	5.3	27.48	22.3	87.71
Wethers	0.0	0.00	0.4	1.14	0.7	2.55
Lambs	6.5	27.42	5.1	22.07	11.4	45.97
Goats	0.0	0.00	0.0	0.00	0.1	0.28
Boars	0.0	0.00	....	0.54	....	0.75
Brood sows	0.1	2.71	0.6	11.27	1.2	21.09
Other hogs	1.3	12.50	2.7	24.00	5.6	50.07
Pigs	0.2	0.67	1.0	3.34	2.1	5.84
Chickens	29.5	14.00	46.4	24.86	75.1	40.16
Turkeys	1.0	1.90	1.5	2.36	2.6	4.65
Ducks	0.2	0.14	0.1	0.07	0.5	0.33
Geese	0.0	0.00	0.0	0.00	0.4	0.35
Guineas	0.0	0.00	....	0.03	0.1	0.04
Bees (stands)	0.2	0.50	0.3	1.22	1.1	4.48
Total		\$408.99		\$695.06		\$1343.18

Number and Value of Farm Animals

Almost all the general farms produced small numbers of several different kinds of livestock. The small farms had 5.7 animal units per farm, the medium-sized farms 9.2, and the large farms 19.7.

Table 2 shows the number and value of the different kinds of farm animals on the general farms. The value of the livestock was \$408.99 per farm on the small farms, \$695.06 on the medium-sized farms, and \$1343.18 on the large farms. On all three groups of farms more money was invested in horses than in any other kind of livestock, while that invested in cows was second. The number of most kind of animals was very small on many of the general farms.

Crop Acreage and Yield

The crops grown on general farms were mostly used as feed and bedding for livestock. The small acreage of crops did not justify the use of large farm machines in growing them.

Table 3.—Crop Acreage and Yield on General Farms Operated by Owners.

Crops	36 Small Farms		92 Medium-Sized Farms		174 Large Farms	
	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield
Corn for grain (bu.)	2.4	82.7	4.9	165.4	12.0	432.1
Corn for silage (tons) ..	0.0	0.0	0.1	2.4	0.6	4.6
Potatoes (bu.)	0.1	9.4	0.2	11.6	0.3	32.7
Wheat (bu.)	0.1	1.4	1.7	25.6	7.7	124.9
Rye (bu.)	0.0	0.0	0.2	2.9	1.0	11.4
Oats (bu.)	0.5	7.4	2.1	39.4	4.4	113.4
Buckwheat (bu.)	0.1	1.9	0.4	6.6	0.4	6.2
Hay (tons)	5.6	4.3	10.2	8.3	18.7	16.2
Alfalfa (tons)	0.0	0.0	....	0.1	0.2	0.3
Apples (bearing trees)	1.1	....	1.6	....	2.1	....
Apples (trees not b'r'g)	0.2	0.0	0.4	0.0	0.4	0.0
Other crops	0.3	....	0.7	....	....	....
Total	10.4		22.5		47.8	

Table 3 shows the acreage and yield of the crops grown on the general farms. The small farms had 10.4 acres of crops, the medium-sized farms 22.5 acres, and the large farms 47.8 acres. There was a greater acreage of hay than of any other crop, corn coming second in all three groups of farms. No definite data were obtained on yields of fruit and truck crops.

Farm Receipts

On the general farms the receipts came from a large number of sources, but they were very small from each source. Receipts from livestock were more important than from any other source.

Table 4.—Receipts on General Farms Operated by Owners.

Sources of Receipts	36 Small Farms		92 Medium-Sized Farms		174 Large Farms	
	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm
Crops:						
Corn (bu.)	4.6	\$ 3.78	3.2	\$ 2.58	51.6	\$ 42.25
Wheat (bu.)	0.8	1.25	5.3	7.30	44.3	63.68
Hay (tons)	--	0.78	--	10.04	--	22.64
Potatoes (bu.)	1.0	0.69	2.4	2.78	--	14.62
Apples (bu.)	--	0.05	2.9	2.55	--	13.09
Other crops	--	4.25	--	8.62	--	35.26
Total rec'ts from crops		10.80		33.87		191.54
Livestock:						
Cows	0.4	23.47	0.3	20.11	0.8	43.53
Heifers, calves and steers	1.2	36.69	1.8	52.75	3.2	124.95
Horses	0.4	51.67	0.2	16.76	0.3	38.85
Sheep	7.7	31.91	6.0	28.69	13.6	56.96
Hogs	0.6	3.89	2.2	12.75	--	55.29
Poultry	--	19.75	--	23.44	--	48.81
Other livestock	--	7.40	--	6.60	--	14.64
Total receipts from livestock		174.78		161.10..		383.03
Livestock products:						
Butter	--	24.25	--	35.33	--	72.57
Milk and cream	0.0	0.00	--	10.24	--	23.96
Wool	--	6.19	--	6.74	--	44.87
Eggs	--	24.72	--	43.58	--	65.75
Other livestock products						
Total receipts from livestock products		55.56		97.70		210.99
Miscellaneous receipts:						
Labor off farm		98.92		77.32		92.36
Rent, land, buildings		5.44		0.00		13.04
Lumber and mine props		1.86		10.91		16.48
Other receipts		0.00		4.30		14.91
Total miscellaneous receipts		106.22		92.53		136.79
Increased inventory		-2.38		57.83		425.70
Total receipts		\$344.98		\$443.03		\$1168.05

Table 4 shows the receipts and their sources on the three groups of general farms operated by owners. The total receipts on the small farms were \$344.98, on the medium-sized farms \$443.03; and on the large farms \$1168.05.

The small farms received \$10.80 per farm for crops sold, the medium-sized farms \$33.87, and the large farms \$191.54. The two principal crops sold from the small farms were corn and truck crops; from the medium-sized farms hay and wheat; and from the large farms wheat and corn. The receipts from crops were very small on all the three groups of farms.

The receipts from livestock on small general farms operated by owners were \$174.78 per farm; on the medium-sized farms \$161.10; and on the large farms \$383.03. There was no one kind of livestock from which there was a very large receipt.

The total receipts from livestock products per farm on the small general farms operated by owners were \$55.56; on the medium-sized farms \$97.70; and on the large farms \$210.99. Butter and eggs were the most important livestock products on each group of general farms; these were sold from almost every farm.

Miscellaneous receipts were \$106.22 on the small general farms, \$92.53 on the medium-sized farms, and \$136.79 on the large farms. These were derived from man and team labor off the farm, pasture, rentals, sale of posts, etc. The group of small farms had a small decrease in inventory, and the medium-sized, and large farms had small increases in inventory.

Farm Expenses

Farm expenses included the value of family labor for all members of the family except the operator, and all other farm expenses. Family labor was not actually paid for in most cases but was a legitimate item of expense.

Table 5.—Average Expenses per Farm on General Farms Operated by Owners.

Items of Expense	36	92	174
	Small Farms	Medium- Sized Farms	Large Farms
Livestock purchases -----	\$ 57.39	\$ 65.45	\$ 131.12
Hired labor -----	8.28	32.87	125.18
New buildings -----	1.67	8.14	84.10
Repair of buildings -----	3.05	9.98	15.64
New farm machinery -----	0.93	8.16	26.84
Feeds purchased -----	22.03	37.32	42.54
Seeds, plants, trees, etc. -----	3.89	5.32	18.74
Fertilizer and manure -----	6.05	14.47	27.38
Taxes -----	14.50	25.94	60.19
Cash rent for pasture -----	3.25	0.37	10.11
Other expenses -----	15.44	29.96	69.99
Total cash expenses except interest -----	136.48	237.98	611.83
Value of unpaid family labor except operator's -----	51.61	80.64	117.31
Interest on capital at 5 per cent -----	139.50	256.95	530.33
Total expenses -----	\$327.59	\$575.57	\$1259.47

Table 5 shows the principal items of cash expense and the total expenses on the general farms operated by owners. On the small farms the cash expense was \$136.48, on the medium-sized farms \$237.98, and on the large farms \$611.83. Interest was paid by many farmers who had mortgages on their farms. The total farm expense

including the value of family labor and interest on the capital, was \$327.59 on the small farms, \$575.57 on the medium-sized farms, and \$1259.47 on the large farms.

Table 6.—Average Cash Receipts and Expenses per Farm on General Farms Operated by Owners.

	36 Small Farms	92 Medium- Sized Farms	174 Large Farms
Total cash receipts (Table 4) -----	\$347.36	\$385.20	\$922.35
Total cash expenses except interest (Table 5) -----	136.48	237.98	611.83
Net cash income -----	\$210.88	\$147.22	\$310.52

The net cash income available for the payment of farm expenses and also for interest on mortgages, if any, was for the small farms, \$210.88, for the medium-sized farms \$147.22, and for the large farms \$310.52.

Farm Earnings

Farm income is the difference between receipts and general farm expenses not including interest. It is the amount the operator and his capital earn. Labor income is a common measure of the returns from farming operations. It is "what the farmer receives for his labor and supervision of the farm business in addition to the use of a dwelling and that part of the family living furnished by the farm." Labor income is comparable to farm wages for hired labor, but it cannot be compared to wages of the city worker. Many farmers do not receive anything for their labor and supervision after all farm expenses, including interest, are paid, that is, they make minus labor incomes. Such farmers operate their farms with no pay for their labor, except those things furnished by the farm, and less than 5 per cent interest on their investment. In addition to labor income, the farm furnishes a house to live in and a large part of the food and in many cases the fuel. The family income is made up of the farm income, and the value of family labor; it is the amount the farmer and his family have to use for living.

Table 7.—Average Farm Earnings per Farm on General Farms Operated by Owners.

	36 Small Farms	92 Medium- Sized Farms	174 Large Farms
Total capital -----	\$2789.97	\$5139.08	\$10606.54
Total receipts -----	344.98	443.03	1168.05
Total expenses except interest -----	188.09	318.62	729.14
Farm income -----	156.89	124.41	438.91
Interest on capital at 5 per cent -----	139.50	256.95	530.33
Labor income -----	17.39	-132.54	-91.42
Family income -----	\$ 208.50	\$ 205.05	\$ 556.22

Fig. 2.—Labor Incomes of the Eleven Groups of Farms. All Groups of Small Farms Made Small Labor Incomes; All but One Group of the Medium-sized Farms Made Minus Labor Incomes; and All but One Group of Large Farms Made Plus Labor Incomes. The Large Livestock Farms Made Fairly Large Labor Incomes.

Three and One-half Tons of Soybean Hay per Acre

Table 7 shows the farm income to be \$156.89 per farm on the small farms, \$124.41 on the medium-sized farms, and \$438.91 on the large farms. Interest on capital was figured at 5 per cent. The labor income was \$17.39 per farm on small farms, minus \$132.54 on the medium-sized farms, and minus \$91.42 on the large farms. If the farmer had no debts he would have had for his use the value of unpaid family labor, interest on investment and labor income. This sum is called family income and amounted to \$208.50 per farm on the small farms, \$205.05 on the medium-sized farms, and \$556.22 on the large farms.

The general farms operated by owners were generally unsuccessful financially. Only five of the large farms made more than \$1000.00 labor income per farm, and none of the medium-sized or small farms made that amount. About one-half of the farms in each group made minus labor incomes.

GENERAL FARMS OPERATED BY TENANTS

Of the 333 general farms 31 were operated by tenants, and of these 11 were medium-sized farms and 20 were large farms. There were no small farms in this group of tenant farms. Nineteen of the farms operated by tenants were cash rented, 11 were share rented, and one was partly share and partly cash rented.

Distribution of Capital

The land farmed by tenants was owned by landlords most of whom lived a considerable distance away. The tenants' capital was invested in farm machinery, livestock, feed, and other things needed in operating the farm.

Table 8 shows that the medium-sized farms had an investment
ated by Tenants.

Distribution of Capital	11 Medium-Sized Farms		20 Large Farms	
	Average Amount per Farm	Per cent	Average Amount per Farm	Per cent
Real estate -----				
Machinery and tools -----	\$116.00	17.3	\$ 232.63	16.4
Livestock -----	517.50	77.2	1119.97	78.9
Feed and supplies -----	3.77	0.5	12.38	0.9
Cash to run the farm -----	32.73	5.0	54.50	3.8
Total -----	\$670.00	100.0	\$1419.48	100.0

Table 8 shows that the medium-sized farms had an investment of \$670.00 per farm and the large farms had \$1419.48 invested. A

little more than three-fourths of the total capital in each group of farms was invested in livestock, about one-sixth in machinery, while a very small amount was left for feed and supplies and cash.

In addition to the capital which the tenant farmer had invested, he often made use of personal credit for short periods; however, he rarely mortgaged any livestock or other property as a means of securing credit and therefore had little or no interest to pay.

On the medium-sized farms operated by tenants, the average value of the dwellings was \$973 and the value of the other farm buildings was \$350. On the large farms the value of the dwellings was \$1237 and the value of the other farm buildings was \$778. There was very little difference in the value of the buildings on the farms operated by tenants and on those operated by owners.

Number and Value of Farm Animals

The tenant farmers generally owned all the livestock on the farm. In a few cases the tenant rented the farm including some livestock and machinery.

Table 9.—Number and Value of Farm Animals on General Farms Operated by Tenants.

Kinds of Animals	11 Medium-Sized Farms		20 Large Farms	
	Number per Farm	Total Value per Farm	Number per Farm	Total Value per Farm
Cows -----	2.2	\$132.27	3.6	\$215.88
Heifers -----	0.7	21.82	1.1	31.85
Calves -----	0.8	12.41	1.6	20.30
Bulls -----	—	1.13	0.2	13.88
Steers -----	0.0	0.00	0.2	3.50
Horses -----	2.1	261.82	3.6	520.89
Mules -----	0.0	0.00	0.1	5.00
Colts -----	0.0	0.00	0.4	34.39
Rams -----	0.0	0.00	0.1	0.75
Ewes -----	8.4	25.32	29.5	93.08
Wethers -----	0.0	0.00	3.2	10.48
Lambs -----	1.0	1.05	9.9	24.38
Boars -----	0.0	0.00	—	0.38
Brood sows -----	0.1	2.73	1.1	23.46
Other hogs -----	3.3	31.64	6.3	59.00
Pigs -----	0.1	1.36	2.3	7.08
Chickens -----	42.3	23.95	73.3	42.85
Turkeys -----	0.5	0.73	1.4	3.43
Ducks -----	0.7	0.50	2.7	1.83
Geese -----	0.0	0.00	0.4	0.28
Bees (stands) -----	0.2	0.77	1.3	7.28
Total -----		\$517.50		\$1119.97

Table 9 shows the number and value of each kind of livestock

kept on the general farms operated by tenants. The medium-sized farms had 8.2 animals per farm valued at \$517.50, and the large farms had 16.6 animal units valued at \$1119.97. The work horses were valued at nearly twice as much as any other kind of livestock, and the cows were second in value. The number and value of livestock was a little less on the farms operated by tenants than on those operated by owners.

Crop Acreage and Yield

The farms operated by tenants produced the same kinds of crops as those operated by owners and in most cases, a little greater acreage of them.

Table 10.—Average Crop Acreage and Yield on General Farms Operated by Tenants.

Crops	11 Medium-Sized Farms		20 Large Farms	
	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield
Corn for grain (bu.)-----	5.8	277.7	14.8	552.8
Corn for silage (tons) ----	0.0	0.0	0.2	1.5
Potatoes (bu.) -----	1.2	24.4	0.5	25.1
Wheat (bu.) -----	1.3	17.1	7.2	68.3
Rye (bu.) -----	0.9	9.1	1.3	7.7
Oats (bu.) -----	6.2	114.6	12.4	329.8
Hay (tons) -----	7.8	8.9	30.9	27.7
Apples (bearing trees) --	0.6	--	2.0	--
Apples (trees not bearing)	0.2	--	0.1	--
Other crops -----	0.3	--	0.5	--
Total -----	24.3		69.9	

Table 10 shows the acreage of crops on the medium-sized general farms operated by tenants to be 24.3 per farm, and on the large farms 69.9. Hay, corn, and oats were the most important crops.

Farm Receipts

Practically the same products were sold from the farms operated by tenants as from those operated by owners, and the total value of the products sold did not vary greatly on the two types of farms.

Table 11 shows the receipts from general farms operated by tenants. The total receipts per farm were \$436.82 on the medium-sized farms, and \$1154.10 on the large farms.

The receipts from crops sold were \$63.73 per farm from the medium-sized farms, and \$273.05 from the large farms. In most cases data on the quantity of the crops sold were not obtained. The re-

Table 11.—Average Receipts on General Farms Operated by Tenants.

Sources of Receipts	11 Medium-Sized Farms		20 Large Farms	
	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm
Crops:				
Corn for grain (bu.) -----	37.3	\$25.36	--	\$84.60
Wheat (bu.) -----	4.9	4.91	--	18.50
Oats (bu.) -----	8.2	3.56	--	34.55
Hay (tons) -----	7.7	10.09	--	65.65
Potatoes (bu.) -----	11.8	12.45	--	10.35
Apples -----	0.0	0.00	--	22.10
Other crops -----	--	7.36	--	37.30
Total receipts, crops		63.73		273.05
Livestock:				
Cows -----	0.1	1.82	1.1	78.40
Heifers, calves, and steers -----	--	19.55	--	34.45
Horses -----	0.0	0.00	0.4	43.00
Sheep -----	0.3	1.00	15.5	49.15
Hogs -----	--	2.00	--	78.35
Poultry -----	--	12.45	--	31.75
Other livestock -----	0.0	0.00	--	30.30
Total rec'ts, livestock		36.82		345.40
Livestock Products:				
Butter -----	--	53.73	--	100.15
Milk and cream -----	0.0	0.00	--	3.65
Wool -----	--	16.36	--	64.45
Eggs -----	--	31.09	--	67.10
Other livestock products -----	0.0	0.00	--	96.75
Total receipts from livestock products -----		101.18		332.10
Miscellaneous receipts:				
Labor off the farm -----		170.00		138.15
Lumber, posts, etc -----		0.00		20.50
Other miscellaneous rec'ts -----		5.00		2.25
Total miscellaneous receipts -----		175.45		160.90
Increased inventory -----		59.64		42.65
Total receipts -----		\$436.82		\$1154.10

ceipts from individual crops were small. The largest receipt from a crop was \$25.36 for corn on the medium-sized farms, and \$84.60 on the large farms for the same crop.

The receipts from livestock were \$36.82 per farm on the medium-sized farms, and \$345.40 on the large farms. There were several kinds of livestock kept on each of these tenant farms and the receipts from each kind were very small. Butter was the principal livestock product sold. The greater part of the miscellaneous receipts came from labor off the farms. There was a small increase in the inventory on both groups of farms.

A Typical Barn for the Medium-Sized West Virginia Farm

Farm Expenses

Farm expenses did not include the value of the operator's labor. Family labor was not actually paid for in most cases, and obviously the tenant farmers did not have farm mortgages on which to pay interest.

Table 12.—Average Expenses per Farm on General Farms Operated by Tenants.

Items of Expense	11 Medium-Sized Farms	20 Large Farms
Livestock purchases -----	\$ 22.72	\$140.00
Hired labor -----	22.09	83.80
New buildings -----	4.54	0.00
Repair of buildings -----	6.81	8.25
New machinery -----	5.45	12.45
Feed -----	24.90	47.85
Seeds, plants, and trees -----	1.81	4.95
Fertilizer and manure -----	3.27	6.90
Taxes -----	5.27	10.70
Cash rent -----	95.45	147.10
Other farm expenses -----	29.87	60.05
Total cash expenses -----	222.18	522.05
Value of unpaid family labor except operator's -----	39.09	181.00
Interest on capital at 5 per cent -----	33.50	70.97
Total expenses -----	\$294.77	\$774.12

Table 12 shows the expenses on the general farms operated by tenants. On the medium-sized farms the cash expenses were \$228.18 and the total expenses \$294.77. On the large farms the cash expense:

were \$522.05, and the total expenses \$774.12. The amount of interest actually paid by the tenant farmers was very small since they carried no farm mortgages. Rent, labor, feed, and livestock purchases were the principal items of expense.

Table 13.—Average Cash Receipts and Expenses per Farm on General Farms Operated by Tenants.

	11 Medium-Sized Farms	20 Large Farms
Total cash receipts (Table 11) -----	\$377.18	\$1111.45
Total cash expenses (Table 12) -----	222.18	522.05
Net cash income -----	\$155.00	\$589.40

The medium-sized farms had an average of \$155.00 and the large farms \$589.40 for use as desired. The cash income of the average tenant farmer was not sufficient to enable him to save enough to become a farm owner in a reasonable length of time. A few farmers in the group of large farms had net cash incomes almost twice as large as the average.

Farm Earnings

The income of the tenant farmer is not comparable to the income of the city wage earner. The farm furnishes him many things which, if paid for in cash, would amount to considerable sums. The cash expenses of the tenant farmer would make a very small part of the expenses of the city wage earner.

Table 14.—Average Farm Earnings per Farm on General Farms Operated by Tenants.

	11 Medium-Sized Farms	20 Large Farms
Total capital -----	\$670.00	\$1419.48
Total receipts -----	436.82	1154.10
Total expenses -----	261.27	703.05
Farm income -----	175.55	451.05
Interest on capital at 5 per cent -----	33.50	70.97
Labor income -----	142.05	380.08
Family income -----	\$214.64	\$632.05

Table 14 shows that the farm income; that is, the difference between receipts and expenses, on the medium-sized general farms operated by tenants was \$175.55; the labor income \$142.05, and the family income \$214.64. On the large farms the farm income was \$451.05, the labor income \$380.08, and the family income \$632.05.

The general farms operated by tenants were a little more successful than the general farms operated by owners. Most tenant farmers expected to own farms sometime, but the chances as indicated from this survey were against them on the general farms.

Of the 11 medium-sized farms operated by tenants \$516.00 was the largest labor income made by any one farmer. Of the 20 large farms only two made labor incomes of more than \$1000.00. Each of the two farmers who made more than \$1000.00 labor income operated farms of more than 200 total acres, more than 80 crop acres, more than 300 man work units, and more than 270 horse work units. In most cases the farm business was too small to be profitable. With a very much larger farm business the tenant farmer's chances for success were much greater. High yielding crops and high producing livestock were important factors contributing to success on the tenant farms, but these factors alone did not make the very small farm return a labor income large enough to support a family adequately. The owners received an average of less than 3 per cent on their investment in the farms operated by tenants. Only one of the 31 owners received as much as 10 per cent on his investment.

LIVESTOCK FARMS

West Virginia is essentially a livestock state; that is, the state as a whole is better adapted to livestock production than to any other type of farming. The large areas of bluegrass, the abundance of good water, the long pasturing season, and the temperate climate are the principal conditions conducive to successful livestock production. Much of the land in the state is too steep for cultivation, but it affords fairly good pasture for livestock.

The most important counties marketing fat cattle are Harrison, Lewis, Roane, Jackson, Ritchie, Upshur, Doddridge, Randolph, Pendleton, Mason, Monroe, Pocahontas, Braxton, Greenbrier and Barbour. Among the principal counties which produce cattle for feeding are Gilmer, Clay, Pocahontas, and Nicholas. The grass in the latter counties is not so well suited to fattening but very good for growing the young cattle. Comparatively few feeders are shipped to points out of the state and not many are shipped in. Fat cattle are marketed directly off grass from August to November. Most cattle are marketed when they are three years old. During the last few years, owing to the low prices of beef cattle, more have been sold at four years old than formerly. Feeders are bought when one or two years old, soon after the fat cattle are marketed.

Sheep are grown throughout the state but they are kept in largest number in the counties keeping beef cattle, except that the northern panhandle has long been famous for its large number of fine-wool sheep. Very few fine-wool sheep are grown south of Marshall County. The general practice is to market lambs from June to September.

Hogs are produced for home use. In a few counties in the South Branch Valley hogs are grown for the eastern markets. Very few are shipped to market from other sections of the state.

Poultry is raised on almost every farm. The flocks are usually

Purebred Hereford Cattle Are Popular in West Virginia

small, rarely as many as one hundred fowls to the farm. In Jackson, Wood, and a few other counties there are several commercial flocks, some containing several thousand birds.

Most of the livestock is sold through local buyers, there being several livestock buyers in each livestock county. Six livestock shipping associations operate in several different counties.

The livestock farms were grouped according to the number of animal units per farm. The farms with not more than 50 animal units were classed as small farms, those with 51 to 100 as medium-sized farms, and those with more than 100 as large farms. On this basis there were 91 small farms, 58 medium-sized farms, and 19 large farms.

The small livestock farms operated by owners contained an average of 216 acres per farm of which 94.6 were tillable and 119.2 were in pasture; the medium-sized farms contained 439.4 acres per farm of which 203.7 were tillable and 249.3 were in pasture; the large farms contained 785.6 acres per farm which 373.4 were tillable and 415.5 were in pasture. The proportion of pasture land to tillable land was practically the same in each group of farms.

Distribution of Capital

The livestock farmers had a very much larger investment than the farmers of either of the other types. The percentage distribution

of capital on the livestock farms did not vary greatly from the distribution of the general farms operated by owners.

Table 15.—Distribution of Capital on Livestock Farms Operated by Owners.

Distribution of Capital	91 Small Farms		58 Medium-Sized Farms		19 Large Farms	
	Average Amount per Farm	Per cent	Average Amount per Farm	Per cent	Average Amount per Farm	Per cent
Real estate -----	\$10919.95	80.0	\$25070.90	80.9	\$39197.47	73.6
Machinery and tools --	272.58	2.0	452.88	1.5	668.05	1.3
Livestock (Table 16) --	2148.05	15.9	5163.54	16.7	12797.75	24.0
Feed and supplies ----	51.74	0.4	65.84	0.2	125.05	0.2
Cash to run the farm --	127.09	0.9	227.16	0.7	500.00	0.9
Total -----	\$13519.38	100.0	\$30980.32	100.0	\$53288.32	100.0

Table 15 shows the distribution of capital on the three groups of livestock farms operated by owners. The small farms had a total capital of \$13,519.38 per farm, the medium-sized farms \$30,980.32, and the large farms \$53,288.32.

The per cent of capital invested in the various subdivisions was about the same for all three groups of farms, except that the large farms had a considerably smaller per cent invested in real estate and a greater per cent in livestock. Information as to the amount of credit used by the livestock farmers was not obtained.

On the small livestock farms the average value of the dwelling was \$1427, and other buildings \$812. On the medium-sized farms the average value of the dwelling was \$2010, and other buildings \$1138. On the large farms the average value of the dwelling was \$2600, and other buildings \$1682.

Number and Value of Farm Animals

The small livestock farms operated by owners had an average of 30.7 animal units per farm, the medium-sized farms had 68.8, and the large farms had 177.6.

Table 16.—Number and Value of Animals on Livestock Farms Operated by Owners.

Kinds of Animals	91 Small Farms		58 Medium-Sized Farms		19 Large Farms	
	Number per Farm	Total Value per Farm	Number per Farm	Total Value per Farm	Number per Farm	Total Value per Farm
Cows -----	5.4	\$ 314.25	8.2	\$ 479.22	12.6	\$ 735.53
Heifers -----	2.6	157.01	4.3	193.20	5.5	226.21
Calves -----	4.0	89.16	7.3	149.19	14.2	315.11
Bulls -----	0.3	20.86	0.7	64.32	1.0	71.05
Steers -----	10.4	585.36	37.0	2409.88	127.4	8721.90
Oxen -----	0.0	0.00	0.0	0.00	0.2	19.74
Stallions -----	--	10.99	0.1	66.38	0.1	73.68
Jacks -----	--	2.20	0.0	0.00	0.0	0.00
Horses -----	3.8	556.93	7.1	1098.05	8.6	1304.21
Mules -----	1.0	11.32	0.2	25.78	1.7	207.89
Colts -----	1.1	86.79	1.8	159.66	2.5	226.97
Rams -----	0.4	3.21	0.4	3.94	0.8	6.34
Ewes -----	22.3	106.60	34.5	176.84	60.7	310.05
Lambs -----	16.9	77.65	31.1	148.18	65.5	324.89
Goats -----	0.9	1.97	0.2	0.83	0.0	0.00
Boars -----	--	0.49	0.2	4.55	0.0	0.00
Brood sows -----	1.0	17.77	1.6	31.26	1.9	33.82
Other hogs -----	5.8	51.05	9.9	93.88	12.6	125.71
Pigs -----	1.8	5.54	2.9	9.07	4.4	10.39
Chickens -----	72.0	36.30	84.2	38.57	151.1	68.87
Turkeys -----	3.6	8.03	4.1	8.03	5.1	10.45
Ducks -----	0.6	0.50	0.6	0.24	0.0	0.00
Geese -----	0.5	0.51	0.0	0.00	0.0	0.00
Bees (stands) -----	0.7	3.56	0.6	2.47	1.1	4.94
Total -----		\$2148.05		\$5163.54		\$12797.75

Table 16 shows the number and value of each kind of livestock found on each of the three groups of livestock farms. The total value of livestock per farm on the small farms was \$2148.05, on the medium-sized farms \$5163.54, and on the large farms \$12797.75. A larger proportion of the capital was invested in beef cattle than in any other kind of livestock on all the three groups of farms, horses coming second. Cows and sheep were also important on all the groups of farms.

Crop Acreage and Yield

Corn, wheat, and hay were the most important crops grown on the livestock farms. But a very small acreage of rye, buckwheat, and alfalfa was grown on these farms.

A Herd of Purebred Angus Cattle of Which Any Farmer Might be Proud

Table 17.—Crop Acreage and Yields on Livestock Farms Operated by Owners.

Crops	91 Small Farms		58 Medium- Sized Farms		19 Large Farms	
	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield
Corn for grain (bu.) -----	8.7	353.3	16.9	628.4	27.0	1095.5
Corn for silage (tons) -----	0.7	5.6	3.2	26.4	9.9	79.9
Potatoes (bu.) -----	0.1	6.6	0.2	19.1	0.1	1.1
Wheat (bu.) -----	6.2	112.6	18.3	344.5	35.5	620.5
Rye (bu.) -----	0.2	2.9	0.6	8.1	0.4	7.9
Oats (bu.) -----	2.2	37.2	1.5	17.9	2.1	15.8
Buckwheat (bu.) -----	0.2	4.8	0.0	0.0	0.0	0.0
Hay (tons) -----	23.5	22.0	40.6	32.8	70.5	58.2
Alfalfa (tons) -----	—	0.1	0.1	0.2	0.4	0.5
Apples (bearing trees) -----	2.6	—	3.1	—	10.8	—
Apples (trees not bearing) -----	0.4	00.0	0.5	00.0	0.8	0.0
Other crops -----	0.9	—	1.0	—	0.5	—
Total -----	45.7		86.0		158.0	

The average total acreage of crops on the small livestock farms, as may be seen in Table 17, was 45.7 per farm, on the medium-sized farms 86, and on the large farms 158. About one-half the total crop area was in hay, and about one-fifth was in corn for grain. A relatively small acreage of corn for silage was grown on the livestock farms.

Farm Receipts

On the livestock farms, receipts were derived from a large number of sources, but the amount of the receipts from any source other than livestock was small.

Table 18.—Receipts on Livestock Farms Operated by Owners.

Sources of Receipts	91 Small Farms		58 Medium-Sized Farms		19 Large Farms	
	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm
Crops:						
Corn (bu.) -----	18.3	\$ 17.62	29.5	\$ 27.28	--	\$ 14.74
Potatoes (bu.) -----	--	1.10	--	9.48	2.1	1.58
Wheat (bu.) -----	--	44.61	--	231.33	339.9	397.73
Hay -----	--	4.71	--	8.10	0.0	0.00
Apples -----	--	23.32	--	41.83	--	25.79
Other crops -----	--	4.15	--	7.62	--	0.00
Total rec'ts from crops		95.51		325.64		439.84
Livestock:						
Cows -----	1.6	87.34	1.2	71.60	2.8	169.26
Heifers and calves -----	--	202.29	--	96.26	--	190.53
Steers -----	12.2	790.11	27.2	2259.67	79.3	6968.53
Horses -----	0.5	86.20	0.4	60.57	1.3	222.63
Sheep -----	52.6	232.37	40.9	206.86	82.5	416.63
Hogs -----	--	44.19	--	91.74	--	144.84
Chickens -----	--	20.85	--	21.83	--	34.95
Turkeys -----	--	37.39	--	50.02	--	85.42
Other livestock -----	--	19.61	--	31.17	--	235.79
Total receipts from livestock -----		1520.35		2889.72		8468.58
Livestock products:						
Butter -----	--	59.07	--	31.38	--	21.32
Milk and cream -----	--	54.53	--	32.30	--	196.05
Wool -----	--	35.79	--	51.03	--	100.68
Eggs -----	--	60.81	--	50.64	--	62.68
Other livestock products--	--	18.00	--	19.58	--	28.69
Total rec. from livestock products--		228.20		184.93		409.42
Miscellaneous rec.:						
Labor -----		52.62		67.53		5.52
Rents -----		11.20		32.17		53.42
Lumber, posts -----		18.17		43.79		3.94
Other misc. rec. -----		23.81		2.01		9.49
Total miscellaneous receipts -----		105.80		145.50		72.37
Increased inventory -----		111.56		380.33		2152.42
Total receipts -----		\$2061.42		\$3926.12		\$11542.63

The receipts on the livestock farms operated by owners are shown in Table 18. The total receipts per farm on the small farms were \$2061.42, on the medium-sized farms \$3926.12, and on the large farms \$11,542.63.

Bluegrass Pasture Showing Outcropping Limestone

The total receipts from crops were \$95.51 per farm on the small farms, \$325.64 on the medium-sized farms, and \$439.84 on the large farms. Wheat was the principal cash crop on the livestock farms. The crops grown on these farms were largely fed to livestock except that most of the wheat was sold. There were several different kinds of livestock kept, so that almost any crop could be used for feed.

The total receipts per farm from livestock were \$1520.35 on the small farms, \$2889.72 on the medium-sized farms, and \$8468.58 on the large farms. Steers and heifers kept for beef purposes were frequently listed together under "Steers." Beef cattle were the most important source of receipts, and receipts from lambs were second in importance.

The receipts from livestock products were \$288.20 per farm on the small farms, \$184.93 on the medium-sized farms, and \$409.42 on the large farms. The cows on these farms were mostly of the beef type, and no market milk was produced. The sheep kept on these farms were of the mutton type.

Miscellaneous receipts were made up principally of man and team labor off the farms, rent of pasture and buildings, and lumber and posts sold from the farm.

On each group of livestock farms almost three-fourths of the receipts were derived from livestock. There was an increase in the inventory of livestock on all the groups of farms.

Farm Expenses

Not all farm expenses are paid in cash. From a business point of view, interest and the value of unpaid family labor are farm expenses and must be reckoned with.

Table 19.—Average Expenses per Farm on Livestock Farms Operated by Owners.

Items of Expense	91	58	19
	Small Farms	Medium-Sized Farms	Large Farms
Livestock purchases	\$728.77	\$1097.95	\$4314.53
Hired labor	137.20	377.09	589.05
New buildings	75.62	197.84	430.21
Repairs of buildings	20.45	27.79	20.53
New machinery	27.72	42.71	67.89
Feed purchases	49.52	109.48	279.37
Seeds, plants, trees	19.24	40.67	62.58
Fertilizer and manure	29.54	64.72	104.32
Taxes	70.77	160.41	287.05
Rent	7.86	23.02	414.11
Other expenses	59.70	138.58	214.62
Total cash expenses except interest	1226.39	2280.26	7284.26
Value of unpaid family labor except operator's	113.41	143.41	206.21
Interest on capital at 5 per cent	675.97	1549.02	2664.42
Total expenses	\$2015.77	\$3972.69	\$10154.89

Table 19 shows the principal items of cash expenses and total expenses on the livestock farms operated by owners. The cash expenses, except interest, on the small farms were \$1226.39, on the medium-sized farms \$2280.26, and on the large farms \$7284.26. The value of unpaid family labor was \$113.41 on the small farms, \$143.41 on the medium-sized farms, and \$206.21 on the large farms. The total farm expenses were \$2015.77 on the small farms, \$3972.69 on the medium-sized farms, and \$10154.89 on the large farms.

Table 20.—Average Cash Receipts and Expenses Per Farm on Livestock Farms Operated by Owners.

	91 Small Farms	58 Medium-Sized Farms	19 Large Farms
Total cash receipts (Table 18)	\$1949.86	\$3545.79	\$9390.21
Total cash expenses except interest (Table 19)	1226.39	2280.26	7284.26
Net cash income before paying interest	\$723.47	\$1265.53	\$2105.95

The small farms had \$723.47, the medium-sized farms \$1265.53, and the large farms \$2105.95 per farm with which to pay interest and other expenses.

Farm Earnings

The livestock farms had a large investment and in turn a large interest charge. The average livestock farmer received a very small sum for his labor and supervision when the price of livestock was low, but he could not change his type of farming with changing prices.

Table 21.—Average Farm Earnings per Farm on Livestock Farms Operated by Owners.

	91 Small Farms	58 Medium-Sized Farms	19 Large Farms
Total capital	\$13519.38	\$30980.32	\$53288.32
Total receipts	2061.42	3926.12	11542.63
Total expenses except interest	1339.80	2423.67	7490.47
Farm income	721.62	1502.45	4052.16
Interest on capital at 5 per cent	675.97	1549.02	2664.42
Labor income	45.65	-46.57	1387.74
Family income	\$ 835.03	\$ 1645.86	\$ 4258.37

Table 21 shows the farm income on the small livestock farms operated by owners to be \$721.62 per farm, on the medium-sized

The Cash Crop in the Grazing Area

farms \$1502.45, and on the large farms \$4052.16. The labor income was \$45.65 per farm on the small farms, on the medium-sized farms it was minus \$46.57, and on the large farms \$1387.74. The family income before paying interest was \$835.03 per farm on the small farms, \$1645.86 per farm on the medium-sized farms, and \$4258.37 per farm on the large farms.

The large livestock farms operated by owners were generally financially successful. About 16 per cent of the large farms made minus labor incomes, and about 63 per cent made labor incomes of more than \$1000.00. The largest labor income was \$6312.00. The medium-sized farms made the lowest average labor income of the three groups of farms. Almost 47 per cent of the medium-sized farms made minus labor incomes, and less than 9 per cent made labor incomes of more than \$1000.00. Practically one-half of the small livestock farms made minus labor incomes, and fewer than 5 per cent of them made labor incomes of more than \$1000.00.

This study indicates that the farmer with a small amount of capital had a poor chance of success in livestock farming. The man who had capital enough to operate a large livestock farm and who knew the business had a good chance of success on a livestock farm in West Virginia. There were not enough livestock farms operated by tenants in the sections where these records were taken to afford opportunity for a statistical study which would have any value.

DAIRY FARMS

Dairy farming has not been practiced extensively in West Virginia. There are regions around most of the larger towns and cities of the state where dairy farming could probably be made a profitable industry but lack of a satisfactory method of marketing the products has retarded its development. While most farmers of the state keep a few dairy cows, the production of dairy products is not the main business of these farmers. Many of the dairy farmers near the towns and cities, in addition to producing milk, deliver it in small quantities to the consumers. Some of the streets in cities are traversed by several different wagons, each delivering milk to a small number of customers on the same street.

Creameries have been established in different parts of the state, but few of them have been able to secure enough milk to enable them to continue in operation.

A large quantity of dairy products, much of which could be produced economically on local farms if some satisfactory system of handling and marketing were provided, is shipped into West Virginia from other states.

Of the 544 farms considered in the study, 34 were dairy farms. Small dairy farms are those with not more than 10 cows, medium-sized farms those with 11 to 25 cows and large farms those with more than 25 cows. On this basis there were 17 small farms, 17 medium-sized farms, and no large farms. The 17 small farms had an average of 7.7 cows per farm and the medium-sized farms had an average of 14 cows per farm. There were so few dairy farms operated by tenants that they were not used for purposes of comparison.

The small dairy farms operated by owners averaged 142.3 acres per farm of which 93.4 acres were tillable and 61.6 were in pasture. The medium-sized dairy farms averaged 168.6 acres per farm of which 118.6 were tillable and 77.3 were in pasture.

Distribution of Capital

The records of these farms were taken when the dairy cows were on pasture and the amount of feed on hand was the smallest of the whole year.

Table 22 shows the distribution of capital on dairy farms operated by owners. The total investment on the small farms was \$10,225.35 per farm, and on the medium-sized farms \$13,500.46. The small farms had 81 per cent of the total capital invested in real estate, and 14.2 per cent in livestock. The capital on the medium-sized farms was invested in almost exactly the same proportions as on the small farms. Dairy farmers commonly did a monthly credit business. They bought feed to be paid for at the end of the month, and their customers were expected to pay for their milk about the same time.

Table 22.—Distribution of Capital on Dairy Farms Operated by Owners.

	17 Small Farms		17 Medium-Sized Farms	
	Average Amount per Farm	Per- cent	Average Amount Per Farm	Per- cent
Real estate -----	\$ 8282.94	81.0	\$10993.53	81.4
Machinery and tools -----	346.06	3.4	414.00	3.1
Livestock (Table 23) -----	1456.59	14.2	1950.85	14.4
Feed and supplies -----	25.64	0.3	8.85	0.1
Cash to run the farm -----	114.12	1.1	133.23	1.0
Total -----	\$10225.35	100.0	\$13500.46	100.0

On the small dairy farms dwellings were valued at \$1788.23 per farm, and other buildings at \$970.60. On the medium-sized dairy farms dwellings were valued at \$2105.55 per farm, and other buildings at \$1094.11.

Number and Value of Farm Animals

The dairy farmers kept small numbers of several kinds of livestock in addition to the dairy cows. Hogs and chickens consumed a considerable part of the milk produced on many of the dairy farms.

Table 23.—Number and Value of Farm Animals on Dairy Farms Operated by Owners.

Kinds of Animals	17 Small Farms		17 Medium-Sized Farms	
	Average Number per Farm	Total Value per Farm	Average Number per Farm	Total Value per Farm
Cows -----	7.7	\$ 508.82	14.0	\$ 826.77
Heifers -----	2.9	104.27	3.4	113.68
Calves -----	3.2	67.09	3.9	57.35
Bulls -----	0.5	40.15	0.9	53.38
Steers -----	0.2	8.76	0.7	18.82
Horses -----	3.4	471.20	4.7	656.62
Mules -----	0.2	23.53	0.0	0.00
Colts -----	0.6	55.00	0.3	35.29
Ewes -----	9.7	35.23	8.6	44.47
Lambs -----	4.3	18.06	0.4	1.35
Brood sows -----	1.2	27.20	1.4	32.15
Other hogs -----	3.8	42.67	4.6	48.97
Pigs -----	2.0	5.71	2.4	7.09
Chickens -----	75.7	42.70	89.4	49.50
Turkeys -----	3.7	5.12	0.7	1.59
Ducks -----	0.9	0.91	1.5	0.88
Geese -----	0.1	0.17	0.0	0.00
Bees (stands) -----	0.0	0.00	0.7	2.94
Total -----		\$1456.59		\$1950.85

Table 23 shows the average number and total value of the different kinds of animals kept on the dairy farms. The cows on the small farms were valued at \$508.82 per farm while the value of all the livestock was \$1456.59. The cows on the medium-sized farms were valued at \$826.77 per farm and all the livestock valued at \$1950.85. The value of the dairy cows, heifers, and calves was about one-half the value of all the livestock. An average of 3.4 horses per farm was kept on the small farms, and 4.7 on the medium-sized farms. The other livestock was of little importance. On the small dairy farms there were 18.4 animal units per farm and on the medium-sized farms 26.5.

Crop Acreage and Yield

The same labor that cared for the dairy cattle and other livestock produced a small acreage of several different kinds of crops.

Table 24.—Crop Acreage and Yields on Dairy Farms Operated by Owners.

Crops	17 Small Farms		17 Medium-Sized Farms	
	Acreage per Farm	Total Yield	Acreage per Farm	Total Yield
Corn for grain (bu.) -----	7.8	31.2	8.8	349.9
Corn for silage (tons) -----	1.4	12.9	3.5	42.5
Potatoes (bu.) -----	0.4	26.3	0.1	7.2
Winter wheat (bu.) -----	3.7	42.4	7.8	105.6
Rye (bu.) -----	0.6	8.8	1.8	15.9
Oats (bu.) -----	9.2	224.4	7.5	220.3
Buckwheat (bu.) -----	0.2	6.4	0.0	00.0
Hay (tons) -----	25.7	24.0	23.8	25.8
Alfalfa (tons) -----	1.6	2.2	0.7	0.8
Apples (bearing trees) -----	1.6	—	2.7	—
Apples (trees not bearing) -----	0.3	—	1.4	—
Other crops -----	1.6	—	0.6	—
Total -----	54.1		58.7	

From Table 24 it may be seen that the acreage of each of the crops was small. On the small dairy farms operated by owners there was an average of 54.1 acres of crops per farm, and on the medium-sized farms 58.7 acres. It is interesting to note that the medium-sized farms had but 4.6 acres more per farm in crops than did the small farms.

Farm Receipts

On the dairy farms crops were grown principally for feed. The principal receipts were from livestock and livestock products.

Table 25.—Receipts on Dairy Farms Operated by Owners.

Sources of Receipts	17 Small Farms		17 Medium-Sized Farms	
	Quantity Sold per Farm	Value per Farm	Quantity Sold per Farm	Value per Farm
Crops:				
Corn (bu.) -----	2.9	\$ 2.06	0.0	\$ 0.00
Wheat (bu.) -----	6.5	6.06	29.7	31.12
Hay (tons) -----	--	1.47	0.4	5.41
Potatoes (bu.) -----	14.7	13.82	2.9	2.94
Apples -----	0.0	0.00	--	17.35
Other crops -----	--	13.35	--	10.36
Total receipts from crops -----		36.76		67.18
Livestock:				
Cows -----	0.6	40.29	4.0	220.47
Heifers, calves, and steers -----	--	91.89	--	137.00
Horses -----	0.3	28.35	0.4	59.41
Sheep -----	8.4	31.12	11.5	40.47
Hogs -----	4.8	47.41	8.3	54.77
Poultry -----	--	43.47	--	28.83
Other livestock -----	--	15.88	--	18.05
Total receipts from livestock -----		298.41		559.00
Livestock products:				
Butter -----	--	261.76	--	63.59
Cream -----	--	145.76	--	515.41
Market milk -----	--	161.59	--	499.53
Wool -----	--	15.53	--	14.35
Eggs -----	--	82.88	--	119.30
Other livestock products -----	--	13.30	--	4.41
Total receipts from livestock products -----		680.82		1216.59
Miscellaneous receipts:				
Labor off the farm -----		120.60		102.82
Rent of land and buildings -----		11.88		3.30
Lumber, posts, and mine props -----		3.52		13.41
Other miscellaneous receipts -----		0.00		88.23
Total miscellaneous receipts -----		136.00		207.76
Increased inventory -----		185.18		15.12
Total receipts -----		\$1337.17		\$2065.65

The receipts per farm on the dairy farms operated by owners, as shown in Table 25, were \$1337.17 on the small farms, and \$2065.65 on the large farms.

On the small farms the receipts per farm from sale of crops amounted to \$36.76, from livestock \$298.41, from livestock products \$680.82, from miscellaneous sources \$136.00, and there was an increase of \$185.18 in the inventory. The receipts from crops were small since most of them were fed to the livestock on the farms. Butter was the principal livestock product sold from the farms, the receipts from butter being \$261.76, and the receipts from all dairy products \$569.11.

Alfalfa Hay Makes a Good Feed for Dairy Cows and Can be Grown on the Farm

On the medium-sized dairy farms receipts from crops were \$67.18 per farm, from livestock \$559.00, from livestock products \$1216.59, from miscellaneous sources \$207.76, and there was an increase of \$15.12 in the inventory. The receipts from dairy products were \$1078.53, cream and market milk being the principal products sold. Miscellaneous receipts were mostly for labor off the farm. Both groups of farms showed a small increase in inventory.

Farm Expenses

Dairy farms usually have a somewhat regular monthly income from the sale of dairy products which enables them to meet their labor and feed bills regularly. When all the annual income is received at one time it is much more difficult to pay monthly bills throughout the year than when it is received monthly.

Table 26 shows the principal items of expense and total expenses on the dairy farms operated by owners. The most important items of expense were labor and feed. The total cash expenses on the small farms were \$559.65, and on the medium-sized farms \$1290.47. The value of unpaid family labor except that of the operator was \$163.94 on the small farms, and \$178.06 on the medium-

A Herd of Profitable Dairy Cows

Table 26.—Average Expenses per Farm on Dairy Farms Operated by Owners.

Items of Expense	17	17
	Small Farms	Medium- Sized Farms
Livestock purchases -----	\$ 76.29	\$ 153.06
Hired labor -----	140.94	333.06
New buildings -----	17.47	42.64
Repair of buildings -----	16.47	116.53
New machinery -----	20.12	71.12
Feed -----	97.59	308.70
Seeds, plants, trees -----	17.71	16.59
Fertilizer and manure -----	25.76	26.12
Taxes -----	69.06	92.53
Cash rent for pasture -----	4.24	6.47
Other expenses -----	74.00	120.65
Total cash expenses except interest -----	559.65	1290.47
Value of unpaid family labor except operator's -----	163.94	178.06
Interest on capital at 5 per cent -----	511.29	675.02
Total expenses -----	\$1234.88	\$2143.55

sized farms. Five per cent interest on the capital amounted to \$511.29 on the small farms, and \$675.02 on the medium-sized farms. The total expenses were \$1234.88 on the small farms, and \$2143.55 on the medium-sized farms.

Table 27.—Average Cash Receipts and Expenses per Farm on Dairy Farms Operated by Owners.

	17 Small Farms	17 Medium- Sized Farms.
Total cash receipts (Table 25) -----	\$1218.99	\$2050.65
Total cash expenses except interest (Table 26) ----	559.65	1290.47
Cash income before paying interest -----	\$ 659.34	\$ 760.06

The small dairy farms had \$659.34, and the medium-sized farms \$760.06 with which to pay interest and other expenses. The amount of farm mortgages was not learned, hence the amount of interest actually paid could not be ascertained.

Farm Earnings

Not enough records were taken from large dairy farms to make a study of them. The few records taken indicated that the large dairy farms made reasonably large labor incomes.

Table 28.—Average Farm Earnings per Farm on Dairy Farms Operated by Owners.

	17 Medium- Sized Farms	17 Small Farms
Total capital -----	\$10225.35	\$13500.46
Total receipts -----	1337.17	2065.65
Total expenses except interest -----	723.59	1468.53
Farm income -----	613.58	597.12
Interest on capital at 5 per cent -----	511.29	675.02
Labor income -----	102.29	-77.90
Family income -----	\$ 754.52	\$ 933.18

From Table 28 it may be seen that farm income was \$613.58 per farm on the small dairy farms operated by owners, and \$597.12 on the medium-sized farms. The labor income on the small farms was \$102.29 and on the medium-sized farms minus \$77.90. The family income on the small farms was \$754.52 and on the medium-sized farms \$933.18.

Small and medium-sized dairy farms were financially unsuccessful. About one-half of the dairy farms operated by owners made minus labor incomes. One farm in each group of the dairy farms showed a labor income of more than \$1000.00. Four records of dairy farms operated by tenants were taken. Of these one showed a labor income of more than \$1000.00, and one a minus labor income.

Truck Crops Are Grown Mostly on the Fertile River Bottoms

TRUCK FARMS

Of the 544 survey records 9 were of truck farms. There was but a small acreage in West Virginia on which truck crops were produced on a commercial scale. The largest areas adapted to such production are along the Ohio and the Great Kanawha rivers. Eight of the nine records of truck farms were taken in Brooke County.

A great variety of crops, including plants and small fruits, was grown on the truck farms. The crops were practically all sold direct from the farms at nearby markets.

While the number of truck farms was not large enough from which to draw very valuable conclusions, the average will indicate in general the prevailing type of organization of truck farms. These farms averaged 91 acres in size, 57.3 of which were tillable land and 41.3 pasture.

Distribution of Capital

The truck farms had a little larger proportional amount of capital invested in real estate and cash to run the farm, and a smaller amount in livestock, than the other types of farms.

The distribution of capital on the truck farms operated by owners is shown in Tabel 29. The total investment in truck farms was \$6186.22 per farm. Of this sum 86 per cent was invested in real estate, and 8.2 per cent in live stock. Truck farmers were able to obtain considerable credit which was most often needed during the harvest season, but the amount of such credit was not ascertained.

Table 29.—Distribution of Capital on Truck Farms Operated by Owners.

Distribution of Capital	9 Truck Farms	
	Average Amount per Farm	Per cent
Real estate -----	\$5322.94	86.0
Machinery and tools -----	192.56	3.1
Livestock (Table 30) -----	506.28	8.2
Feed and supplies -----	22.78	0.4
Cash to run farm -----	141.66	2.3
Total -----	\$6186.22	100.0

The value of the dwellings on the truck farms was \$1516.66 per farm, and the value of other buildings was \$700.00.

Number and Value of Farm Animals

There were 6.3 animal units of livestock per farm on the truck farms. The animals on the truck farms were kept chiefly for supplying food for the family and for operating the farm.

Table 30.—Number and Value of Farm Animals on Truck Farms Operated by Owners.

Kinds of Animals	9 Truck Farms	
	Average Number per Farm	Total Value per Farm
Cows -----	2.1	\$128.89
Heifers -----	0.9	23.33
Calves -----	0.4	4.83
Bulls -----	0.2	7.22
Horses -----	2.1	247.78
Brood sows -----	0.3	9.33
Other hogs -----	3.4	49.06
Pigs -----	0.3	1.39
Chickens -----	58.6	33.89
Bees (stands) -----	0.1	0.56
Total -----		\$506.28

Table 30 shows that the value of all livestock on the truck farms was \$506.28 per farm. The value of the horses, \$247.78, was greater than that of any other kind of livestock; cows ranked second, being valued at \$128.89.

Crops Acreage and Yield

There was a small acreage of field crops grown on the truck farm. Two of the truck farms had greenhouses which were used mostly for plants and flowers.

Rolling and Steep Land Predominates in West Virginia

Table 31.—Crop Acreage and Yields on Truck Farms Operated by Owners.

9 Truck Farms		
Crops	Acreage per Farm	Total Yield
Corn for grain (bu.) -----	7.0	335.3
Potatoes (bu.) -----	7.0	—
Wheat (bu.) -----	1.3	8.7
Rye (bu.) -----	2.0	6.3
Oats (bu.) -----	3.4	71.1
Hay (tons) -----	7.9	8.4
Alfalfa (tons) -----	0.5	6.6
Apples (bearing trees) -----	1.1	—
Apples (trees, not bearing) -----	0.4	—
Truck crops -----	7.3	—
Total -----	31.6	—

There were 31.6 acres of crops per farm on the truck farms operated by owners as shown in Table 31. Of this area 7.3 acres were in truck crops, 7.9 in hay and 7 acres in corn for grain. The acreage of each crop was so small that the crops were probably not grown under usual field conditions, hence the yields are not comparable with yields on other classes of farms.

Farm Receipts

Nearly three-fourths of the receipts on the truck farms came from crops most of which was from truck crops. The quantity of the various truck crops sold was not learned.

Table 32.—Receipts on Truck Farms Operated by Owners.

Source of Receipts	9 Truck Farms	
	Quantity Sold per Farm	Value per Farm
Crops:		
Corn for grain	6.6	\$ 3.67
Potatoes	--	44.44
Hay	--	46.33
Apples	--	1.67
Truck crops	--	883.67
Total receipts from crops		979.78
Livestock:		
Cows	0.7	49.44
Calves	0.8	8.44
Hogs	2.9	22.22
Chickens	--	17.34
Total receipts from livestock		97.44
Livestock products:		
Butter	--	23.33
Market milk	--	44.44
Eggs	--	33.22
Other livestock products	--	13.68
Total receipts from livestock products		114.67
Miscellaneous sources:		
Labor		28.33
Rent		66.67
Other miscellaneous receipts		6.67
Total miscellaneous receipts		101.67
Increased inventory		77.33
Total receipts		\$1370.89

Table 32 shows the receipts per farm on the truck farms operated by owners. The total receipts were \$1370.89 per farm. Of this amount \$77.33 was increased inventory; \$101.67 was from miscellaneous sources, \$114.67 was from livestock products, \$97.44 was from livestock, and \$979.78 was from crops. Truck crop receipts made up \$883.67 of the total crop receipts.

Farm Expenses

The expenses on the truck farms were spread over the whole year. However, the largest single expense, hired labor, was not incurred in the winter season.

Table 33.—Average Expenses per Farm on Truck Farms Operated by Owners.

Items of Expense	9 Truck Farms
Livestock purchases -----	\$ 81.33
Hired labor -----	140.33
Repairs of buildings -----	8.33
New machinery -----	14.44
Feeds -----	70.34
Seeds, plants, trees -----	22.78
Fertilizer and manure -----	18.45
Taxes -----	58.33
Other cash expenses -----	82.11
Total cash expenses except interest -----	496.44
Value of unpaid family labor except operator's -----	116.45
Interest on capital at 5 per cent -----	309.31
Total expenses -----	\$922.20

Table 33 shows the principal items of expense on the truck farms operated by owners. The cash expenses, except interest, were \$496.44; value of unpaid family labor \$116.45; interest on capital \$309.31; and total expenses \$922.20. The expense for labor was greater than any other item of cash expense.

Table 34.—Cash Receipts and Expenses on Truck Farms Operated by Owners.

	9 Truck Farms
Total cash receipts (Table 32) -----	\$1293.56
Total cash expenses except interest (Table 33) -----	495.44
Cash income before paying interest -----	\$ 797.12

The truck farms had \$797.12 with which to pay interest and other expenses.

Farm Earnings

The truck farmers had a small amount of capital invested; the labor was mostly performed by the farmer and his family; and the returns were fairly good for the size of the farm business.

Table 35.—Average Farm earnings per Farm on Truck Farms Operated by Owners.

	9 Truck Farms
Total capital -----	\$6186.22
Total receipts -----	1370.89
Total expenses except interest -----	612.89
Farm income -----	758.00
Interest on capital at 5 per cent -----	309.31
Labor income -----	448.69
Family income -----	\$ 874.45

Marketing Farm Commodities by Truck Is Extending the Area of Production

Table 35 shows that the average income on the truck farms operated by owners was \$758.00 per farm, the labor income was \$448.69, and the family income before paying interest was \$874.45. One of the nine truck farmers made more than \$1000.00 labor income and one made a minus labor income.

CHANGES IN FARM CONDITIONS IN BROOKE AND PRESTON COUNTIES

In the summer of 1914 a farm management survey of 201 farms in Brooke County and 74 farms in Preston County was made. The results of the survey in Brooke County were published as West Virginia Agricultural Experiment Station Bulletin 153; the results of the survey in Preston County have not been published except in connection with some other work. From the 201 farms in Brooke County 22 were selected, and from the 74 in Preston County 20 were selected for a five-year study. In Brooke County, farms of all types and tenures common in the county were selected; and in Preston County the farms selected for study were very similar to each other. The farms studied were considerably better than the average farms of the regions.

Brooke County

Brooke County is located in the Northern Panhandle of West Virginia. The land is generally rolling to hilly and intersected by

Fig. 3.—Distribution of Labor Incomes on Brooke County Farms. Each Dot Represents the Labor Income of a Farm and Shows Its Relative Position in Comparison with Labor Incomes of Other Farms.

Fig. 4.—Receipts and Labor Incomes Increased Constantly While Expenses Did Not Vary Greatly on the Twenty-two Farms in Brooke County.

many ravines. The soil is mostly clay loam and the climate is suited to general farming. The area covered by this study was near a rapidly developing industrial section. Transportation facilities were very good and a plentiful supply of coal was attracting new industries. The industrial developments brought new markets for agricultural products, and also brought about a considerable shortage of farm labor.

The amount of rainfall in inches during the growing season for Wellsburg, Brooke County, was as follows:¹

Year	April	May	June	July	August	Sept.	Annual Average
1913	3.41	3.33	0.86	9.67	1.91	3.11	44.26
1914	4.14	1.89	4.26	2.06	4.45	1.16	36.14
1915	1.48	5.03	4.65	6.05	2.85	3.21	40.42
1916	2.24	3.25	4.19	1.63	3.72	2.26	33.43
1917	1.84	3.08	3.50	4.51	6.21	1.85	36.96
Average of 29 Years	3.11	3.48	4.49	4.59	3.84	2.80	38.82

The rainfall is given in inches per month and the statistics show that in 1913 the amount was very light in June and August and very

¹ From Climatological Report, Weather Bureau, U. S. Dept. of Agriculture, Washington, D. C.

heavy in July. In 1914 May and September had the light rainfall, and in 1915 April was light, in 1916 July was very dry, and in 1917 April and September were the dry months. The dry June in 1913 did not materially influence crop yields, but with a dry July in 1916 crop yields were lowest of the five years. In no case did all crops have high nor all have low yields in any one year. The average length of the growing season was approximately 200 days.

Table 34.—The Farm Business on Twenty-Two Brooke County Farms Over a Period of Five Years.

Factors Considered	1913	1914	1915	1916	1917	Average of the 5 Years
Average acreage per farm	206	201	204	213	205	206
Average crop acreage per farm	83	74	81	81	75	78
Average pasture acreage per farm ..	95	98	95	104	102	99
Months of man labor	30	29	28	26	24	28
Number of animal units except work horses	26	27	28	28	28	28
Number of dairy cows	12	12	11	11	10	11
Number of sheep	45	52	49	48	49	48
Number of work horses	4.9	4.6	4.5	4.3	4	4.5
Total capital per farm*	\$14818	\$15510	\$16027	\$16444	\$16930	\$15945
Total receipts per farm	2605	2829	3471	3810	4342	3411
Receipts from livestock	1783	1969	2090	2376	2846	2210
Receipts from market milk	875	1126	958	900	1176	1007
Receipts from butter	159	175	246	224	248	210
Receipts from poultry & eggs	136	132	167	277	214	185
Receipts from wool	88	109	119	162	235	143
Receipts from corn	53	29	50	57	71	52
Receipts from wheat	47	63	124	170	141	109
Receipts from hay	53	54	102	119	119	91
Receipts from fruit	23	74	96	26	102	64
Total expenses per farm:	1519	1350	1281	1526	1668	1469
Expenses for hired labor	308	248	336	245	217	271
Expenses for repairs	57	33	17	50	52	42
Expenses for feed purchased	189	173	120	193	164	168
Expenses for taxes and ins....	85	84	98	107	118	98
Fertilizer purchased	16	19	18	23	29	21
Unpaid family labor	226	162	182	216	207	199
Farm income	1086	1479	2190	2284	2674	1942
Interest on capital at 5 per cent ..	597	627	649	667	687	645
Labor income	489	852	1541	1617	1987	1297
Family income	1312	1641	2372	2500	2882	2141
Prices of farm products at farm ..						
Corn per bushel	.76	.90	.89	1.58	1.35	1.10
Oats per bushel	.46	.58	.51	.86	.93	.63
Wheat per bushel	.84	1.14	1.05	1.60	2.03	1.35
Hay per ton	14.00	16.00	19.00	13.10	25.00	17.00
Butter per pound	.30	.30	.30	.36	.42	.34
Wool per pound	.25	.29	.33	.70	.60	.43

*Average of 17 farms operated by owners.

Acreage and Production.—The 22 farms varied in size from 12 acres in a truck farm to 250 acres in a general farm. Seventeen of the farms were operated by owners and five by tenants. The farms might be classed as general, dairy, and truck farms. The average area of the 22 farms was 206 acres and varied but little during the five years. The principal crops grown were corn, wheat, oats, hay, and alfalfa. The acreage of alfalfa was very small but it is a promising crop for this region. The average acreage of crops varied not more than 9 acres during the five years. The acreage of corn and oats showed a small decrease during the five years; wheat showed a small increase; there was almost no change in the acreage of hay; alfalfa showed a large increase. The average yield of crops per acre was: corn for grain 43 bushels, corn for silage 10 tons, oats 33 bushels, wheat 15 bushels, hay 1.2 tons, alfalfa 2.7 tons, and potatoes 92 bushels.

The total number of farm animals kept on the farms varied but little during the five years. The number of dairy cows per farm decreased from 12 to 10; the number of sheep increased from 45 to 49; and the number of work horses decreased from 4.9 to 4. The remaining livestock showed almost no change during the five years. Although the number of head of livestock did not vary greatly, there were considerable changes on individual farms. The individual farmer changed his farm business to conform to his changing economic conditions.

Capital.—The total capital per farm of the 17 farms operated by owners showed a constant increase during the five years, increasing from \$14818 to \$16930. The average value per farm increased \$1047 while the average area per farm decreased one acre.

Receipts.—Receipts for the 22 farms averaged \$3411 per farm for five years, increasing from \$2605 in 1913 to \$4342 in 1917. The number of animal units per farm increased in the five years from 26 to 28, and the receipts per animal unit increased from \$78 to \$108. Receipts per animal unit of sheep increased from \$27 the first year to \$67 the last year. Livestock receipts included livestock and livestock products sold and the value of livestock at the end of the year less the value of livestock purchased and that on hand at the beginning of the year. The livestock receipts increased from \$1783 to \$2846 during the five years. With a small decrease in crop acreage, crop receipts increased from \$304 the first year to \$616 the fifth year. The increased receipts were due principally to higher prices received for products sold.

Expenses.—Farm expenses averaged \$1469 per farm and did not vary greatly from year to year. The expenses were lower in 1915 than in any other year. All items of expense were lower in 1917 than in 1913 except taxes, fertilizers, and seeds. The greatest reduction in expenses was on the amount paid for labor. Total expenses did not include interest on investment or wages for the operator.

Table 35.—Yearly Variations in Labor Incomes on Individual Farms in Brooke County.

Rank of Farm Based on Five- Year Average Labor Income	Five-Year Average Labor Income	1913		1914		1915		1916		1917	
		Labor Income	Rank	Labor Income	Rank	Labor Income	Rank	Labor Income	Rank	Labor Income	Rank
1*	\$3183	\$2773	1	\$4352	1	\$1676	6	\$2607	3	\$4507	1
2	2454	2200	2	2701	2	3938	1	1695	11	1737	12
3	2449	-56	18	1602	4	3936	2	3121	2	3642	3
4	2032	1374	3	999	7	1148	15	2262	5	4379	2
5	1892	91	14	1011	6	2388	5	2570	4	3410	5
6	1819	1085	4	2557	3	2418	4	1816	9	1219	15
7	1701	51	15	1226	5	1642	8	2149	7	3437	4
8*	1538	986	6	913	8	1402	11	1305	15	3086	6
9	1533	1054	5	347	14	1672	7	1745	10	2845	7
10	1420	485	10	562	12	1633	9	1826	8	2594	8
11	1337	-806	21	-117	20	3745	3	3572	1	290	20
12*	1268	805	8	590	11	1371	12	1102	16	2470	9
13	1195	384	11	605	10	1272	13	1335	14	2380	10
14	964	-69	19	807	9	1551	10	2233	6	298	19
15	813	44	16	98	18	1151	14	814	18	1956	11
16	776	597	9	346	15	742	18	1388	13	807	18
17	731	377	12	-372	21	736	19	1582	12	1334	14
18*	592	37	17	522	13	290	20	709	20	1404	13
19*	584	163	13	296	16	901	17	729	19	829	17
20	470	806	7	67	19	-346	21	619	21	1202	16
21	400	-269	20	116	17	1027	16	1041	17	86	21
22	-615	-1360	22	-483	22	-381	22	-657	22	-192	22

*Farms operated by tenants.

Farm Income.—The average farm income, i. e., the difference between receipts and expenses, increased in the five years from \$1086 to \$2674 per farm. The labor income increased from \$489 the first year to \$1987 the last year of the study. Family income before paying interest increased in the five years from \$1312 the first year to \$2882 the last year.

Prices of Farm Products.—Prices received for farm products increased materially between 1913 and 1917. A comparatively small portion of the crops was marketed directly; most of them were fed to livestock. In 1916 the price of corn was very high; however, only a small amount was sold and most of that was for seed. Receipts from livestock and its products were more important than receipts from crops. The wholesale price of milk increased from 18 cents per gallon in 1913 to 28 cents in 1917. The price of eggs increased from 26 cents to 45 cents per dozen in the same time.

Variation in Labor Incomes.—As numbered in the five-year average, farm No. 1 had the largest labor income in 1913, 1914, and 1917, but fell to sixth place in 1915 and third place in 1916. Farm No. 2 had second place in 1913 and 1914, and first place in 1915, but fell to eleventh place in 1916 and twelfth place in 1917. Of the ten farms with highest labor incomes all but two were operated as dairy farms during all or part of the five years; the two not dairy farms were specialized farms. Only two of the remaining farms were dairy farms. Farm number 14 was a general farm and made a fairly good labor income in 1915 and 1916. Farm number 13 was a general farm and made good labor incomes in 1915, 1916, and 1917. Farms No. 3, 5, and 7 showed marked improvement in labor income during the five years, ranging from fourteenth place or lower the first year to fifth place or higher the fifth year. Farm No. 11 raised from twenty-first place in 1913 to first place in 1916. Only one farmer made a minus labor income during each of the five years.

Preston County

Preston County is in the northeastern part of West Virginia. (See map page 4). Three mountain ranges cross the county conforming to the general direction of the Appalachian system. The mountains throw out broad, flat-topped ridges with surface rather uniform but badly dissected by erosion along the margin. The plains, narrow valleys, and gentle slopes afford good farming land while the abrupt slopes and steep mountain sides may be best utilized in growing timber. The altitude of the area covered by this survey ranges from 2,000 feet to 2,700 feet. The soil is largely DeKalb silty and stony loam and Upshur clay. The average length of the growing season is about 140 days.

Fig. 5.—Receipts, Expenses, and Labor Incomes on Twenty Preston County Farms.

The rainfall in inches in the growing season for Rowlesburg, Preston County, was as follows.¹

Year	April	May	June	July	Aug.	Sept.	Oct.	Annual Average
1913	2.50	8.23	4.63	7.02	2.22	2.84	6.20	59.20
1914	6.83	1.72	4.62	4.56	5.71	1.06	3.46	47.97
1915	1.98	6.85	3.43	5.32	6.34	4.32	4.18	52.64
1916	3.58	4.16	6.10	3.66	2.98	5.86	3.76	55.35
1917	2.92	7.28	2.95	5.22	2.80	4.57	4.02	49.37
Average of 33 years	4.01	4.95	4.96	4.96	3.80	3.03	2.99	47.19

The amount of rainfall was low in April 1915 and in May 1914. However, the total amount of rainfall in this section was considerably more than that in many other parts of the state. Very little

¹From Climatological Report, Weather Bureau, U. S. Dept. of Agriculture, Washington, D. C.

Fig. 6.—Distribution of Labor Incomes in Preston County Farms. Each Dot Represents the Labor Income of a Farm and Shows Its Relative Position in Comparison with Labor Incomes of Other Farms.

hard-surfaced road has been constructed in this section. A railroad crosses the middle of the county but much of the farming land was ten or more miles from a railroad. Almost all the farms were operated by their owners and might be classed as general or diversified farms.

Table 36.—Farm Business on Twenty Preston County Farms Over a Period of Five Years.

Factors Considered	1913	1914	1915	1916	1917	Average for the 5 years
Average acreage per farm	162	162	161	162	162	162
Average crop acreage per farm	56	51	51	53	56	53
Average pasture acreage per farm	67	73	73	70	68	70
Days of productive man labor	254	263	268	283	305	272
Days of productive horse labor	161	162	172	182	228	182
Number of productive animal units	15	16	16	17	17	16
Number of cows	6	6	6	6	6	6
Number of beef cattle	4	5	6	6	6	5
Number of ewes	8	8	7	6	7	7
Number of work horses	3.7	3.5	3.2	2.9	2.8	3.2
Total capital per farm	\$10413	\$10945	\$11058	\$11283	\$11546	\$11049
Total receipts per farm	1718	1857	1798	2265	2817	2091
Receipts from livestock	917	912	934	1155	1463	1076
Receipts from butter	162	180	177	189	200	183
Receipts from wool	11	13	15	13	28	16
Receipts from eggs	143	124	117	163	202	150
Receipts from buckwheat	46	44	51	68	143	70
Receipts from potatoes	72	77	81	88	85	81
Receipts from hay	71	75	47	54	98	69
Total expenses per farm	875	809	868	999	1136	937
Expenses for hired labor	124	95	105	132	138	119
Expenses for repairs	54	34	22	13	25	28
Expenses for feed purchased	16	22	25	34	69	33
Fertilizer purchased	14	27	31	36	46	35
Taxes and insurance	60	62	71	84	98	75
Unpaid family labor	147	141	152	195	144	156
Farm income	843	1048	930	1266	1681	1154
Interest on capital at 5 per cent....	521	547	554	564	577	533
Labor income	322	501	376	702	1104	601
Family income before paying int.	990	1189	1082	1461	1825	1309
Prices of farm products at the farm						
Corn per bushel	.80	1.12	.86	1.19	—	1.00
Wheat per bushel	1.00	1.23	—	1.78	2.10	1.40
Oats per bushel	.54	.67	.66	.76	1.04	.74
Buckwheat per bushel	.76	.75	.71	1.10	1.42	1.00
Potatoes per bushel	.75	.62	.73	1.46	1.18	.87
Hay per ton	13.50	18.10	16.20	16.50	24.50	17.50
Butter per pound	.25	.24	.26	.27	.32	.27
Wool per pound	.25	.27	.35	.38	.65	.38

Acreage and Production.—The average area of the 20 farms was 162 acres and did not vary greatly during the five years. Nearly one-fourth of the farm acreage was in woods and waste land. Fifty-three acres per farm were in crops and 70 acres in pasture. A little more than half of the land that could be cultivated was in crops.

The principal crops grown were corn, oats, buckwheat, hay, and potatoes. Neither the total acreage of crops nor the acreage of any particular one varied greatly during the five years. The area of corn for silage per farm increased from 1.2 acres in 1913 to 3.5 acres in 1917, and the area of potatoes increased from .8 acres in 1913 to 1.2 acres in 1917. There was no consistent variation in the yield per acre of the various crops.

The average amount of productive man labor on the 20 farms increased from 254 days in 1913 to 305 days in 1917, while the number of men remained practically the same. The amount of horse labor increased in about the same proportion as did man labor, yet the number of horses decreased each year. Crop acres per horse increased from 15 to 20 during the period. Productive labor included that expended on all crops and on all livestock except work horses.

The number of productive animal units, including all animals except work horses, increased from 15 in 1913 to 17 in 1917. The number of cows per farm did not change; the number of beef cattle showed a small increase; the number of sheep slightly decreased; and the number of work horses decreased slightly during each of the five years.

Capital.—The total amount of capital per farm increased from \$10,413 in 1913 to \$11,546 in 1917. The average amount of capital per farm increased \$1,133 while the area of the farms remained the same.

Receipts.—The total receipts per farm increased \$1,099 during the five years, or from \$1,718 to \$2,817, an increase of about 64 per cent.

The amount of receipts from each crop, each kind of livestock, and each livestock product increased during the five-year period, but not each individual year. Livestock receipts included the value of livestock products, livestock sold, and livestock on hand at the beginning of the year. The increased receipts were due primarily to constantly increasing prices received for products sold and to some little extent to increased production.

Expenses.—The average total farm expenses per farm were \$875 in 1913 and \$1,136 in 1917 or an increase of about 30 per cent. The cost of feed purchased and taxes increased noticeably during the five years and expenditures for repairs decreased. Total expenses as here used did not include interest on investment or wages for the operator.

Table 37.—Yearly Variations in Labor Incomes on Individual Farms in Preston County.

Rank of Farm Based on Five- Year Average Labor Income	Five-Year Average Labor Income	1913		1914		1915		1916		1917	
		Labor Income	Rank	Labor Income	Rank	Labor Income	Rank	Labor Income	Rank	Labor Income	Rank
1	\$1460	\$1168	2	\$1175	2	\$885	2	\$1634	1	\$2436	2
2	1427	1809	1	1467	1	724	4	1626	2	1508	4
3	1358	262	9	1083	3	469	8	1358	3	3620	1
4	806	656	4	721	5	279	13	1050	5	1321	5
5	790	814	3	67	19	694	6	1163	4	1211	8
6	752	318	7	987	4	799	3	580	12	1080	9
7	595	617	5	313	12	710	5	625	9	712	14
8	573	-204	19	277	14	1276	1	521	14	995	10
9	563	66	15	187	16	60	16	816	7	1687	3
10	563	144	12	517	8	361	10	1039	6	753	13
11	559	386	6	353	11	379	9	355	16	1322	6
12	445	-42	17	649	6	-270	20	593	11	1296	7
13	445	267	8	531	7	183	14	596	10	648	15
14	411	-194	18	272	15	585	7	524	13	867	11
15	360	196	11	414	10	284	12	700	8	204	19
16	310	114	13	106	17	170	15	555	15	604	16
17	232	239	10	46	20	339	11	100	18	435	18
18	185	90	14	443	9	-40	17	-153	20	585	17
19	147	-218	20	105	18	-212	19	287	17	775	12
20	42	-37	16	305	13	-146	18	71	19	16	20

Farm Income.—The average farm income increased from \$843 in 1913 to \$1,681 in 1917 or almost exactly doubled. The labor income increased from \$322 the first year to \$1,104 the fifth year of the study. The family income increased from \$990 to \$1,825 in the same time.

Prices of Farm Products.—The average prices received for farm products increased nearly 80 per cent during the period of the study, but the increase was not regular from year to year nor uniform for all products. The price of butter increased only 28 per cent while the price of wool increased 160 per cent.

Variations in Labor Incomes.—The labor incomes varied greatly from year to year. Farm No. 1, which had an average income of \$1,460 for the five years, had the highest labor income in 1916 and the second highest the remaining years. Farm No. 20 had the lowest average labor income, \$42. This farm, however, had the lowest labor income only one year and in 1914 seven farms had labor incomes lower than this farm. Farm No. 5 with an average labor income of \$790 was in nineteenth place in 1914 with a labor income of \$67. The amount of the labor incomes fluctuated considerably on practically every farm.

The results which farmers obtained from similar farms in the same region during a particular year, varied greatly. Some men had their farms better organized than others. The farmer who wisely selected his farm and adopted a type of farming suited to his environment and then used skill and judgment in managing made a fairly good labor income. About two farmers out of five saved enough to enable them to buy farms or pay off indebtedness on the farms they operated. However, the average of the five years from 1913 to 1917 included a period when prices of farm products were considerably higher than at most other times. Labor incomes were the highest of the five years in 1917, when about three-fifths of the farmers made fairly good labor incomes. If labor incomes were no larger than they were in 1913, about one-eighth of the farmers would have saved enough to pay for farms instead of about two-fifths when averaging the five years.

COST OF PRODUCING SOME COMMON FIELD CROPS

Data on the cost of labor used in producing certain field crops of West Virginia were collected in several sections of the state in 1913, and the results of this study were published as West Virginia Agricultural Experiment Station Bulletin 163.

During the summers of 1915 and 1923 records on the total cost of producing the common field crops for the previous years were collected by means of personal visits to farmers in Preston and Brooke counties. About twenty-five records were obtained for each crop in each of these two counties. In many cases the same farms were visited both years.

Preparing Land for Alfalfa

The farms from which the records were taken were typical of the regions, no attempt at selection being made. Both counties are located in rolling or hilly regions where the climate is well suited to general farming. Preston County is typical of the higher altitudes of the state, while Brooke County is typical of the lower sections. The values of crops as used in this study were based upon the selling prices in the communities. Corn, wheat, oats, potatoes, and hay are the principal field crops of West Virginia. In the higher altitudes, buckwheat is a common crop. Hay was grown in both counties but accurate cost data were not secured on this crop.

Methods of Farming Used

About one-half of the farmers used manure-spreaders. The breaking of the soil was done principally with two-horse walking plows. Only a few riding plows were used. Fitting was done with spike-tooth, spring-tooth, and disc harrows, and with drags and rollers. There was a great variation in the methods of fitting land. Corn was planted with check-row planters and with hand planters. Wheat, oats, and buckwheat were usually drilled; some was sown broadcast. Potatoes were generally planted by hand. Cultivating was done with either riding or walking cultivators which worked but one row at a time. Corn was cut by hand almost entirely; wheat, oats, and buckwheat were generally cut with

A Good Four-Cylinder Outfit for Farm Work

binders, cradles being used on some rough land. Potatoes were dug by hand and with plows; no potato diggers were used. Corn was husked from the shock by hand almost entirely. Wheat and oats were generally stacked before threshing, and buckwheat was usually threshed from the field. Most of the hauling of grain was done by wagons, but sleds were used in some cases on steep and rough land.

Table 38.—Acreage and Yields of Crops.

Brooke County:	Year	Crops				
		Corn	Wheat	Oats	Potatoes	Buckwheat
Acreage	1914	12.0	9.5	23.0	—	—
Yield per acre	1914	36.8	16.0	30.0	—	—
Acreage	1922	8.1	—	7.0	0.3	—
Yield per acre	1922	42.0	—	30.4	90.4	—
Preston County:						
Acreage	1914	6.8	—	10.8	1.8	5.6
Yield per acre	1914	53.8	—	37.0	172.5	29.4
Acreage	1922	5.1	3.0	8.6	0.6	6.1
Yield per acre	1922	44.0	15.8	38.0	162.7	25.8

Acreage and Yields

A comparison of the records of acreage and yield for the farms studied in each county with such records as are available for the entire county, indicates that the records included in this survey represent closely the conditions for the general areas from which they were collected.

Table 38 shows the size of fields and yields considered in figuring the following costs of production. The acreage and yields for the two years covered by this study are not comparable since not all the same farms were considered both years.

Man labor was valued at 25 cents per hour and horse labor at 15 cents per hour in both counties both years. Equipment labor was included with miscellaneous costs.

Cost of Growing Corn

The cost of growing corn was based on corn husked from shocks by hand.

Table 39.—Man and Horse Labor Used in Growing Corn.

Operations	Brooke County					Preston County				
	Man per Acre	Labor per Acre	Horse per Acre	Labor per Acre	Total Cost of Man and Horse Labor	Man per Acre	Labor per Acre	Horse per Acre	Labor per Acre	Total Cost of Man and Horse Labor
	No. 1914	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.		No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.	
Manuring	5.9	\$1.48	18.3	\$2.74	\$4.22	8.6	\$2.15	15.4	\$2.31	\$4.46
Breaking	7.2	1.80	14.9	2.24	4.04	7.6	1.90	16.1	2.41	4.31
Fitting	2.6	0.65	5.1	0.77	1.42	3.6	0.90	6.8	1.02	1.92
Planting	1.5	0.38	1.5	0.23	0.61	1.8	0.45	2.1	0.32	0.77
Cultivating ..	9.2	2.30	11.3	1.70	4.00	10.9	2.72	12.0	1.80	4.52
Hoeing	4.8	1.20	0.0	0.00	1.20	14.6	3.65	0.0	0.00	3.65
Cutting	7.0	1.75	0.0	0.00	1.75	10.6	2.65	0.0	0.00	2.65
Husking	15.2	3.80	0.0	0.00	3.80	15.5	3.87	0.0	0.00	3.87
Hauling	4.7	1.18	7.4	1.11	2.29	5.7	1.42	7.5	1.12	2.53
Total	58.1	14.54	58.5	8.79	23.33	78.9	19.72	59.9	8.98	28.70
1922										
Manuring	6.0	1.50	9.0	1.35	2.85	6.9	1.72	10.8	1.62	3.34
Breaking	6.6	1.65	13.3	2.00	3.65	6.8	1.70	13.6	2.04	3.74
Fitting	3.7	0.92	7.3	1.10	2.02	4.7	1.18	10.2	1.53	2.71
Planting	3.6	0.90	3.5	0.53	1.43	1.8	0.45	2.7	0.41	0.86
Cultivating ..	10.2	2.55	13.7	2.06	4.61	8.9	2.22	10.3	1.55	3.77
Hoeing	9.3	2.32	0.0	0.00	2.32	5.3	1.33	0.0	0.00	1.33
Cutting	9.1	2.28	0.0	0.00	2.28	10.4	2.60	1.4	0.21	2.81
Husking	13.4	3.35	0.0	0.00	3.35	17.2	4.30	0.8	0.12	4.42
Hauling	5.0	1.25	7.0	1.05	2.30	5.5	1.38	7.3	1.10	2.48
Total	66.9	\$16.72	52.0	\$8.09	\$24.81	67.5	\$16.88	57.1	8.58	\$25.46

Table 39 shows that the number of man hours expended in growing an acre of corn varied from 58.2 to 78.9. The average num

ber of man hours expended in growing an acre of corn in 1914 was 68.5 and in 1922 it was 59.4. There was a greater variation in the number of man hours used in hoeing than in any other operation. The number of horse hours per acre varied from 52 to 59.9; the average time in 1914 being 68.6 hours, and 59.8 hours in 1922. The labor cost varied with the number of hours of labor. Man labor cost from \$14.54 to \$19.72 per acre, and horse labor cost from \$8.09 to \$8.89 per acre. In 1914 the average cost of man and horse labor per acre was \$26.02 and in 1922 it was \$25.14.

The cost of growing corn was divided into cost of man and horse labor, land rental, fertilizer and manure, seed, and miscellaneous costs. Use of machinery, use of buildings, interest, taxes, twine, etc. were grouped together under miscellaneous costs.

Table 40.—Cost of Growing Corn.

Items of Cost	Cost per Acre	
	Brooke County	Preston County
1914		
Man and horse labor	\$23.33	\$28.70
Land rental	4.50	2.70
Fertilizer and manure	7.50	11.33
Seed	0.19	0.20
Miscellaneous costs	2.75	1.00
Total	38.27	43.93
1922		
Man and horse labor	24.81	25.46
Land rental	4.64	3.59
Fertilizer and manure	6.84	10.17
Seed	0.38	0.18
Miscellaneous costs	2.75	2.84
Total	\$39.42	\$42.24

Table 40 shows that the cost of growing an acre of corn varied from \$38.27 in Brooke County in 1914 to \$43.93 in Preston County in the same year. The average cost per acre in 1914 was \$41.10 and in 1922 it was \$40.83. Preston County farmers used more hours of labor than Brooke County farmers. The soil in Brooke County was somewhat easier to work than that in Preston County; therefore, more and larger machines were used in Brooke County. Land was more valuable in Brooke County than in Preston. In Preston County stable manure was commonly applied to corn while some commercial fertilizer also was used. In Brooke County very little stable manure was used on corn; the principal part of the cost of fertilizer and manure was for commercial fertilizer. In Brooke County a good quality of seed corn was coming into use as was indicated by the cost of seed.

A few farmers made very good returns from growing corn, but on almost two-thirds of the farms the value of the crop was not equal to the cost of growing it. Returns may have been somewhat different when corn was put into a silo, but no data were collected on corn for silage.

Table 41.—Returns from Growing Corn.

	Value and Returns per Acre	
	Brooke County	Preston County
1914		
Farm value of grain	\$27.96	\$39.27
Farm value of stover	6.00	5.00
Total farm value	33.96	44.27
Cost of production	38.27	43.93
Net returns per acre	-4.31	0.34
Net returns per man day	-.74	0.04
1922		
Farm value of grain	37.80	38.37
Farm value of stover	6.25	5.00
Total farm value	44.05	43.37
Cost of production	39.42	42.24
Net returns per acre	4.63	1.13
Net returns per man day	0.69	0.17

Table 41 shows that the value of grain and stover ranged from \$33.96 to \$44.27, a difference of \$10.32 per acre. The yields, however, varied 17 bushels per acre. The average value of the corn crop per acre in 1914 was \$39.11 and in 1922 it was \$43.71. The cost of producing corn was more than the value of the crop in 1914 in Brooke County by \$4.63 per acre or 74 cents per man day. In Preston County in 1914 and in both counties in 1922 the value of the crop slightly exceeded the cost of production. The man who produced corn made, on the average, all expenses, including farm wages for himself, from his crop and had a very small profit in addition.

While corn is a crop on which large profits are not usually made, it fits into the scheme of farming in West Virginia so well that the farmers continue to grow it. The grain is needed for feeding livestock; labor on the crop does not seriously compete with that needed for other crops; and it is the cultivated crop in the common crop rotation.

Cost of Growing Oats

The cost of growing oats was based on oats threshed from stacks. In some sections where oats was grown in small quantities it was fed in the sheaf or as oats hay.

Table 42.—Man and Horse Labor Used in Growing Oats.

Operations	Brooke County					Preston County				
	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor
	No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.		No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.	
1914										
Breaking	5.5	\$1.87	11.1	\$1.67	\$3.54	7.4	\$1.85	15.2	\$2.28	\$4.13
Fitting	2.1	0.53	4.1	0.62	1.15	4.1	1.03	8.1	1.22	2.25
Seeding	1.9	0.48	3.1	0.47	0.95	1.8	0.45	2.8	0.42	0.87
Cutting and shocking	1.9	0.48	3.8	0.57	1.05	4.7	1.17	3.4	0.51	1.68
Hauling and stacking ..	3.1	0.78	3.1	0.47	1.25	3.6	0.90	3.2	0.48	1.38
Threshing ..	3.8	0.95	0.8	0.12	1.07	4.7	1.17	0.8	0.12	1.29
Total	18.3	5.09	26.0	3.92	9.01	26.3	6.57	33.5	5.03	11.60
1922										
Breaking	6.4	1.60	12.8	1.92	3.52	6.8	1.70	14.0	2.10	3.80
Fitting	3.7	0.93	7.2	1.08	2.01	3.6	0.90	7.3	1.10	2.00
Seeding	2.0	0.50	2.5	0.38	0.88	1.4	0.35	2.7	0.41	0.76
Cutting and shocking ..	3.6	0.90	3.6	0.54	1.44	4.8	1.20	3.9	0.59	1.79
Hauling and stacking ..	3.6	0.90	3.4	0.51	1.41	3.9	0.98	3.5	0.53	1.51
Threshing ..	4.2	1.05	0.6	0.09	1.14	5.0	1.25	0.5	0.08	1.33
Total	23.5	\$5.88	30.1	\$4.52	\$10.40	25.5	\$6.38	31.9	\$4.81	\$11.19

Table 42 shows that the amount of man labor used in growing an acre of oats varied from 18.3 hours in Brooke County in 1914 to 26.3 hours in Preston County the same year. The average time in 1914 was 22 hours per acre and in 1922 it was 24.1 hours. In Brooke County more hours of man labor were expended on each operation in growing oats in 1922 than in 1914, apparently due largely to the labor of older men which became necessary because the younger men has been attracted by high wages to nearby industrial work. Rougher and steeper ground was used for growing oats in Preston County than in Brooke, and the cradle was in common use on the rougher ground. The amount of horse labor varied with the amount of man labor. In 1914 the average number of hours of horse labor per acre was \$5.83 in 1914 and \$6.13 in 1922; and of horse labor \$4.48 in 1914 and \$4.66 in 1922. The average cost of man and horse labor was \$10.30 per acre in 1914 and \$13.36 in 1922.

Table 43.—Cost of Growing Oats.

Items of Cost	Cost per Acre	
	Brooke County	Preston County
1914		
Man and horse labor	\$ 9.01	\$11.60
Land rental	4.50	2.70
Fertilizer and manure	1.75	1.60
Seed	1.72	1.49
Threshing	0.00	0.92
Miscellaneous costs	1.70	1.00
Total	18.68	19.31
1922		
Man and horse labor	10.40	11.19
Land rental	4.64	3.59
Fertilizer and manure	0.48	1.93
Seed	1.80	1.60
Threshing	1.77	1.53
Miscellaneous costs	1.50	1.65
Total	\$20.59	\$21.49

Table 43 shows that the cost of growing oats did not vary greatly in the two counties. In 1914 the average cost per acre was \$19.00 and in 1922 it was \$21.04. The average yield per acre was 7.3 bushels more in Preston County than in Brooke. Oats was grown on higher priced land in Brooke County than in Preston. In 1914 in Brooke County the prevailing custom was to feed the oats from the sheaf rather than to thresh it. Not all the oats was threshed in 1922. Miscellaneous costs included treating seed, twine, taxes, interest, use of machinery, use of buildings, etc.

Table 44.—Returns from Growing Oats.

	Value and Returns per Acre	
	Brooke County	Preston County
1914		
Farm value of grain	\$16.92	\$21.09
Farm value of straw	8.00	5.00
Total farm value of crop	24.92	26.09
Cost of production	18.68	19.31
Net returns per acre	6.24	6.78
Net returns per man day	3.41	2.58
1922		
Farm value of grain	20.81	22.04
Farm value of straw	7.50	6.00
Total farm value of crop	28.31	28.04
Cost of production	20.59	21.49
Net returns per acre	7.72	6.55
Net returns per man day	\$ 3.29	\$ 2.57

Table 44 shows that the value of the oats crop varied from \$24.92 to \$28.31 per acre. The net returns per acre averaged \$6.51 in 1914 and \$7.14 in 1922. The farmers made farm wages for the time used in growing oats and an average of nearly \$3.00 per day additional. In many sections of West Virginia oats is one of the best crops with which to get a stand of grass, and for that reason it is often grown even if not very profitable otherwise.

Cost of Growing Wheat

So few farmers were growing wheat in Preston County in 1914 that data on cost of production could not be collected without an undue amount of travel and the same condition prevailed in Brooke County in 1922, so that figures on the cost of production of wheat for but one year in each county are given.

Table 45.—Man and Horse Labor Used in Growing Wheat.

Operations	Brooke County (1914)					Preston County (1922)				
	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor
	No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.		No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.	
Manuring and liming	4.0	\$1.00	8.0	\$1.20	\$2.20	2.5	\$0.62	3.1	\$0.47	\$1.09
Breaking	6.3	1.57	12.3	1.84	3.41	7.1	1.76	14.3	2.15	3.91
Fitting	2.4	0.60	4.8	0.72	1.32	3.9	0.98	7.8	1.17	2.15
Seeding	1.5	0.37	2.7	0.40	0.77	1.5	0.36	2.7	0.41	0.79
Cutting and shocking	1.8	0.45	3.9	0.59	1.04	4.9	1.23	3.9	0.59	1.82
Hauling and stacking	3.3	0.83	3.0	0.45	1.28	3.9	0.98	3.9	0.59	1.57
Threshing	4.3	1.07	0.9	0.13	1.20	6.4	1.60	0.5	.08	1.68
Total	23.6	\$5.89	35.6	\$5.33	\$11.22	30.2	\$7.55	36.2	\$5.46	\$13.10

Table 45 shows that in Brooke County in 1914, 23.6 hours of man labor at a cost of \$5.89 and 35.6 hours of horse labor at a cost of \$5.33 were expended in growing an acres of wheat. In Preston County in 1922, 30.2 hours of man labor at a cost of \$7.55 and 36.2 hours of horse labor at a cost of \$5.46 were expended in growing an acre of wheat. All the operations except manuring and liming cost more in Preston County than in Brooke. The labor of manuring and liming was considered together. Liming, however, was generally done while fitting, and manuring was done before breaking.

A Typical Threshing Outfit Used on a Large Farm

Table 46.—Cost of Growing Wheat.

Items of Cost	Costs per Acre	
	Brooke County (1914)	Preston County (1922)
Man and horse labor -----	\$11.22	\$13.01
Land rental -----	4.50	3.59
Fertilizer and manure -----	2.15	4.16
Seed -----	1.83	2.24
Threshing -----	0.77	0.88
Miscellaneous costs -----	1.80	1.65
Total -----	\$22.27	\$25.63

Table 46 shows the total cost of growing an acre of wheat in Brooke County in 1914 to be \$22.27, and in Preston County in 1922 in was \$25.63.

Table 47.—Returns from Growing Wheat.

	Value and Returns per Acre	
	Brooke County (1914)	Preston County (1922)
Farm value of grain -----	\$14.36	\$19.75
Farm value of straw -----	6.00	5.00
Total farm value of grain and straw -----	20.36	24.75
Cost of production -----	22.27	25.63
Returns per acre -----	1.91	0.88
Returns per man day -----	0.81	0.29

Table 47 shows that in Brooke County in 1914 the total value of the wheat crop was \$20.36 per acre, and the cost of production was \$22.27, or \$1.91 per acre or 81 cents per man day less than cost of production. In Preston County in 1922 the total value of the crop of wheat was \$24.75 per acre, and the cost of production was \$25.63, or 88 cents per acre or 29 cents per man day less than the cost of production.

Wheat is not generally considered a profitable crop in West Virginia except on farms particularly adapted to growing it. For lack of a better crop to follow corn, wheat is still commonly grown and generally follows corn in the crop rotation.

Cost of Growing Buckwheat

Buckwheat is a common field crop in the high altitudes. About one-fourth of the buckwheat of the state is grown in Preston County. Brooke is one of the four counties of the state in which no buckwheat was grown in 1919.

Table 48.—Man and Horse Labor Used in Growing Buckwheat.

Operations	Preston County				
	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor
	Number of Hours	Cost at 25c per Hour	Number of Hours	Cost at 15c per Hour	
1914					
Manuring -----	1.7	0.18	0.9	0.14	0.32
Breaking -----	8.4	\$2.10	16.2	\$2.43	\$ 4.53
Fitting -----	3.8	0.95	7.6	1.14	2.09
Seeding -----	1.6	0.40	2.8	0.42	0.82
Cutting and bunching -----	7.2	1.80	4.0	0.60	2.40
Hauling and threshing -----	8.4	2.10	3.9	0.58	2.68
Total -----	29.4	7.35	34.5	5.17	12.52
1922					
Breaking -----	7.3	1.83	14.5	2.18	4.01
Fitting -----	3.7	0.92	7.3	1.10	2.02
Seeding -----	1.8	0.45	2.9	5.44	0.89
Cutting and bunching -----	4.8	1.20	3.5	0.53	1.73
Hauling and threshing -----	8.4	2.10	4.6	0.69	2.69
Total -----	26.7	\$6.68	33.7	\$5.08	\$11.76

Table 48 shows that in 1914, 29.4 hours of man labor at a cost of \$7.35 and 34.5 hours of horse labor at a cost of \$5.17, amounting to a total cost of \$12.52 for man and horse labor, were used in growing an acre of buckwheat. In 1922, 26.7 hours of man labor at a cost of \$6.68 and 33.7 hours of horse labor at a cost of \$5.08, amounting to

a total cost of \$11.76 for man and horse labor used in growing an acre of buckwheat. The number of hours and the cost of labor were slightly less in 1912 than in 1914.

Table 49.—Cost of Growing Buckwheat in Preston County.

Items of Cost	Cost per Acre	
	1914	1922
Man and horse labor	\$12.52	\$11.76
Land rental	2.70	3.59
Fertilizer and manure	1.50	2.28
Seed	0.91	1.45
Threshing	0.92	1.31
Miscellaneous costs	1.00	1.00
Total	\$19.55	\$21.39

From table 49 it will be seen that in 1914 the cost of growing an acre of buckwheat was \$19.55 and in 1922 it was \$21.39, an increase of \$1.84. All the items of expense were a little greater in 1922 than in 1914 except miscellaneous costs.

Table 50.—Returns from Growing Buckwheat in Preston County.

	Value and Returns per Acre	
	1914	1922
Farm value of grain	\$18.72	\$25.80
Farm value of straw	1.25	1.25
Total value of crop per acre	19.97	27.05
Cost of production	12.52	21.39
Net returns per acre	7.45	5.66
Net returns per man day	\$ 2.53	\$ 2.12

Table 50 shows that the farm value of the crop of buckwheat was \$19.97 in 1914 and \$27.05 in 1922. The yield of buckwheat was 3.6 bushels greater in 1914 than in 1922. The net returns were \$7.45 per acre in 1914 and \$5.66 in 1922. In 1914 the farmer on the average, made expenses, including wages and \$2.53 additional per day in growing buckwheat; in 1922 he made a little less than in 1914.

Cost of Growing Potatoes

Potatoes are a common crop throughout West Virginia, but there is no particularly large potato growing section. More than 80 per cent of the farmers grow potatoes, usually on a comparatively small acreage. The average yield for the state is a little less than

100 bushels per acre, or about the same as the average of the United States.

Table 51.—Man and Horse Labor Used in Growing Potatoes.

Operations	Brooke County					Preston County				
	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor	Man Labor per Acre		Horse Labor per Acre		Total Cost of Man and Horse Labor
	No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.		No. of Hrs.	Cost at 25c per Hr.	No. of Hrs.	Cost at 15c per Hr.	
1914										
Manuring		No data				14.0	\$3.50	23.8	\$3.57	\$7.07
Breaking		No data								
and planting		No data				33.7	8.42	25.8	3.87	12.30
Cultivating		No data				16.0	4.00	18.4	2.76	6.76
Digging		No data								
and hauling		No data				46.6	11.65	24.5	5.18	16.82
Total						110.3	27.57	102.5	15.38	42.95
1922										
Manuring	3.9	\$0.98	7.0	\$1.05	2.03	10.7	2.67	16.8	2.52	5.19
Breaking	6.6	1.65	13.3	2.00	3.65	31.1	7.78	27.5	4.13	11.91
Fitting	4.2	1.05	8.5	1.28	2.33	0.0	0.00	0.0	0.00	0.00
Planting	37.0	9.25	23.5	3.53	12.78	0.0	0.00	0.0	0.00	0.00
Cultivating	21.7	5.42	12.8	1.92	7.34	15.4	3.85	17.1	2.57	6.42
Digging										
and hauling	57.0	14.25	29.5	4.43	18.68	58.7	14.68	43.0	6.45	21.23
Total	130.4	\$32.60	94.6	\$14.21	\$46.81	115.9	\$28.98	104.4	\$15.67	\$44.65

The acreage of potatoes in Brooke County in 1914 was so small that no data on this crop were collected. In 1922 the average sized field on which potatoes were grown was less than one-half acre. Reduced to the acreage basis, as shown in Table 51, 130.4 man hours at a cost of \$32.60 and 96.4 horse hours at a cost of 14.21, or a total cost for man and horse labor of \$46.81 per acre, were used. In Preston County in 1914 the fields on which potatoes were grown averaged 1.8 acres. The labor used was 110.3 man hours at a cost of \$27.58, and 102.5 horse hours at a cost of \$15.38, or a total cost of \$42.95 per acre for man and horse labor. In 1922 in Preston County the costs were slightly higher than in 1914. In 1922 the total cost of man and horse labor was \$44.65, or \$1.70 more per acre than in 1914. In Preston County it is a common practice to plant potatoes in sod ground. As the sod is turned the potatoes are planted in the furrow and then covered with the breaking plow when the next furrow is turned. The potatoes are thus planted in every third or fourth furrow. Farmers claim better yields and a saving of labor by using this method.

Table 52.—Cost of Growing Potatoes.

Items of Cost 1914	Costs per Acre	
	Brooke County	Preston County
Man and horse labor -----	No data	\$42.95
Land rental -----	No data	5.00
Manure -----	No data	6.42
Fertilizer -----	No data	14.40
Seed -----	No data	9.46
Miscellaneous costs -----	No data	0.80
Total -----		\$79.03
1922		
Man and horse labor -----	\$46.81	\$44.65
Land rental -----	7.00	5.00
Fertilizer -----	1.03	0.70
Manure -----	4.06	13.02
Seed -----	22.74	13.67
Miscellaneous costs -----	0.60	0.80
Total -----	\$82.24	\$77.84

Table 52 shows that the cost of growing potatoes did not vary greatly in the two counties nor in the two years. In Preston County in 1914 the cost of growing an acre of potatoes was \$79.03; in 1922 it was \$77.84. In Brooke County in 1922 the cost was \$82.24 per acre. In Preston County from six to fifteen tons of stable manure per acre were commonly used on potatoes. In Brooke County the amount was very much less. In Preston County seed potatoes, as a rule, were selected from the farmer's own crop and in this study are valued at market price which was approximately \$1.00 per bushel. In Brooke County seed potatoes were either purchased or were selected from home-grown potatoes and were valued at about \$2.00 per bushel.

Table 53.—Returns From Growing Potatoes.

1914	Value and Returns per Acre	
	Brooke County	Preston County
Farm value of potatoes -----	No data	\$136.32
Cost of production -----	No data	79.03
Net returns per acre -----	No data	57.29
Net returns per man day ----	No data	5.19
1922		
Farm value of potatoes -----	\$113.00	\$144.80
Cost of production -----	82.24	77.84
Net returns per acre -----	30.76	66.96
Net returns per man day ----	\$ 2.36	\$ 5.78

In Preston County in 1914 potatoes yielded 172.5 bushels per acre which were valued at \$136.32, and the cost of production was \$79.03 thus leaving a net return of \$57.29 per acre or \$5.19 per man day. In 1922 in Brooke County potatoes yielded 90.4 bushels per acre worth \$113.00. The cost of production was \$82.24 per acre leaving a net return of \$30.76 per acre or \$2.36 per man day. In Preston County in 1922 the yield of potatoes was 162.7 bushels per acre valued at \$144.80. The cost of production was \$77.84 leaving a net return per acre of \$66.96 or \$5.78 per man day. Several sections of West Virginia are very well adapted to the production of potatoes. Lack of a satisfactory method of marketing the crop has been the chief reason for not growing more potatoes.

DISTRIBUTION OF MAN AND HORSE LABOR IN PRESTON COUNTY

With the normal number of available days of labor on field crops the average Preston County family, with perhaps a few day's help, mostly at harvest time, can grow, and properly care for, fifty or more acres of crops in addition to doing the other farm work. When this area of crops is grown it is necessary that crops be chosen the labor on which does not conflict seriously at any particular time. Considering the crops grown in the region and the amount of labor required on each, the average farm family could grow about 8 acres of corn, 11 acres of oats, 8 acres of buckwheat, 3 acres of potatoes, and 25 acres of hay. The chart on page 69 shows the distribution of man and horse labor on these crops. Optional labor is that which may or may not be done at fixed times, such as plowing, husking, and threshing. There was no

Fig. 7.—Distribution of Man Labor and Horse Labor on the Crops of a Common Family Farm in Preston County.

labor on crops during December, January, and February. The days which are not too stormy during these months could be utilized by many farmers in clearing land, building fences, cutting poles, mine props, etc. There was a large amount of optional labor on crops in April. This was largely plowing and might have been shifted to February and March or even to the preceeding fall, on fields that did not wash easily, by carefully planning the farm work so as to utilize all the days available for field work in these months.

SOME IMPORTANT FACTORS IN FARM ORGANIZATION

The fourteenth Federal census reported nearly one-eighth of the farms of West Virginia with fewer than 20 acres, almost one-third of the farms contained fewer than 50 acres, and nearly two-thirds contained fewer than 100 acres. The same report showed 57.7 per cent of the farm land of the state as improved. Approximately three-fourths of the farms of the state are general or diversified farms, i. e., they do not derive one-half or more of their incomes from any one source. From these facts it seems obvious that the average farm in West Virginia is too small for profitable farming operations as general farms.

There has been during the last decade, a tendency toward increasing the size of the farms which indicates a re-adjustment. The 544 farms considered in this study seem to have been fairly representative of the farming in West Virginia.

Various minerals, coal, oil, gas, limestone, marl, clay, iron ore, and building stone, are found in large areas of the state. In addition to the income from the farms a large percentage of the farmers have had an income from minerals, and not infrequently the income from minerals has been many times that from the farms. Public works have been so widely distributed over the state that many farmers have had an opportunity to live on the farm and work at industrial work for one or more months during the year. Oil companies have been paying many farmers a royalty for twenty years or more on land remote from their present operations. The income from such farms may thus not be the total income of the farmers. The incomes from minerals have not been considered in this study.

From Table 54 it may be seen that the crop area was only about one-half as great as the tillable area on practically all the groups of farms. The farms were generally keeping a sufficient number of animals for the area of crops. The pasture area of the general farms was not well stocked or the pasture was of poor quality. The improvement of pasture is one of the most important problems of the West Virginia farmer at this time.

Table 54.—Relative Importance of Some Factors in Farm Organization.

Factors and Farm Organization	General Farms Operated by Owners			General Farms Operated by Tenants		Livestock Farms Operated by Owners			Dairy Farms Operated by Owners			Truck Farms Operated by Owners
	Small Farms	Medium-Sized Farms	Large Farms	Medium-Sized Farms	Large Farms	Small Farms	Medium-Sized Farms	Large Farms	Small Farms	Medium-Sized Farms	Large Farms	
Number of farms	36	92	174	11	20	91	58	19	17	17	17	9
Acres tillable	20.4	45.0	89.6	48.7	118.9	94.6	203.7	373.4	93.4	118.6	118.6	57.3
Acres in crops	10.3	22.5	48.7	23.5	70.4	45.9	86.0	158.0	54.2	58.6	58.6	31.8
Acres in pasture	36.2	48.9	83.6	44.5	91.0	119.2	249.3	415.5	61.6	77.3	77.3	41.3
Number of animal units	5.7	9.2	19.7	8.2	16.6	30.7	68.8	177.6	18.4	26.5	26.5	6.3
Man equivalent	1.1	1.2	1.4	1.1	1.4	1.4	1.9	2.3	1.5	1.9	1.9	1.4
Man work units on crops	26.2	57.8	126.9	75.2	194.7	106.5	212.8	383.1	125.1	149.9	149.9	248.0
Man work units on livestock except work animals	40.1	52.8	114.8	48.1	81.9	139.9	273.2	542.0	151.4	251.4	251.4	63.4
Horse work units on crops	17.4	48.1	128.1	75.8	171.3	100.6	217.1	325.1	128.8	146.7	146.7	131.5
Horse work units on livestock except work animals	5.4	7.6	13.9	7.5	10.7	15.6	25.7	47.0	18.3	31.7	31.7	5.9
Value of machinery per crop acre	\$5.92	\$6.44	\$5.40	\$4.98	\$3.30	\$5.93	\$5.26	\$4.23	\$6.39	\$7.06	\$7.06	\$6.05
Total capital	2790	5139	10607	0.00	0.00	13519	30980	53288	10225	13500	13500	6186
Total cash receipts	347	385	922	377	1111	1950	3546	9390	1219	2051	2051	1294
Total cash expense except interest	136	238	612	222	522	1226	2280	7284	560	1290	1290	496
Net cash income before paying interest	211	147	311	155	589	723	1266	2106	654	760	760	797
Value of unpaid family labor except that of operator	52	81	117	39	181	113	143	206	164	178	178	116
Interest on capital at 5%	140	257	530	34	71	676	1549	2664	511	675	675	309
Labor income	15	-133	-91	142	380	46	-47	1388	102	-78	-78	449
Family income before paying interest	206	205	556	215	632	835	1646	4258	755	933	933	874

On Large Farms the Tractor Adds to the Efficiency of the Use of Labor

The livestock farmers bought and sold cattle and sheep from time to time so that it was difficult to determine the number of animal units kept on the livestock farms. The livestock farms were generally fairly well stocked.

The greatest general defect in the organization of these farms, except that the unit for operation was too small, was either inefficient utilization of labor or lack of industry. Man equivalent is the average number of men working on the farm throughout the year. The small general farms operated by owners used but 62 days of man labor on crops and productive livestock on the farm and not more than a possible maximum of 40 days off the farm. These farmers worked at productive work considerably less than half the number of working days in the year.

Productive work means that employed on crops, and all livestock except work horses. The farmers in all the groups may have had considerable additional work building fences, repairing, cutting filth from pastures, etc. Many farmers may have worked practically all the year but the work has been so organized that more labor was necessary to perform it than the normal amount should have been. The number of man days is based on standard amounts of work required to care for livestock and grow crops. The large general farms operated by owners utilized their labor better than the farmers in either of the other groups of general farms. On the large general farms, practically 100 days per year were used at unproductive work or not used at all. The same condition prevailed on all the groups of farms except the large livestock farms, which utilized practically all the labor on the farms at productive work, had a large farm business, and in turn made by far the highest labor income of the

various groups. Horses worked at productive work from about 16 to 50 days per year per farm on the different groups. It was difficult to provide work for horses throughout the year, but in many cases a smaller number might have been kept where there was not sufficient work for all.

The amount of capital invested in the farm business varied from \$2790 on the small general farms operated by owners to \$53,288 on the large livestock farms.

The net cash income before paying interest varied from \$147 on the medium sized general farms operated by owners, to \$2,106 on the large livestock farms. The general farms had smaller net cash income than any of the other types of farms.

Labor incomes were fairly high on the large livestock farms only, the average being \$1388 per farm. The next highest average labor income per farm, \$499, was on the truck farms. Four groups of farms made minus labor incomes; the average farmer of these groups received nothing for his own labor and less than 5 per cent interest on his investment. The family incomes, or money available for the family living and paying interest, did not exceed \$471.08 per farm on the general farms, and it was not less than \$754.53 per farm on any other type.

The outstanding improvements needed on a very large majority of the farms studied, were a larger farm business and a better utilization of labor. This does not necessarily mean more acres in the farm nor does it mean harder work for the operator. It is possible for the present farm to be so changed as to provide a bigger business on the same, or even less, acreage by more intensive culture; also more careful management may enable the farmer better to utilize both man and horse labor. Nor is it necessarily true that all persons now in the farming business need to increase the size of their operations. Perhaps it may be advisable for fewer farmers to engage in the production of the needed farm commodities, and thus release a number of people for industrial and other needed types of work.

Many improvements can be made in the organization of the farms studied but sizes of business and utilization of labor are easily first. Farm earnings may be increased in either of two ways, by lowering costs of production or by securing higher prices for commodities sold. Perhaps lowering costs of production is as important on most farms as higher prices for farm products. The cost of production figures presented may serve as a basis for comparing such costs. Higher prices for farm products compared to those of other commodities would have increased returns to the farmer. In 1913 when prices were low, eight of the farmers from whom records were taken for five consecutive years, made labor incomes of more than \$1,000; while in 1916 when prices were high, twenty-three of the same farmers made labor incomes of more than \$1,000. In

A Cheap Method of Clearing Land

1917 the number receiving labor incomes of more than \$1,000 increased to twenty-five. However, it should be borne in mind that the purchasing power of the larger labor income may not have been any greater than the purchasing power of the income in 1913.

Only thirty farmers out of the 544 made labor incomes of more than \$1,000 each in 1913. Incomes from minerals have, in many cases, resulted in the farms becoming merely a place to live rather than a place to conduct a business. Since many of the younger people have left the farms, the older people are in many cases satisfied with light work and an income sufficient to meet their expenses. Farming is yet hopeful for one who is able and willing to provide a large farm business and organize it properly.

Farming in West Virginia has become essentially livestock production and will likely remain such. Fortunately bluegrass thrives in large areas and affords excellent pasture for livestock. Much of the surface is too steep to cultivate but will produce excellent pasture for cattle and sheep. There is enough level and rolling land among the steeper areas on which winter feed can be produced for the livestock which can graze the hillsides seven months of the year. In this way the hill areas can best be utilized. But there is a considerable area in the state which is too steep for profitable grazing purposes; such lands will produce very good timber and will produce a greater return from timber than from any other product. Since more livestock can be pastured on the grazing areas during the grazing season than can be wintered on the feed produced on the arable land, the problem of growing as much winter feed as possible on the arable land is one of the farmer's biggest problems. The most efficient production of winter crops on the limited level land has not yet been worked out. Both new crops and new methods of growing them are being tried by many farmers.

Forest improvement and reforestation have been given almost no attention in West Virginia. There are large areas of cut-over land in the state where practically all timber large enough for mine props has been removed. Much of the small growth has been broken down in cutting the large timber and forest fires have completed the destruction. West Virginia is just beginning to realize the need for reforestation, systematic cutting of timber, and less destruction of the small timber when the larger timber is being removed. One or more forest nurseries will soon be established and systematic cutting of timber will soon become an economic necessity. Large areas of land too steep for pasture, even though they have once been cleared, will probably be reforested.

The natural resources of the state have brought about industrial work well distributed over almost the whole state. The high wages paid for industrial work have lured many people to the industrial centers. This movement of the population away from the farms will continue for at least some years. Organized labor has succeeded in obtaining high wages for itself, and prices of farm products at the farms have become ridiculously low. It will take several years to effect an equitable adjustment between wages of industrial labor and the prices of farm products. While the adjustment is going on more people will be leaving the farms.

There are a few sections of the state where specialized crops will continue to be grown; apples and peaches in the Eastern Panhandle, truck crops in the Ohio Valley, and tobacco in the southwestern parts of the state. These specialized industries when well organized, will produce a fairly good living but much more than a comfortable living cannot be expected for at least the next several years. More specialized farming—the growing of truck crops in particular—will develop near several of the larger cities. These specialized types of farming will continue to offer better returns than general farming.

West Virginia cannot hope to compete with the Middle West in the production of the common field crops. But the state is well adapted to a type of livestock production which can be practiced in but few other places. Enough feed can be grown on the level and rolling land to provide winter rations for livestock which can convert the hillside pastures into beef and mutton. Since rather low-priced pasture lands abound, there is an exceptionally good opportunity for this type of farming. With a large and well managed business and prices of farm products somewhat near the level of prices of other commodities, it should be sufficiently remunerative to attract and hold the best people on the farms.