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FARM MANAGEMENT AND INCOMES OF FARM FAMILIES IN LAUREL COUNTY, KENTUCKY

BULLETIN NO. 305

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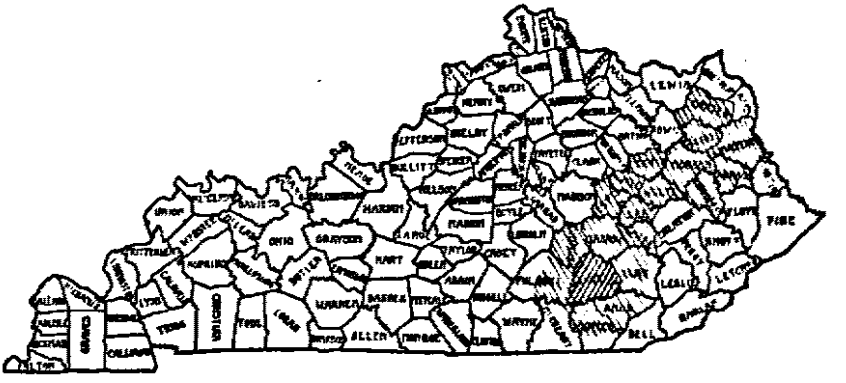

Fig. 1. Position of Laurel County and other eastern Kentucky counties with farm conditions generally similar to those of the area included in this study. Heavily shaded area is Laurel County and light shaded area is that with similar farm conditions.

BULLETIN NO. 305

Farm Management and Incomes of Farm Families in Laurel County, Kentucky

By W. D. Nicholls and H. W. Hawthorne.*

INTRODUCTION.

This bulletin is a report on one aspect of a study made by the Department of Farm Economics of the Kentucky Agricultural Experiment Station and the Bureau of Agricultural Economics of the United States Department of Agriculture, the central object of which was to furnish data upon which could be based an improved land utilization program for the region.** The report presents an analysis of the farm business and the sources and uses of the incomes of 203 farm families. The study was made in the summer of 1928 and covered the farm year 1927. The survey method was employed. Each family was visited and careful estimates were secured and recorded on a field schedule. The study throws light on the questions: "What income can reasonably be expected from farming in the area? What are the chief factors which influence farm income? How do incomes derived from farming alone compare with incomes from farming and one or more kinds of outside work? What systems of organization and management of farms appear most likely to give maximum net returns to farm operators?"

*Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, United States Department of Agriculture.

**Ackowledgment is made of the participation of the Federal Division of Land Economics, Dr. L. C. Gray in charge, and the Division of Population and Rural Life, Dr. C. J. Galpin in charge. Credit is due Mr. C. F. Clayton of the Federal Division of Land Economics, who had charge of the field work for the Bureau of Agricultural Economics, to Dr. E. L. Kirkpatrick, Mr. J. L. Miller, Mr. Merton Oyler and Mr. L. A. Cramer for work done in collecting data in the field, to Mr. W. G. Finn for assistance in analyzing the data, and to Mr. Z. L. Galloway for work in calculating the budgets shown.

Laurel County was selected for the study because it is representative of a considerable area of the foothill and mountain territory of Eastern Kentucky. (See Fig. 1.) The topography of the region varies from a considerable area of fairly level or rolling land to steep mountain slopes. Roads, for the most part, are poor, with the exception of a Federal highway which traverses the entire length of the county from north to south. London, the county seat, a town of 1,707 people, is on the Cincinnati and Knoxville division of the Louisville & Nashville Railroad, about 90 miles from Lexington, 172 miles from Cincinnati, 158 miles from Louisville and 120 miles from Knoxville. Corbin, about 9 miles from the edge of the area studied, is a town of 3,406 population, a railroad division point and the seat of large railroad shops employing several hundred mechanics and other workers. A new highway intersecting the main Federal highway connects this area with the mining centers in Harlan and Bell Counties. These communities afford a market for some of the surplus farm products from nearby farming sections. According to the 1920 census, Bell County had a total population of 33,988 persons, with only 8,582 of these living on farms, and Harlan had a total of 31,546 persons, of whom only 6,749 were listed as farm population. Harlan, Pineville and Middlesboro, the chief towns of the two counties, and the numerous small mining settlements look beyond the territory immediately surrounding them for food, feed and other farm products.

The soils in the area studied range from fine sandy loam thru silt loam to clay loam. They are derived from shale and sandstone, and represent a territory lying in a strip along the western side of the eastern coal field and extending from the Ohio River in Boyd County to the Tennessee line in Whitley County.

The farms included in this study lie in two areas. The first is a solid block of territory south of London comprising the school districts of Wyan, McGill and Old Union. The farms are an average distance of three and a half miles from London and ten miles from Corbin. The other area, located north of London, includes all the farms in the school district of Salem, Taylor, Pleasant View, Twin Branch and Long Branch. An

average distance in a direct line from the farms of this area to London is about eight miles and to Corbin twenty miles.

PART I.—INCOME AND OUTGO OF FARM FAMILIES.

In 1928 there were 203 families living on the farms of the territory studied. Not all of the families were living there primarily for the purpose of farming. Some of them had other lines of business. The farms were their homes and part of their living came directly from the farm.

Family Living from the Farm.

On the average, these families used food products from their own farms amounting to $308 when valued at farm prices, wood and coal amounting to $12, and house rent worth $45, when estimated at 10 percent of the value of the house. These items total $365 and when added to the amount of cash spent for the family living, that part furnished by the farms represented 53 percent of the total.

TABLE 1.

Value of Things Furnished by the Farm and Purchased, for 203 Farm Families in Laurel County

Value of family living from the farm	Number of families	Furnished by farm				Purchased		Total furnished and purchased	Number in family
		Food	Wood and coal	House	Total	Food	Total		
Dols.		Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	
Less than 200	17	136	10	14	160	97	183	343	4.1
200-299	61	205	10	35	250	116	292	542	4.2
300-399	53	297	13	36	346	108	296	642	5.0
400-499	38	372	13	55	440	111	348	788	5.9
500-599	18	456	12	75	543	130	431	974	7.4
600 and over	16	602	15	84	701	132	517	1,217	7.4
Average of all	203	308	12	45	365	114	325	690	5.3

The amount of the family living furnished from the farm varied with different families as indicated in Table I. Nearly three-fourths of the value of all the food used by these 203 families was furnished by the farm. This shows that these farms are more significant in furnishing directly the subsistence for the families living on them than in producing things to be sold for money. The study indicates that the well-being of families in this region is dependent in a very large measure upon their producing an ample supply of foods for home use, particularly vegetables, fruits, dairy and poultry products.

An analysis of the data on family living shows that those families with the higher values of family living from the farm got more food from the farm and their houses were worth more than those with the lower values. These same families also purchased more food products and more of the other items entering into the cost of living. The 16 families with $600 or more family living from the farm spent an average of $517 for their living, while the 17 families with less than $200 family living from the farm spent an average of only $183.

Income and Outgo.

In this study, figures were obtained from which both a year's cash income and a year's cash outgo of these 203 families could be calculated.[1] Insofar as the year covered was a normal year, the data presented in Tables 2 to 4 are believed fairly to represent a year's cash income and cash outgo for the families included.

Approximately one-half of the 203 families had less than $500 cash income for the year under consideration and from their income an average of $121 per family was spent for farm expenses. On the other hand, only 16 of the 203 families

[1] Strictly speaking, not all the data pertain to the identical year. The year involved for all of the income and for that part of the outgo data relating to the farm business was from March 1, 1927, to February 29, 1928, while the time covered for the other part of the outgo data, mostly expenditures for the family living, was from July 1, 1927, to June 30, 1928. It is probable that the family living expenditures for as many as 203 families in this locality varies but little from one year to another. If this be true, the four months' variation in the year covered by the data for family living expenditures from the time covered by the other data, is insignificant. Therefore, the data on cash income and cash outgo as applied to the group of families, and with few exceptions as applied to given families, has been regarded as pertaining to the same year.

had cash incomes amounting to $1,500 or more. These families averaged $683 farm expenses. In Table 2, the families are grouped by the amounts of their cash income.

In the analysis of the family incomes "work off the farm" includes receipts for any work which the farmers did away from home, or which was not directly a part of the farm business. In some instances they lived at home; in others, they were away for a week or a month at a time; and in a few instances it was necessary to be away for several months at a time. About 6 percent of the amount received for work off the farms was for team work, such as hauling coal, work on roads, work in coal mines and work on other farms.

The kinds of work off the farm which brought in the greatest amounts of money were: work in railroad shops, from which 4 families secured a total of $5,419; carpentry and painting, which furnished 19 families a total of $4,803; mining coal, which gave to 22 families a total of $4,020; work as salesmen, from which 4 men derived a total of $3,170; and work in timber and saw-milling, which furnished 14 families a total of $3,121. Other kinds of work off the farm and the number of families deriving incomes from such work were:

Insurance business	1	Grinding feed	2
Dealing in livestock	5	Blacksmithing	3
Work as physician	1	Carrying mail	1
Driving taxi	1	Buying furs	1
Farm work for others	30	Baling hay and straw	1
Police duty	1	Assessing property for taxes	2
Road work	6	Keeping boarders	1
Work in grain elevator	1	Work as stone mason	1
Store business	1	Brick laying	1
Teaching	2	Making sorghum syrup	1
Hauling coal	5	Work as U. S. Deputy	1
Work as postmaster	2	Grading tobacco	1
Butchering	1	Work as deputy sheriff	1
Preaching	1	Work for telephone company	1
Work in iron foundry	2		

In addition to the list just given, there were receipts for work off the farm amounting to $2,406 out of a total of $37,924, the sources of which were not specified.

TABLE 2.

Kinds and Amounts of Income and Outgo of 203 Farm Families in Laurel County, Classified by Amount of Cash Income.

Items	Groups by amount of cash income				All families
	Under $500	$500 to $999	$1,000 to $1,499	$1,500 and over	
Number of families	100	70	17	16	203
	Dols.	Dols.	Dols.	Dols.	Dols.
Cash income from:					
The farm	196	472	610	974	387
Work off the farm	83	101	371	1,007	186
Other sources	40	141	247	183	103
Total cash income	319	714	1,228	2,164	676
Cash outgo for:					
Farm expenses	121	268	408	683	240
Family living and other purposes	217	358	414	738	323
Total cash outgo	338	626	822	1,421	563
Cash receipts less cash expenses of farming	75	204	202	291	147
Total amount available for family living and other purposes	198	446	820	1,481	436
Income less outgo	−19	88	406	743	113
Family living from the farm	303	407	436	494	365

In Table 2, "other sources" of income include that which came with but little, if any, effort on the part of the farmer. The principal sources of this income and the amounts from each number of the 203 families who had such incomes were as follows: Pensions furnished 16 families a total of $7,022; earnings of other members of the family living at home, 32 families, a

total of $5,796; contributions from relatives not at home, 28 families, a total of $4,461; interest and dividends, 24 families, a total of $1,752; income from other property, 8 families, a total of $888; and other sources, 17 families, a total of $1,090.

More than half of the average gross cash income of the 203 families came from the farm. However, this does not hold for all the groups of the families. The two groups with higher incomes had slightly less than one-half of their gross cash income from the farm. The cash outgo both for farm expenses and for the family living increased as the cash income increased and the amount of the family living from the farm also increased.

The average expenditure per family was $113 less than the average income. This should not be taken to mean that the incomes of all the families equaled or exceeded their expenditures. Some of them did not, and those with less than $500 cash income failed by $19 to do so. The families whose cash incomes for the year were not sufficient to meet their expenses, usually made up the deficiency by using savings from former years or by borrowing money. On the other hand, in some cases incomes exceeded expenditures by considerably more than $113. Four families had more than $1,000 left after paying the farm and family living expenses. Those families whose incomes were in excess of their expenditures usually used the surplus in paying debts, or as savings for use in later years.

Not all the families which showed a surplus of receipts over expenses have a surplus every year. For some, the showing made was better than usual. Similarly, in a good many cases, those whose expenses were in excess of their incomes made a poorer showing than usual because of a poorer business year or unusually heavy family expenses.

How much of the money available for the family cash expenses came from the farm and how much came from other sources are shown in Table 2. About one-third of the average amount of cash available for the family living expenses came from the farm after the expenses of operating the farm were paid, but it equaled nearly one-half of that actually spent.

The average cash expenditure of $323 for the family living plus the items supplied directly from the farm, valued at $365,

make the total living $688, nearly three-fourths of which was obtained from the farm, part in cash and part in kind.

TABLE 3.

Kinds and Amounts of Income and Outgo of 203 Farm Families in Laurel County, Classified by Size of Family.

Items	Number of persons in the family						All families
	1 and 2	3 and 4	5 and 6	7 and 8	9 and 10	11 and 12	
Average number in family	1.83	3.56	5.37	7.27	9.26	11.17	
Number of families	24	61	60	33	19	6	203
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
Cash income from:							
The farm	286	365	465	428	285	326	387
Work off the farm	86	144	252	242	160	137	186
Other sources	86	113	120	64	122	78	103
Total cash income	458	622	837	734	567	541	676
Cash outgo for:							
Farm expenses	162	220	278	287	199	258	240
Family living and other purposes	235	299	351	344	384	338	323
Total cash outgo	397	519	629	631	583	596	563
Cash receipts less cash expenses of farming	124	145	187	141	86	68	147
Total amount available for family living and other purposes	296	402	559	447	368	283	436
Income less outgo	61	103	208	103	−16	−55	113
Family living from the farm	252	304	396	410	488	469	365

Income and Outgo As Influenced by Size of Family.

The relation of income and outgo to size of family, for the 203 families, is shown in Table 3. The families of 5 or 6 persons have the maximum average cash income, outgo and excess of

income over outgo. They have maximum incomes both from the farm business and from work off the farm and, with the exception of the families of 9 or 10 persons, also the maximum in the amount of income from other sources. With the same single exception, the families of 5 or 6 persons have the maximum for the family living and, with the exception of the families of 7 or 8 persons, they have maximum expenditure on account of the farm business. They also have the maximum amount left from the farm business for the use of the family. The value of the family living from the farm is not so much for the families of 5 or 6 persons as for the larger-sized families, but is more per person.

The table also shows that, on the average, the families of 5 or 6 persons both spent more per person for their family living and obtained more of family living from the farm per person than the larger families.

Income and Outgo As Influenced by Number of Crop Acres.

The size of the farm business proper of these families is fairly well represented by the number of acres of crops grown on each farm. Table 4 shows figures for the farms, grouped in this way. As is to be expected, the gross cash income from the farm business increased as the number of acres of crops increased, which is also true for the income after the farm expenses were paid.

The figures show that, on the average, farming with less than 15 acres of crops resulted in less than enough cash income to pay the farm expenses, leaving a deficit instead of a surplus. Thus, so far as cash income is concerned, the operation of these farms resulted in a loss. These operators depended more upon work off the farm than did those with larger acreages of crops.

Families growing 16 acres or more of crops not only increased their cash incomes from the farm as they increased their acreages of crops, but also increased their total cash incomes, spent more for family living, obtained more family living from the farm, and had larger cash surpluses after paying the farm and living expenses.

TABLE 4.

Kinds and Amounts of Income and Outgo of 203 Farm Families in Laurel County, Classified by Size of Crop Acreage.

Items	Number of crop acres per farm				All families
	15 acres and under	16 to 30 acres	31 to 45 acres	Over 45 acres	
Number of families	40	86	52	25	203
	Dols.	Dols.	Dols.	Dols.	Dols.
Cash income from:					
The farm	144	323	481	802	387
Work off the farm	363	130	150	172	186
Other sources	97	113	91	105	103
Total cash income	604	566	722	1,079	676
Cash outgo for:					
Farm expenses	163	185	306	415	240
Family living and other purposes	333	302	318	394	323
Total cash outgo	496	487	624	809	563
Cash receipts less cash expenses of farming	-19	138	175	387	147
Total amount available for family living and other purposes	441	381	416	664	436
Income less outgo	108	79	98	270	113
Family living from the farm	264	338	401	540	365

PART II.—THE FARM BUSINESS.

A detailed business analysis was made of the 203 farms, the chief purposes of which were to study their present organization and management, to determine the factors which are most influential in profitable farming in the area and to show the relative advantages of depending solely upon farming as compared with combining farming with work off the farm, as a means of obtaining a livelihood.

Land Tenure Status of Operators.

Only a small percentage of tenancy exists in this area. Of 203 farm operators representing all in the area from whom the records were obtained, only 18, or about 9 percent of the total number, did not own land. Most of those who owned land and either rented or rented out some land, own and operate the major part of the land they farm. The larger part of the renting is represented by the farmer who either rents a field from or to a neighbor. The tenure status of the 203 operators were as follows: 90 were straight owners who neither rented nor rented out land; 55 were owners and renters, 47 of whom rented on a share basis and 8 on a cash basis. Thirty-six operators were owners who rented out some of their land, 33 on a share basis and 3 on a cash basis. There were 4 owners who both rented and rented out land. Thirteen non-owners rented land, 10 on shares and 3 for cash. Two non-owners rented both on a share and a cash basis, while 3 non-owners share-rented land and sublet part of it.

Farms Classified According to Sources of Income of Families.

As already pointed out, many of these farmers depend upon work off the farm for part of their incomes. A considerable number derive an appreciable part of the income of the family from sources independent of the farm and of the farmer's work off the farm. In making a business analysis of these farms, it therefore seemed necessary to separate them into three groups.

Group A includes the 90 farms with families living on them who depend mainly upon the farm for their living. For each farm in this group receipts for the farmer's work off the farm are less than 25 percent (averaging 6 percent) of the farm receipts and the family income from all other sources is less than 25 percent (averaging about 3 percent) of the farm receipts. Group B includes 41 farms whose families have additional incomes other than from the farm or the farmer's work off the farm (largely pensions or financial assistance of children or others), amounting to 25 percent or more (averaging 97 percent) of the farm receipts. Group C includes 72 farms whose operators have 25 percent or more (averaging 65 percent) of their farm receipts from work away from the farm.

TABLE 5.

Sources of Spendable Income of 203 Farmers of Laurel County Farms Grouped by Principal Sources From Which Incomes Were Derived.

Items	Group A*	Group B*	Group C*	Average of all
Number of farms	90	41	72	203
Income (receipts less expenses) directly from the farm.....Dols.	283	110	-10	147
Income from operator's work away from the farm.....Dols.	36	10	476	186
Farm income .....Dols.	319	120	466	333
RECEIPTS—Other than those from the operation of the farm or work of operator away from the farm (Largely gifts, pensions or interest) .....Dols.	20	339	74	103
Total spendable income.....Dols.	339	459	540	436
Family living from the farm.....Dols.	375	376	345	365

*Group A, operators who depend mainly upon farming for a livelihood.

Group B, operators whose chief sources of income were contributions of relatives, pensions, interest and other sources not entailing labor on their part.

Group C, operators who derived the greater part of their income from work away from the farm.

The 90 farmers of Group A had an average of $339 per year for spending, a little over 83 percent of which came from the operation of their farms, about 11 percent from their work away from the farm and only 6 percent from other sources. The total spendable income of the 41 operators of Group B averaged $459, nearly three-fourths of which came from contributions, interest or other sources entailing little, if any, work on their part. About 88 percent of the spendable income of the farmers in Group C came from the work of the operators away from the farm. The farm receipts of this group failed by $10 to equal the farm expenses, but the operators had perquisites furnished by the farm for the family living amounting to an average of $345. (See Table 5.)

Scale and Type of Farming.

Since so much of the land in these farms is rough land, total acreage is not a good measure of size. Acres in crops is a better

measure. Table 6 shows the size of farms and type of farming in terms of the total land area and the acreage of the various crops and the number of the various kinds of livestock.

TABLE 6.

Crop Acreage and Number of Livestock on 203 Laurel County Farms.

	Group A	Group B	Group C	All farms
Number of farms	90	41	72	203
Acres per farm	84	80	64	76
Acres of crops	31	24	21	26
Corn	10.5	8.0	7.8	9
Wheat	1.3	1.0	.6	1
Oats (for grain)	2.2	.7	1.1	1.5
Oats (for hay)	2.0	2.8	2.0	2.0
Hay:				
Mixed clover and grass	4.1	3.6	1.9	3.2
Grass[1]	7.0	4.8	5.2	5.8
Soybean and cowpea	.9	.5	.6	.7
Clover	.8	.8	.3	.6
Sorghum[2]	.4	.2	.2	.3
Tobacco	.3	.....	.....	.2
Garden, including potatoes	.7	.9	.7	.7
Orchard (mostly apples)	.7	.7	.5	.6
Livestock (number)				
Horses and mules	2.3	1.7	1.7	1.9
Cows	2.8	2.5	1.9	2.4
Heifers and calves	1.1	.5	.9	.9
Bulls over 1 yr. old	.1	.1	.....	.1
Steers (over 1 yr. old)	.3	.2	.1	.2
Ewes	1.3	.6	.3	.8
Lambs	.1	.....	.1	.1
Sows	.6	.4	.3	.5
Other hogs	1.2	.6	1.0	1.1
Chickens (mostly hens)	55	51	40	49

[1] Includes millet, which crop occupied an average of 1/10 of an acre for all farms.

[2] About 2/3 of the sorghum was used for feed and 1/3 for syrup.

The chief crops grown were corn, hay, oats and tobacco. The chief livestock besides the work stock were dairy cows and poultry.

Of the 203 farms, 93 percent grew corn, 20 percent wheat, 43 percent oats, 23 percent tobacco, 14 percent clover, 23 percent clover and timothy, 62 percent grass hay (largely redtop), 5 percent cowpeas, 15 percent soybeans, 18 percent oat hay, 6 percent millet, 17 percent sorghum. All but one had gardens.

The following percentages of the farms had one or more head of the kinds of livestock indicated at the beginning of the farm year: Horses 62 percent, mules 58 percent, colts 6 percent, cows 99 percent, heifers 40 percent, calves 50 percent, bulls 8 percent, steers 10 percent, ewes 15 percent, lambs 6 percent, brood sows 44 percent, other hogs 24 percent, pigs 72 percent, chickens 99 percent.

Of the 203 farms, the following percentages reported sales of the crops indicated: Corn 29 percent, wheat 4 percent, oats 5 percent, tobacco 23 percent, hay 36 percent, sweetpotatoes 13 percent, tomatoes 11 percent, cabbage 11 percent, onions 14 percent, string beans 16 percent, other garden truck 15 percent, sorghum syrup 6 percent.

The following percentages of the farms reported sales of the livestock and livestock products indicated: Horses and mules 17 percent, cows 28 percent, heifers 7 percent, calves 64 percent, bulls 4 percent, steers 8 percent, ewes 8 percent, lambs 10 percent, brood sows 1 percent, other hogs 8 percent, pigs 27 percent, chickens 92 percent, butter 22 percent, cream 55 percent, milk 6 percent, eggs 93 percent, pork 34 percent, beef and mutton 4 percent, wool 7 percent.

TABLE 7.
Capital Investment of 203 Laurel County Farms.

	Group A	Group B	Group C	All farms
Number of farms	90	41	72	203
CAPITAL—Total	$2,968	$2,751	$2,395	$2,721
Land and buildings	2,376	2,279	1,992	2,220
Dwelling	417	510	449	447
Other buildings	212	257	208	219
Livestock	402	318	282	343
Horses, mules and colts	137	103	114	122
Cows	139	130	96	122
Other cattle	36	17	18	26
Poultry	56	49	40	49
Hogs	19	13	11	15
Sheep	15	6	3	9
Farm implements	109	80	80	93
Feed	81	74	41	65

Cream and butter accounted for 15 percent of the total farm receipts and constituted the largest single item. Calves and cows came next with 13 percent, followed by eggs and tobacco, each of which accounted for 12 percent of the total receipts. Poultry accounted for 6 percent and hay 8 percent of the total receipts. Of the total receipts, 57 percent came from livestock and livestock products, 34 percent from crops and 9 percent from labor, team work and other outside sources.

Capital Investment.

Table 7 shows the distribution of the capital investment on the farms in this study. The average investment of all the operators was $2,721. The investment of the 90 operators whose chief source of income was the operation of their farms (Group A) was $2,968. This group exceeded the other two groups in the value of livestock and farm equipment as well as the value of land and buildings.

Profits Made by Operators.

In analyzing the business of these farms, a determination was made of the returns earned by each operator for his year's work. Three measures of returns were used. One of these was "farm income," a figure representing what the operator had left after deducting from the total farm receipts the total farm expenses, including the unpaid family labor other than that of the operator. A second measure is "labor income," which is the farm income diminished by the interest on the farm investment. The other measure of net returns is "operators' earnings"* representing the labor income plus the value of the food products, fuel, use of farm residence, etc., which the farm furnished to the family living.

The farm income of the 203 operators averaged $333, interest on the investment $136, and the labor income $197. When $365, the value of the family living furnished by the farm is added, the operator's earnings mounted to $562. The

*In the analysis of the farm business set forth in the following pages, all calculations have been made on the farm basis, that is, as tho the operator owned all the capital he used.

operator's earnings for the farms in Group A were $545, Group B, $359 and Group C, $692. (See Table 8.) Fifty-one percent of the operators in Group A (those who derived their chief income from farming) had labor incomes of $150 or more and 49 percent less than $150. The operator's earnings of 54 percent of them amounted to more than $500, and those of 46 percent of them less than $500.

TABLE 8.
Farm Receipts and Operator's Earnings on 203 Laurel County Farms.

Items	Group A*	Group B*	Group C*	Average on all
FARM RECEIPTS				
From Crops:				
Corn	26	13	15	20
Hay	46	41	14	33
Tobacco	76	8	2	36
Vegetables	52	22	11	31
Other crops	10	3	5	8
Total crop receipts	210	87	47	128
From livestock:				
Cream, butter and milk	93	62	60	76
Cattle and calves sold	80	76	39	66
Eggs	73	39	38	53
Poultry	35	34	20	29
Hogs	41	13	11	24
Sheep, lambs and wool	7	5	2	6
Horses and mules	7	8	3	6
Total livestock receipts	336	237	173	260
Other farm receipts:				
Work off the farm	36	10	476	186
Wood products	10	7	6	8
Rent	3	1	1	2
Increase in feed	11	7	10	10
Total other farm receipts	60	25	493	206
Total farm receipts	606	349	713	594
Total farm expenses	287	229	247	261
Farm income	319	120	466	333
Interest on investment	149	137	119	136
Labor income	170	−17	347	197
Family living from the farm	375	376	345	365
Operator's earnings	545	359	692	562

*Group A, operators who depend mainly upon farming for a livelihood.
Group B, operators whose chief sources of income were contributions of relatives, pensions, interest and other sources not entailing labor on their part.
Group C, operators who derived the greater part of their income from work away from the farm.

The average labor income of the 72 farmers of Group C (those whose incomes came largely from work away from the farm) was $347. The operator's earnings of this group were $692, of which $345 consisted of the value of perquisites furnished by the farm to the family living. Forty-four percent of the 72 operators in Group C had labor incomes of $150 or more and 56 per cent of them less than $150. Thirty-seven percent had operator's earnings of $500 or more and 63 percent of them less than $500.

Of the families in Group A, the highest labor income was $926, and the highest 20 percent of the labor incomes ranged from $363 to $926. Twenty-one percent of the operators had minus labor incomes, these ranging from minus $393 the lowest, to minus $5 the highest. The operator's earnings of the most successful farmer amounted to $1,404, and the most successful 20 percent of the farmers had operator's earnings ranging from $758 to $1,404. The operator's earnings of the least successful farmer amounted to minus $131. The operator's earnings of the least successful 20 percent of the farmers ranged from minus $131 to $312.

Farm Receipts.

The receipts of the 203 operators are presented in Table 8. The receipts of the 90 operators in Group A averaged $606. The highest farm receipts of any one farm were $2,196.

The highest one-fifth of the farms ranged in farm receipts from $815 to $2,196.

The second highest fifth ranged from $653 to $813.

The third highest fifth ranged from $458 to $651.

The fourth highest one-fifth ranged from $316 to $456.

The lowest one-fifth ranged from $98 to $313.

The items making up the receipts are presented in Table 8.

Of the 203 farms, 19 percent had outside income from work with the farm teams, 5 percent from work in the woods, 9 percent from carpentering and painting, 3 percent from railroad work, 29 percent from other manual labor, 13 percent from wood products sold, 6.4 percent from land rented out, 24 percent from increases in feed inventories and 15 percent from miscellaneous outside forces.

PERQUISITES FURNISHED BY THE FARM TO THE FAMILY LIVING.

The family living furnished by the farm averaged $365 in total value for the 203 farms. The value of food was $308, fuel $11 and the use of the family residence $45. The amounts and values of the various items are shown in Table 9.

TABLE 9.

Perquisites Furnished by the Farm for the Family Living on 203 Laurel County Farms.

ITEMS		Group A	Group B	Group C	All Farms
Food	Dols.	320	315	289	308
Corn	Bus.	14	13	10	13
	Dols.	17	16	13	15
Wheat	Bus.	4	4	3	4
	Dols.	6	5	4	5
Potatoes	Bus.	18	18	19	18
	Dols.	19	19	20	19
Sorghum syrup	Gals.	4	2	2	3
	Dols.	4	2	2	3
Fruits and vegetables	Dols.	43	47	43	44
Butter	Lbs.	47	38	32	40
	Dols.	16	13	11	14
Cream	Gals.	3	3	2	3
	Dols.	3	4	2	3
Wholemilk	Gals.	454	417	412	432
	Dols.	112	104	103	107
Skim-milk and buttermilk	Gals.	48	71	23	44
	Dols.	2	5	2	3
Beef	Lbs.	4	.....	13	6
	Dols.	1	.....	2	1
Mutton	Lbs.	2	.....	.....	1
	Dols.	.....	.....	.....	.....
Pork	Lbs.	467	424	379	427
	Dols.	58	52	47	53
Poultry	No.	40	46	37	40
	Dols.	17	22	16	18
Eggs	Doz.	82	99	93	89
	Dols.	21	25	23	22
Honey	Lbs.	6	4	4	5
	Dols.	1	1	1	1
Fuel	Dols.	12	10	11	11
Wood	Cords	4	4	4	4
	Dols.	10	9	9	9
Coal	Bus.	30	8	23	23
	Dols.	2	1	2	2
House rent	Dols.	42	51	45	45
Other items	Dols.	1	.....	.....	1
Total value		$375	$376	$345	$365

TABLE 10.

Farm Expenses of 203 Laurel County Farms.

ITEMS	Group A	Group B	Group C	All Farms
FARM EXPENSES:				
Hired labor	8	8	11	9
Roughage	3	5	16	8
Grain	40	31	37	37
Repairs on improvements and machinery	17	14	12	15
Horse shoeing	6	6	5	5
Seeds	19	14	12	16
Fertilizer	24	20	14	20
Limestone	7	4	3	5
Taxes	27	27	24	26
Family labor	59	34	43	48
Depreciation	24	26	21	23
Decrease in feed and supplies	24	20	15	20
Other expenses	29	20	34	29
Total farm expenses	287	229	247	261

Farm Expenses.

The farm expenses incurred by the 203 operators are shown in Table 10. The 90 farms in Group A, the most significant group from the standpoint of farm organization and management, had gross expenses amounting to $287.

Expenses, including inventory decreases, for the one-fifth of the farms having the highest expenses, ranged from $412 to $1,127. For the second highest fifth, they ranged from $298 to $404. For the third highest fifth, they ranged from $202 to $294. For the fourth highest fifth, they ranged from $149 to $202. For the lowest fifth, they ranged from $37 to $147.

Of the total farm expenses of the operators in Group A, the item of unpaid family labor amounted to $59, or 21 percent, purchased grain 14 percent, taxes 9 percent, fertilizer 8 percent, seeds 7 percent, depreciation on implements and farm improvements 8 percent and repairs 6 percent.

Factors Affecting the Profits of Farming.

For the purpose of answering the question, "Why do some operators secure greater returns than others?" numerous tests

and classifications of the farm business records were made. One such test was that of subdividing the records into five groups according to the operator's earnings. This brought out the fact that, on the average, the most successful operators excelled the least successful ones in size of business, yields of crops and livestock, and in labor efficiency. A study of the farms both from a statistical and non-statistical point of view, showed that the proper type of farming, volume of sales, effective and economic practices in soil improvement and maintenance, and the control of farm expenses were other important factors.

Factors of Efficiency On the Most Profitable Farms Compared With Those of the Average and the Least Profitable Farms.

Table 11 compares the profits and some important factors affecting profits on average farms and those on the most profitable fifth of the farms and the least profitable fifth, for the 90 farmers who depended for a livelihood principally upon the operation of their farms. The labor income for the most profitable 18 farms averaged $489, while that for the least profitable 18 was minus $84. Operator's earnings for the most profitable group averaged $987 as against $210 for the least profitable group.

One reason suggested by the figures why the most profitable farms gave better returns than the least profitable ones was their larger size as measured by crop acreage. The most profitable farms had nearly double the acreage of crops of the least profitable farms. They had more than twice as great an investment in livestock.

Another reason for larger profits suggested by the figures is that the better farms were so organized as to afford larger total receipts and larger receipts per acre. Farm receipts for the most profitable farms were more than three times those for the least profitable farms, while the farm expenses were only a little over one-half greater than those for the least profitable farms. For each dollar of farm receipts, the most profitable farms had

an expense of 37 cents as against 78 cents for the least profitable farms.

TABLE 11.

Profits and Some Important Factors Affecting Profits on Laurel County Farms Compared With the Same Factors on the Most Profitable 18 Farms and the Least Profitable 18 Farms.

	Average of 90 farms	Average of 18 farms highest in operator's earnings	Average of 18 farms lowest in operator's earnings
Labor income ..... Dollars	170	489	−84
Total value of perquisites furnished by farm ..... Dollars	375	498	294
Operator's earnings (labor income plus perquisites) ..... Dollars	545	987	210
Acres operated ..... Acres	82	101	82
Acres in crops ..... Acres	31	44	23
Acres in intensive crops ..... Acres	.5	1.1	.1
Value of livestock ..... Dollars	403	593	274
Number of cows	2.8	3.5	2.1
Value of cows ..... Dollars	139	184	101
No. of chickens (mostly hens)	55	67	42
Value of poultry ..... Dollars	56	71	42
Value of farm implements ..... Dollars	109	162	110
Total farm receipts ..... Dollars	606	1,061	324
Total farm expenses ..... Dollars	287	392	252
Tobacco sold ..... Dollars	76	133	2
Tobacco, potatoes and truck sold .... Dollars	128	261	18
Livestock and livestock products sold ..... Dollars	336	583	202
Net receipts from dairy products[1] .... Dollars	226	321	170
Net receipts from poultry and eggs[1] ..... Dollars	146	206	88
Value of tobacco per acre ..... Dollars	207	239	164
Crop yields, per acre:			
Corn ..... Bushels	21	24	21
Wheat ..... Bushels	7	8	6
Potatoes ..... Bushels	99	119	66
Soybean and cowpea hay ..... Tons	.9	.9	.7
Grass hay ..... Tons	.5	.7	.5
Tobacco ..... Pounds	893	912	720
Receipts per crop acre ..... Dollars	19.5	24.1	14.1
Expenses per $100 receipts ..... Dollars	47	37	78
Productive work per man ..... Days	159	201	123
Crop acres per work animal ..... Acres	13.9	16.8	11.7
Price per pound of tobacco ..... Cents	23.2	26.2	22.8
Eggs sold per hen ..... Dollars	1.3	1.7	.9

[1] Includes perquisites.

Greater use of the dairy and poultry enterprises and of intensive crop enterprises like tobacco and truck appeared to be important factors in providing increased total returns, larger returns per acre and larger labor incomes.

The 18 farms highest in income averaged 3.5 cows and 4.0 head of other cattle per farm against 2.1 cows and .5 head of other cattle for the 18 farms lowest in incomes, and 2.8 cows and 1.5 head of other cattle for the 90 farms. The 18 farms highest in income averaged 67 chickens per farm; the 18 farms lowest in income, 42 chickens, and the 90 farms, 55 chickens. Practically all the poultry on these farms were chickens.

The highest-income farms averaged 1.1 acres of intensive crops, the lowest-income farms only $\frac{1}{10}$ of an acre. All but three of the 18 most profitable farms had acreages of intensive crops, while only five of the 18 least profitable farms had acreages of such crops.

For the most profitable farms, corn yielded 24 bushels as against 21 bushels for the least profitable farms. The yields of other crops on the most profitable farms exceeded those on the least profitable farms by the following percentages: Wheat 33 percent, cowpea and soybean hay 30 percent, tobacco 27 percent. The principal reasons for these better crop yields appeared to be the use of ground limestone and phosphate and the use of manure and grass crops which go with a livestock system of farming.

The most profitable farms exceeded the least profitable farms by 64 percent in productive days work per man. A considerable part of this difference is due to the larger size of the most profitable farms and to the dairy enterprise which gave productive employment to labor which, without that enterprise, would have been unemployed. On the most profitable farms, the net receipts from dairying were nearly double, and the net returns from poultry more than double those on the least profitable farms.

The average receipts per acre from the tobacco crop were $239 for the most profitable farms growing tobacco as against $164 per acre for the least profitable growing tobacco. This differ-

ence was due both to a larger yield per acre and a higher price per pound.

Type of Farming.

Cattle and poultry were the main sources of receipts from the livestock enterprises of these farms. The receipts from these two sources, including dairy products and eggs, constituted 84 percent of the total receipts from livestock and livestock products. Hogs were important as a source of meat supply for the families, yet in value, pork and lard constituted only 25 percent of the animal products supplied from the farms for the family living, while cattle and poultry products constituted 74 percent. Thus cattle and poultry were the important sources of income, both as sales and as food supplies for the farm families.

In order to study the influence of type of farming on profits, the farms were classified according to the total receipts coming from various enterprises. The first classification was made on the receipts from dairying, and showed an unmistakable tendency for farms carrying the dairy enterprise to be more profitable than those which did not. The farmers whose total receipts from the dairy enterprise did not exceed $100 had labor incomes of only $6 and operator's earnings of only $352, with the operator's earnings greater than $500 in only 21 percent of the cases. The farmers with receipts from the dairy enterprise ranging from $100 to $200 had labor incomes averaging $171 and operator's earnings averaging $364, the operator's earnings

TABLE 12.
Relation of Acreage of Intensive Crops to Income on 90 Laurel County Farms.

Intensive crops	Farms	Farm income	Labor income	Operator's earnings
Acres	Number	Dollars	Dollars	Dollars
None	32	233	76	436
.1 to .9	31	280	149	517
1.0 and over	27	464	307	707
All farms	90	319	170	545

being more than $500 in 59 percent of the cases. The farmers having the highest receipts from dairying had operator's earnings averaging $641, 68 percent of them being more than $500.

There appeared to be a similar relation between the poultry enterprise and farm profits. The data seems to show that in most cases poultry should have a relatively important place in farming systems of this region.

One of the most significant facts brought out in studying types of farming on these farms was the marked effect the production of intensive crops exerted on profits. The intensive crops consisted for the most part of tobacco, potatoes and other truck, and sorghum for molasses—crops yielding a relatively high money return per acre. The effect of this factor is set out in Table 12, which shows that the operators who grew some intensive crops made considerably greater profits than those who did not. This was particularly marked with tobacco.

On an average, the farmers who grew some tobacco made much better earnings than those who did not, and those who grew more than one acre made more than those who grew less than one acre. However, in no case did the acreage on one farm exceed 2½ acres. Whereas only 40 percent of the farmers who grew no tobacco made operator's earnings exceeding $500, 62 percent of those who grew as much as one acre of tobacco, and 80 percent of those who grew more than one acre, had operator's earnings greater than $500.

TABLE 13.
Relation of Number of Crop Acres to Income on 90 Laurel County Farms.

Crop acres	Farms	Farm income	Labor income	Operator's earnings
Number	Number	Dollars	Dollars	Dollars
20 and less	21	197	107	378
21-40	51	295	160	522
Over 40	18	529	272	808
All farms	90	319	170	545

Size of Farm.

An analysis of the data furnished by the farm records showed that size of farm had a marked effect on the profitableness of the farm studied.

It is difficult to find a single expression to measure accurately the comparative size of business conducted on one farm and on another. Many items enter into the factor of size. It is evident that the number of acres of land, the acreage of crops, the number of livestock, the amount of capital represented, the amount of labor required, the amount of power and equipment needed, and other items, each has a bearing on the size of the farm business. The data of the study indicate all along the line that the operators having the highest operator's earnings had larger businesses than the operators having the lowest operator's earnings.

In Table 13, which presents this relationship, the number of crop acres per farm is used as a measure of size. The same relation was shown when the farms were classified by the total acreage, the amount of capital investment and the number of livestock. These classifications indicate a marked tendency for the larger farms to return better profits than the smaller ones.

The smaller farms afforded only a small fraction of a full year's productive work. On the farms of 15 acres and less of crop land, only 89 days of work were performed per man, while on those of 45 acres and more, the accomplishment per man was 194 days of productive work. The conclusion is clearly justified that operators of farms with less than 30 acres of crop land and depending mainly upon farming operations for a living cannot, as a rule, with present enterprises and methods, expect to make a fair wage for their work. It is not to be implied that good size of business alone is a guaranty of a comparatively high income, for three of the least profitable 18 farms were larger than the average, and four of the 18 largest farms gave returns smaller than the average.

Labor Accomplishment Per Man.

The records show that labor accomplishment per man exerted a marked influence on profits made by farm operators

in this area. (See Table 14.) For each farm, the total work accomplished in acres of crops produced and livestock cared for was calculated in terms of "productive work units," a unit representing approximately a day's work of ten hours. The number of days work per man for each farm was derived by dividing the total days of work accomplished on that farm by the "man equivalent" employed on the farm during the year.

An outstanding fact brought out was the small accomplishment per man. As an average of 90 farms, only 159 days of productive work were accomplished per man in the year. Twenty-two percent showed an average accomplishment of less than 120 days work per man. The labor incomes of these operators averaged only $30. Only 15 percent of them made operator's earnings of $500 or more, and their operator's earnings averaged $325.

TABLE 14.
Relation of Labor Accomplishment to Farmer's Profit on 90 Laurel County Farms.

Work units per man	Number of farms	Labor income	Operator's earnings
120 and less	20	$ 30	$325
120.1 to 160	25	101	431
160.1 to 190	21	267	679
190 and over	24	274	731
All farms	90	170	545

Twenty-eight percent of the farms showed a labor accomplishment ranging from 120 to 160 days work per man. The labor incomes of this group averaged $101, and their operator's earnings averaged $431. Forty percent of them made operator's earnings greater than $500. Twenty-two percent of them had a labor accomplishment ranging from 160 to 190 days work per man. Their labor incomes averaged $267 and their operator's earnings $679. Sixty-seven percent of them had operator's earnings greater than $500. Twenty-eight percent secured an accomplishment of more than 190 days of work per man. These made a labor income of $274, and operator's earnings of $731. Ninety-two percent of them made operator's earnings greater than $500.

Efficiency of Labor.

Some farmers secured a greater accomplishment both in the production of products sold and in those for the use of the family than others. The farm receipts for each dollar's worth of labor—hired, family and farmer's own labor combined—is indicative of the efficiency with which the labor is used on the different farms. The 18 farms highest in operator's earnings averaged receipts amounting to $3.51 for each dollar's worth of labor, while the 18 farms lowest in operator's earnings averaged $1.65 or less than one-half as much. The 90 farms averaged $2.56. Of the 18 farms highest in operator's earnings 14 were above the average of all the farms, and of the 18 farms lowest in operator's earnings, only five were above the average of all the farms in receipts for each dollar's worth of labor. On two of these farms the receipts were less than one dollar for each dollar's worth of labor.

Of the 35 farms with receipts amounting to $3.00 or more for each dollar's worth of labor, 13 were below the average of all the farms in operator's earnings; of the 24 farms with receipts amounting to less than $2.00 for each dollar's worth of labor, 6 were above the average of all the farms in operator's earnings.

A further study of the records shows that the labor accomplishment per man was determined to a very large extent by the size of the farms, tending to increase as the size increased. The operators with 15 crop acres and less accomplished 89 days work per man; those with 15¼ to 30 crop acres 141 days work per man; those with 30¼ to 45 crop acres 163 days work per man and those with 45¼ crop acres or more 194 days work per man. The most profitable ten farms had a crop acreage 50 percent greater than the average and showed an accomplishment of 195 days work per man. The farms having 15 crop acres or less had a labor efficiency 43 percent less than the average; those having 54¼ crop acres or more were 30 percent more efficient in labor accomplishment than the average.

Thus the conclusion appears to be justified that most of the farms as at present organized are too small to provide productive employment to the farm families living on them, and this

condition is largely responsible for the low returns made by their operators.

TABLE 15.
Relation of Receipts Per Acre Crop to Incomes on 90 Laurel County Farms.

Receipts per crop acre	Farms	Farm income	Labor income	Operator's earnings
Dollars	Number	Dollars	Dollars	Dollars
Less than 15	31	173	18	398
15-24	38	352	202	594
25 and over	21	473	337	675
All farms	90	319	170	545

Volume of Sales.

Not only is it necessary for a farm to be of sufficient size, but it is equally important that the acreage operated shall give an adequate return per acre. One very significant fact brought out by the study was the low income on most of the farms. Not only are the farms small in size and acreage of crop land, but the returns per acre are small in far too many cases. The average receipts per crop acre for the 90 farms in Group A were $20. There were 31 farms which had receipts per crop acre of less than $15, 38 ranging from $15 to $24 and 21 of $25 or more. (See Table 15.) This classification showed a marked tendency for farm profits to increase as receipts per acre increased. The most profitable 18 farms returned receipts per acre which averaged $24, the least profitable 18 farms only $14. Only 8 percent of the farmers in the lowest income-per-acre

TABLE 16.
Relation of Crop Yield to Income on 90 Laurel County Farms.

Crop index	Farms	Farm income	Labor income	Operator's earnings
Percent	Number	Dollars	Dollars	Dollars
Less than 90	30	248	109	494
90-114	33	349	196	552
115 and over	27	359	207	594
All farms	90	319	170	545

group had operator's earnings as high as $500, while 65 percent of the highest income-per-acre group had operator's earnings exceeding $500. The analysis seems to show that an adequate volume of sales per acre is one of the major factors upon which profitable farming in this area depends.

Crop Yields.

Table 16 shows the relation of crop yields to profits. The term crop index is used as a measure of yields. It states the comparison of the composite yields of crops on a particular farm with the yields of the crops of all the farms studied. Thus a crop index of 90 means crop yields which are 90 percent as great as those on all the farms. The farms having a crop index of less than 90 showed labor incomes only about half as great as the farms having a crop index of 115 or more. The crop index of the most profitable ten farms was 121. The figures justify the conclusion that crop yields constitute a major factor in the profitableness of farms in this area.

Livestock Returns Per Animal

Less than one-fourth of all the feed crops—as corn, oats and hay—produced on these 90 farms was sold as cash crops. The greater part of them was marketed thru the livestock kept on the farms. More than one-half of all the farm receipts was from livestock and animal products. Therefore, the per animal production from livestock must have an important bearing upon the incomes, perhaps more important than the per acre production of feed crops. Since more than three-fourths of the livestock and animal product receipts were from cattle and poultry and since more than one-half of the cattle receipts were from the sale of dairy products and more than one-half of the poultry receipts from the sale of eggs, these are the more important indications of the quality of the livestock phase of the farm business.

A study of the data showed that the dairy receipts per cow averaged $4 more for the 18 farms with highest incomes than for the 18 farms with lowest incomes. The egg sales averaged 77 cents more per hen for the group with the highest incomes

than for the group with lowest incomes. In egg sales per hen, there was only one of the 18 farms with highest operator's earnings, with egg sales amounting to less than 80 cents per hen, while there was only one of the 18 farms with lowest operator's earnings with egg sales amounting to $1.50 or more per hen.

Subdividing the farms according to the amount of the sales of dairy products per cow and the amount of egg sales per hen furnished further evidence of the influence of these two factors on the profits of farmers. Here again, however, not all the farms with high receipts per cow or per hen were among the farms with comparatively high incomes, nor were all the farms with low receipts per cow, or per hen, among the low-income farms.

Soil Improvement and Fertility Maintenance.

The study furnished strong evidence that soil improvement is one of the most vital factors for increasing farm profits and bettering living conditions in this area. The use of limestone and phosphate and the control of erosion appeared to be the chief factors in an effective program of soil improvement. A comparison of the profits of the farmers who used agricultural limestone with the profits of those not using it showed that the former made considerably better profits than the latter. The expenditures for limestone on the most profitable farms were about 3 times those on the average of all the farms. This bears out the results of the tests which have been carried on for the past 13 years by the Kentucky Agricultural Experiment Station at the Fariston Experiment Field located near London.

The chief factor in protecting the soil from erosion was the use of grass and sod crops on the sloping land, and a necessary feature of such a system was the use of grass-eating livestock. Successful grass production was found to depend chiefly upon liming and phosphating the land and the control of the growth of shrubs and sprouts (locally called "filth") which choke out the grass on the pasture and hay fields.

Cover Crops, Hay and Pastures.

A majority of the best farmers sow grass with spring oats at the time of seeding the oat crop. The smaller number sow

wheat and grass at the same time. A serious objection to oats is that the land is left bare during the winter, whereas wheat may serve as a protecting winter cover crop. The experience of farmers in the area seems to indicate that wheat is not a profitable crop because of the very low yield secured. Sowing rye as a special winter soil cover on land intended for spring oats does not appear to furnish enough protection to justify the expense entailed. Rye does not have sufficient time to form a sod in the fall before the arrival of cold weather, and the land is broken too early the following spring for the rye to attain much growth before it is turned under. Prof. George Roberts of the Agronomy Department of the College of Agriculture recommends that rye be used instead of spring oats as the principal small-grain crop, because it serves both as a winter cover crop and a crop with which to seed grass. If care is taken not to graze the rye when the fields are muddy, it should be a profitable crop for grazing. Any of the rye not grazed falls down on the land and furnishes valuable mulching and organic matter for the improvement of the soil.

The chief objection which local farmers urge against rye as a substitute for spring oats is that the latter crop is needed as feed. However, the work of the Department of Agronomy seems to show that the substitution of rye for oats, by furnishing protection from erosion and increasing organic matter in the soil, serves to increase the productivity of the soil to the extent that increased yields of corn, hay and grass will, in a short time, more than make up for the lack of the oats now grown for grain.

Good hay crops in this area depend upon the application of ground limestone. It is particularly evident that red, sapling, sweet and alsike clover usually will not grow without limestone except on land recently cleared out of timber. Some farmers who are getting good clover yields are using as little as 200 pounds of special finely ground limestone per acre. Others apply as much as three tons of coarsely ground limestone per acre. For hay, where the land is limed, red clover and timothy appear to be especially well adapted. Timothy is preferable to redtop because it yields a larger tonnage. The chief value of redtop is that it makes a fair growth even without liming on

practically all the land in the area. Lespedeza is particularly valuable on land which is not feasible to lime.

The most successful growers of pasture use limestone and phosphate and seed a mixture including red clover, orchard grass, timothy, lespedeza and sweet clover. The best farmers agreed that a vital need is to keep hillside fields in grass as long as a good set of grass can be maintained. Several fields were seen which had been covered with good grass for five or six years. One field has been in grass eighteen years.

One fact upon which there was general agreement was that "filth" control is a necessary requirement for the successful production of pastures. Particular care was therefore given to study methods employed by farmers who are succeeding in the control of the growth of "filth." The fact was brought out that the greatest difficulty in "filth" control is encountered during the first year after land is seeded down to grass. However, if the sprouts are grubbed out with a mattock the first year they can be effectively and economically kept down thereafter by running the mowing machine over the pasture in the late summer. The following points seem to be the most important ones in securing and maintaining good pastures: Liming and phosphating the land, using a proper mixture of seed, keeping down the filth by grubbing and mowing, and avoiding pasturing too early or too closely. Altho few farmers are able to practice top dressing pastures with stable manure, that practice was found very effective in pasture improvement.

For growing sweet clover successfully, it appears that as much as 1,000 pounds of finely ground limestone per acre or several times that amount of coarser limestone is necessary. The experience of farmers indicates that sweet clover gives very marked results in soil improvement and in furnishing feed and pasture. Even on very thin soil the crop makes an excellent growth if limestone is applied. As an illustration of this fact, one farmer on a piece of land which the previous year yielded 10 bushels of corn per acre seeded sweet clover in the early spring after applying two tons of ground limestone and 300 pounds of superphosphate per acre. The crop made a rank growth and was turned under in the late summer of the following year and the land sown to rye. The following spring a

heavy growth of rye was turned under and the land planted to corn, which made a yield of 55 bushels per acre.

Soybeans are a valuable hay crop on many farms. The crop, however, entails a greater cost for seed, labor and teams than do the clovers. It has been demonstrated that the clovers grow luxuriantly when the land is limed and they may be expected to replace soybeans to an increasing extent when liming becomes more generally practiced.

LIVESTOCK.

Since the growing of grass and hay is a necessary feature of farming in this region, the selection of a class of livestock which will best utilize pastures and roughage is of vital importance. This study seems to show that as a rule dairy cattle furnish the most profitable means of disposing of grass and roughage. A ready market is accessible to the entire area for cream, even for farmers having the product of only two or three cows. The price of butter fat compares favorably with that received by farmers in other localities. Most of the farms are small and have a considerable amount of available family labor which stands in need of productive employment. The milking and care of dairy cows provide this needed employment. Beef cattle and sheep fail to furnish remunerative employment to the extent that dairy cattle do. It is chiefly on the few large farms and those farms not having available labor for handling dairy cows that beef cattle and sheep have an economic place.

Since this territory is poorly adapted to the growing of corn or other feed grains, the production of hogs in large numbers is not feasible. The hog enterprise appears to have no place in the farming of this area beyond furnishing meat to the farm families and some fresh pork for sale locally. A study of the records seems to show that poultry offer a more profitable means of using the limited amount of corn available than do hogs.

Control of Expenses.

The farms were classified according to the percentage which farm expenses bore to farm receipts. Ten percent of the oper-

ators had expenses ranging between $16 and $30 for each $100 of receipts. For 32 percent of the operators, the expense per $100 of receipts ranged from $30.50 to $45; for 23 percent of them the range was between $45.50 and $60; and for 35 percent of them $61 and over. The figures show a marked tendency for profits to increase as the percentage of expenses to receipts decreases. Only 13 percent of the farms having the highest expenses relative to receipts showed operator's earnings of $500 or more. Forty-seven percent of the farms in the next lower relative expense group showed operator's earnings of $500 or more. Nearly 70 percent of the farms in the group having expenses less than $30 per $100 of receipts showed operator's earnings of $500 or more. The most profitable fifth of the farms showed an expense of $37 for each $100 of receipts, the least profitable fifth, $78 for each $100 of receipts.

The figures on farm expenses indicate that control of expenses relative to receipts is a factor of vital importance in the profitable operation of farms in this region. This, of course, is not to say that farmers should refrain from making business expenditures. On the contrary, the study shows that judicious expenditures for such production materials as limestone and phosphate fertilizers increased the farm returns much beyond the cost of the materials. It is characteristic of successful farmers that they carefully scrutinize all proposed business outlays and make them only when there is strong evidence that such outlays will result in returns large enough to pay their cost plus an amount sufficient to cover risks and provide a profit.

A Well-Balanced Business.

In the consideration of factors as they affect farm profits it should be remembered that very rarely does the profit depend upon any one factor alone. As the farms have been grouped in the foregoing discussion of factors, the resulting incomes in every instance are influenced by variations in one or more, or all of the other factors. However, the figures are indicative of the direction in which to go in order to secure higher returns.

TABLE 17.

Relation of Number of Items Above Average to Income—90 Laurel County Farms.

Factors above average	Farms	Receipts	Farm income	Labor income	Operator's earnings
Number	Number	Dollars	Dollars	Dollars	Dollars
0	3	212	46	−16	236
1	9	308	149	27	302
2	9	377	155	12	323
3	15	405	173	65	402
4	14	596	295	145	558
5	16	662	417	265	671
6	9	798	429	235	687
7	6	781	434	254	650
8	8	1,160	607	402	838
9	1	1,585	1,070	926	1,404
All farms	90	606	319	170	545

The ten factors in making Table 17 with the average of each for the 90 farms are:

Crop acreage	31.0	acres
Acreage of intensive crops	.5	acres
Number of cows	2.8	head
Number of hens	55.0	head
Yields of corn per acre	21.0	bushels
Sales of intensive crops per acre	216	dollars
Sales of dairy products per cow	33	dollars
Sales of eggs per hen	1.33	dollars
Receipts per dollar's worth of labor	2.56	dollars
Acres of crops per horse	13.9	acres

Three of the 90 farms were not above the average in any one of the ten factors. These had very low returns, their operators showing minus labor incomes and very low operator's earnings —an average of only $236 per farm. Fifteen farms were above the average in three factors and had operator's earnings of $402. Eight farms were above the average in eight factors. These had operator's earnings which averaged $838. There was no farm above the average in all the factors. The one farm above the average in nine factors had operator's earnings of $1,404.

Dependence Upon Farming for a Living versus Supplementing Farming With Outside Work.

It has been shown that 72 out of a total of 203 farm operators derived a large proportion of their total business income from work other than farming and that these 72 operators secured on the average $177 greater labor incomes for their year's work than the 90 operators who derived nearly all their business income from farming. This raises the question whether farmers in this area must of necessity look to outside work in order to piece out an inadequate farm income or whether it is within their power to make changes in their farming and livestock systems which will afford them adequate incomes without having to resort to outside work.

The data derived from the study show that an adequate income from farming in this area depends largely upon a sufficiently large business, and the inclusion of relatively intensive enterprises such as dairying, tobacco and poultry production. Forty farms with crop areas between 30¼ and 45 acres provided 163 days of productive work per man and gave operator's earnings averaging $518; and 18 farms with more than 45 acres in crops provided 194 days of productive work per man and gave operator's earnings of $760. These figures point strongly to the conclusion that the operation of farms of sufficient size and correct type, organized so as to provide a comparatively full year's work for the operator and his family, compares favorably, as a means of livelihood, with an occupation which includes non-farming work as a chief source of income of farm occupants in this area.

The study afforded examples of small farms which show the possibility of employing intensive enterprises like tobacco, truck and dairying as a means of providing productive labor and increasing the incomes of small farms. It is, of course, recognized that the operators of these farms might have made better profits with less effort if they had had larger acreages.

Organization and Management Used by Four Successful Farmers.

To arrive at an understanding of ways and means by which the farming in any section may be made more profitable, it is

helpful to study the organization and management of farms in that section which are returning exceptionally good profits, and compare them with other farms in the same section. Whether it is feasible for other farmers in the area to realize as good results as these successful men would depend not only upon the application of good farm organization and management, but upon their having land of suitable topography and quality. However, the natural condition on the farms of these successful operators are no better than those on large numbers of farms in the area.

Successful 197-Acre Crop and Livestock Farm (Farm No. 151)

The operator of this farm is both a successful farmer and a leader in various activities for the betterment of civic, economic and other conditions in his community and county. The farm has more than double the acreage of the average farm of the community and has nearly four times the acreage of crops of the average farm. The operator is a pioneer in his community in the use of ground limestone and is securing rank growths of red clover and sweet clover on land which formerly was almost worthless for farming. The greater part of this farm has been limed at the rate of two tons per acre. The fine quality of clover hay finds a ready market at excellent prices locally. A herd of Jersey cattle is being raised with the ultimate object of having enough cattle to consume all or most of the hay produced. This farm ranks high in most of the factors which increase farming profits in this area.

Outstanding 83-Acre Livestock and Crop Farm (Farm No. 156)

Farm No. 156 is an exceptionally well organized farm and demonstrates in a marked way the possibilities of this region for profitable farming when a full measure of intelligent management and industry is applied. The operator made a labor income nearly 400 percent greater than the average.

The crops grown on this 83-acre farm were 12 acres of corn, 8 acres of oats, 15 acres of wheat, 9 acres of clover and timothy

Successful 197 Acre Crop and Livestock Farm
(Farm No. 151)

Labor income	$515
Operator's earnings	$1,354
Acres operated	197
Acres in crops	115

Principal crops	Yield per acre
19 A. of corn	29.5 bu.
8 A. of wheat	12.5 bu.
15 A. of oat hay	
40 A. of clover hay	1.0 tons
30 A. of timothy hay	.8 tons

Total receipts	$1,582
Principal items	
Dairy products and stock	196
Poultry and poultry products	225
Hogs	79
Hay, 40 tons	800
Wheat, 70 bu.	94
Cash rent, pasture	30

Total investment	$8,854
Principal items	
Land and buildings	7,300
5 cows	375
2 heifers and 2 calves	104
1 brood sow	30
75 chickens	75
5 turkeys	20
4 work stock	325
Farm implements	450

Total expenses	$624
Principal items	
Labor	50
Feed	11
Fertilizer, 2 tons	45
Limestone, 15 tons	42
Seed	57
Repairing	10
Fencing	20
Blacksmithing	12
Taxes	65
Threshing	15
Baling and wire	16

Factors Affecting Profits

Total crop acres	115
Net receipts from dairying	$470
Net receipts from poultry	272
Receipts per crop acre	14
Expenses per $100 receipts	39
Productive work units per man	184.2
Crop index	113

hay, 10 acres of grass hay, and 1 acre of soybean hay. The principal livestock were 6 Jersey cows, 4 heifers and a bull, 1 brood sow producing 2 litters a year, 75 hens, 10 sheep and 3 work animals. Two 5-gallon cans of cream a week were sold during the greater part of the year, the cash sales from the dairy enterprise during the year amounting to nearly $400. Some excellent dairy heifers are being raised. The operator expects to make the production and sale of heifers and cows an important part of his dairy enterprise, using mainly the skim-milk and home-grown roughage and pasture for that purpose.

The hogs are produced principally on skim-milk, pasture and home-grown grain. Some of them are sold at a weight of 175 pounds and some are butchered and sold at a weight of 90 to 125 pounds, selling in that way for an average of $15 per head.

Outstanding 83 Acre Livestock and Crop Farm
(Farm No. 156)

Labor income	$543	
Operator's earnings	$1,022	
Acres operated	83	
Acres in crops	52¼	
	Yield per acre	
Principal crops		
12 A. of corn	29	bu.
8 A. of oats		
15 A. of wheat	8.25	bu.
9 A. of clover and timothy	1.2	tons
10 A. grass hay	.7	tons
1 A. soybean hay	2.0	tons
½ A. of sorghum:		
¼ acre	2	tons
¼ acre	18	gals.
Total receipts	$1,123	
Principal items		
Dairy products and stock	388	
Poultry and poultry products	137	
Hogs	204	
Potatoes	40	
Other truck crops	105	
Hay	100	
Seed wheat	32	
Total investment	$3,263	
Principal items		
Land and buildings	2,000	
6 cows and 1 bull	320	
4 heifers and calves	158	
1 brood sow	25	
3 other hogs	23	
75 chickens	75	
10 sheep	95	
3 work stock	240	
Farm implements	220	
Total expenses	$457	
Principal items		
Labor	26	
Feed	40	
Fertilizer	45	
Limestone	71	
Seed	42	
Repairing	21	
Fencing	40	
Blacksmithing	4	
Taxes	52	
Baling and wire	37	
Threshing	20	

Factors Affecting Profits

Total crop acres	52.5
Net receipts from dairying	$601
Net receipts from poultry	183
Receipts per crop acre	21
Expenses per $100 receipts	41
Productive work units per man	238.6
Crop index	145

Feed for the livestock is nearly all produced on the farm, the total cash expenditure for feed being $40. Sales of hay amounted to $100 and of truck crops to a little over $100. Fall and winter pasture for sheep, calves and pigs are provided by planting in August each year a small field of rye, this being turned under the following April and the field planted to corn. This farmer has achieved remarkable results in soil building. When purchased eleven years ago the land was washed into deep gullies and yielded about six bushels of corn per acre. In 1928 the same land produced fifty bushels of corn and two tons of cowpea hay per acre. This improvement has been due principally

to the use of limestone and phosphate, the employment of a cropping system including grass, clover and other sod crops, and the use of the manure furnished by a livestock type of farming. More than one hundred tons of manure are applied each year.

The principal crop rotation consists of corn, followed by oats or wheat the second year and that followed by red clover and timothy the third and fourth years. Red clover was seen growing on this farm equal to that found anywhere in Kentucky. The fertility and humus content of the land has been built up to a remarkable extent. When broken, it turns over in a fine, loose, dark loam.

The more sloping land is cultivated only to the extent necessary to get into grass and hold the filth in check, the object being to keep the land in grass nearly all the time. One field has held a good set of grass for nine years, a very significant fact, since many farmers said that good sets of grass could be held only a year or two. Filth is effectually controlled on this farm by grubbing all sprouts out of the grass fields the first year and in subsequent years running the mowing machine over the pasture in the late summer.

The crop yields on this farm exceeded the average of all the farms by nearly one-half, sales per crop acre by nearly a third, and work accomplished per man by nearly two-thirds. The exceptional labor accomplishment was because work is carefully planned beforehand. Particular care is taken to do work at the proper time, and the livestock enterprises are such as to furnish work when the labor force would otherwise be unemployed. The good-sized crop acreage was also an important factor in the excellent labor accomplishment.

An exceptional feature of this farm was the ratio of receipts to expenses. For each dollar of farm receipts, an expense of 41 cents was incurred as compared with an expense of 47 cents per dollar of receipts on the average farm. Expenses were not kept down by not purchasing necessary supplies. This is shown by the fact that 37 tons of ground limestone were applied. This farmer used a considerably larger amount of phosphate per acre than was used by the average farmer. One reason for the unusual economy of expenditures was that the greater part of

the roughage and grain fed to livestock was grown on the farm. Another reason was that a relatively small expense was incurred for hired labor because the greater part of the land was kept in grass. Another reason was that most of the necessary repair work was done by the operator.

Successful Truck, Dairy and Poultry Farm.

The operator of Farm No. 8 was one of the most successful of all those studied. His income was derived mainly from truck crops, a type of farming not applicable to all farms of the region.

Other enterprises besides truck which contributed in an important way to the receipts of this farm were dairy cows, poultry and the produce of one brood sow. Crop yields exceeded the average of all the farms by 40 percent. These exceptional yields were due to the liberal use of ground limestone, super-

Successful Truck Farm With Dairy and Poultry Products and Hogs As Important Additional Sources of Income.
(Farm No. 8)

Labor income	$544
Operator's earnings	$1,230
Acres operated	89
Acres in crops	55¼
Total investment	$10,500
Principal items	
Land and buildings	8,900
4 cows	400
1 heifer and 4 calves	45
1 brood sow	25
75 chickens	75
Farm implements	375
3 work stock	450
Total receipts	$2,196
Principal items	
Dairy products and stock	355
Poultry products and poultry	125
Hogs (live or dressed)	191
Potatoes	580
Other truck crops	100
Sorghum	175
Tomatoes	275
Lettuce	100
Onions	175

		Yield per acre
Principal crops		
10	A. corn	25 bu.
10	A. oats	20 bu.
4	A. wheat	6.25 bu.
6	A. hay, cowpea	1 ton
1.5	A. hay, soybean	1 ton
18	A. hay, clover and timothy	.8 tons
1.5	A. sorghum	124 gals.
2.5	A. Irish potatoes	120 bu.
.5	A. tomatoes	
1	A. garden and other truck	
Total expenses		$1,127
Principal items		
Labor		4
Feed		61
Fertilizer		70
Seed and plants		122
Repairing		88
Fencing		40
Blacksmithing		18
Taxes		60
Insurance		20
Auto for farm use		180

Factors Affecting Profit

Total crop acres	55¼
Net receipts from dairying	$580
Net receipts from poultry	273
Receipts per crop acre	40
Expenses per $100 receipts	51
Productive work units per man	202.8
Crop index	140

phosphate and other chemical fertilizers, the regular application of home-produced manure, and the growing of red clover, soybeans, and other legumes. Labor accomplishment per man exceeded by 31 percent the average for all the farms.

The truck crops on this farm consisted chiefly of potatoes, melons, tomatoes, beans, onions and lettuce; these being sold for local consumption to retail customers and to grocers at London and Corbin. The operator believes that there is room for expansion in truck growing and the production of small fruits in this area for a considerable number of farmers. An important market is afforded by the mining towns in Harlan and adjoining counties which are now bringing in the bulk of their supply of truck and small fruits from more distant outside areas.

Successful Tobacco, Dairy and Poultry Farm
(Farm No. 102)

Labor income	$498	Total investment	$2,577
Operator's earnings	$985	Principal items	
Acres owned	70	Land and buildings	2,000
Acres in crops	29¾	3 cows and 4 calves	225
		88 chickens	95
	Yield per acre	2 work animals	125
Principal crops		Farm implements	60
4.5 A. of corn	39 bus.	Total expenses	$349
8 A. oats	.....	Principal items	
12 A. clover and timothy	1.67 tons	Labor	25
1 A. cowpea hay	.....	Feed	103
¼ A. of potatoes	28 bus.	Fertilizer, 1 ton	22
1.5 A. of tobacco	979 lbs.	Limestone	23
		Seed	31
Total receipts	$976	Repairing	7
Principal items		Fencing	10
Tobacco, 1,469 lbs.	367	Blacksmithing	4
Dairy products and stock	159	Taxes	23
Poultry and poultry products	281	Insurance	7
Potatoes	24	Other machine work	9
Hay, 6 tons	90		
Corn	40		

Factors Affecting Profits

Total crop acres	29¾
Net receipts from dairying	$307
Net receipts from poultry	350
Receipts per crop acre	33
Expenses per $100 receipts	36
Lbs. and total value of tobacco: 1,469 lbs.	367
Price per pound of tobacco	25c
Productive work units per man	173
Crop index	184

This farm of 70 acres is one of the best organized of the farms studied. About one-third of it is bottom land and two-thirds hill land. Tobacco, the dairy enterprise and poultry were the chief sources of income. One outstanding feature is that the crop yields were 84 percent better than the average. The operator is exceptionally successful as a grower of tobacco of high yield and quality. Limestone, phosphate and manure are applied regularly. Turning under the legume crops is also used as a means of soil improvement. The hill land is kept in hay crops and pasture nearly all the time, and the cultivated crops are confined largely to the bottom land. Exceptionally good returns were secured from the dairy and the poultry enterprises.

Proposed Farm Budgets.

A particular effort was made to determine the crops and livestock and combinations of crops and livestock most likely to give the best net returns for the use of the land, labor and funds of farmers in this area. Various combinations were set up and calculations made of the net returns reasonably to be expected from such combinations. Costs and net returns for three combinations are presented in the form of budgets or detailed plans for the use of farmers' resources.* Each budget sets out the crops to be grown, the probable expenses, the production of crops and the amount and value of the portion of the crops to be sold, the number and kinds of livestock, their expected production and the amount and value of the portion available for sale. The total feed requirements of the livestock is compared with the total feed raised in order to estimate the

*The second and third combinations or budgets are presented in the appendix.

amount and cost of feed necessary to be purchasd. In other words, a balance has been made between total returns and total costs to determine the net return reasonably to be expected from the budgeted enterprises.

The budgets are based on assumptions derived from this study, the most significant of which are as follows:

(1) Because of the hilly nature of much of the land in this area, any successful farming system must keep the land covered with grass or sod crops most of the time. Grass-and-roughage-eating animals are therefore required. The livestock should be limited to the kind and number which can be pastured on home-grown grass and roughage supplemented with relatively small amounts of purchased grain or concentrates. Grain feed, because of its scarcity and expensiveness, distinctly limits the number of livestock.

(2) In most cases as much as 50 acres of tillable land and pasture is necessary to afford a reasonable chance for a farmer to make a fair living. By the use of intensive methods on a limited acreage of tillable land it is feasible and economical to produce most of the grain required for supplementing the ration of the livestock for which pasture and roughage are available. The liberal use of ground limestone, phosphate, manure and legumes is necessary in such a system. A very vital

TABLE 18.
Yields Used in Budget Organizations.*

Crop	Yield per acre
Corn	40 bus.
Oats	30 bus.
Clover hay	2,500 lbs.
Mixed hay	2,000 lbs.
Soybean hay	3,000 lbs.
Wheat	12 bus.
Tobacco	900 lbs.
Corn stover	2,300 lbs.

*Yields of corn and hays are within the ten-year average obtained by the Experiment Station on the thin soil of the Fariston Experiment Field in Laurel County. Numerous farmers of the area, by using the methods and fertilization called for in these budgets, are securing yields as good or better than those here shown.

requirement is that the farm shall be large enough to furnish this minimum acreage of tillable land required.

(3) Dairy cattle are best adapted to utilize the feed and labor resources on most farms.

(4) Poultry furnish a more profitable means of utilizing home-grown grain and skim-milk than do hogs.

(5) An intensive crop like tobacco or truck which furnishes a relatively large amount of income and productive work is needed on most farms.

Two of the suggested budgets use spring oats as the small-grain crop. The chief advantage of oats is that it furnishes more feed grain than any other available small-grain crop. The chief disadvantage is that oats does not furnish a winter cover for the protection of the land. However, the rather compact clay soil of this area does not seem to wash as much as do soils in many other localities. Protection against washing following the inter-tilled crops is furnished by the use of rye in Budget No. 3 and for half of the land in Budget No. 2. A cover crop could be furnished in Budgets 1 and 2 by using wheat instead of oats. However, as has been previously shown, wheat yields very poorly. A further disadvantage is that it entails a very heavy cost for threshing and often it is difficult or impossible to get it threshed.

In each budget here presented the fertilizer is applied on the inter-tilled crop with which the rotation begins. Corn land received 600 pounds of superphosphate; tobacco land 300 pounds of superphosphate and 500 pounds of complete fertilizer analyzing about 4-12-4. One thousand pounds per acre of fine ground limestone are used, most farmers preferring to apply the limestone and disk it in at the time of seeding the small grain which precedes the clover crop. The quantities of fertilizer and limestone mentioned are applied once in each round of the rotation.

The standards of crop yields and livestock production in Tables 18 and 19 and the seed, fertilizer and other crop requirements in Table 21 and the feed requirements in Table 20 are

based on the records of the 203 farms included in the study, supplemented by other available data including records kept on other Kentucky farms having conditions substantially similar to those prevailing on these farms. The prices for products sold and expense items shown in Table 22 are assumed to represent the prices most likely to prevail on these farms for a period of years.

TABLE 19.
Production Standards for Dairy Cattle and Poultry.

Dairy cows, per head	Whole milk, 4.5% fat	5,000	lbs.
Veal calves, per head	Veal	140	lbs.
Poultry, per hen	Eggs	9	doz.
	Fryers	4	lbs.
	Old hens	4	lbs.

TABLE 20.
Normal Feed Requirements for Livestock, Per Head, Used in Budgets.

	Cows	Veals	Dairy calves	Dairy heifers	Hogs (per cwt.)	Poultry	Work stock
Corn, bu.[1]	16	....	.....	2	6.3	1.25	40
Legume hay, lbs.	2,500	....	200	1,000	....	....	3,000
Corn stover, lbs.	1,000	....	.....	1,000[2]	....	....	1,000
Mixed hay, lbs.	.....	....	.....	.....	....	....	3,000[3]
Bran, lbs.	200	....	.....	100	....	....	.....
Cottonseed meal, lbs.	100	....	.....	.....	....	....	.....
Chick feed, lbs.	.....	....	.....	.....	....	2	.....
Whole milk, lbs.	.....	600	50	.....	....	....	.....
Skim-milk, lbs.	.....	....	1,200	.....	275	130	.....
Oyster shell, lbs.	.....	....	.....	.....	....	4	.....
Pasture, acres	2	....	.5	1.5	....	....	1.5

[1] Wherever oats are substituted for corn, it is at the rate of two bushels of oats to one of corn. [2] 1,000 pounds of corn stover is used as a substitute for 400 pounds of legume hay for dairy heifers in Budget No. 2. None fed in other budgets. [3] Work stock are fed mixed hay in two budgets and legume hay in the other. The figure, 3,000 pounds, is total amount of hay per head in either case.

BUDGET NO. 1.

FOUR-YEAR ROTATION—28 ACRES IN FIELD CROPS, 20 ACRES IN PERMANENT PASTURE.

Budget No. 1 shows a plan for a farm having 28 acres of land in field crops and 20 acres in permanent pasture. A ne' income of $1,085 for the use of the operator's time and investment in the farm is shown. The total acreage actually required would, of course, depend upon the proportion of the farm suitable for use in cultivated crops and pasture. The plan is adapted for the use of farmers who, because of the steepness of

TABLE 21.

Seed, Fertilizer, Limestone and Other Requirements, Per Acre, for Crops Included in Budgets Used.

Crop	Seed	Fertilizer	Other Requirements
Corn	7 lbs.	600 lbs. of 16% superphosphate[1]	
Tobacco	Farm	300 lbs. of 16% superphosphate 500 lbs. of 4-10-4 fertilizer	30 yds. of canvas
Oats	1.5 bu.		2 lbs. twine threshing 10c per bu.
Clover and grass mixture[2]	4 lbs. red clover 2 lbs. alsike 3 lbs. timothy 2 lbs. redtop 3 lbs. lespedeza 4 lbs. orchard grass		1,000 lbs. fine ground limestone
Clover mixture	5 lbs. red clover 2 lbs. alsike		1,000 lbs. fine ground limestone
Pasture mixture	5 lbs. sweet clover 3 lbs. lespedeza 3 lbs. redtop 2 lbs. timothy 5 lbs. orchard grass	300 lbs. of superphosphate	1,000 lbs. fine ground limestone
Rye	1½ bus.		
Wheat	1¼ bus.		2 lbs. twine threshing at 15c per bu.
Soybeans	2 bus.		

[1]Fertilizer and limestone include all that is used per rotation in each case. If preferred, half the fertilizer may be applied to the small grain and half to the corn instead of the plan suggested. In that case, only the 500 pounds of complete fertilizer would go on tobacco, and superphosphate on the following crop. [2]Where the clover and grass mixture is to be left only two years, the orchard grass is omitted and another pound of lespedeza added.

the land for other reasons, prefer to keep a considerable area in pasture continuously. Six dairy cows, 125 hens and 1 acre of tobacco furnish the chief sources of income.

The 28 acres of crop land is divided into four areas of 7 acres each, and a 4-year rotation is used. The first year of the rotation, 6 acres is planted to corn and 1 acre to tobacco.

The next year the acre of tobacco stubble land is planted to corn and 2½ acres of the corn stubble land planted to soybeans, these 3½ acres having a cover crop of rye during the intervening fall and winter period. The other 3½ acres is sown to spring oats in which is seeded a hay mixture of red and alsike clover, timothy, redtop and Japan clover.

The third year the soybean stubble land and the acre of corn stubble land representing half of one of the four fields is sown to oats, a mixture of red and alsike clover being seeded at the same time. The hay which was seeded the previous year is cut off the other half of the area.

The fourth year 3½ acres of red clover and alsike hay and 3½ acres of second-year grass hay is cut.

TABLE 22.

Assumed Prices for Products Sold and Expense Items Incurred in Budgets Used.

Products to be sold			Expense Items		
Item		Price	Item		Price
Cash crops:		Dols.	**Feeds:**		Dols.
Wheat	per bu.	1.30	Bran and shorts	per 100 lbs.	2.00
Tobacco	per lb.	.20	Cottonseed meal	per 100 lbs.	2.50
Corn	per bu.	1.00	Oyster shell	per 100 lbs.	1.00
Hay	per ton	18.00	Baby chick feed	per 100 lbs.	5.00
Livestock:			**Fertilizer:**		
Butterfat	per lb.	.40	Superphosphate	per 100 lbs.	1.10
Veal	per lb.	.08	4-10-4 (tobacco)	per 100 lbs.	2.00
Cull cows	per head	40.00	Fine ground limestone	per 100 lbs.	.35
Hogs	per 100 lbs.	9.00	**Seeds:**		
Eggs	per doz.	.25	Soybeans	per bu.	2.50
Fryers	per lb.	.26	Japan clover	per lb.	.15
Hens	per lb.	.18	Red clover	per lb.	.30
			Alsike clover	per lb.	.25
			Sweet clover	per lb.	.18
			Orchard grass	per lb.	.20
			Redtop	per lb.	.18
			Timothy	per lb.	.08
			Rye	per bu.	1.40
			Miscellaneous:		
			Twine	per lb.	.18
			Canvas	per yard	.05
			Limestone	per ton	2.50

One thousand pounds of fine-ground limestone and 300 pounds of superphosphate are applied to the permanent pasture. Since it is planned to reseed the permanent pasture every fifth year, the seed and fertilizer requirements would be for 4 acres a year of the amounts indicated.

Each year there would be the following acreages of harvested crops: Corn 7 acres, tobacco 1 acre, oats 7 acres, soybean hay 2½ acres, clover hay 7 acres, mixed hay 3½ acres. There would also be 1¼ acres of truck crops and orchard and 20 acres of permanent pasture. (See Section B of Table 23.)

The sales of crops include $180 worth of tobacco and $77 worth of hay; the sales from livestock enterprises $425 worth of butterfat, veal calves $34, 2 old cows $80, eggs $226 and live poultry $185. The principal cash expenses on crops are for superphosphate and limestone and for seeds. The livestock cash

TABLE 23.

Budget No. 1.

SECTION A.

Crop	Acres	Seeds		Fertilizer and other materials		
		Amount	Value	Kind	Amount	Value
				Fertilizer 4-10-4	500 lbs.	$10
Tobacco	1			16% superphosphate	300 lbs.	3
				Canvas	30 yds.	1
				16% superphosphate	4,200 lbs.	46
Corn	7	1 bu.	Farm			
Rye	3½	5 bus.	$7			
Oats	7	10½ bus.	Farm	Twine	14 lbs.	3
				Threshing	210 bus.	21
Soybeans	2½	5 bus.	$12			
Mixed clover hay	3½	14 lbs. red cl.	4			
		7 lbs. alsike	2			
		10½ lbs. timothy	1	Fine-ground limestone	3,500 lbs.	19
		7 lbs. redtop	1			
		14 lbs. lespedeza	2			
Mixed clover hay	3½	17½ lbs. red cl.	5	Fine-ground limestone	3,500 lbs.	19
		7 lbs. alsike	2			
		20 lbs. sweet cl.	4			
Permanent pasture	Ave. 4 each year	12 lbs. lespedeza	2	Fine-ground limestone	4,000 lbs.	14
		20 lbs. orchard grass	4	16% superphosphate	1,200 lbs.	13
		12 lbs. redtop	2			
		8 lbs. timothy	1			
Total			$49			$149

TABLE 23—Continued.
SECTION B

Crop	Acres	Total Production	Disposition of products			
			Farm Use		Sales	
			Seed	Feed	Amount	Value
Tobacco	1	900 lbs.	.....	.....	900 lbs.	$180
Corn	7	280 bus.	1 bu.	265 bus.		
Oats	7	210 bus.	10½ bus.	200 bus.		
Clover hay	7	17,500 lbs.	.....	10,000 lbs.	7,500 lbs.	68
Soybeans	2½	7,500 lbs.	.....	7,500 lbs.		
Mixed hay	3½	7,000 lbs.	.....	6,000 lbs.	1,000 lbs.	9
Perm. pasture	20	Pasture	.....	Pasture		
Orch. and truck	1¼					
Lots	2¾					
Waste	3					
Woodland	15					
Total	70					$257

TABLE 23—Continued.
SECTION C.

Live-stock	No.	Home grown feeds		Purchased feed and other expenses		
		Kind	Amounts	Kind	Amount	Value
Dairy cows	6	Corn	72 bus.			
		Oats	48 bus.	Bran	1,200 lbs.	$24
		Legume hay	15,000 lbs.	Cottonseed meal	600 lbs.	15
		Corn stover	6,000 lbs.	Miscellaneous costs	.....	15
Veals	3	Whole milk	1,800 lbs.			
Dairy calves	2	Whole milk	100 lbs.			
		Skim-milk	2,400 lbs.			
		Legume hay	400 lbs.			
Dairy heifers	2	Corn	4 bus.	Bran	200 lbs.	4
		Legume hay	2,000 lbs.	Miscellaneous costs	.....	1
Pigs	3	Corn	39 bus.	Original cost	.....	12
		Skim-milk	1,650 lbs.	Miscellaneous costs	.....	1
Poultry	125	Corn	120 bus.	Chick feed	250 lbs.	12
		Skim-milk	16,250 lbs.	Oyster shell	500 lbs.	5
		Oats	72 bus.	Miscellaneous costs	.....	1
Work stock	2	Corn	30 bus.			
		Oats	80 bus.	Corn	10 bus.	10
		Mixed hay	6,000 lbs.	Miscellaneous costs	.....	4
		Corn stover	2,000 lbs.			
Totals		Corn	265 bus.			
		Oats	200 bus.			
		Whole milk	1,900 lbs.	Feeds	.....	70
		Skim-milk	20,300 lbs.	Miscellaneous	.....	34
		Legume hay	17,400 lbs.			
		Mixed hay	6,000 lbs.			
		Corn stover	8,000 lbs.			

expenses are for feeds and miscellaneous expenses. Other expenses include $80 for repairs and upkeep of buildings and machinery, $40 for fences, $35 for taxes and $18 for insurance and telephone. When cash expenses are subtracted from cash receipts, $1,085 remains to pay for the operator's labor and the small amount of family help used and the interest on the capital invested. In addition, the farm furnished crop and orchard products worth $134, and meat, dairy and poultry products worth $219, and the use of a dwelling house.

TABLE 23—Continued.
SECTION D.

Kind of livestock and product	Total Production	Disposition of products: Fed to Livestock	Used in home: Amount	Used in home: Value	Sales: Amount	Sales: Value
Dairy cows			4,500 lbs.			
Milk 4½ %	30,000 lbs.	1,900 lbs.	202 lbs. fat	$81	1,062 lbs.	$425
Veals	420 lbs.	"			420 lbs.	34
Cull cows	2				2 cows	80
Pork	700 lbs.		700 lbs.	63		
Poultry eggs	1,125 doz.	62 set	160 doz.	40	903 doz.	226
Fryers	500 lbs.		100 lbs.	26	400 lbs.	104
Hens	500 lbs.		50 lbs.	9	450 lbs.	81
Totals				$219		$950

TABLE 23—Continued.
SECTION E.

Incomes		Expenses	
Crops (Section B	$257	Crops (Section A)	
Livestock and livestock products (Section D)	950	Seeds	$49
		Fertilizer and other materials	149
Orchard and crop products used in home	134	Livestock (Section C)	
Livestock products used in home (Section D)	219	Feeds purchased	70
		Miscellaneous costs	34
Total	$1,560	General farm	
		Machinery—new and upkeep	30
		Buildings—new and upkeep	50
		Fence—new and upkeep	40
		Miscellaneous: taxes $35, insurance $15, telephone $3	53
Net Income	$1,085	Total	$475

SUMMARY AND CONCLUSIONS.

This report presents an analysis of the farm business and the sources and uses of the income of 203 farm families for the farm year 1927. Laurel County was selected for the study because it was representative of a considerable area of the foothill and mountain territory of Eastern Kentucky. The study included the territory comprising eight school districts.

Ninety of the 203 operators (Group A) depended mainly upon the farm for their living. These had an average of $339 per year for spending. Forty-one operators (Group B) derived their living largely from pensions of financial assistance of children or others. Their total spendable income averaged $459. Seventy-two operators secured the greater part of their income from work away from the farm. The total spendable income of these men averaged $540.

The study indicates that the well-being of families in this region is dependent in a very large measure upon their producing an ample supply of foods for home use, particularly vegetables, fruits, dairy and poultry products.

The average investment of all the operators was $2,721. The investment of the 90 operators whose chief source of income was the operation of their farms (Group A) was $2,968. The net farm income of the 203 operators averaged $333 and the labor income, $197. When $365, the value of the family living furnished by the farm is added, the operator's earnings amounted to $560. The operator's earnings for the farms in Group A were $545, Group B $359 and Group C $692.

Of the total farm expenses, unpaid family labor amounted to 21 percent, purchased grain 14 percent, taxes 9 percent, fertilizer 8 percent, seeds 7 percent, depreciation on implements and farm improvements 8 percent and repairs 6 percent.

On the average, the most successful operators excelled the least successful ones in labor efficiency, yields of crops and livestock and size of business. Other important factors for success were proper type of farming, volume of sales, effective and economic practices in soil improvement and maintenance, and the control of farm expenses.

A larger volume of sales per acre is one of the major factors upon which profitable farming in this area depends. Farms having crop yields 10 percent or more below average showed labor incomes only about half as great as the farms having yields 15 percent or more above average. The amount of the sales of dairy products per cow and the amount of egg sales per hen had a marked influence on profits.

Soil improvement appeared to be one of the most vital factors for profits. The use of limestone and phosphate and the control of erosion appeared to be the chief factors in an effective program of soil improvement. Because of the hilly nature of much of the land, the use of grass and sod crops and the use of grass-eating livestock are particularly important for profitable farming. Successful grass production was found to depend chiefly upon liming and phosphating the land and the control of the growth of shrubs and sprouts (locally called "filth") which choke out the grass on the pasture and hay fields. A vital need was shown to be that of keeping hillside fields in grass as long as a good set of grass can be maintained. The greatest difficulty in "filth" control is encountered during the first year after land is seeded down to grass. However, if the sprouts are grubbed out the first year, they can be effectively and economically kept down thereafter by running the mowing machine over the pasture in the late summer.

One of the most significant facts brought out was the marked effect the production of intensive crops exerted on profits. The intensive crops consisted for the most part of tobacco, potatoes and other truck. The operators who grew some intensive crops made on an average considerably greater profits than those who did not. There is an imperative need for the greater use of intensive crops and more intensive methods with such non-intensive crops as may be grown. Since land level enough for cultivation is scarce, it is particularly imperative that every acre of such land shall be so handled as to get large returns in physical yields and money values by the greater use of such intensive crops as tobacco and truck crops, and the liberal use of limestone and other fertilizing agents. By these means it is possible and economical to secure larger net returns on smaller acreages than are at present being secured on larger acreages.

The land upon which cultivation is discontinued should be used for grazing or growing timber. Such a plan would prevent the washing away of hillside soils.

The need for the greater use of intensive livestock enterprises is also imperative. This is particularly true of dairying on farms situated where transportation facilities make possible the economical delivery of dairy products to market. Most farms are small and have a considerable amount of available family labor and insufficient crops and livestock to furnish full employment. The milking and care of cows in such cases serves to furnish needed employment and a greater family revenue.

Labor accomplishment per man exerted a marked influence on profits. Many of the operators had small incomes because they had only a fraction of a full year's productive employment. The larger farms provided more nearly a full year's productive employment for the operator and available family labor and tended to be more profitable than the smaller farms. Intensive enterprises and the use of more intensive methods provided a larger business on some farms which would otherwise be too small.

This territory is poorly adapted to growing corn or other feed grains, and the hog enterprise appears to have no place in the farming of this area beyond furnishing meat to the farm families and some fresh pork for sale locally. In general, livestock should be limited to the kind and number which can be carried on home-grown grass and roughage supplemented with relatively small amounts of purchased grain or concentrates.

The operation of a farm which is of such size and type as to provide a full year's work for the operator and his family compares favorably as a means of livelihood with an occupation which includes non-farming work as a chief source of income of farm occupants in this area.

The organization and management of four outstanding successful farms are described on pages 258 to 265 of this bulletin.

Budgets of farming systems, which from this study seem to be adapted to this region and calculated to give economical and profitable returns from the standpoint of permanent farming are shown on pages 265 to 273 and in the appendix.

APPENDIX.

BUDGET NO. 2.

FOUR-YEAR ROTATION—36 ACRES IN FIELD CROPS, 12 ACRES IN PERMANENT PASTURE.

Budget No. 2, shown in Table 24, provides for a 4-year rotation. With the crops and the livestock shown a net return of $1,093 to the operator is indicated.

There are four 9-acre rotation fields and 12 acres of permanent pasture. In the first year of the rotation there are 8 acres of corn and 1 acre of tobacco, these crops being followed by 4½ acres each of wheat and spring oats the second year. The oats and wheat are seeded to a mixture of clover and grass (red and alsike clover, timothy, redtop and Japan). A hay crop is harvested the third year, and the same area pastured the fourth year, the sod being broken again for corn and tobacco the fifth year.

The 12-acre permanent pasture is to be reseeded every fourth year, this being equivalent to seeding 3 acres each year. An application of 1,000 pounds of fine ground limestone and 300 pounds of 16 percent superphosphate is made at the time the pasture mixture is seeded.

The crops and pasture grown in this plan provide the principal part of the feed required for 6 dairy cows and young stock, 2 head of work stock, 125 chickens and 3 hogs. The hogs are bought as pigs and fattened for home use. The plan provides an excellent balance between the stock kept and feeds grown. Feed to the value of only $60 has to be purchased. The poultry flock gets the greater part of the skim-milk.

The largest single source of cash revenue are the 6 dairy cows. These return a gross income of $539. Poultry and eggs from the 125 hens provide for cash sales of $348. The acre of tobacco provides an income of $180. Wheat brings in $61. Total cash sales amount to $1,191. Garden, orchard and crop products are furnished by the farm for the family living to a total value of $134; pork, poultry and eggs and dairy products to a total value of $219.

TABLE 24.
Budget No. 2.
SECTION A.

Crop	Acres	Seeds		Fertilizer and other materials		
		Amount	Value	Kind	Amount	Value
Tobacco	1			Fertilizer 4-10-4 16% super-phosphate Canvas	500 lbs. 300 lbs. 30 yds.	$10 3 1
Corn	8	1 bu.	Farm	16% super-phosphate	4,800 lbs.	53
Oats	4½	7 bus.	Farm	Twine Threshing	9 lbs. 135 bus.	2 14
Wheat	4½	6 bus.	Farm	Twine Threshing	9 lbs. 54 bus.	2 8
Mixed clover hay	9	36 lbs. red clover 18 lbs. alsike 27 lbs. timothy 18 lbs. redtop 36 lbs. lespedeza	11 4 2 3 5	Fine-ground limestone	9,000 lbs.	32
Permanent pasture	Ave. 3 A. each year	15 lbs. sweet cl. 9 lbs. lespedeza 15 lbs. orchard grass 9 lbs. redtop 6 lbs. timothy	3 1 3 1 1	Fine-ground limestone 16% super-phosphate	3,000 lbs. 900 lbs.	10 10
Total			$34			$145

TABLE 24—Continued.
SECTION B

Crop	Acres	Total Production	Disposition of products			
			Farm Use		Sales	
			Seed	Feed	Amount	Value
Tobacco	1	900 lbs.	.....	.....	900 lbs.	$180
Corn	8	320 bus.	1 bu.	305 bus.		
Oats	4½	135 bus.	7 bus.	128 bus.		
Wheat	4½	54 bus.	6 bus.	.....	48 bus.	62
Clover hay	9	22,500 lbs.	.....	22,500 lbs.		
Rotation past.	9	Pasture	.....	Pasture		
Perm. pasture	12	Pasture	.....	Pasture		
Orch. and truck	1¼					
Lots	2¾					
Waste	3					
Woodland	15					
Total	70					$242

TABLE 24—Continued.
SECTION C.

Live-stock	No.	Home grown feeds		Purchased feed and other expenses		
		Kind	Amounts	Kind	Amount	Value
Dairy cows	6	Corn	96 bus.	Bran	1,200 lbs.	$24
		Clover hay	15,000 lbs.	Cottonseed meal	600 lbs.	15
		Corn stover	6,000 lbs.	Miscellaneous costs	.....	15
Veals	3	Whole milk	1,800 lbs.			
Dairy calves	2	Whole milk	100 lbs.			
		Skim-milk	2,400 lbs.			
		Clover hay	400 lbs.			
Dairy heifers	2	Corn	4 bus.			
		Clover hay	1,200 lbs.	Bran	.....	4
		Corn stover	2,000 lbs.	Miscellaneous costs	.....	1
Pigs	3	Corn	39 bus.	Original cost	.....	12
		Skim-milk	1,650 lbs.	Miscellaneous costs	.....	1
Poultry	125	Corn	125 bus.	Chick feed	250 lbs.	12
		Skim-milk	16,250 lbs.	Oyster shell	500 lbs.	5
		Oats	62 bus.	Miscellaneous costs	.....	1
Work stock	2	Corn	40 bus.			
		Oats	80 bus.			
		Clover hay	6,000 lbs.	Miscellaneous costs	.....	4
		Corn stover	2,000 lbs.			
Totals		Corn	304 bus.			
		Oats	142 bus.			
		Whole milk	1,900 lbs.	Feeds	.....	60
		Skim-milk	20,300 lbs.	Miscellaneous costs	.....	34
		Clover hay	22,600 lbs.			
		Corn stover	10,000 lbs.			

TABLE 24—Continued.
SECTION D.

Kind of livestock and product	Total Production	Disposition of products				
		Fed to Livestock	Used in home		Sales	
			Amount	Value	Amount	Value
Dairy cows			4,500 lbs.			
Milk 4½%	30,000 lbs.	1,900 lbs.	202 lbs. fat	$81	1,062 lbs.	$425
Veals	420 lbs.				420 lbs.	34
Cull cows	2				2 cows	80
Pork	700 lbs.		700 lbs.	63		
Poultry eggs	1,125 doz.	62 set	160 doz.	40	903 doz.	226
Fryers	500 lbs.		100 lbs.	26	400 lbs.	104
Hens	500 lbs.		50 lbs.	9	450 lbs.	81
Totals				$219		$950

TABLE 24—Continued.

SECTION E.

Incomes		Expenses	
Crops (Section B)	$242	Crops (Section A)	
Livestock and livestock products (Section D)	950	Seeds	$34
Orchard and crop products used in home	134	Fertilizer and other materials	145
Livestock products used in home (Section D)	219	Livestock (Section C)	
		Feeds purchased	60
		Miscellaneous costs	34
Total	$1,545	General farm	
		Machinery—new and upkeep	30
		Buildings—new and upkeep	50
		Fence—new and upkeep	40
		Miscellaneous: taxes $35, insurance $15, telephone $3	53
Net Income	$1,099	Total	$446

BUDGET NO. 3.

FIVE-YEAR ROTATION—27½ ACRES OF FIELD CROPS, 19 ACRES IN ROTATION PASTURE.

The plan shown in Budget No. 3, Table 25, provides a net cash income of $657 and farm products for the family living worth $353. The plan is adapted to farms on which all the land except the woodland can be cultivated. Rotation pastures rather than permanent pastures are used.

There are 5 nine and a half acre fields. The first year there are 1 acre of tobacco and 8½ acres of corn, rye being seeded as a cover crop on the corn and tobacco stubble land. Red, alsike and Japan clover, timothy, redtop and orchard grass are seeded on the rye, that crop serving as a winter cover for the corn and tobacco stubble land. The rye may be pastured or clipped or allowed to ripen and fall down, thus materially benefiting the land by mulching and adding to its content of organic matter. The third year 9½ acres of hay is cut, the same land during the fourth and fifth years being used for pasture.

TABLE 25.
Budget No. 3.
SECTION A.

Crop	Acres	Seeds		Fertilizer and other materials		
		Amount	Value	Kind	Amount	Value
Tobacco	1			Fertilizer 4-10-4	500 lbs.	$10
				16% super-phosphate	300 lbs.	3
				Canvas	30 yds.	1
Corn	8½	1 Bu.		16% super-phosphate	5,100 lbs.	56
Mixed clover hay	9½	38 lbs. red cl.	$11			
		19 lbs. alsike	5			
		28½ lbs. timothy	2	Fine-ground limestone	9,500 lbs.	33
		19 lbs. redtop	3			
		36 lbs. orchard grass	8			
		28½ lbs. lespedeza	4			
Rye	9½	14 bus.	20			
Total			$53			$103

The system provides most of the feed needed for 6 dairy cows and the accompanying young stock, 3 hogs, 125 chickens and 2 head of work stock. Somewhat less grain is grown than in Systems 1 and 2, and the deficiency is made up by the purchase of 30 bushels of corn.

TABLE 25—Continued.
SECTION B

Crop	Acres	Total Production	Disposition of products			
			Farm Use		Sales	
			Seed	Feed	Amount	Value
Tobacco	1	900 lbs.	.....	.....	900 lbs.	$180
Corn	8½	340 bus.	1 bu.	325 bus.		
Mixed clover hay	9½	23,750 lbs.	.....	23,750 lbs.		
Rye	9½	Pasture and cover crop				
Rotation pasture	19	Pasture				
Orchard and truck	1½					
Lots	3¼					
Waste	3					
Woodland	15					
Total	70					$180

TABLE 25—Continued.
SECTION C.

Live-stock	No.	Home grown feeds		Purchased feed and other expenses		
		Kind	Amounts	Kind	Amount	Value
Dairy cows	6	Corn	96 bus.	Bran	1,200 lbs.	$24
		Legume hay	15,000 lbs.	Cottonseed meal	600 lbs.	15
		Corn stover	6,000 lbs.	Miscellaneous costs	.....	15
Veals	3	Whole milk	1,800 lbs.			
Dairy calves	2	Whole milk	100 lbs.			
		Skim-milk	2,400 lbs.			
		Legume hay	400 lbs.			
Dairy heifers	2	Corn	4 bus.	Bran	200 lbs.	4
		Legume hay	2,000 lbs.	Miscellaneous costs	.....	1
Pigs	3	Corn	39 bus.	Original cost	.....	12
		Skim-milk	1,650 lbs.	Miscellaneous costs	.....	1
Poultry	125	Corn	126 bus.	Corn	30 bus.	30
		Skim-milk	16,250 lbs.	Chick feed	250 lbs.	12
				Oyster shell	500 lbs.	5
				Miscellaneous costs	.....	1
Work stock	2	Corn	60 bus.			
		Mixed hay	6,000 lbs.	Corn	.....	20
		Corn stover	2,000 lbs.	Miscellaneous costs	.....	4
Totals		Corn	326 bus.			
		Whole milk	1,900 lbs.			
		Skim-milk	20,300 lbs.	Feeds	.....	$110
		Legume hay	23,400 lbs.	Miscellaneous costs	.....	34
		Corn stover	8,000 lbs.			

TABLE 25—Continued.
SECTION D.

Kind of livestock and product	Total Production	Disposition of products				
		Fed to Livestock	Used in home		Sales	
			Amount	Value	Amount	Value
Dairy cows			4,500 lbs.			
Milk 4½%	30,000 lbs.	1,900 lbs.	202 lbs. fat	$81	1,062 lbs.	$425
Veals	420 lbs.				420 lbs.	34
Cull cows	2				2 cows	80
Pork	700 lbs.		700 lbs.	63		
Poultry eggs	1,125 doz.	62 set	160 doz.	40	903 doz.	226
Fryers	500 lbs.		100 lbs.	26	400 lbs.	104
Hens	500 lbs.		50 lbs.	9	450 lbs.	81
Totals				$219		$950

TABLE 25—Continued.
SECTION E.

Incomes		Expenses	
Crops (Section B)	$180	Crops (Section A)	
Livestock and livestock products (Section D)	950	Seeds	$53
		Fertilizer and other materials	103
Orchard and crop products used in home	134	Livestock (Section C)	
		Feeds purchased	110
Livestock products used in home (Section D)	219	Miscellaneous costs	34
Total	$1,483	General farm	
		Machinery—new and upkeep	30
		Buildings—new and upkeep	50
		Fence—new and upkeep	40
		Miscellaneous: taxes $35, insurance $15, telephone $3	53
Net Income	$1,010		$473