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Alternative Uses for Resources in Part-time Farming

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Summary

The accumulation of economic resources represents important investments to part-time farmers in Northeast Texas. According to a 1955 survey, part-time farmers controlled about 40 percent of all farm and land resources in the area and accounted for more than a third of all operators. The value of farm products used at home, the rental value of the dwelling, appreciation in land values and rent from mineral rights constituted an important source of returns from farm investments. Monetary returns from farm operations, however, constituted only a small part of the total income of these part-time farmers. As organized on most part-time farms, enterprise operations were not profitable.

An analysis of four representative part-time farming situations indicates that greater returns are possible through a reorganization of the present resources. These returns are small by total income standards and would suffice only as a supplemental income. The level of net returns (returns to land, labor, management and risks) from present resources ranges from a low of \$417 for one representative situation to a high of \$860 for another typical part-time farm situation.

Returns to capital and labor represented by these situations are low. This is emphasized by comparing returns from renting out the land (reserving the dwelling and other buildings and 5 acres) with returns from other farm plans. In the situations analyzed, renting out would require only \$41 operating capital and 80 hours of labor, yet it would return incomes of \$255 to \$408 per year. These compare favorably with incomes of \$417 to \$860 from farming operations.

On the average part-time farm in the area, the level of capital used is the most limiting resource in planning for higher farm returns from more efficient farm organization. With the use of higher, yet practical, levels of capital, net returns can be expected to range from \$1,000 to more than \$1,200.

The labor and land resources available on most part-time farms cannot be utilized efficiently without the additional use of relatively high capital resources and the assumption of high risks in addition to different management practices. The representative farm with most available labor would require about \$14,000 average investment capital (excluding the value of land) and \$19,500 operating capital to utilize fully available land and labor. Capital requirements for utilization of available labor and land resources for the representative farm with the least available labor would be about \$9,300 average investment capital and \$10,000 operating capital. The expected net returns under these conditions are \$2,200 and \$1,600, respectively.

The 1955 survey showed considerable unemployment of available family labor on many part-time farms in the area. Reorganization of current farm resources would lead to greater efficiency and returns, but even less labor would be required for farming operations. Even with the use of higher levels of farm resources than available on most part-time farms, the returns to family labor from off-farm work activities are greater than those possible in any farm activities considered.

Considering the resources on most farms in the area, full-time off-farm work (a 40-hour-per-week job) by the farm operators would not prevent farm reorganization for the greatest returns from farming. This suggests that both part-time and full-time farmers might find it profitable to work full-time off the farm if possible.

Contents

Summary.....	2
Purpose of Report.....	3
Framework of Analysis.....	4
Methods of Study.....	4
Alternative Farm Enterprises Considered.....	4
Level of Management and Technology Assumed.....	4
Production Practices.....	5
Prices.....	5
Situation A—Farm Operator with Full-time Off-farm Work Opportunities.....	6
Present Organization.....	6
Present Farm Resources and Returns.....	6
Enterprise Combinations Considered.....	6
All Resources Limited to Present Level.....	7
Investment Capital Unlimited.....	8
Investment Capital and Operating Capital Unlimited.....	9
Farm Resources Required for Adequate Employment of Available Farm Labor.....	10
Resources Required To Use Present Off-farm Labor in Farming.....	10
Situation B—Farm Operator with Medium-level Off-farm Work Opportunities.....	11
Present Organization.....	11
Enterprise Combinations Considered.....	12
All Resources Limited to Present Level.....	12
Investment Capital Unlimited.....	12
Investment Capital and Operating Capital Unlimited.....	13
Employment of Family Labor.....	13
Situation C—Farm Operator with Low-level Off-farm Work Opportunities.....	14
Present Organization.....	14
Enterprise Combinations Considered.....	14
All Resources Limited to Present Level.....	14
Investment Capital Unlimited.....	15
Investment Capital and Operating Capital Unlimited.....	15
Situation D—Farm Operator without Off-farm Work Opportunities.....	16
Present Organization.....	16
Enterprise Combinations Considered.....	17
All Resources Limited to Present Level.....	17
Operating Capital Unlimited.....	18
Investment Capital and Operating Capital Unlimited.....	19
Conclusions and Recommendations.....	19
Definitions of Budget Items.....	21
Bibliography.....	21

Alternative Uses for Resources in Part-time Farming in Northeast Texas

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MAJOR CHARACTERISTIC OF THE AGRICULTURAL INDUSTRY TODAY is the existence of many farm families whose major family income is from resources other than farming. Technological, economic and social factors have resulted in an extensive rural pattern of living and land utilization commonly referred to as *part-time farming*. This report is concerned with resources used in part-time farming in a particular area of low-farm income and low-farm production. The area is typical of low-farm income areas throughout the nation. Consequently, the findings and conclusions of this study probably can be expanded to reflect the part-time farming situation of a broader area.

PURPOSE OF REPORT

This report is one of a series dealing with the characteristics, economic problems and development potentials of rural families in an important 24-county area of Northeast Texas (U. S. Census Economic Area XII, sometimes referred to as the Northeast Texas sandy lands type-of-farming area). The first report—a broad orientation study—dealt with human and physical resource characteristics, size and distribution pattern of family incomes and specific types of adjustment problems of rural families in the area.¹ A subsequent report examined the characteristics of part-time farmers in the area—their place and importance in the economy, their employment and under-employment characteristics, and the economic returns they currently were deriving from the control or ownership of farm resources.²

The principal purpose of the study was to analyze alternative uses for farm resources under various conditions of part-time farming in the

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Southern, John H. and Hendrix, W. E., *Incomes of Rural Families in Northeast Texas*, Texas Agricultural Experiment Station Bul. 940, 1959.

Martin, James R. and Southern, John H., *Part-time Farming in Northeast Texas*, Texas Agricultural Experiment Station Bul. 970, 1961.

area. More specifically, answers to the following questions were sought:

(1) What level of farm returns could be expected from alternative uses of the farm resources currently used in part-time farming?

(2) Considering the current level of farm resource use, what specific resources were most restrictive to obtaining greater returns from farming with good farm organization practices?

(3) With various farm organization practices, what level of farm returns could be expected from using more resources than those currently available?

(4) Could part-time farm family labor currently available for farmwork be utilized adequately in farming?

(5) Under what conditions would available family labor and land resources become limiting factors to higher farm income?

(6) What are the implications of the findings for families engaged in part-time farming, the economy of the area and program policies for utilizing and developing resources in the area?

The findings of the previous studies indicated that part-time farming in the area is important from the standpoint of the number of families, the large amounts of farm resources involved and the accompanying underemployment of labor resources. Furthermore, the accumulations of farm resources by part-time farmers represent important investments. As *investors* these operators receive returns to their resources that are important and perhaps adequate in terms of current interest rates. However, the returns received as a result of *farming* are insignificant in the total income picture of the families involved. In other words, monetary and non-monetary returns in the form of farm perquisites (value of farm products used in the home and rental value of dwelling), value of land appreciation, mineral rent income and such, are im-

portant to part-time farmers, but these returns do not result from farm enterprise operation or from the sale of farm products. In general, under the present organization of most part-time farms in the area, the returns to farm resources specifically used for farm *enterprise* operations (production and sale of conventional farm products) are not profitable. Since this situation exists, the need is apparent for further investigation on alternatives that would provide more profitable uses of the farm resources involved in part-time farming.

FRAMEWORK OF ANALYSIS

Methods of Study

The procedure for analysis included three basic steps:

(1) Selection of several farm situations typical of part-time farming in the area, and establishment of representative farm resource levels and labor use conditions for these typical farm situations.

(2) Development of budgets (production requirements, costs, product outputs and such) for various feasible enterprises as alternative ways of using resources on part-time farms.

(3) Analysis of resource use and returns resulting from most desirable farm organization and conditions suited to the typical part-time farming situations.

The first step of the procedure was accomplished in a study of part-time farming which analyzed primary data obtained by survey records taken in 1956 (TAES Bulletin 970). Part-time farming includes a wide range of situations. Consequently, operators were divided into four groups—Situations A, B, C and D—based on the extent of off-farm work activities. This classification divided the operators into fairly homogeneous groups—farm operators and families with similar conditions and adjustment problems. The part-time farm situations examined in this report represent the average resource situations of these four groups of part-time farms. The second step involved the development of enterprise budgets to establish a framework for the analysis of farm income potentials of part-time farm operators having different sets of productive resources. The data for developing the budgets were obtained from published and unpublished research data, and by consultation with production specialists of the Texas Agricultural

Experiment Station and Extension Service (see Bibliography).

The budgets represent input-output relationships, costs and returns for enterprise operations presently feasible on part-time farms in the area. They were not developed to set a standard for production techniques. The detailed budgets are presented as a separate appendix to this report.

Since every producing unit is different, the budgets as developed probably would not exactly fit any specific situation. In several instances, information necessary to complete the budgets was not available for Northeast Texas. Such data developed in production studies for other areas of Texas and in other states were modified for application to the study area.

The third step—analysis of returns from alternative uses of part-time farm resources—was accomplished by using a method of production programming. This involved a mathematical procedure to describe maximum and conditional maximum income possibilities with given combinations of farm resources.³

Alternative Farm Enterprises Considered

In the analyses of farm income possibilities the following enterprises were considered as alternative uses of part-time farm resources: cow-calf, sheep, swine, broilers, commercial egg production, turkeys, timber and renting out of land. Different levels of inputs were considered for the cow-calf and sheep enterprises, including high and medium levels of management for improved pasture, tame pasture and woods pasture. Feeder pigs and market hog production enterprises, and production of broilers on both a non-contract and contract basis, were considered as separate enterprises.

Only budget summaries for the enterprises finally included in the farm organization structure of the various situations analyzed are presented in this report (Table 1). (See Definitions of Budget Items, page 21)

Level of Management and Technology Assumed

The level of management assumed in this analysis is one that can be used currently on most part-time farms in the area. Superior management abilities or the use of advanced technology were not considered.

³Many references are available on Linear Programming. For example, Earl O. Heady and Wilfred Candler, *Linear Programming Methods*, Iowa State College Press, Ames, Iowa, 1959.

Farm operators should use information on improved practices and advanced production techniques to develop their particular farm enterprise activities. New technology constantly is being developed and used by farmers in the area. The budgets in this report represent only feasible alternative production techniques with average management and current practices for the various enterprises considered.

Production Practices

Livestock budgets assume that all feed concentrates are purchased from retail feed dealers. However, farmers with the necessary machinery and equipment should consider the savings possible from using some feed concentrates produced on the farm.

High-level improved pasture assumes seeding with recommended grasses and clovers, a high level of fertilization and adequate weed control. Medium-level improved pasture assumes the same practices with a lower level of fertilizer use. All improved pasture operations such as seeding, fertilization and mowing are custom hired.

The land-renting enterprise assumes that the operator rents out all land except the dwelling and 5 acres of open land under a 10-year lease

agreement. Improved fences, pens and storage are assumed adequate for cow-calf operations and should be kept in good repair by the owner.

Prices

Price data published by the U. S. Department of Agriculture, Statistical Reporting Service, Texas Crop and Livestock Reporting Service, Austin, Texas, were used to derive most of the input and product prices used to develop the budgets. In some instances, price data from "Agricultural Prices," published by the Statistical Reporting Service, were used. Average 1960 prices were adjusted to fit local situations and conditions.

Many farm operators organize their livestock enterprises to take advantage of higher seasonal product prices. Some also may be able to purchase input items at lower prices than those assumed in this analysis. These possibilities should not be overlooked by individual farm operators. Such economies, however, were not assumed in the study. The enterprise budgets used represent production conditions feasible to part-time farm operators as a group. A different set of price assumptions would have been used if budgets were designed to represent optimum production techniques.

TABLE 1. BUDGET SUMMARIES OF ENTERPRISES INCLUDED IN FARM ORGANIZATION STRUCTURE OF THE VARIOUS SITUATIONS ANALYZED

Enterprise	Unit	Resource requirements				Annual costs and returns			
		Average capital investment ¹	Operating capital	Annual labor required	Land ²	Gross receipts	Returns over cash expenses	Non-cash expenses	Net returns ³
		— — Dollars — —	— — — —	Hours	Acres	— — — —	— — — — Dollars — — — —	— — — —	— — — —
Cow-calf									
High-level improved pasture	cow	204.00	53.42	15.0	2.22	93.34	39.92	17.44	22.48
Medium-level improved pasture	cow	204.00	43.37	15.0	3.29	90.04	46.67	17.14	29.53
Tame pasture	cow	204.00	34.40	15.0	8.74	80.64	46.24	16.87	29.37
Wooded pasture	cow	204.00	34.40	15.0	27.27	58.59	24.19	16.87	7.32
Sheep									
High-level improved pasture	30 ewes	1,046.00	354.97	350.0	10.45	595.67	240.70	120.11	120.59
Medium-level improved pasture	30 ewes	1,046.00	308.94	350.0	15.63	556.14	247.20	118.73	128.47
Tame pasture	30 ewes	1,046.00	233.26	350.0	41.52	505.79	272.53	116.46	156.07
Broiler (noncontract)	⁴	2,181.25	8,525.34	700.0	.20	9,777.60	1,252.26	685.39	566.89
Timber	acre	⁵	.80	1.5	1.0	9.60	8.80	7.22	1.58
Rent land out									
Situation A		884.26	40.68	80.0	168.0	620.00	579.32	171.04	408.28
Situation B		884.26	40.68	80.0	151.0	555.00	514.32	171.04	343.28
Situation C		884.26	40.68	80.0	140.0	536.00	495.32	171.04	324.28
Situation D		884.26	40.68	80.0	146.0	457.00	426.32	171.04	255.28

¹Does not include the value of land.

²In addition to pastureland, each cow-calf unit requires 0.02 acre of openland not in pasture; each 30-ewe unit requires 0.1 acre of openland not in pasture.

³Net returns to land, labor, risks and management.

⁴Includes four broods of 5,000 birds each.

⁵Assumes that no additional investment capital is needed.

Within the framework of assumptions outlined, four typical resource situations were analyzed:

A. Farm operator with full-time off-farm work opportunities.

B. Farm operator with medium-level off-farm work opportunities.

C. Farm operator with low-level off-farm work opportunities.

D. Farm operator without off-farm work opportunities.

Details of the analyses for the four situations follow.

SITUATION A--FARM OPERATOR WITH FULL-TIME OFF-FARM WORK OPPORTUNITIES

Situation A represents the average farm and nonfarm work activities of about 43 percent of all part-time farm operators in the Northeast Texas study area—those who reported full-time off-farm work.

Present Organization

The farm operator's principal activity is off-farm work. This is the main source of the family's income. He regularly commutes to a nearby 40-hour-per-week nonfarm job. In addition, other family members work approximately 45 days per year at various off-farm jobs.

After beginning to work off the farm, the operator continued to operate his farm much in the same way he operated it as a full-time farmer. The result was a sharp decline in net farm income. There has been no specific plan for the use of available labor, and the selection of farm production practices has not been made within the framework of the present off-farm work activities.

Although relatively small, the farm resources owned by the operator represent a sizable economic accumulation, and he is interested in obtaining the greatest economic returns from these investments.

Present Farm Resources and Returns

The Situation A farm consists of 174 acres—118 acres of open land, 55 acres of wooded land and 1 acre of other land, including the farmstead and garden. Under the present organization, \$5,342 is invested in livestock, farm buildings and

equipment. Annual cash operating expenses (operating capital) average about \$2,055.

Family members work a little more than 1,000 hours a year on the farm. More family labor is available but is not used. On the basis of the present activities of all members, the family could furnish about 1,250 hours of labor annually for farm work. The additional amount of available farm labor over the amount actually used represents the equivalent of one person working 30 8-hour days. Preferences of family members, regarding the use of their labor in performing farm work, may influence the selection of farm enterprises.

The net returns to land, family labor and management (not including the value of farm perquisites) resulting from the current use of the preceding farm resources, are low. The value of farm perquisites, including the value of home-use products, rental value of dwelling, value of land appreciation and mineral rent income represent important returns and have constituted the difference between a loss or gain in total farm returns. However, perquisites are available, regardless of the production practices in actual farm operations. As used in this study, net returns to land, labor and management are returns resulting from farm enterprise selection and operation. These are the returns that will be considered in selecting farm production activities.

Enterprise Combinations Considered

The economic feasibility of various enterprise combinations was analyzed under five general assumptions.

1. All resources limited to the present level. Under this assumption income potentials for four enterprise combinations were tested.

2. Investment capital unlimited. Four enterprise combinations were tested for income potentials under this assumption.

3. Investment and operating capital unlimited. Only three enterprise combinations proved feasible under this set of assumptions.

4. Sufficient farm resources available for adequate employment of available farm labor.

5. Sufficient farm resources required to shift all off-farm labor from off-farm to farm work.

The results of these analyses for the various assumed conditions follow.

All Resources Limited to Present Level

With all resources limited to the present level, several alternative enterprises can be eliminated from consideration because of their capital resource requirements. Poultry enterprises, for example, require more operating capital than is available.

If a single enterprise is selected, a cow-calf enterprise on medium-level improved pasture results in the largest net returns, about \$768. Available investment capital limits the enterprise to 26 units. Other resources available are not used completely. This does not imply that medium-level improved pasture management is always more profitable than a higher or lower level. On a *per acre* basis, the returns from the cow-calf enterprise are greater with the high level of improvement, but available investment capital limits the enterprise so that only about 26 acres out of 118 acres of open land are used. If land were the limiting factor, the high-level improved pasture probably would be more profitable.

The farm plan need not involve only one enterprise. Timber may be included in the plan, even though the total average investment capital is used for the cow-calf operation. Timber requires no additional investment capital, and the total resources used in combining cow-calf and timber enterprises do not exceed the available resource limitations. Also, with 26 cow-calf units

on medium-level improved pasture and 55 acres of timber, investment capital limits the adding of more cow-calf units to the farm plan. In this case, it is possible to increase net returns by replacing some of these units with alternative enterprises that return more per dollar invested.

Several desirable combinations of enterprises adapted to part-time farming which may be established within the limits of the present level of resources are shown in Table 2. To obtain these results, reorganization and different management would have to be applied to present resources.

Plan 1 in Table 2 provides maximum net returns. All investment capital is used, limiting utilization of the other resources. With plan 2, although net returns are only slightly lower, 275 fewer hours of labor are required than with plan 1. Only about 86 acres of open land are used, making the plan somewhat flexible because the additional pasture acreage might be used to hold livestock off the market if it were necessary or advantageous. Plan 3 is similar to plan 1, except that the sheep and beef cow enterprises both utilize medium-level improved pasture. Net returns are slightly lower than for plan 1, since production costs for sheep on medium-level improved pasture are slightly higher than costs on tame pasture. More lambs could be marketed at higher weights on the high-level improved pasture; however, in this instance these gains would not be enough to offset the additional cost

TABLE 2. ENTERPRISE COMBINATION, RESOURCES USED AND NET RETURNS, ALL RESOURCES LIMITED TO PRESENT LEVEL, NORTHEAST TEXAS, SITUATION A

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		Dollars	Dollars	Hours	Acres	Dollars	
Available resources		5,342.00	2,055.00	1,254.0	118.0	55	
Plan 1							
Cow-calf, medium-level improved pasture	21 cows	4,284.00	910.77	315.0	61.9	0	620.13
Sheep, tame pasture	30 ewes	1,046.00	213.26	350.0	41.5	0	167.78
Timber	55 acres	0	44.00	82.5	0	55	86.90
Total resources used and net returns		5,330.00	1,188.03	747.5	110.6	55	863.10
Plan 2							
Cow-calf, medium-level improved pasture	26 cows	5,304.00	1,127.62	390.0	85.5	0	767.78
Timber	55 acres	0	44.00	82.5	0	55	86.90
Total resources used and net returns		5,304.00	1,171.62	472.5	85.5	55	854.68
Plan 3							
Cow-calf, medium-level improved pasture	21 cows	4,284.00	910.00	315.0	61.9	0	620.13
Sheep, medium-level improved pasture	30 ewes	1,046.00	308.94	350.0	15.6	0	128.47
Timber	55 acres	0	44.00	82.5	0	55	86.90
Total resources used and net returns		5,330.00	1,263.71	747.5	77.5	55	835.50
Plan 4							
Rent land out	168 acres	884.26	40.68	80.0	113.0	55	408.28
Timber	55 acres	0	44.00	82.5	0	55	86.90
Total resources used and net returns		884.26	84.68	162.5	113.0	55	495.18

¹Net returns to land, labor, management and risks.

of pasture improvement. This plan is more flexible than plan 1, and net returns are not significantly lower. Net returns with plan 4 are considerably lower, but capital and labor requirements are much lower and considerably fewer risks are involved.

The various plans, with the resources required and estimated net returns, may be examined in view of various desires on the part of the farm operator. As an example, plan 1 involves more risk than plan 4 because it requires \$5,330 average investment capital and \$1,188 operating capital. In contrast, plan 4 requires only \$884 average investment capital and \$85 operating capital. Some operators may consider that the additional net returns from plan 1 (\$368) would not justify the risk assumed.

Investment Capital Unlimited

In planning for the greatest net returns with the present levels of resources, average investment capital is the limiting resource (Table 2, plan 1). It is important, therefore, to examine the possibility of increasing net returns by the use of additional investment capital. When investment capital is increased, other available

resources soon limit production and net returns. When this point is reached, net returns cannot be increased by adding more investment capital. By assuming unlimited investment capital available, it is possible to determine the most profitable level to use. The four enterprise combinations which may be expected to result in the greatest possible net returns when resources other than investment capital are limited are described in Table 3.

Of the four-enterprise combination, plan 1 results in maximum net returns. This combination of enterprises includes 42 cows, 29 acres of high-level improved pasture, 89 acres of medium-level improved pasture and utilization of wooded land for grazing and timber. About \$3,200 more investment capital is required than under conditions of maximum net returns where all resources are limited to the present level (plan 1, Table 2). Net returns are increased by \$328 when this additional investment is added. Addition of more enterprise units to the plan is limited by available operating capital and land. With plan 2, sheep can be brought into the farm organization without significantly decreasing net returns. A 30-ewe unit almost replaces 7 cows

TABLE 3. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, AVERAGE INVESTMENT CAPITAL UNLIMITED, OTHER RESOURCES LIMITED TO PRESENT LEVEL, SITUATION A, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital		Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —				
Available resources		Unlimited	2,055.00	1,254.0	118.0	55	
Plan 1							
Cow-calf, medium-level improved pasture	27 cows	5,508.00	1,170.99	405.0	88.8	0	797.31
Cow-calf, high-level improved pasture	13 cows	2,652.00	694.46	195.0	28.9	0	292.24
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	2	54.5	14.64
Total resources used and net returns		8,568.00	1,978.25	712.5	117.7	55	1,191.09
Plan 2							
Cow-calf, medium-level improved pasture	28 cows	5,712.00	1,214.36	420.0	92.1	0	826.84
Cow-calf, high-level improved pasture	6 cows	1,224.00	320.52	90.0	13.3	0	134.88
Sheep, high-level improved pasture	30 ewes	1,046.00	354.97	350.0	10.4	0	120.59
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	2	54.5	14.64
Total resources used and net returns		8,390.00	2,002.65	972.5	115.8	55	1,183.85
Plan 3							
Cow-calf, medium-level improved pasture	31 cows	6,120.00	1,301.10	450.0	102.0	0	915.43
Sheep, medium-level improved pasture	30 ewes	1,046.00	308.94	350.0	15.6	0	128.47
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	2	54.5	14.64
Total resources used and net returns		7,574.00	1,722.84	912.5	117.6	55	1,145.44
Plan 4							
Cow-calf, medium-level improved pasture	35 cows	7,150.00	1,517.95	525.0	115.2	0	1,033.55
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	2	54.5	14.64
Total resources used and net returns		7,558.00	1,630.75	637.5	115.2	55	1,135.09

¹Net returns to land, labor, management and risks.

²Less than 0.05 acres.

high-level improved pasture. With the exception of labor, the resource use for this plan is similar to that for plan 1. Labor requirements, however, are increased by about 260 hours by addition of the sheep enterprise. Plan 3 assumes a medium level of improved pasture management on all open land. The investment capital required would be almost \$1,000 less than under plan 1. Adoption of plan 4, which includes only beef cattle and timber, requires less resources, particularly investment capital and labor, than any of the other plans. This plan requires over \$1,000 less investment capital and 75 fewer hours of labor than plan 1. Yet net returns are only \$56 lower.

As net returns vary only slightly among the preceding plan, personal preference probably should determine the organization selected on farms of this type. As an example, with the first reorganization of the farm an operator might choose a plan with 26 beef cows on 86 acres of improved pasture (plan 2, Table 2) and move toward a system with 37 beef cows, medium-level improved pasture on all open land and use of woodland for grazing and timber (plan 4, Table 4). This adjustment could be achieved within a relatively short period of time.

Investment Capital and Operating Capital Unlimited

With no limit on available investment capital, but with other resources limited to the present

level, operating capital and land become the resources that limit net returns, (plan 1, Table 3). When higher levels of investment capital are assumed, it may be realistic to consider higher levels of operating capital. However, since under these conditions land is still limited, net returns can be increased only by practices that use relatively less land per unit of the enterprise added.

Poultry production, which requires large amounts of capital, can now be considered as an alternative. Land resource requirements for this enterprise are relatively low, and labor requirements are relatively high. Limited labor resources prohibit large poultry operations, and when labor is the only limited resource, net returns can be increased by substituting alternative enterprises such as beef cows, which return more per unit of labor. These enterprises, however, have relatively high land resource requirements and are limited by the acreage of land available. Consequently, net returns are not greatly increased when higher levels of capital resources are available as long as labor and land are limited (Table 4).

Under the assumption of unlimited investment and operating capital, and land and labor at present levels, the combination of enterprises shown for plan 1 in Table 4 results in the largest net returns. Capital requirements for this plan are high, and all available family labor is used. So

TABLE 4. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, AVERAGE INVESTMENT CAPITAL AND OPERATING CAPITAL UNLIMITED, LABOR AND LAND RESOURCES LIMITED TO PRESENT LEVEL, SITUATION A, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		Unlimited	Unlimited	1,254.0	118.0	55	
Plan 1							
Cow-calf, high-level improved pasture	35 cows	7,140.00	1,517.19	525.0	115.2	0	1,033.55
Broilers	birds ²	1,181.25	8,525.34	700.0	.2	0	566.89
Timber	19 acres	0	15.20	28.5	0	19	30.02
Total resources used and net returns		9,321.25	10,057.73	1,253.5	115.4	19	1,630.46
Plan 2							
Cow-calf, high-level improved pasture	48 cows	9,792.00	2,564.16	720.0	106.6	0	1,079.04
Sheep, high-level improved pasture	30 ewes	1,046.00	354.97	350.0	10.5	0	120.59
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	³	54.5	14.64
Total resources used and net returns		11,246.00	3,031.93	1,182.5	117.1	55	1,301.17
Plan 3							
Cow-calf, high-level improved pasture	53 cows	10,812.00	2,831.26	795.0	117.7	0	1,191.44
Timber	55 acres	0	44.00	82.5	0	55	86.90
Cow-calf, wooded pasture	2 cows	408.00	68.80	30.0	³	54.5	14.64
Total resources used and net returns		11,220.00	2,944.00	907.5	117.7	55	1,292.98

¹Net returns to land, labor, management and risks.
²Four broods of 5,000 each.
³Less than 0.05 acres.

much labor is required that timber utilization is limited to only about 19 of the 55 available acres. The plan is associated with high risks, and one serious mistake in the management of the broiler enterprise might jeopardize capital resources as well as net returns. A slight downward change in the price received for broilers results in a significant decrease in net returns.

When poultry production is not considered, plan 2 offers the greatest net returns with unlimited investment and operating capital, and with land and labor limited. Operating capital requirements for this plan are much lower than for plan 1. The investment capital required is somewhat higher and almost all available land and labor resources are used. With the exception of labor, the resource use and expected net returns from the combination of enterprises outlined in plan 3 are much the same as for plan 2. Plan 3, however, is slightly more flexible from the standpoint of labor used.

Farm Resources Required for Adequate Employment of Available Farm Labor

It is unusual for a farm operator's only limited resource to be labor. However, if this is assumed to be the case, the farm activity that results in greatest net returns is the enterprise with the highest net return per hour of labor required. Net returns of about \$1.97 per hour of labor are possible with a cow-calf organization on medium-level improved pasture. Of all the production alternatives tested (except renting out land) this results in the largest net return per hour of labor. (Land renting as an enterprise would return \$5.08 per hour of labor. For practical purposes this enterprise was not considered. More than 2,500 acres would be required to employ fully 1,254 hours of labor.)

About 83 beef cows on medium-level improved pasture would be required to employ fully the 1,254 hours of family labor available for farm work. This operation would require almost \$17,000 average investment capital, about \$3,600 operating capital and 273 acres of open land, 155 acres more than are presently available. Estimated net returns would be almost \$2,500.

A note of caution is in order at this point. Net returns as used in this report are returns to land, labor, management and risks. Returns to land are included, because most farm operators in the area have a 100 percent equity in their farms and any return to land is also a return to them as landowners. If returns to land go to

someone other than the operator, as an operator who borrows capital to purchase land, a different net return criterion should be used. Under these circumstances, maximum net returns to labor, management and risks would be most important.

A case in point is the one just described, where an additional 155 acres would be required to use all family labor available for farm work. Land values are such in this area that little monetary gain would be possible through purchasing additional land upon which to employ available labor. If 155 acres of open land valued at \$75 per acre are purchased with borrowed capital at 5 percent interest, the returns to land must be \$3.75 per acre, or a total of \$581 for the 155 acres. With a cow-calf enterprise on medium-level improved pasture, net returns to land, labor, management and risks are increased \$1,417 by the added acreage. After deducting the returns to land, only \$836 is left as net returns to labor, management and risks. The purchase of 155 acres of land at \$75 per acre would require \$11,625. Amortized annual payments of interest and principal over a 30-year period would amount to about \$750. With returns of \$836, the use of additional land through purchase represents capital accumulation rather than a good source of additional income.

These returns are made possible by the employment of 720 hours of family labor. Some opportunity may exist for employing this unused family labor through renting additional open land. If open land can be rented at \$4 per acre (the price assumed in the land-renting enterprise, Table 1) the additional 155 acres required to employ the 720 hours of labor will return about \$800 net to labor, management and risks. Whether this is an adequate return to available family labor depends on the alternative uses for this labor.

With a cow-calf enterprise on high-level improved pasture, all available family labor could be employed on 185 acres of open land, only 67 more acres than is available. This operation, however, would require almost \$17,000 more average capital investment than is available, and more than twice as much operating capital.

Resources Required To Use Present Off-farm Labor in Farming

Few part-time farm operators have adequate farm resources to make it profitable to employ in farming the labor engaged in off-farm work. Returns for family labor used in off-farm work

averaged \$1.47 per hour for part-time farm operators in the study area reporting full-time, off-farm work in 1955. With the exception of renting out land which is excluded for obvious reasons, only the beef cow enterprises (cow-calf on wooded pasture excluded) would yield (farm) returns greater than \$1.47 per hour for the labor used. This does not mean that the returns to labor with these enterprises exceed \$1.47. Net returns shown in the examples include returns to land, management and risks, as well as labor. However, with the assumption that an increase in net returns of more than \$1.47 increases family income by the same amount, it would be possible with certain levels of farm resources to increase family income by using off-farm work labor in farming.

The 1,254 hours of family labor assumed to be available for farm work are sufficient to care for about 83 beef cows. If capital and land resources were sufficient to accommodate a herd of more than 83 beef cows, family income could be increased by using all labor in farming now used in off-farm work.

Most part-time farm operators in the area do not have sufficient capital and land resources to support a herd of 84 beef cows or more. Capital investments required for a herd of this size would exceed the \$17,000 average investment capital reported. Land requirements would vary from 187 to 734 acres of open land, depending on the level of pasture improvement assumed.

If only the operator worked off the farm full-time, about 1,870 hours of family labor would be available for farm work. This amount of labor could take care of about 124 beef cows requiring an average capital investment of more than \$25,000 (excluding the value of land) and a minimum of 275 acres of open land. It would be more profitable, therefore, (in terms of family income) for the operator to work less than full-time off the farm only when his farm resources exceeded these levels. To use all family labor more profitably in farming than in off-farm work would require an average capital investment of more than \$52,000 (for 258 beef cows) and 573 acres of open land.

Total returns from off-farm work sources averaged about \$3,800 in 1955 for part-time farm families in the area whose operators reported full-time off-farm work. To obtain this level of net returns from farming would require a minimum of \$23,500 average investment capital and

380 acres of open land, or a minimum of 337 acres of open land and about \$31,000 average investment capital. On the situation A farm, 3,870 hours of family labor are assumed to be available. This includes family labor used in off-farm work activities. With farm labor limited to this amount, and with all other resources unlimited, none of the production activities considered except beef cows would provide net returns equal to the returns from off-farm work.

SITUATION B -- FARM OPERATOR WITH MEDIUM-LEVEL OFF-FARM WORK OPPORTUNITIES

Situation B represents another part-time farm situation. It is typical of the 23 percent of all part-time farm families in Northeast Texas whose operators reported that in 1955 they spent more than 100 days but less than full-time in off-farm work. With the exception of labor, the level of available farm resources is lower than those previously considered.

Present Organization

The situation B farm is a general crop and livestock farm consisting of 106 acres of open land and 50 acres of woodland. Present capital use consists of about \$4,505 average capital investment (excluding the value of land) and \$1,413 operating capital. Family labor used on the farm averages about 1,246 hours annually. An additional 878 hours of labor is available for farm work, but under the present farm organization this available labor is not used. Farm operations are not profitable, as the resources are presently being used. The value of farm perquisites is important, and more than offsets the loss resulting from farm operations. However, the value of farm perquisites does not depend upon the operation of farm enterprises.

The operator currently works off the farm about 150 days each year. Other family members work at various off-farm jobs about 40 days annually. The total returns to the family for off-farm work average about \$2,100 a year. This is the family's principal source of income.

Most of the farm could be rented to a neighboring farmer under a 10-year leasing agreement, with the family retaining 5 acres and the dwelling. This lease arrangement nets the owner about \$340 annually. Since the family retains the dwelling and 5 acres, the total value of farm perquisites is still available.

Enterprise Combinations Considered

The opportunity to rent out the farm appears an attractive alternative. However, even though leasing would be more profitable than present farm operations, an operator might be reluctant to rent out the farm for such a long period of time. This especially is likely under the conditions assumed in situation B, where the operator works off the farm only part-time and needs additional profitable employment.

For this reason, estimated returns from alternative farm plans were compared with returns from renting. It appeared likely that certain production practices could be profitable with a reorganization made within the framework of present activities and available farm resources. Plans for the various assumed conditions are presented below.

All Resources Limited to Present Level

With the present level of farm resources, the single enterprise with largest net returns is the cow-calf enterprise on medium-level improved pasture. Investment capital limits this enterprise to a 22-cow unit. The medium-level improved pasture is more profitable than the high-level improved pasture in this instance because investment capital, rather than land, limits the enterprise to 22 cow units. Greater gains in calf weights are assumed possible on the high-level improved pasture, but the additional weight gains do not offset the higher production costs (operating expenses).

The three farm plans that appear most desirable when farm resources are limited to the present level are given in Table 5. In plan 1, which gives maximum net returns, investment capital is the limiting resource. As a result, other available farm resources are not utilized fully. Only about a fifth of the available family labor is used. When sheep are considered, as in plan 2, labor requirements increase sharply and estimated net returns decrease. Plan 3 (renting out some land and using some for timber) requires little capital and labor. Consider this plan when capital or labor are limited. Very low risks are involved.

Investment Capital Unlimited

With farm resources limited to the present level, investment capital is a factor limiting higher net returns. However, at higher levels of investment capital, all available operating capital is used quickly, and this resource then becomes a limiting factor (Table 6). With more investment capital available and with other resources limited to the present level, plan 1 (50 acres of timber and a cow-calf enterprise on the medium-level pasture) results in greatest net returns. Operating capital is now the limiting resource. A comparison of this plan with plan 1 in Table 5 indicates that about \$1,800 more average investment capital than presently available increases net returns by about \$250. The addition of sheep (plan 2, Table 6) reduces investment capital requirements slightly, increases labor requirements and lowers net returns.

TABLE 5. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, ALL RESOURCES LIMITED TO PRESENT LEVEL, SITUATION B, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		4,505.00	1,413.00	2,124	106.0	50	
Plan 1							
Cow-calf, medium-level improved pasture	22 cows	4,488.00	954.14	330	72.4	0	649.66
Timber	50 acres	0	40.00	75	0	50	79.00
Total resources used and net returns		4,488.00	994.14	405	72.4	50	728.66
Plan 2							
Sheep, medium-level improved pasture	30 ewes	1,046.00	308.94	350	15.6	0	128.47
Cow-calf, medium-level improved pasture	16 cows	3,264.00	693.92	240	52.6	0	472.48
Timber	50 acres	0	40.00	75	0	50	79.00
Total resources used and net returns		4,310.00	1,042.86	665	68.2	50	679.95
Plan 3							
Rent land out	151 acres	884.26	40.68	80	101.0	50	343.28
Timber	50 acres	0	40.00	75	0	50	79.00
Total resources used and net returns		884.26	80.68	155	101.0	50	422.28

¹Net returns to land, labor, management and risks.

TABLE 6. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, AVERAGE INVESTMENT CAPITAL UNLIMITED, OTHER RESOURCES LIMITED TO PRESENT LEVEL, SITUATION B, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		Unlimited	1,413.00	2,124	106.0	50	
Plan 1							
Cow-calf, medium-level improved pasture	31 cows	6,324.00	1,344.47	465	102.0	0	915.43
Timber	50 acres	0	40.00	75	0	50	79.00
Total resources used and net returns		6,324.00	1,384.47	540	102.0	50	994.43
Plan 2							
Cow-calf, medium-level improved pasture	24 cows	4,896.00	1,040.88	360	79.0	0	708.72
Sheep, medium-level improved pasture	30 ewes	1,046.00	308.94	350	15.6	0	128.47
Timber	50 acres	0	40.00	75	0	50	79.00
Total resources used and net returns		5,942.00	1,389.82	785	94.6	50	916.19

¹Net returns to land, labor, management and risks.

Investment Capital and Operating Capital Unlimited

Poultry production, which has high operating capital requirements, may be considered as an alternative when higher levels of capital resources are available. By combining this enterprise, which has high labor requirements, with a beef-cow enterprise, which has relatively high land requirements, maximum use of available labor and open land resources is obtained. Net returns can be increased substantially under these conditions, but capital requirements are large and risks are high (Table 7). With unlimited capital resources the combination of broilers and cows (plan 1, Table 7) results in the largest net returns. This plan requires so much labor that only 12 of the 50 acres of woodland can be utilized.

Plan 2 results in greatest net returns when poultry enterprises are not considered. All available labor and open land is utilized under the plan. Although much less labor is required in plan 3, net returns from this plan are not much lower than those from plan 2. With either of these plans, returns are not significantly higher than those of plan 1, Table 6, for which less resources are required.

Employment of Family Labor

At the present level of farm resources, the plan resulting in highest net returns uses only a small amount of the family labor available for farm work (Table 5, plan 1). The use of higher but reasonable levels of investment capital permits only a small amount of additional labor to

TABLE 7. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, AVERAGE INVESTMENT CAPITAL AND OPERATING CAPITAL UNLIMITED, LABOR AND LAND RESOURCES LIMITED TO PRESENT LEVEL, SITUATION B, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		Unlimited	Unlimited	2,124.0	106.0	50	
Plan 1							
Broilers (noncontract)	birds ²	4,362.50	17,050.68	1,400.0	0.4	0	1,133.78
Cow-calf, high-level improved pasture	47 cows	9,558.00	2,510.74	705.0	104.3	0	1,056.56
Timber	12 acres	0	9.60	18.0	0	12	18.96
Total resources used and net returns		13,950.50	19,571.02	2,123.0	104.7	12	2,209.30
Plan 2							
Sheep, high-level improved pasture	150 ewes	5,230.00	1,774.85	1,750.0	52.3	0	602.95
Cow-calf, high-level improved pasture	24 cows	4,896.00	1,282.08	360.0	53.3	0	539.52
Timber	9 acres	0	7.20	13.5	0	9	14.22
Total resources used and net returns		10,126.00	3,064.13	2,123.5	105.6	9	1,156.69
Plan 3							
Cow-calf, high-level improved pasture	47 cows	9,588.00	2,510.74	705.0	104.3	0	1,056.56
Timber	50 acres	0	40.00	75.0	0	50	79.00
Total resources used and net returns		9,588.00	2,550.74	780.0	104.3	50	1,135.56

¹Net returns to land, labor, management and risks.

²Four broods of 10,000 each.

be used effectively (Table 6, plan 1). With present land resources, full utilization of available labor is profitable only with high levels of investment and operating capital (Table 7, plan 1). This may involve high risks. Expansion of land resources to use available labor at satisfactory returns would require a much higher level of capital than is available.

Since more labor is available for farm work in situation B than in situation A, the level of other farm resources required to utilize the available labor efficiently would be much higher under situation B. With 2,124 hours of labor available (which does not include labor used in off-farm work), and with labor the only limited farm resource, greatest returns would result from a livestock operation that included 141 cows. This would require \$28,764 average investment capital (excluding the value of land), a minimum of 313 acres of open land, and \$7,532 of operating capital. The expected net returns from these resources would be about \$3,100. An even higher level of farm resources would be required to make it profitable to use in farming the labor presently used in off-farm work.

The excessive level of farm resources required prohibits an efficient use of available labor resources in most part-time farm situations similar to situation B. The solution to the problem of labor utilization would be more off-farm work, where additional work was available.

SITUATION C--FARM OPERATOR WITH LOW-LEVEL OFF-FARM WORK OPPORTUNITIES

About 11 percent of the part-time farmers in the area worked off the farm less than 100 days in 1955. Situation C is typical of this.

Present Organization

The situation C farm consists of 148 acres including 104 acres of open land, mainly pasture. It is assumed that at one time, crops, mostly cotton and vegetables, were the most important source of cash farm income, but that net returns from crops declined and cropland acreage was decreased gradually. At present only 20 acres are classified as cropland. As crop activities decreased, livestock units were added in a non-systematic manner. The sale of livestock products presently is more important than crop sales, although production has not been planned carefully.

It is assumed that, although off-farm work opportunities are limited, the operator works about 50 days a year off the farm. Other family members work a total of about 115 days off the farm. The family labor available for all work activities is estimated at slightly more than 3,000 hours. All family members spend about 1,100 hours at off-farm work and about 1,000 hours at farming activities. Approximately a third of the available family labor is not used in any work activity.

The family's total net money income is a little more than \$2,000, excluding the value of farm perquisites. Only about 6 percent of this income is from farm operations. If noncash costs, including interest and depreciation, were charged against cash farm income, the result would be negative net returns to land, labor, management and risks from farm enterprise operations. With this relatively low level of net family money income, and with limited off-farm work opportunities, the need for placing labor in more productive farming activities is apparent.

Enterprise Combinations Considered

The present level of farm capital resources includes about \$4,200 investment capital, excluding the value of land, and less than \$1,000 annual operating capital. Various farm plans were considered that might be possible with the present farm resources and with higher levels of capital resources. These plans follow.

All Resources Limited to Present Level

The single alternative farm enterprise which would result in greatest net returns with the existing level of farm resources would be a 20-cow unit cow-calf enterprise on medium-level improved pasture. This enterprise would use only 300 hours of labor and about 66 acres of open land. A poultry enterprise is not a feasible alternative with the present low level of operating capital.

A combination of enterprises would result in greater utilization of available labor and land resources and higher net returns. Several farm plans would result in profitable farm operations under a reorganization of the farm with the existing level of resources (Table 8). Plan 1, which includes a combination of beef cows, sheep and timber, would result in greatest net returns. Both investment and operating capital are limiting resources in this plan. Plan 2, including only beef cows and timber, may be the best alternative

with existing resources. Net returns are only slightly less than for plan 1, and labor requirements are less. Plan 1 yields less than \$10 more per year in net returns than plan 2 but requires an additional 275 hours of labor. Renting out of land, as in plan 3, reduces net returns by more than \$200. However, this plan involves little risk. With the assumption that the dwelling and 5 acres are retained, a cow-calf unit can be included in the plan, and timber resources can be utilized also.

The net returns, resulting from a farm reorganization with the present level of resources are not high. However, such a reorganization on most part-time farms with similar situations would reduce labor requirements from a half to almost a third. The desirable effect of lower labor requirements with increased net returns is apparent, as no part-time farm operator with limited off-farm work opportunities knows when more off-farm work may be available. A farm operator with high levels of available labor and little chance of utilizing this labor in any activity other than farming may be wise to reject a farm plan which requires 400 hours less labor and returns \$50 less net returns than some alternative plan. But if some chance for off-farm employment at more than \$1 per hour exists, he may be unwise to commit an additional 400 hours of labor for the \$50 increase in net returns.

Investment Capital Unlimited

With the present level of resources, operating capital as well as investment capital is a limiting

resource in planning for highest net returns (plan 1, Table 9). Therefore, only small gains in net returns are possible by using higher levels of investment capital while holding operating capital at the present level. However, this situation offers a good example where a relatively small amount of additional investment capital substitutes for a large amount of labor and also increases net returns slightly. With higher levels of investment capital and other resources limited to present level, the combination of beef cows and timber shown in plan 1 of Table 9 results in greatest net returns. Large additional gains in net returns are not possible under these conditions, but only \$129 more average investment capital than presently available substitutes for 260 hours of labor and increases annual net returns by about \$20 (plan 1, Table 8 and plan 1, Table 9). Plan 2 of Table 9, which includes sheep as well as beef cows and timber, offers lower net returns with no particular advantage other than, perhaps, diversification. Essentially, the same level of capital is required, with more labor and open land resources.

Investment Capital and Operating Capital Unlimited

With the present level of available labor and land resources, the use of high levels of capital resources can result in relatively high levels of net income (Table 10). The important question is whether part-time farm operators in similar situations could increase their use of capital to the extent required. With higher levels of capital

TABLE 8. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, ALL RESOURCES LIMITED TO PRESENT LEVEL, SITUATION C, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		4,155.00	949.00	2,048.0	104.0	41	
Plan 1							
Cow-calf, medium-level improved pasture	15 cows	3,060.00	650.55	225.0	49.4	0	442.95
Sheep, tame pasture	30 ewes	1,046.00	233.26	350.0	41.5	0	156.07
Timber	41 acres	0	32.80	61.5	0	41	64.78
Total resources used and net returns		4,106.00	916.61	636.5	90.9	41	663.80
Plan 2							
Cow-calf, medium-level improved pasture	20 cows	4,080.00	867.40	300.0	65.8	0	590.60
Timber	41 acres	0	32.80	61.5	0	41	64.78
Total resources used and net returns		4,080.00	900.20	361.5	65.8	41	655.38
Plan 3							
Rent land	140 acres	884.26	40.68	80.0	99	41	324.28
Timber	41 acres	0	32.80	61.5	0	41	64.78
Cow-calf, high-level improved pasture	2 cows	408.00	106.84	30.0	4.4	0	44.96
Total resources used and net returns		1,292.26	180.32	171.5	103.4	41	434.02

¹Net returns to land, labor, management and risks.

TABLE 9. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, INVESTMENT CAPITAL UNLIMITED, OTHER RESOURCES LIMITED TO PRESENT LEVEL, SITUATION C, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		Unlimited	949.00	2,048.0	104.0	41	
Plan 1							
Cow-calf, medium-level improved pasture	21 cows	4,284.00	910.77	315.0	69.1	0	620.13
Timber	41 acres	0	32.80	61.5	0	41	64.78
Total resources used and net returns		4,284.00	943.57	376.5	69.1	41	684.91
Plan 2							
Cow-calf, medium-level improved pasture	16 cows	3,264.00	693.92	240.0	51.8	0	472.48
Sheep, tame pasture	30 ewes	1,046.00	233.26	350.0	41.5	0	156.07
Timber	27 acres	0	21.60	40.5	0	27	42.66
Total resources used and net returns		4,310.00	948.78	630.5	93.3	27	671.21

¹Net returns to land, labor, management and risks.

resources and with labor and land limited to the level presently available, the combination of broilers and cows described in plan 1 results in the maximum net returns possible. In the absence of tested management abilities which would be required by the various enterprises, the plan should be avoided perhaps. Otherwise, high risks would be associated with such large capital and labor requirements. If the poultry enterprise is not considered as an alternative, the combination of cows, sheep and timber shown in plan 2 results in greatest net returns. Capital requirements are not too excessive, but labor requirements are rather high, considering the total level available. The combination of cow-calf and timber enterprises shown in plan 3 offers a good alternative. Capital requirements are not excessive,

and the level of labor required is less than the amount presently used.

SITUATION D - FARM OPERATOR WITHOUT OFF-FARM WORK OPPORTUNITIES

Situation D represents situations where the farm operator has no off-farm work opportunities, and where more than half of the family's net money income is from nonfarm sources. In 1955, about 23 percent of all part-time farms in the area fell in this category.

Present Organization

It is assumed that the operator of the situation D farm has been farming most of his life, and that a combination of factors including age,

TABLE 10. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, INVESTMENT CAPITAL AND OPERATING CAPITAL UNLIMITED, LABOR AND LAND RESOURCES LIMITED TO PRESENT LEVEL, SITUATION C, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		Unlimited	Unlimited	2,048.0	104.0	41	
Plan 1							
Broilers (noncontract)	birds ²	4,362.50	17,050.68	1,400.0	0.4	0	1,133.78
Cow-calf, high-level improved pasture	36 cows	7,344.00	1,923.12	540.0	79.9	0	809.28
Cow-calf, medium-level improved pasture	7 cows	1,428.00	303.59	105.0	23.0	0	206.71
Total resources used and net returns		13,134.50	19,277.39	2,045.0	103.3	0	2,149.77
Plan 2							
Cow-calf, high-level improved pasture	28 cows	5,712.00	1,495.76	420.0	62.2	0	629.44
Sheep, high-level improved pasture	120 ewes	4,184.00	1,419.88	1,400.0	41.8	0	482.36
Timber	41 acres	0	32.80	61.5	0	41	64.78
Total resources used and net returns		9,896.00	2,948.44	1,881.5	104.0	41	1,176.58
Plan 3							
Cow-calf, high-level improved pasture	45 cows	9,180.00	2,403.90	675.0	99.9	0	1,011.60
Cow-calf, medium-level improved pasture	1 cow	204.00	43.37	15.0	3.3	0	29.53
Timber	41 acres	0	32.80	61.5	0	41	64.78
Total resources used and net returns		9,384.00	2,480.07	751.5	103.2	41	1,105.91

¹Net returns to land, labor, management and risks.

²Four broods of 10,000 each.

health problems and lack of experience and training prevents him from working off the farm. All other family members work a total of about 80 days off the farm at various activities.

The farm consists of 147 acres, including 84 acres of open land and 62 acres of wooded land. The present total investment in farm buildings, livestock and equipment is about \$3,081. The present organization includes various crops on about 25 acres and several types of livestock. Gross farm sales minus cash farm expenses average about \$200. When noncash expenses, interest and depreciation are charged as an expense, the net returns to land, family labor, management and risks are negative. The greatest value of the farm to the family has been from farm perquisites.

The total family labor available for all activities is estimated at about 2,100 man hours annually, less than one manwork equivalent. Less than a third of this amount is currently spent at off-farm work activities by family members other than the operator. About a third of the available labor of all family members, including the operator, is used for farm work, and about a third is not utilized. In a monetary sense, the family labor presently used in performing farm work is unemployed, because the returns from farm enterprise operations have not been profitable. The family's total net money income is less than \$2,100.

Enterprise Combinations Considered

With the relatively low family income, there is a need for placing family labor presently used in farm work and unemployed labor in profitable activities. In attempting to develop plans that would provide profitable employment for family labor, various production alternatives and possibilities were considered, including a complete farm reorganization.

All Resources Limited to Present Level

If only single enterprises are considered, a cow-calf enterprise on medium-level improved pasture offers greatest net returns. Operating capital limits the enterprise to 10 cows; under these conditions only 33 acres of open land are required. A cow-calf enterprise on tame pasture requires less operating capital and more land per cow unit. The available level of operating capital would allow 13 cows on tame pasture; however, this would require over 113 acres of open land. With only 84 acres of open land available, this enterprise is limited to 9 cows. Since land is not limiting with the cow-calf operation on medium-level improved pasture, a combination of tame and medium-level improved pasture would allow more cow units and increase net returns.

Under the present organization of the farm, only \$453 operating capital is used. This level of operating capital is definitely a limiting factor. However, several profitable plans may be developed within the framework of the present level of resources (Table 11). Plan 1, which

TABLE 11. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, ALL RESOURCES LIMITED TO PRESENT LEVEL, SITUATION D, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		3,081.00	453.00	1,520.0	84.0	62	
Plan 1							
Cow-calf, tame pasture	8 cows	1,632.00	275.20	120.0	69.9	0	234.96
Cow-calf, medium-level improved pasture	3 cows	612.00	130.11	45.0	9.9	0	88.59
Timber	59 acres	0	47.20	88.5	0	59	93.22
Total resources used and net returns		2,244.00	452.51	253.5	79.8	59	416.77
Plan 2							
Rent land	141 acres	884.26	40.68	80.0	79	62	255.28
Timber	62 acres	0	49.60	93.0	0	62	97.96
Cow-calf, medium-level improved pasture	1 cow	204.00	43.37	15.0	3.3	0	29.53
Total resources used and net returns		1,088.26	113.65	188.0	82.3	62	382.77
Plan 3							
Cow-calf, tame pasture	8 cows	1,632.00	275.20	120.0	69.9	0	234.96
Cow-calf, medium-level improved pasture	4 cows	816.00	173.48	160.0	13.2	0	118.12
Total resources used and net returns		2,448.00	448.68	180.0	83.1	0	353.08

¹Net returns to land, labor, management and risks.

includes 11 beef cows and provides for utilization of most of the present timber stand, results in maximum net returns. Because of the low level of operating capital, only 59 of the total 62 acres of timber are utilized in this plan. Plan 2, which includes renting out of land, may be most desirable. The plan involves low risks and requires low levels of capital and labor. Plan 3 includes 12 beef cows on 70 acres of tame pasture and 13 acres of medium-level improved pasture.

Any of the above plans would fit well within the framework of low levels of capital and labor resources. Although resulting net returns are not high, part-time farm families in similar situations probably would profit by considering these plans. Under the conditions assumed for situation D, plan 1 would raise family income by more than 10 percent.

With land values in this area approaching \$100 per acre, it might appear that net returns of only a little more than \$400 to land, labor, management and risks from enterprise operations (as in plan 1) on a 148-acre farm is uneconomical in view of alternative investments possible. A \$14,800 investment at a guaranteed 6 percent interest would return almost \$900. However, if a part-time farm operator were to liquidate his assets for investment purposes, he would be deprived of the value of farm perquisites as well as the returns possible from farm operations. In 1955, the average value of farm perquisites on part-time farms in this area was over \$1,000. The value of perquisites and expected returns

from plan 1, Table 11, would total more than \$1,500. This return capitalized at 6 percent is equivalent to an investment of \$25,000.

Operating Capital Unlimited

Poultry enterprises, which have high operating capital requirements, may be considered as alternatives for the situation D farm when high levels of operating capital are available. Successful noncontract operations, however, require high-level management. An economical poultry unit also has relatively high labor requirements. In view of these facts, farm activities that include poultry may not be feasible for this part-time farm situation. With higher levels of operating capital and with other resources limited to present levels, the combination of broiler and timber enterprises with renting out of land, shown in plan 1 of Table 12, will result in maximum net returns. Operating capital requirements for this plan are high relative to the level presently used. If land is not rented out, the most profitable organization includes 4 cows on medium-level improved pasture in place of the land renting enterprise (plan 2). Only about 13 acres of open land are utilized, because of limited investment capital. If the 71 acres of unused open land were rented out, net returns would increase. In plan 3, operating capital is held to a low level while other resources remain fixed at their present level. Much less labor is required than presently used, and only about 49 acres of open land are utilized. Investment capital limits greater utilization of these resources.

TABLE 12. ENTERPRISE COMBINATIONS, RESOURCES USED AND NET RETURNS, OPERATING CAPITAL UNLIMITED, OTHER RESOURCES LIMITED TO PRESENT LEVEL, SITUATION D, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — —	Hours	— — Acres — —	Dollars	
Available resources		3,081.00	Unlimited	1,520	84.0	62.0	
Plan 1							
Broilers (noncontract)	birds ²	2,181.25	8,525.34	700	0.2	0	566.89
Rent land	141 acres	884.26	40.68	80	79.0	62.0	255.28
Timber	62 acres	0	49.60	93	0	62.0	97.96
Total resources used and net returns		3,065.51	8,615.62	873	79.2	62.0	920.13
Plan 2							
Broilers (noncontract)	birds ²	2,181.25	8,525.34	700	0.2	0	566.89
Cow-calf, medium-level improved pasture	4 cows	816.00	173.48	60	13.2	0	118.12
Timber	62 acres	0	49.60	93	0	62.0	97.96
Total resources used and net returns		2,997.25	8,748.42	853	13.4	62.0	782.97
Plan 3							
Cow-calf, medium-level improved pasture	15 cows	3,060.00	650.55	225	49.4	0	442.95
Timber	62 acres	0	49.60	93	0	62.0	97.96
Total resources used and net returns		3,060.00	700.15	318	49.4	62.0	540.91

¹Net returns to land, labor, management and risks.

²Four broods of 5,000 each.

Investment Capital and Operating Capital Unlimited

With higher levels of capital resources all available labor on this farm can be utilized; however, high levels of operating capital are required (Table 13). When only labor and land are limited to their present levels, plan 1, consisting of non-contract broilers, some timber and cows and the renting out of 141 acres, results in greatest net returns. All labor and land are utilized, but capital requirements are high relative to the levels used on most such farms and in the area. Plan 2, a combination of broiler and cow-calf enterprises, also utilizes all available labor, but only 27 acres of open land. Net returns are reduced by less than \$100. The plan might be modified to include renting out of land. Although net returns are lower in plan 3, capital requirements are reduced considerably. All land resources are utilized. All available labor is not used, but the level of labor required is somewhat more than is presently used. Plan 4 would be well suited to a situation where labor resources are limited to a lower level. The plan requires less labor than presently used.

CONCLUSIONS AND RECOMMENDATIONS

The foregoing analysis leads to the following conclusions and recommendations with respect to

resource use for greater returns from part-time farm operations in Northeast Texas.

(1) Returns from farming can be a good source of supplemental income to part-time farm operators who own land resources and associated capital investments. Even with the present level of farm resources, and within the framework of present off-farm work activities, many of these farms can be more profitably reorganized than at present.

(2) With the present level of farm resources, investment capital is the most limiting resource in obtaining higher farm returns on most part-time farms in the area. The next most limiting resource is operating capital. Present land and labor resources become limiting only after large capital resources are made available.

Even with the usual amount of off-farm work done by part-time farm family members, labor is the least limiting farm resource.

(3) Increases in income result when the farm is reorganized with the present level of farm resources. Beyond this, the use of higher levels of capital are profitable and allow greater utilization of available land and labor resources. In general, part-time farm operators should reorganize enterprises so that farm operations fit

TABLE 13. ENTERPRISE COMBINATIONS, AVERAGE INVESTMENT CAPITAL AND OPERATING CAPITAL UNLIMITED, LAND AND LABOR RESOURCES LIMITED TO PRESENT LEVEL, SITUATION D, NORTHEAST TEXAS

Enterprise	Size of enterprise	Average investment capital	Operating capital	Labor per year	Open land	Wooded land	Annual net returns ¹
		— — — Dollars — — —	— — — Dollars — — —	Hours	— — — Acres — — —	Dollars	
Available resources		Unlimited	Unlimited	1,520	84.0	62.0	
Plan 1							
Broilers (noncontract)	birds ²	4,362.50	17,050.68	1,400	0.4	0	1,133.78
Rent land	141 acres	884.26	40.68	80	79.0	62.0	255.28
Cow-calf, high-level improved pasture	2 cows	408.00	160.84	30	4.4	0	44.96
Timber	6 acres	0	4.80	9	0	6.0	9.48
Total resources used and net returns		5,653.76	17,203.00	1,519	83.8	62.0	1,443.50
Plan 2							
Broilers (noncontract)	birds ²	4,362.50	17,050.68	1,400	0.4	0	1,133.78
Cow-calf, medium-level improved pasture	8 cows	1,632.00	346.96	120	26.3	0	236.24
Total resources used and net returns		5,994.50	17,397.64	1,520	26.7	0	1,370.02
Plan 3							
Cow-calf, high-level improved pasture	33 cows	6,732.00	1,762.86	495	73.3	0	741.84
Sheep, high-level improved pasture	30 ewes	1,046.00	354.97	350	10.5	0	120.59
Cow-calf, wooded pasture	2 cows	408.00	68.80	30	³	54.5	14.64
Timber	62 acres	0	49.60	93	0	62.0	97.96
Total resources used and net returns		8,186.00	2,236.23	968	83.8	62.0	975.03
Plan 4							
Cow-calf, high-level improved pasture	37 cows	7,548.00	1,976.54	555	82.1	0	831.76
Cow-calf, wooded pasture	2 cows	408.00	68.80	30	³	54.5	14.64
Timber	62 acres	0	49.60	93	0	62.0	97.96
Total resources used and net returns		7,956.00	2,094.94	678	82.1	62.0	944.36

¹Net returns to land, labor, management and risks.

²Four broods of 10,000 each.

³Less than .05.

into the framework of off-farm work activities. The initial reorganization probably should be accomplished with the present level of capital resources, or with only a moderate increase. In view of the risks involved, any reorganization that requires much more capital than presently available should be a gradual rather than an immediate adjustment. This also would permit some capital to be generated internally.

(4) With limited investment or operating capital, farm plans that are simple and have relatively low labor requirements are almost as profitable as more complex plans with higher labor requirements. The more complex plans which require more labor call for higher management abilities and may, therefore, include higher risks. Without tested management abilities, part-time farm operators may be wise to select simple farm plans with low labor requirements when first reorganizing their farm resources. As management abilities develop, further reorganizations can be undertaken that utilize available labor more profitably. If technical assistance is available, the interested operator can develop a long-term growth plan and make systematic changes gradually. Technical assistance is usually available through the county agricultural agent. Also, production credit associations and the Farmers Home Administration offer technical assistance, as well as credit resources.

(5) Where available, timber resources should be utilized with improved management for present stands. With alternative livestock enterprises available, it appears that new timber stands, which would involve additional capital investments, would be less profitable. In most instances, the timber enterprise was included in the farm plans only because it required no additional capital investment.

(6) Net returns from farm operations include net returns to land, labor, management and risks. The returns to land are, in most instances, returns to the part-time farm operator as the owner of land. Because of relatively high land values in this area, the opportunity cost of owning land is relatively high, and the returns to land necessarily represent a large proportion of the total net returns from farming. Therefore, the possibilities of increasing family income through farm operations are small, if the returns to land go to someone other than the part-time farm operator. Purchase of additional land, therefore, may not be a profitable way to employ

available family labor, if the purchase is financed from sources outside the family.

The use of the additional land would involve risks and would require additional capital, more family labor and more management. The addition to family money income is small until the purchased land is paid for. Part-time farm families with relatively low incomes probably are more interested in employing available family labor to increase family money income than in capital accumulation. Families with high money incomes may prefer capital accumulation.

(7) Family labor presently used in off-farm work cannot be used more profitably in farming unless high levels of farm resources are available. With the present size limitations of most part-time farms, even use of unlimited levels of capital do not allow more profitable use of off-farm labor in farm operations. For the various situations analyzed, a minimum of 187 acres of open land would be required before any off-farm labor can be shifted profitably to farming. A minimum of 277 acres would be required before an operator could more profitably work less than full-time off the farm. About 849 acres would be required to make profitable use of all family labor.

A level of net returns from farming equal to the present returns from off-farm work would require a relatively high level of resources even for full-time farm operators in this area.

(8) In view of this, full-time farmers in the area might be wise to evaluate their situations and consider the possibility of off-farm work.

(9) The situations analyzed do not involve high levels of technology or of management. Part-time farm operators who have or may develop greater management abilities than are assumed may obtain higher net returns than the analysis indicates, but this fact does not affect the general conclusions and recommendations. For example, if on the situation A farm the net returns per unit of a cow-calf enterprise on high-level improved pasture are increased by 50 percent by use of advanced technology or improved management, the farm resources required for a level of net returns equal to family income from off-farm work activities are reduced. For a net farm income of \$2,500, the open land required is reduced from 248 to 167 acres. However, assuming that the labor requirements per unit remain the same and only 1,250 hours of labor are available for farm work, 84 units must be

produced before it is profitable to shift family labor from off-farm work to farming. This number of units requires 187 acres of open land. If the land resources are fixed, the use of labor saving techniques decreases the labor used in farming and, consequently, leaves more family labor unemployed or available for off-farm work.

(10) The income levels of part-time farmers in the area can be raised with a reorganization of the farm resources presently available. However, such a reorganization requires less labor in farm activities than currently used. In a way, this is a paradoxical situation, as a successful program designed only to increase farm income substantially increases unemployment.

DEFINITIONS OF BUDGET ITEMS

Capital investment requirements do not include the value of land. *Average capital* represents the average investment required by the specific enterprise. This assumes a straight line depreciation for items such as buildings and equipment. For these items the average capital investment required would be half the total capital or "new value." In the case of brood stock, total and average capital requirements are the same, since the value of these investments is maintained for an indefinite period.

Operating capital or cash expenses include the value or cost of various items used in production. These expenses are annual production costs necessary for enterprise operations. Equipment repair and taxes are included as cash expenses, because these costs must be covered if operators continue production over a period of time.

Labor requirements represent estimates of annual labor requirements for the various enterprises. The amount of labor required for various types and units of enterprises varies as much as production conditions. Labor requirements are estimates of requirements under conditions of average skills and technology. Research data from various sources were used to estimate labor requirements. (See bibliography.)

Land requirements for the various enterprises represent annual requirements.

Gross receipts are gross product sales or income resulting from the enterprise. With some enterprises, male breeding stock will be sold during some years. These budgets were simplified by including the purchase, depreciation and sale

of these items under cash expenses as replacement cost.

Returns over cash expenses are simply total receipts minus total cash expenses. This term is comparable to "net money income from farm operations."

Noncash expenses include interest charges and depreciation costs. Interest is a cost of using capital and is, therefore, a cost to the enterprise which uses capital as an item of production. Interest charges are based on the average investment capital and half of the cash expenses, since many of these items do not represent 12-month investments. Depreciation costs assume straight line depreciation.

Returns to land, labor, risk and management are returns over cash expenses minus total non-cash expenses.

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State-wide Research



Location of field research units of the Texas Agricultural Experiment Station and cooperating agencies



The Texas Agricultural Experiment Station is the public agricultural research agency of the State of Texas, and is one of the parts of the A&M College of Texas.

OPERATION

IN THE MAIN STATION, with headquarters at College Station, are 13 subject-matter departments, 3 service departments, 3 regulatory services and the administrative staff. Located out in the major agricultural areas of Texas are 20 substations and 10 field laboratories. In addition, there are 13 cooperating stations owned by other agencies. Cooperating agencies include the Texas Forest Service, Game and Fish Commission of Texas, Texas Prison System, U. S. Department of Agriculture, University of Texas, Texas Technological College, Texas College of Arts and Industries and the King Ranch. Some experiments are conducted on farms and ranches and in rural homes.

ORGANIZATION

THE TEXAS STATION is conducting about 450 active research projects, grouped in 25 programs, which include all phases of agriculture in Texas. Among these are:

- | | |
|--------------------------------------|---------------------------------|
| Conservation and improvement of soil | Beef cattle |
| Conservation and use of water | Dairy cattle |
| Grasses and legumes | Sheep and goats |
| Grain crops | Swine |
| Cotton and other fiber crops | Chickens and turkeys |
| Vegetable crops | Animal diseases and parasites |
| Citrus and other subtropical fruits | Fish and game |
| Fruits and nuts | Farm and ranch engineering |
| Oil seed crops | Farm and ranch business |
| Ornamental plants | Marketing agricultural products |
| Brush and weeds | Rural home economics |
| Insects | Rural agricultural economics |
| | Plant diseases |

Two additional programs are maintenance and upkeep, and central services.

Research results are carried to Texas farmers, ranchmen and homemakers by county agents and specialists of the Texas Agricultural Extension Service

AGRICULTURAL RESEARCH seeks the WHATS, the WHYS, the WHENs, the WHEREs and the HOWs of hundreds of problems which confront operators of farms and ranches, and the many industries depending on or serving agriculture. Workers of the Main Station and the field units of the Texas Agricultural Experiment Station seek diligently to find solutions to these problems.

Today's Research Is Tomorrow's Progress