AN ANALYSIS OF INCOMES AND PRODUCT SUPPLIES;

LIVESTOCK AND CROP FARMS, EASTERN

OKLAHOMA PRAIRIE SOILS

By

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PREFACE

The author extends sincere appreciation to Dr. Odell L. Walker, graduate committee chairman, for his interest and assistance throughout the duration of this study. Thanks are also extended to Dr. James S. Plaxico and Dr. Jack E. McCroskey for their helpful suggestions.

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CHAPTER I

INTRODUCTION

Information concerning the nature and magnitude of farming adjustments and enterprise reorganization necessary to allow attainment of maximum profit is vitally needed by farmers in the prairie soil area of eastern Oklahoma. Evidence of this need is provided by recurring questions such as: (1) Is it profitable to switch from crop production to a livestock-bermuda grass pasture system? (2) What farm adjustments will be required as a result of changes in product price relationships and in service and marketing facilities in the area? (3) Can returns be increased by changing the organization of a given farm?

Questions about farm adjustments also are of vital concern to area businessmen and to policymakers. Businessmen seek answers to questions concerning perspective changes in type of inputs demanded, in demand for specific inputs, in needs for marketing facilities and area population. Policymakers are interested in crop supply potentials under alternative programs, area income effects resulting from different price levels, livestock production possibilities and effects of changes in area agricultural orientation on the area's economy.

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The Study Area

The prairie soils area includes approximately 668 thousand acres of cropland, 297 thousand acres of pasture and about 1,267 thousand acres of rangeland, woodland and waste in 29 counties (See Figure 1). A sample designed to provide needed data was taken among those farms having at least one of the allotment crops of wheat, cotton, and peanuts and the sample area has a greater percentage of cropland in proportion to total farm acreage than occurs in the total prairie soils area. Thus, the analysis reported herein applies most specially to crop farms, including 214 thousand acres of the better prairie cropland and an associated 142 thousand acres of range.

Climatologically, the area has an average rainfall of 39.0 inches annually. The Muskogee-Okmulgee area has the highest annual rainfall with 42.0 inches.[1] The area had an average of 225 frostfree days.

Objectives

The basic purpose of this analysis is to evaluate possible farming adjustment in the prairie soils area of eastern Oklahoma. The specific objectives are:

1. To develop production, costs, and returns estimates for major cash crop and livestock alternatives in the area.

2. To estimate production levels and costs associated with bermuda grass and other pasture crops for a variety of levels and combinations of production practices.

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[1]U. S. Department of Commerce, Climatological Data, Oklahoma, Annual Summary 1963, Vol. 71, No. 13, (Washington, 1964) pp. 171.

Figure 1. Map of Oklahoma Showing the Area of Study.

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3. To analyze returns from alternative organizations under current price conditions.

4. To determine the potential influence of price level changes upon crop production and the relative profitability among crops in the intermediate run.

5. To determine, for different levels of cattle prices, (a) optimum levels of pasture improvement and (b) the responsiveness of area cattle supply to changes in cattle prices.

Adjustment Problems

Census data on acreage per farm, total farm numbers and per farm capital requirements indicate that eastern Oklahoma is experiencing considerable intra-farm and inter-farm adjustment. Examples of changes in representative counties are given in Table I.

TABLE I

CHANGES IN FARM NUMBERS, SIZES, AND VALUE OF
SELECTED ASSETS, 1945-1960

	Bryan County	Muskogee County
Number of Farms:		
1930	3767	4487
1940	3512	3614
1950	2584	2881
1960	1518	1814
Average Farm Size:		
1930	113.4 a.	86.5 a.
1940	134.4 a.	108.6 a.
1950	180.7 a.	132.4 a.
1960	292.0 a.	207.2 a.
Average Value of Land and Buildings Per Farm:		
1930	$ 3386.00	$ 3610.00
1940	2537.00	2736.00
1950	6966.00	6348.00
1960	18078.00	18091.00

Reductions in farm numbers, increases in farm size, additional capital per acre and changes in input use highlight adjustments that are occuring in the two counties. Clearly information to serve as guides to current and future adjustments can pay substantial dividends.

In general, two types of adjustments are available. First, given resources are allocated among alternative production activities to maximize the value of returns to these resources. Reorganization or adjustments within the farm fencelines can be made in response to changes in price relationships and the particular farmers decision environment. Secondly, adjustments in the size of operation, particularly in farm acreage, are frequently necessary so that the volume of business is large enough to provide a satisfactory return to operator's labor and management after all costs are paid. Clearly, the two types of adjustments are related since reorganization may increase the size of the business through capital additions. This study emphasizes the reorganization type of adjustment, but also provides information concerning pressures leading to increased size through land acreage adjustment using levels of returns, shadow prices for land, and labor requirements as pressure indicators.

The firm adjustment problems in farm management research are summarized by the questions of (1) What is to be produced? (2) How much is to be produced?, and (3) How should the products be produced? Available production alternatives, objectives sought and restrictions set by the available resources and the planning environment provide the general framework for analysis. The tools of budgeting and linear programming are designed to solve decision problems in that framework.

Budgeting is a systematic procedure for estimating returns from
alternative organizations before resources are committed. Appropriate
costs, prices and yield data for included enterprises are analyzed
within the framework of objectives, alternatives and restrictions.
Linear programming has the additional advantage of assuring a unique
solution and of allowing the inclusion and analysis of many more
enterprises with very little additional effort required. As in
budgeting, the assumption is made that many processes in farming
involve linear relationships. For example, if net returns from one
cow are $50, then net returns from 100 cows are $5,000 or if one ton
of fertilizer costs $50, then 1,000 tons of fertilizer costs $50,000.

Results from budgeting and linear programming indicate optimum
organization and levels of enterprise activities, specify maximum
net income from given resources and allow comparisons of net income,
capital requirements and labor requirements for various organizations.

Organization of Remainder of Thesis

A brief explanation of organization of chapters to follow is
given below.

Chapter II

The method of analysis and appropriate planning horizons are
given, the general soil and resource characteristics of the represent-
ative farm are explained, and the enterprise alternatives are specified
and explained.

Chapter III

The returns, capital requirements and labor requirements are
examined for alternative whole farm plans suited to the prairie soils

area. The analysis is oriented to the short-run, in the sense that
approximate current price levels are used.

Chapter IV

Variable price programming is used to determine optimum intermediate-
run organizations. Cotton price is varied over five levels within
three general price levels for other commodities. Potential cotton
supply response is estimated for each price level. The implications
of organizational inflexibility as prices change are also examined.

Chapter V

Optimum intermediate-run livestock systems are determined and
potential area livestock supply response is examined. The effects of
non-optimal organization upon net incomes, capital requirements,
organizational practices and labor requirements are discussed. Finally,
the effects of different relative stocker calf and stocker-feeder prices
upon optimum organization are examined.

Chapter VI

The major results and contributions of the study are summarized
and conclusions and implications discussed.

CHAPTER II

DATA AND PROCEDURES

Data applicable to the area were obtained from agricultural

experiment station results, farm surveys and agricultural scientists.

Data used are reflected in budgets used as a basis for this study.[1]

Price data were selected to fit adjustment periods as described below.

Method of Analysis

The technique of linear programming was used to determine optimum

organization presented in later chapters. For a given price or resource

situation a plan was determined which (a) may or may not use the entire

supply of available resources, (b) specifies a unique set of production

activity levels and (c) provides an objective function value, "net

income," such that no change in enterprise combination, with given

restraints, will give a greater net income value. Net income is

defined as the residual returns to the operator's contribution of land

labor, management and certain overhead capital for which no charge is

made in the program.

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[1]Herman Workman, Kenneth C. Schneeberger, and Odell L. Walker,
Resource Requirements, Costs and Expected Returns; Alternative Crop
Enterprises; Major Upland Clay and Sandy Soils of Eastcentral and
Southcentral Oklahoma, Oklahoma Agricultural Experiment Station Processed
Series P   (Stillwater, 1965).

Kenneth C. Schneeberger, Herman Workman and Odell L. Walker,
Resource Requirements, Costs and Expected Returns; Beef Cattle and Improved
Pasture Alternatives; Eastcentral and Southcentral Oklahoma, Oklahoma
Agricultural Experiment Station Processed Series P   (Stillwater, 1965).

Planning Horizons

Adjustment period concept used in analysis are defined as follows:

1. The short-run concept is for a planning period in which current prices are used. Land is fixed. Capital is variable and has a six percent charge. Labor may be hired at one dollar per hour. Changes in machinery and buildings are assumed possible in the short-run, in contrast to the usual conditions assumed for the short-run. Thus, the short-run concepts used here emphasizes the current economic conditions rather than inflexibility.

The short-run planning horizon is used when examining the profitability of alternative whole farm plans under current price conditions. Operationally, results are most useful to farmers with sufficient flexibility to allow year to year organizational changes. However, the short-run analysis also indicates the opportunity cost of non-optional plans.

2. The intermediate-run is defined as that period of time in which all assets except land are variable. Prices likely to prevail over the long term are used. Capital is unlimited at six percent interest and labor may be hired in any quantity for one dollar per hour. Useful information is furnished to farmers considering major farm organization changes or desiring information on the effects of price changes on the relative profitability of various crops or organizations.

Resource Situations

The prairie soils were divided into four productivity classes; the criterion for classification including slope, texture, fertility,

and internal drainage but emphasizing economic difference in soils.
Table II gives a description of each classification. The percent of
cropland in each productivity class was determined from soil maps and
survey information.

TABLE II

DEFINITION OF LAND PRODUCTIVITY CLASSES

Class C_a	Deep, nearly level, loamy upland soils. Key series are Choteau, Okemah, and Taloka.
Class C_b	Deep, gently sloping, loamy upland soils. Key series are Dennis and Durat.
Class C_c	Deep, nearly level claypan soils. Key series is Parsons.
Class C_d	Shallow, eroded and sloping upland soils not suitable for row crops. Includes all above series.

Representative Farm Description

Two different farm situations were used to define representative
area crop and livestock farms. Farms were chosen to be generally
representative and neither farm is meant to be typical of all farms of
its particular size. Table III lists some characteristics of the
representative farms. The small farm contains 210 acres of total
land with 140 cropland acres. It typifies those farms using two-plow
tractors and complementary machinery and having only cotton allotments.
The large farm contains 520 total acres of which 345 acres are crop-
land and it allows a four-plow tractor and machinery complement. The
two farm sizes furnish indications of economics of size associated
with machinery use.

TABLE III

TOTAL ACREAGE, PRODUCTIVITY CLASSES AND ALLOTMENTS FOR TWO
REPRESENTATIVE FARMS, PRAIRIE SOILS OF
EASTCENTRAL AND SOUTHCENTRAL OKLAHOMA

	210 acre farm	520 acre farm
Uses:	(acres)	(acres)
Pasture	49	123
Other	21	52
Cropland	140	345
Total	210	520
Cropland Productivity Classes:		
C_a	21.0	51.75
C_b	84.0	207.00
C_c	21.0	51.75
C_d	14.0	34.50
Total	140.0	345.00
Allotments:		
Cotton	39.2	72.5
Wheat	0.0	34.5
Peanuts	0.0	103.5

A set of improvements, including necessary buildings to adequately
handle the needs of the respective farms, is assumed for each farm.

Land Use

Land is divided among cropland, pasture, and other land (woods,
waste and farmstead) with cropland subdivided into productivity classes
(Table III). The use and productivity breakdowns were obtained from
soil and farmer surveys. The Soil Conservation Handbook on Use and
Treatment Alternatives for Eastern Oklahoma was used to determine
the number of successive years a row-crop can be grown on the same
land. Allotment levels for the three major allotment crops (wheat,
cotton, and peanuts) were derived from current allotment estimates
based upon A.S.C.S. records and farm survey data.

TABLE IV

DESCRIPTION OF CROP ACTIVITIES FOR PRAIRIE SOILS RESOURCE SITUATION

Item	Level	Activity Number	Unit	Yield on Land Classes				Production Practice		
				Ca	Cb	Cc	Cd			
Bermuda	I	P1,9,17,25	AUM [a]	3.3	3.3	2.6	2.5	overseeded with clover	0-15-0	fertilizer
Bermuda	II	P2,10,18,26	AUM	4.5	4.5	3.4	3.3	overseeded with clover	10-20-10	fertilizer
Bermuda	III	P3,11,19,27	AUM	5.2	5.2	3.8	3.7	overseeded with clover	15-30-15	fertilizer
Bermuda	IV	P4,12,20,28	AUM	5.8	5.8	4.4	4.2	overseeded with clover	30-40-20	fertilizer
Bermuda	V	P5,13,21,29	AUM	6.8	6.8	4.8	4.6	overseeded with clover	50-50-50	fertilizer
Bermuda	VI	P6,14,22,30	AUM	8.5	8.5	6.4	6.2	overseeded with clover	100-50-50	fertilizer
Bermuda	VII	P7,15,23,31	AUM	10.0	10.0	7.5	7.3	overseeded with clover	200-50-50	fertilizer
Bermuda	VIII	P8,16,24,32	AUM	7.1	7.1	5.0	4.8	overseeded with vetch	0-50-50	fertilizer
Small Grain for Grazing		P33,34	AUM			2.0	2.0		40-40-20	fertilizer
Rye Vetch Pasture		P35,36	AUM	4.0	4.0				20-40-20	fertilizer
Cotton		P47,49	Cwt.	3.75	3.50			hand harvest	50-40-20	fertilizer
Cotton		P48,50	Cwt.	3.75	3.50			custom harvest custom hoeing	50-40-20	fertilizer
Peanuts		P51,52	Lb.	1250	1150			custom harvest custom hoeing	10-40-40	fertilizer
Wheat		P53,54,55	Bu.	28.0	26.0	24.0		custom harvest	50-30-15	fertilizer
Soybeans		P56,57,58	Lb.	1500	1200	960		custom harvest	10-40-20	fertilizer
Oats		P59,60,61	Bu.	45.0	40.0	38.0		custom harvest	50-30-15	fertilizer
Grain Sorghum		P62,63,64	Cwt.	25.0	23.5	19.0		custom harvest	60-20-40	fertilizer
Alfalfa		P65,66	Ton	3.0	2.0			custom harvest	0-80-60	fertilizer

[a]An animal unit month is defined as the amount of grazing required by the average cow for a one month period.

TABLE V

DESCRIPTION OF COW-CALF ACTIVITIES

Activity Number	Calving Time	Marketing Date	Range AUM's per Cow	Components of Winter Ration
P37	Mar. 1	Oct. 10	13.5	Cottonseed Cake, Hay, and Pasture
P38	Mar. 1	Oct. 10	10.5	Cottonseed Cake, Hay (substituted for pasture)
P39	Mar. 1	Oct. 10	10.4	Cottonseed Cake, Hay, and Pasture with some small grain pasture to substitute for protein and pasture
P40	Nov. 1	Aug. 1	13.5	Cottonseed Cake, Hay, and Pasture
P41	Nov. 1	Aug. 1	10.5	Cottonseed Cake, Hay (substituted for pasture)
P42	Nov. 1	May 20	8.7	Small Grain Pasture with cottonseed, hay and pasture in bad weather

TABLE VI

DESCRIPTION OF STOCKER STEER, BUY-SELL ACTIVITIES

Activity Number	Purchase Date	Sell Date	Purchase Weight	Sell Weight	AUM's per steer		Components of Ration	
					Range	Temporary Pasture	Winter	Summer
P43	Oct. 10	May 20	450	705	.25	3.5	Rye-Vetch Temporary Pasture with cotton-seed cake, hay and pasture in bad weather	
P44	Oct. 10	Mar. 1	450	630	.20	2.1	Small Grain Pasture with cottonseed cake, hay, and pasture in bad weather	
P45	Oct. 10	Aug. 10	450	716	6.3		Cottonseed Cake, Hay and Pasture	Pasture
P46	Oct. 10	Aug. 10	450	777	5.8		Cottonseed Cake, Hay and Pasture	Pasture plus 5 lbs. Grain Sorghum per day for 90 days

Included Activities

Enterprises chosen for this analysis were restricted by climate,
available markets, degree of area applicability (for example, broom-
corn was considered insignificant because acreage in Muskogee, Okmulgee
and Bryan counties was only 338 acres in 1959), and other factors
listed later in this section.

All major area cash crops and such intermediate products as
bermuda grass, rye-vetch temporary pasture, and small grain temporary
pasture were included and are listed in Table IV. This analysis places
special emphasis on pasture forage activities. For example, bermuda
grass, which is the major pasture crop alternative, was analyzed at
eight different production practice levels. Thus, this study
substantially refines previous studies in which only one practice
level was considered.[1]

Only livestock activities that are primarily pasture-forage users
are included (Table V and VI). All sheep, hog and beef fattening
activities were arbitrarily excluded.

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[1]Alfred L. Barr, W. Schultz, James S. Plaxico and Arnold B. Nelson,
Beef Cattle Systems and Range Improvement Alternatives: Estimated
Production Income and Costs, Oklahoma Agricultural Experiment Station
Processed Series P-358 (Stillwater, 1960).

Alan W. Reichardt, William F. Lagrone and Luther Tweeten, Resource
Requirements, Costs and Expected Returns; Alternative Crop and Livestock
Enterprises; Major Bottomland Soils of Eastcentral and Southcentral
Oklahoma, Oklahoma Agricultural Experiment Station, Processed Series
P-476 (Stillwater, 1964).

Prices

Two sets of prices received are used in this study. Short run prices with the exception of wheat price, are average Oklahoma prices over the last five years. The intermediate-run prices are varied from a base representing possible future prices. (See Appendix Table I). Price adjustments are made for market location and transportation differentials.

Resource prices are current prices reported by farmers, agricultural workers and suppliers in the area.

Technology and Management Levels

The level of technology assumed reflects the latest economically feasible innovations and techniques, based upon experiment station recommendations. Above average management is assumed since it is not a common practice in the area to apply fertilization levels or herbicide applications specified in some activities.

Capital

Capital can be borrowed as long as the return is greater than or equal to the assumed market rate of interest. A six percent rate was charged on borrowed operating capital.

Capital requirements for each enterprise were divided into total and annual capital. Total capital is the sum of the expenditures and separable investment capital for a given enterprise in a given year. Annual capital is total capital adjusted to an annual basis so that interest can be charged for the length of time the money was tied up on a particular enterprise. For example, if a calf was purchased Oct. 1 and sold April 1, then the capital was in use for only one half year.

If the calf cost $100 then the annual capital charge would only be $50. The total capital charge would be the complete $100. In the programming model, interest is charged on total operating capital to reflect farmer psychology leading to discounting for uncertainty.

Labor

Available hours of operator labor are divided into two categories: (1) that available for doing field work and (2) that necessary for carrying on the duties of management. The first labor category was subdivided into work periods of (1) January-April, (2) May-July, (3) August-September, and (4) October-December as these are major labor use periods (See Table VII) associated with prevalent area livestock and crop enterprises. One and one-half hours per day was assumed necessary for carrying on the duties of management.

TABLE VII

OPERATOR LABOR AVAILABLE FOR FARMING

Period	Hours Available
January-April	667
May-July	605
August-September	418
October-December	516

Labor in addition to that furnished by the operator may be required in all or some of the months and can be hired at $1.00 per hour.

Machinery

Sets of machinery assumed for the study are those most prevalent

in the area and are derived from machinery data obtained from farmer

surveys in the area.

As indicated earlier, a two-plow tractor and machinery complement

for the small farm and a four-plow tractor and machinery complement for

the larger farms were used.

Costs of owning and operating machinery are considered variable

for all planning periods and are expressed on a per hour basis.

Custom harvesting is assumed for all activities.[2]

Overhead Costs

Most separable and discernable overhead costs such as hay storage,

fences, and corrals are included in production costs in the applicable

activities. Many expenses such as land tax, telephone, insurance, and

car and pickup expenses were not included.[3] These costs have no

influence on decisions relative to combination of activities as they

[2]Prices for custom operations are from D. B. Jeffrey, et. al.,
Oklahoma Custom Rates, Oklahoma Agricultural Experiment Service,
Leaflet L-50, 1960.

[3]Estimates of overhead costs can be found in: Larry J. Connor,
"Long-Run Adjustment Hypotheses for Farm Operators in a Sparsely
Populated, High-Risk Area of the Great Plains." Stillwater: (unpublished
Ph.D. thesis, Oklahoma State University, 1964).

Alan W. Reichardt, "Farm Adjustment Opportunities on Major
Bottomland Soils of Southcentral and Eastcentral Oklahoma." Stillwater:
(unpublished M. S. thesis, Oklahoma State University, 1964).

are considered to be whole farm costs. As mentioned earlier, they do affect the amount of returns from a combination of activities. Consequently, net return estimates include residual payments to excluded overhead costs.

Tenure

The tenure situation assumed is that of an owner-operator. Although many operators farm both owned and rented land, the assumption is not irregular because the desired information concerns what return can be expected from a set of resources, not how the resources are acquired or returns shared. A farmer who does not own all the land he farms will subtract his principal and interest payment or rent payment from net income to determine actual net income.

CHAPTER III

ALTERNATIVE WHOLE FARM PLANS

Much uncertainty exists in southcentral and eastcentral Oklahoma

concerning the profitability of alternative farm organizations, partic-

ularly organizations emphasizing bermuda-livestock enterprises. Lack

of knowlege, customs, farmer preferences, individual farm characteristics

and such local conditions as shortages of labor and marketing facilities

may force exclusion of some enterprises. Operator age, capital position,

farming experience, work capacity and managerial ability may also

influence enterprise choice. Thus, farmers need estimates of costs,

returns, and complementary labor and capital information to allow

comparison of alternative plans.

Since the planning information furnished by this chapter is

basically for the short-run the amount of available land is fixed.

Different farming plans for the given farm size and resource mix are

presented. The plans and accompanying analyses indicate optimum

organizations for given sets of production alternatives. The oppor-

tunity costs of plans other than the optimum one in which all production

alternatives are considered are indicated by differences in returns.

These differences allow farmers to determine costs of factors such

as personal preference which dictate a particular set of production

alternatives. The differences in returns between plans also indicate possibilities of expanding net income by reorganizing within present fencelines.

Profit Maximization With Various Combinations of Enterprises

With all crop and livestock activities listed in Tables IV, V, and VI as admissible alternatives, the most profitable set of enterprises was specified. Alternative organizations were derived by successively deleting the most profitable enterprise and determining the most profitable plans after the deletion. This procedure determined a profitability ranking of enterprises. Land use, capital requirements, and labor requirements are supplementary data furnished by this process. The analysis is short-run in that a fixed farm size and approximate current prices (e.g. $24 for 450 lb. stocker steers, $ .295 cotton and $1.65 wheat) are assumed. Since it is also assumed that capital is unlimited at six percent interest and machinery can be varied, the analysis cannot be strictly classified as short-run.

All Enterprises

With available markets, sufficient capital and land, plus the necessary managerial ability, some farmers can consider all feasible activities as being alternatives open to their consideration. This section includes all activities as possible choices. The linear programming technique determines the most profitable organization (See Plan 1, Table VIII).

For this short-run analysis, the optimum organization includes 12.42 acres of cotton and 184.23 acres of peanuts to use the Ca and Cb land suitable for row-cropping. Wheat is on Ca and Cb land above

TABLE VIII

SHORT RUN ORGANIZATION AND NET INCOME FROM NINE ALTERNATIVE FARM PLANS FOR A REPRESENTATIVE EASTERN OKLAHOMA PRAIRIE SOILS FARM

Enterprise	Unit	Plan[a] 1	2	3	4	5	6	7	8	9
Cotton	Acre	12.42		196.65						
Peanuts	Acre	184.23	196.65							
Wheat	Acre	113.85	113.85	113.85	310.50					
Soybeans	Acre					196.65				
Grain Sorghum	Acre							155.25	196.65	
Oats	Acre					103.50	258.75			
Alfalfa	Acre					10.35	51.75	51.75		
Bermuda	Acre	34.50	34.50	34.50	34.50	34.50	34.50	138.00	148.35	345.00
Beef Cows	Head	30.0	31.0	30.0	30.0	21.0	31.0	11.0	14.0	
Beef Stockers	Head	65.0	69.0	2.0	79.0	18.0	33.0	116.0	120.0	324.0
Operator Labor	Hour	1743.60	1365.52	1779.33	1161.21	1126.70	1039.46	1200.74	1322.82	1657.97
Total Capital	Dol.	30947.57	31645.74	21142.22	25390.93	17332.32	19848.02	28127.95	29455.65	53283.10
Annual Capital	Dol.	21283.39	21622.90	16340.03	18940.26	14313.80	15687.08	22800.84	24265.17	43441.46
Returns to Land, Labor, Management and Risk	Dol.	14370.56	14148.42	13107.85	8552.78	5689.05	5528.83	5007.06	4650.59	3653.49

[a]Plan | Enterprise removed | Plan | Enterprise removed
1 | None | 6 | Cotton, Peanuts, Wheat, Soybeans
2 | Cotton | 7 | "   "   "   "   Oats
3 | Peanuts | 8 | "   "   "   "   "   Alfalfa
4 | Cotton, Peanuts | 9 | "   "   "   "   "   "   Grain Sorghum
5 | "   "   Wheat | |

the 76 percent row-crop restriction and all the Cc land. Bermuda uses the 34.50 acres of Cd land. Livestock activities include 30 units of cow-calf P39, 26 units of buy-sell stockers P43 and 39 units of buy-sell stockers P44 to utilize the wheat pasture.

The organization is stable with the exception of buy-sell stockers P44.[1] An increase in revenue of $1.39 per unit from the P44 activity would make P44 competitive with cows P39 and result in 59 head of buy-sell stockers P46 entering the basis. The column headed stability ranges in Appendix Table IV indicates the range of values over which cost (or revenue) may vary, assuming no other cost value varies, without changing organization of the program. However, any change within this range will result in a change in net income.

All Enterprises Except Cotton

With the removal of cotton, net income decreases to $14,148.42. Wheat and peanuts are the primary cropland users. This organization is attractive because of its simplicity (See Plan 2, Table VIII). With these two cash crops, 69 head of beef stockers P43 and 30 head of beef cows P39, the farmer would have his work distributed throughout the year, although there might be competition for labor during the fall.

For this organization, the buy-sell stocker P44 activity is the only one that would be classed as unstable. An increase in returns per animal of $0.93 would result in a part of the spring cow-calf P39 activity being replaced by more stockers P44, thus allowing 59 head of buy-sell stockers P46 to enter the basis. This would require only a .15 cent per pound price change in buy-sell stockers P44. Stability ranges also indicate

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[1]Stability ranges discussed in this chapter are in Appendix Tables AIV and AXII. There is a corresponding table for each alternative plan discussed in this chapter.

that a six-tenths of one percent decrease in interest rate would result in buy-sell stockers P46 entering the organization.

All Enterprises Except Peanuts

With peanuts excluded from the list of alternative crops, cotton and wheat become the most profitable crops (See Plan 3, Table VIII). The winter wheat pasture, bermuda pasture and native pasture are used by 30 head of the cow-calf P39 activity. Labor requirements (1779.33 hours) are relatively high because of the importance of cotton in the plan. Capital requirements are only two-thirds that required by the plan in the preceeding section which had peanuts and the supplemental buy-sell steer activity P44 as the major activities. Net income is $1260 less than that possible when no activities are excluded.

Stability ranges indicate that substitution of hand harvesting cotton for machine harvesting would reduce net income by $92.15. Other activities are very stable.

Cotton and Peanuts Removed

With peanuts and cotton both excluded, wheat becomes the most profitable enterprise and is the sole user of all cropland suited for cash crops. Bermuda is on Cd soil. This organization (Plan 4) is probably quite attractive because of its simplicity and light machinery requirement. The exclusion of peanuts and cotton resulted in a drop in net income to $8,522.78. Labor required, when compared to the plan with both wheat and peanuts (Plan 2), is less by 204 hours and total operating capital requirements less by $8,058.61. Seventy nine head of stockers P44 are included to utilize the wheat pasture. Thirty cows P39 use the residual small grain and native pasture.

Stability ranges again indicate that an increase in revenue per unit from stockers P44 or a slight decrease in interest rate would result in a different organization with 59 head of buy-sell stockers P46 entering the basis and some of the cow activity P39 leaving the basis.

Cotton, Peanuts, Wheat Removed

The elimination of wheat, the third most profitable crop gives a completely new and much more diversified organization (See Plan 5, Table VIII). Soybeans is grown on all cropland suitable for its production. Oats takes all Cc land and the Cb land not suited to row-crops. Alfalfa is the user of the Ca land not suited for row crops. This organization might be attractive to certain farmers who do not wish, or are financially unable, to bear the risk of a complete crop failure under an organization such as the all wheat organization in the previous section.

Cow numbers P39 change from 30 to 21 head and stocker steer P46 numbers change from 79 to 18 head from the previous to the present organization. The change from all wheat to this more diversified organization results in a decrease in net income of $2,863.73.

A more logical organization might be the substitution of wheat for oats in this organization. Labor, machinery and capital requirements would vary only slightly and net income would increase by $906.66.

Stability range figures show that a cost per acre increase of $0.22 for oats would result in some soybeans on Cb land being replaced by oats. The instability of the oat sell activity re-enforces the already stated proposition that slight increases in net returns from oats or decreases for soybeans would result in some soybeans being replaced by oats.

Cotton, Peanuts, Wheat, Soybeans Removed

With soybeans removed, a more specialized and simple organization is derived (Table VII, Plan 6). Oats uses 258.75 of the 345 acres, alfalfa uses 51.75 acres and bermuda uses 34.5 acres. The available small grain pasture allows 33 stocker steers P43 and 31 cows P39 to be included in the optimum basis. Labor requirements are less than the previous organization by 87 hours (1039.46 hours) and is the lowest for any of the optimum organizations in this chapter (Figure 2). The net income decreases to $5,528.83, which is a drop of only $160.22 from the previous organization.

Stability ranges indicate that a decrease in interest rate of six-tenths of one percent would allow buy-sell stockers P46 to become profitable and would result in 60 head of stocker steers P46 entering the program.

Oats Removed

The removal of oats as an available alternative, in addition to those previously removed, results in both grain sorghum and bermuda becoming relatively more profitable (Table VII, Plan 7). Alfalfa occupies all Ca land and is stable. Grain sorghum uses all Cb land suitable for row-cropping. Bermuda uses all Cb land unsuited for row crops and all Cc and Cd land.

With the increase in bermuda acreage, stocker steer P46 numbers increase from 33 to 116 head and cow numbers P39 decrease to 11 head. Total capital requirements increases $8,279.93 over the previous plan (Figure 2). Net income decreases to $5,007.06.

Bermuda on Cb land is not stable and an increase in cost per unit of $0.24 (from $8.88 to $9.12) would result in fewer acres of bermuda
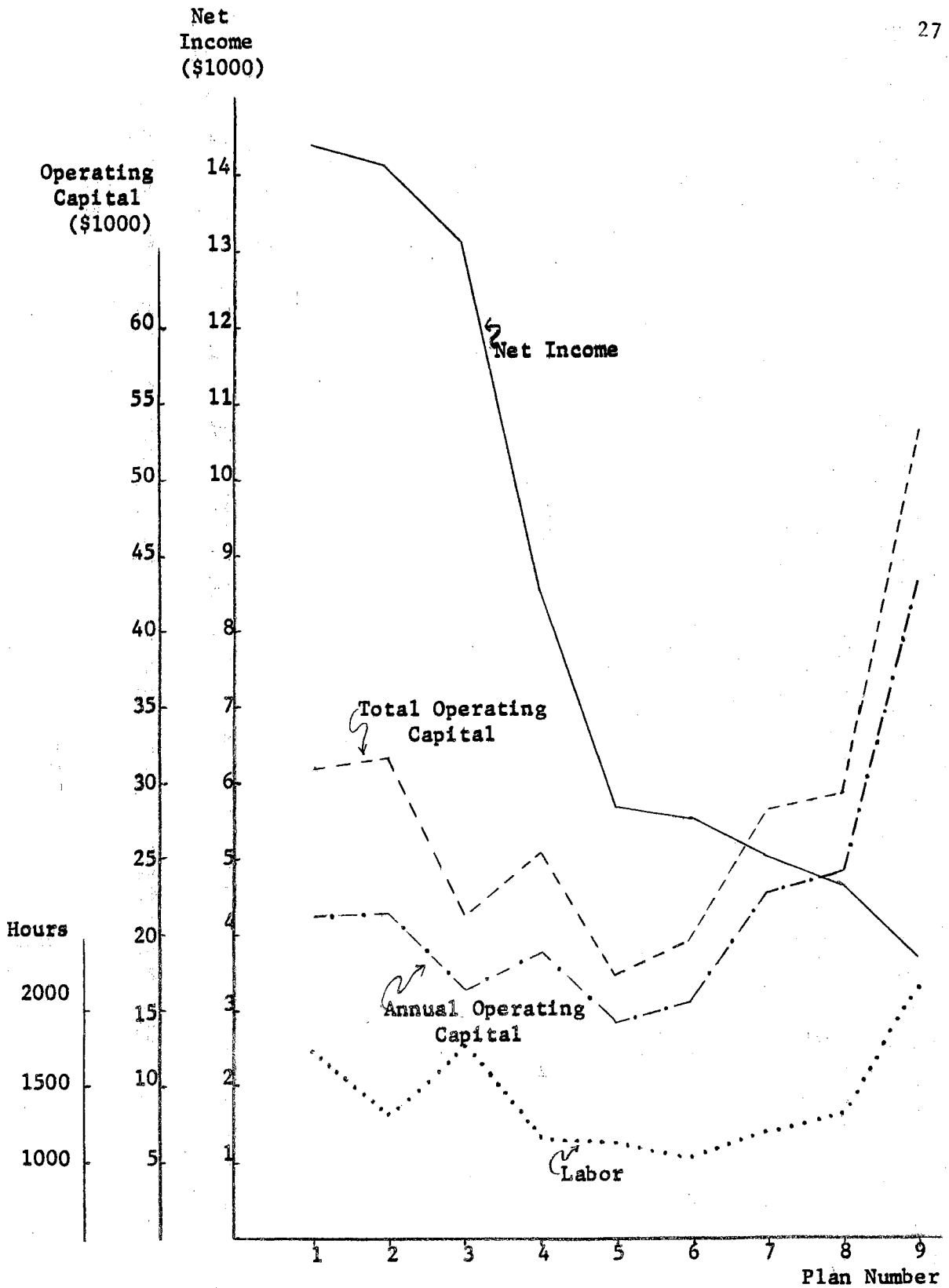
Figure 2. Net Income, Capital Requirements and Labor Requirements for
Nine Optimum Short-Run Organizations, Representative Prairie Soil
Resource Situation

being grown. This would also affect the stocker steer P46 enterprise as fewer steers would be carried with the decrease in bermuda grass acreage.

Although the buy-sell stocker steer activity P43 does not enter the optimum basis for this plan, it would enter if (1) interest rate dropped from six percent to 5.87 percent, (2) revenue per unit from the cow-calf activity P39 dropped by $0.30 or (3) if revenue per unit from buy-sell stockers P46 increased by $0.15. Any of the changes would result in some of the 11 head of cows P39 being replaced by buy-sell stockers P43.

Alfalfa Removed

The elimination of alfalfa as an alternative, along with the other crops which have been previously excluded, returns the optimum organization to a more specialized organization (Table VIII, Plan 8). Grain sorghum is the only cash crop grown and it occupies all Ca and Cb land suitable for row-crops. The remaining 148.35 acres of the 345 tillable acres are in bermuda. Cow-calf P37 numbers increase to 14 head and stocker steer P46 numbers increase to 120 head.

Net income from present organization is $4,650.59. Labor required increases by 121.92 hours over the previous plan to 1322.82 and total capital required increases over the previous organization by $1,327.70 to $29,455.65 (Figure 2).

The bermuda activities on Ca and Cb land are not stable, however, changes in cost per unit would not cause any new organization of enterprises but would result in different levels of production practices for

the bermuda enterprise. There would be some change in net income and livestock numbers. The stability ranges on stocker steers P46 and the cow-calf activity P37 also emphasize that slight price changes would cause some of the bermuda activities currently in the program to be replaced by a different bermuda activity. The narrow range on the six percent interest rate indicates how little interest rate would need to change for a more intensive operation to be initiated. If interest rate decreased from six percent to 5.87 percent then heavier production practices would be applied to bermuda and stocker steer numbers would increase.

No Cash Crops

With the removal of grain sorghum as a possible alternative, in addition to the previously excluded activities, bermuda and small grain for grazing are the only remaining activities that use cropland. All the problems of decision-making are not eliminated, however, as eight levels of production practices (Table IV) can be applied to the bermuda. Both input prices and cattle prices influence the determination of the most profitable level of production practices.

With current prices, the most profitable organization (Table VII, Plan 9) is a bermuda grass-stocker steer operation. All cropland can be profitably sprigged to bermuda and with the 277 AUM's of native grazing available the representative farm can carry 324 units of the buy-sell stocker activity P46.

It is profitable to use production practice level III on bermuda Ca and Cb land but only a maintenance level I on the Cc and Cd land.

Some farmers might not restrict the use of production practice III to Ca and Cb land and apply the practice level III to bermuda on all

land classes. The effect would be to decrease net income by $301.76.
Using the maintenance level I on all bermuda would decrease net income
by only $31.59.

Stability ranges on production practice III on the bermuda on Ca
land indicates that practice levels III and VIII are perfect substitutes.
It also indicates that if a farmer had a limited mix of inputs to apply
to either Ca or Cb land that he would be indifferent as to which land
class received the inputs. The narrow range on buy-sell activity P46
indicates that a per unit decrease in revenue of $0.53 would make produc-
tion practice III unprofitable on 20.81 acres of bermuda on Ca land.
Production practice I would be the new activity. The same results are
implied should interest rate rise above 6.34 percent.

The most significant differences in this organization and the ones
in the previous sections are: (1) much higher total and annual operating
capital requirements (Figure 2), (2) the lowest net income (Figure 2),
and (3) the third highest labor requirement. Other implications will be
looked at in a later chapter.

EFFECTS OF ALLOTMENT RESTRICTIONS ON ORGANIZATION AND NET INCOME

An early section of this chapter dealt with optimum organization
and possible net income with conditions of current prices, no allotment
restrictions and all alternative activities. To allow comparison of
organization and net income under conditions of "no allotments" and
"allotments" this section uses an area representative breakdown of
allotment restrictions. Allotments (See Table II) restrict the available
land for use of cotton, peanuts and wheat to 210.5 of the 345 acres.

Table IX gives a comparison of organization, capital and labor requirements, and net incomes for the two plans. It is significant that the three allotment crops enter the basis up to the maximum allowed under the allotment restrictions. This is in line with the findings from the deletion process which determined cotton, peanuts and wheat to be the most profitable of the alternative crop enterprises.

The "allotments" plan is much more diversified than the "no allotments" plan. Net income, at $12,092.85, is almost $2,200 less than the "no allotments" plan. Total operating capital is almost $6,000 less than the "no allotments" plan.

Stability ranges given in the appropriate appendix tables indicate the activities in the "allotments" plan are more stable than those in the "no allotments" plan.

When compared to other alternative farm plans in this chapter, the "allotments" plan is only inferior in net income to those plans having a greater acreage of either cotton, peanuts or a combination of the two.

TABLE IX

A COMPARISON OF EFFECTS OF REPRESENTATIVE ALLOTMENT RESTRICTIONS UPON
ORGANIZATION AND NET INCOME ON A REPRESENTATIVE EASTERN OKLAHOMA
PRAIRIE SOILS FARM

Item	Unit	Allotments	No Allotments
Cotton	acre	72.50	12.42
Peanuts	acre	103.50	184.23
Wheat	acre	34.50	113.85
Soybeans	acre	20.65	
Oats	acre	69.00	
Alfalfa	acre	10.35	
Bermuda	acre	34.50	34.50
Beef Cows	head	31.0	30.0
Beef Stockers	head	27.0	65.0
Operator Labor	hours	1729.96	1743.60
Total Capital	dol.	24900.90	30947.57
Annual Capital	dol.	18152.90	21283.39
Return to Land, Labor, Management and Risk	dol.	12092.85	14370.56

CHAPTER IV

PROFITABLE FARMING ADJUSTMENTS FOR THE INTERMEDIATE-RUN

This chapter is specifically designed to aid farm managers in planning their farm organizations for possible future product price situations. Supplementary information is furnished to nonfarm business-men on possible changes in area aggregate output and quantities of inputs demanded with changes in the general price level. This analysis lends itself to use by policy makers who are interested in estimating intermediate term response of cotton production with no allotments to changes in either cotton prices or prices of those crops which compete with cotton. The results may also be used in examining comparative advantages of various producing regions.

Input prices used in this chapter are presented in Appendix Table A, I. Cotton price and prices of competing products are varied throughout the analysis. All major livestock and crop activities for the area are included. This may overestimate "real world" conditions as many farmers may have reservations or preferences against the production of certain of the included activities. The analysis includes budgeting to determine differences in income for organizations other than the optimum one.

In this intermediate-run analysis all land is held constant. No allotment restrictions are placed upon any of the crop enterprises. However, row crops are limited by their soil depletion effects and are not allowed to be cropped continuously. Labor is assumed to be available at $1.00 per hour.

Three major effects are studied in this chapter: (1) cotton prices are varied from the base by plus or minus 20 percent and plus or minus 40 percent while prices of all competing activities are held at base, (2) cotton prices are varied by plus or minus 20 percent and plus or minus 40 percent when the prices of competing commodities are increased to 30 percent above base prices, (3) cotton prices are varied by plus or minus 20 percent and plus or minus 40 percent when the prices of competing products are decreased below base prices by 30 percent (Table X). The rationale for looking at many possible price combinations

TABLE X

ALTERNATIVE PLANS DERIVED AND ANALYZED FOR
FIVE COTTON PRICES AND THREE PRICE LEVELS

Price levels for competing products	Cotton Prices (cents per pound)				
	13.2	17.6	22.0	26.4	30.8
(1) Base	X	X	X	X	X
(2) Base Plus 30%	X	X	X	X	X
(3) Base Minus 30%	X	X	X	X	X

is to allow observations concerning changes in organizations as the price
relationships change. Information is also given on changes that could
be expected in profits and the stability of certain crops within a
given organization over a range of prices. Implicit in the analysis
is information relating to deviation from maximum profits resulting
from non-optimal organizations.

Cotton Prices Varied, Competing Products Value at Base

With cattle and all competing crops at base prices, cotton is not
competitive at a price of 13.2 cents per pound (base minus 40 percent).
Peanuts is the major cash crop and occupies all 196.65 acres of crop-
land suitable for its production. Wheat uses the next largest acreage -
23 percent of available cropland (79.35 acres). Class Cc land is planted
to 34.5 acres of grain sorghum and all the Cd land is planted to bermuda.
Fifty nine head of stocker P44 utilize wheat pasture and winter cover
crops and 30 beef cows P39 are included to utilize native pasture, small
grain pasture and extra labor.

With the exception of the "near substitutability" of wheat and
grain sorghum on Cc land, the organization for 13.2 cent cotton and
other products at base prices is quite stable.

Stability ranges[1] tell how much cost per unit or revenue per unit
could cahnge before a change in organization would occur. For this
organization, if prices of grain sorghum decrease by one cent or wheat

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[1]Appendix Tables A, XIII through A, XXVII give stability ranges for
corresponding optimum plans of this chapter.

prices increased by more than one cent, a new organization would result. Additional budgeting indicated that growing all wheat on Cc land would decrease the maximum profit by only $1.04. Many farmers might prefer to grow all wheat to avoid the planting and harvesting of two quite different crops.

Cotton Price at 17.6 Cents and 22.0 Cents

At 17.6 cents per pound for cotton lint, all competing products at base prices, a slight change in the organization of the crop enterprises is observed. At this price level, 12.81 acres of cotton enter the program. This cotton acreage is only 6.5 percent of the total land suitable for cotton production. The amount of available October-December labor restricts the amount of cotton grown. This is because (1) the other activities can pay labor a higher return than cotton and (2) cotton returns are not high enough to allow the hiring of more labor.

The stability ranges for cotton and peanuts (the activity with which cotton competes) indicates both activities are quite stable.

At cotton prices of 22 cents per pound and other products at base prices the same organization is optimum as when cotton is 17.6 cents. Net income increases by $200. The stability range for cotton indicates that production costs would have to decrease by $10 per acre before any labor would be hired.

Cotton Price at 26.4 Cents and 30.8 Cents

An increase in cotton prices to 26.4 cents per pound, 20 percent above the base, gives an important change in farm organization. (Table XI) Cotton completely replaces peanuts on the land suitable for row crops and acreage increases from 12.81 acres to 196.65 acres. With the

TABLE XI

OPTIMUM ORGANIZATION AT FIVE COTTON PRICES, COMPETING COMMODITIES
AT BASE PRICES, REPRESENTATIVE PRAIRIE SOILS RESOURCE SITUATION

Enterprise	Unit	Cotton Prices (cents per pound)				
		13.2	17.6	22.0	26.4	30.8
Cotton	acre		12.81	12.81	196.65	196.65
Peanuts	acre	196.65	183.84	183.84		
Wheat	acre	79.35	79.35	79.35	107.56	107.56
Soybeans	acre					
Grain Sorghum	acre	34.50	34.50	34.50	6.29	6.29
Oats	acre					
Alfalfa	acre					
Bermuda	acre	34.50	34.50	34.50	34.50	34.50
Beef Cows	head	30.0	30.0	30.0	31.0	31.0
Beef Stockers	head	59.0	54.0	54.0		
Operator Labor	hour	1374.45	1764.17	1764.17	1783.07	1783.07
Total Capital	dol.	30661.23	29941.56	29941.56	29962.45	29962.45
Annual Capital	dol.	21196.29	20841.21	20841.21	16250.91	16250.91
Returns to Land, Labor, Management and Risk	dol.	7327.73	7376.78	7573.99	9649.20	12723.14

elimination of peanuts the stocker cattle activities P43 and P44 drop
out of the program as they were users of grazing from the winter cover
crop on the peanut land. Thirty one head of the cow-calf activity P39
is in the basis. Net income increases by more than $2,000 over the
previous organization.

Some of the cotton activities are rather unstable at the lower
limit. The instability is not critical as cotton would still be the
crop grown, but hand harvest would substitute for mechanical harvest.
Net income would decrease by $687.48 if all cotton was hand harvested.
Wheat and grain are still quite unstable on the Cc land. A farmer
could be practically indifferent concerning which crop is grown. If
grain sorghum entered the basis net income would decrease by $17.71.

At a cotton price of 30.8 cents per pound, no change in whole
farm organization is observed. The cost per unit for mechanical
harvested cotton is very close to the value for its upper limit. The
change that would result if the cost per unit of mechanical harvest
cotton decreased by $ .48 would be for hand harvested cotton on Ca
land to enter the program. Therefore, no basic change in farm organi-
zation would result. Net income increases by $3,000 over the previous
program. Livestock and bermuda grass activities remain unchanged.

Cotton Price Varied, Competing Products Value at Base Minus 30 Percent

With all competing crops and livestock valued at base prices minus
30 percent some cotton is included in the optimum organization at every
cotton price (Table XII). However, at prices of 13.2 and 17.6 cents
per pound cotton can claim only seven percent of the suitable cropland.

TABLE XII

OPTIMUM ORGANIZATION AT FIVE COTTON PRICES, COMPETING COMMODITIES
AT BASE PRICES MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOILS RESOURCE SITUATION

| Enterprise | Unit | Cotton Prices (cents per pound) | | | | |
		13.2	17.6	22.0	26.4	30.8
Cotton	acre	13.46	14.24	196.65	196.65	196.65
Peanuts	acre					
Wheat	acre	80.67	62.10	83.22	83.22	83.22
Soybeans	acre	41.40	41.40			
Grain Sorghum	acre	141.79	141.01			
Oats	acre					
Alfalfa	acre					
Bermuda	acre	33.18	14.26			
Idle Land	acre	34.5	71.99	65.13	65.13	65.13
Beef Cows	head	33.00	28.00	24.00	24.00	24.00
Beef Stockers	head					
Operator Labor	hour	1561.51	1466.73	1634.61	1634.61	1634.61
Total Capital	dol.	16950.03	14952.69	17880.69	17880.69	17880.69
Annual Capital	dol.	14529.41	12693.25	13452.51	13452.51	13452.51
Return to Land, Labor, Management and Risk	dol.	1732.54	1944.67	4711.60	7785.55	10859.49

Cotton Price at 13.2 and 17.6 Cents

At a cotton price of 13.2 cents per pound, grain sorghum uses 41 percent of the cropland. Wheat, soybeans, bermuda, and cotton occupy 23, 12, 9, and 4 percent of the cropland, respectively. Ten percent of the cropland is idle. Thirty three head of beef cows P39 utilize the native and small grain pasture. Net income is $1732.54. The included hand harvested cotton activity is limited by available October-December labor. Excess labor is available in the other three periods.

At the 17.6 cent cotton price, wheat acreage decreases, cotton acreage increases slightly, idle land acreage increases, and net income increases to $1944.67.

Cotton Price at 22.0, 26.4, and 30.8 Cents

A major change in organization occurs with a change in lint cotton price at 22 cents per pound (Table XII). Grain sorghum and soybeans are out of the organization and the only crops grown are cotton and wheat. Beef cow, P39, numbers decrease by four to 24 head. Bermuda is replaced by wheat. However, wheat is not stable on Cc land and a small increase in cost of wheat production, a small decrease in cost of bermuda production, or an increase in returns from beef cattle would result in bermuda replacing the wheat on Cc land.

Optimum farm organization does not change with increases in cotton prices to 26.4 and 30.8 cents per pound. Net incomes increase to $7,785.55 and $10,859.49 with the respective increases in price.

Cotton Prices Varied, Competing Products Valued at Base Plus 30 Percent

When prices of those livestock and crop activities which compete

with cotton for available resources are increased by 30 percent, cotton

cannot favorably compete even at prices of 30.8 cents per pound.

Cotton Price at 13.2, 17.6, and 22.0 Cents

Peanuts and wheat occupy three-fourths of the cropland and are the

only cash crops grown. Remaining cropland is used by 86.26 acres of

bermuda. Bermuda and native pasture provide forage for 116 head of

stockers P46 and the small grain pasture can carry 89 head of stockers

P43. The total operating capital requirement of $50,964.95 is much

higher than that required at the base and base minus 30 percent price

levels. No labor is hired and 1525.81 hours of the available 2204 hours

of operator labor are required. Net income is $16,128.30.

Wheat is not stable on the Ca land and would be replaced by

alfalfa should cost of wheat production increase by more than $0.47 per

acre. The same result would be achieved if wheat prices decreased by

more than $0.02 per bushel. The stability ranges for most bermuda

activities are narrow. However, should a change occur, the new activity

would be a bermuda activity with a different production practice level.

No change in optimum organization results from an increase of

cotton prices to either 17.6 or 22.0 cents per pound. Net income

remains at $16,128.30. With a wheat price of $1.56 per bushel, a change

of two cents in price or a change in costs of more than three percent

will result in part of the wheat being replaced by alfalfa. If costs

increase by as much as five percent, 19.8 acres of grain sorghum will

also enter the organization. Although the bermuda activities in the

program are not stable, a slight change in prices or costs will only

result in bermuda with a different production practice level replacing

the outgoing bermuda. An increase of one percent in interest rates could cause wheat to be unprofitable and result in some alfalfa and/or grain sorghum entering the program.

Cotton Price at 26.4 Cents

At a cotton lint price of 26.4 cents per pound a slight change in organization occurs. Cotton replaces 8.84 acres of peanuts. Net income increases by $28.85 to $16,157.15 as a result of the change in organization and the increase in cotton prices. The most significant occurance is the change in the degree of stability of the wheat, bermuda and buy-sell livestock activities. Alfalfa becomes even more competitive with wheat on Ca land than at previous price combinations and an increase in cost of production of wheat by $ .38 per acre would decrease by only $3.93 from this change in organization.

Of the 86.25 acres of bermuda included in this organization, the activities on 80.67 acres are unstable. The unstable activities, however, would be replaced by another bermuda activity using a different level of production practices.

The stability ranges of the two buy-sell activities P43 and P46 indicate that if net returns per animal decreased by more than one percent, some bermuda would drop out of the program and the acreages of wheat and alfalfa would increase.

The stability range around the six percent interest rate is very narrow for all programs with base plus 30 percent prices on competing products. However, a change of plus or minus five tenths percent will result in a change in this system. An increase in interest rate would yield more bermuda in the organization. The closeness in value

of the lower coefficient of the stability range and the $1.56 wheat price
indicates that a one cent decrease in wheat price would allow alfalfa
to enter the program. Net income would decrease $2.85 if alfalfa replaced
wheat.

Cotton Price at 30.8 Cents

At a cotton lint price of 30.8 cents per pound, very little change
occurs in optimum organization (See Table XIII). Cotton acreage
increases by .41 acres and alfalfa replaces wheat on 10.35 acres. Stocker
P43 numbers decrease by four to 82 head, stocker P46 numbers remain at
116 head. Net income increases by $139.03 over the optimum organization
at the previous price level. Total capital required decreases by $700
to $49,688.90.

Stability ranges show alfalfa to be highly unstable. If returns
from alfalfa decrease by $ .28 per acre more bermuda would be grown.
If returns per acres from alfalfa should increase by $ .08 then some
wheat would be replaced by alfalfa. An increase of $ .32 per acre in
costs of bermuda grown on Cb land would decrease bermuda and increase
wheat.

Stability ranges on buy-sell stockers P43 (winter grazed October
to May on small grain pasture) and buy-sell stockers P46 (grazed on
bermuda pasture) are narrow. If the returns per animal from stockers
P43 grazing on wheat pasture decreased by $ .29 then few stockers P43
would be run on wheat pasture. A decrease in per animal returns for
stocker P46 would result in some of the bermuda being replaced by wheat.

Stability range on the interest rate of six percent is very narrow
for this optimum organization. A one-tenth of one percent decrease in

TABLE XIII

OPTIMUM ORGANIZATION AT FIVE COTTON PRICES, COMPETING COMMODITIES
AT BASE PRICES PLUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOILS RESOURCE SITUATION

| Enterprise | Unit | Cotton Prices (cents per pound) | | | | |
		13.2	17.6	22.0	26.4	30.8
Cotton	acre				8.84	9.25
Peanuts	acre	196.65	196.65	196.65	187.81	187.4
Wheat	acre	62.1	62.1	62.1	62.1	51.75
Soybeans	acre					
Grain Sorghum	acre					
Oats	acre					
Alfalfa	acre					10.25
Bermuda	acre	86.25	86.25	86.25	86.25	86.25
Beef Cows	head					
Beef Stockers	head	205.0	205.0	205.0	202.0	198.0
Hired Labor	hour					
Operator Labor	hour	1525.72	1525.72	1525.72	1792.34	1783.00
Total Capital	dol.	50964.95	50964.95	50964.95	50359.91	49688.90
Annual Capital	dol.	37719.99	37719.99	37719.99	37328.20	36724.70
Return to Land, Labor, Management and Risk	dol.	16128.30	16128.30	16128.30	16157.15	16296.18

interest rate would result in more wheat being grown, less bermuda being grown and less stocker cattle being used.

Labor Requirement for Optimum Organizations

A tabular summary of labor requirements of the 15 optimum plans determined earlier in the chapter is presented in this section to allow comparison on the basis of amount of operator labor required. Table XIV gives the number of the available 2204 operator hours that were actually used in the optimum farm organizations.

TABLE XIV

LABOR REQUIREMENTS FOR OPTIMUM PLANS AT FIVE COTTON PRICES AND
THREE GENERAL PRICE LEVELS FOR COMPETING PRODUCTS ON A
REPRESENTATIVE EASTERN OKLAHOMA
PRAIRIE SOILS FARM

Price Level of Competing Products	Cotton Price (cents per pound)				
	13.2	17.6	22.0	26.4	30.8
Base Minus 30 Percent	1561.51	1466.73	1634.61	1634.61	1634.61
Base	1374.45	1764.17	1764.17	1783.07	1783.07
Base Plus 30 Percent	1525.72	1525.72	1525.72	1792.34	1783.00

The farm plans with the highest labor requirements in Table XIV are ones that had some units of the hand harvest cotton activity in the basis. Figures from activity budgets (Table XV) indicate that hand harvested cotton is the most labor intensive of the included cash crop activities. The additional generalization can be made that all row-crops are more intensive labor users than the small grain crops.

It is significant that for the 520 acre representative farm and the
many price combinations, in no case was any labor hired and that the
hours required annually per plan varies by little more than 400 hours.

TABLE XV

PER ACRE LABOR REQUIREMENTS OF INCLUDED CASH CROP ACTIVITIES

Identification Number	Activity	Labor Hours Per Acre
P47	Cotton, hand harvest	35.98
P48	Cotton, machine harvest	3.52
P51	Peanuts	2.92
P53	Wheat	1.92
P56	Soybeans	2.66
P59	Oats	1.92
P61	Grain Sorghum	2.65
P65	Alfalfa	.98

Operating Capital and Machinery Capital Requirements for Optimum Plans

The nature of an organization, whether livestock or crop oriented,
influences operating capital requirements of a farm plan. A livestock
oriented plan will have greater operating capital needs than a cash crop
plan. An example can be drawn from Table XVI by comparing operating
capital requirements for the organizations determined optimum when
competing products are at base prices and cotton prices are at 22 and 26.4
cents per pound. The organization at 22 cent cotton is a peanut-stocker
steer system and at 26.4 cent, cotton is the major crop. Since operating
capital requirements for peanuts and cotton are quite similar, the major
factor causing change in operating capital requirement was steers.

Machinery capital required for farm plans is the reverse of the
situation for operating capital. Although machinery capital requirements

vary no more than $825 within any price level for competing products, plans that include livestock as a major enterprise tend to have lower machinery capital requirements and plans with cotton as the major enterprise tend to have higher machinery capital needs. Plans at (1) base prices plus 30 percent for competing products and cotton prices at 22 cents, (2) base prices for competing products and cotton prices at 22 cents, and (3) base prices for competing products and cotton 26.4 cents can be used for comparative purposes. Plan 1 which is a buy-sell system requires $4,015.63 in machinery capital. Plan 2, a plan with peanuts as the major enterprise, requires $4,518.34. Plan 3, a plan with cotton as the major enterprise, requires $5,095.96 in machinery capital. This is a variation between Plans 1 and 3 of about $1,100.

TABLE XVI

ANNUAL INVESTMENT AND MACHINERY CAPITAL REQUIREMENTS FOR OPTIMUM PLANS AT FIVE COTTON PRICES AND THREE PRICE LEVELS FOR COMPETING PRODUCTS

Price Levels of Competing Products	Cotton Prices				
	13.2	17.6	22.0	26.4	30.8
Minus 30 Percent					
Operating Capital	16950.03	14952.69	17880.69	17880.69	17880.69
Machinery Capital	4172.22	3784.64	4606.78	4606.78	4606.78
Base Prices					
Operating Capital	30661.23	29941.56	29941.56	20962.45	20962.45
Machinery Capital	4472.30	4518.34	4518.34	5095.96	5095.96
Plus 30 Percent					
Operating Capital	50964.95	50964.95	50964.95	50359.91	49688.90
Machinery Capital	4015.63	4015.63	4015.63	4047.54	4017.44

The $1,100 figure implies that a farmer who had recently purchased new equipment, especially row-crop equipment, should weigh cost and return figures very carefully before making a decision to switch to an organization such as wheat or livestock pasture in which there is no use for row-crop equipment.

There is a general tendency for machinery capital requirements within each of the three price levels for competing products to increase as cotton prices increased. This should give machinery dealers indications on possible changes in sales and types of sales as product prices change.

Total cash inputs can be derived by subtracting total machinery capital from total operating capital. The required cash inputs are rather stable for a given price level. With competing product prices at base minus 30 percent, cash inputs range from $11,200 to $12,800 and at base prices cash inputs range from $15,000 to $26,100. At prices of base plus 30 percent the range on cash inputs if $45,100 to $47,100. The higher capital requirement of the latter price level is a result of a large stocker cattle operation. This may imply a substantial credit market for some lending agencies should livestock farm numbers increase in the area. There may be some restraint of the part of farmers from entering a stocker calf system because of the high operating capital requirement of this type of organization and the degree of uncertainty associated with this enterprise.

A Comparison of Organization, Resource Requirements and
Net Incomes of Two Farm Sizes

The description of the small farm given in Chapter II indicated
that the representative small farm is .4 the size of the large farm.
Soil resource situations and land class percentages are the same for the
two farms. The only differences in farm characteristics are in machinery
requirements and allotment crop levels.

Tables XVII through XIX give comparisons of percentage of cropland
on each farm used by the various alternative crops. Because both farms
have the same amount of operator labor available, it is conceivable
that the small farm could have a more labor intensive combination of
enterprises. For example, more hand harvested cotton could be included.
This is the case for cotton prices of 13.2 and 17.6 cents where a
greater percentage of cropland is used for cotton production on the small
farm than on the large farm.

Tables XVII through XIX indicate the degree of closeness with which
the figures on resource requirements, livestock numbers and net incomes
approximate the .4 figure on size relationships.

A more complete analysis of organization, net income and implications
is included in Appendix Chapter B.

Cotton Supply Estimates

The supply response for cotton on a representative eastern Oklahoma
farm is estimated at three general commodity price levels. The cotton
supply function in Figure 3 was obtained from the results in which
cotton price was varied from 13.2 cents to 30.8 cents per pound within

TABLE XVII

CROPLAND ALLOCATION PERCENTAGES AND SELECTED NON-LAND ITEM COMPARISONS FOR TWO REPRESENTATIVE
EASTERN OKLAHOMA PRAIRIE FARM SIZES WHEN COMPETING PRODUCTS ARE AT BASE PRICES

Item	13.2		17.6		22.0		26.4		30.8	
	small	large	small	large	small	large	small	large	small	large
Cotton			.12	.04	.12	.04	.57	.57	.57	.57
Peanuts	.57	.57	.45	.53	.45	.53				
Wheat	.33	.23	.33	.23	.33	.23	.33	.31	.33	.31
Soybeans										
Grain Sorghum		.10		.10		.10		.02		.02
Oats										
Alfalfa										
Bermuda	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10

Small farm results as a percentage of large farms

	13.2	17.6	22.0	26.4	30.8
Cattle	.4494	.4048	.4048	.4194	.4194
Operator Labor	.6167	.7769	.7769	.7798	.7798
Total Capital	.4409	.4209	.4209	.4389	.4389
Annual Capital	.4433	.4301	.4301	.4454	.4454
Net Income	.3837	.3893	.3893	.4158	.4134

TABLE VXIII

CROPLAND ALLOCATION PERCENTAGES AND SELECTED NON-LAND ITEM COMPARISONS FOR TWO REPRESENTATIVE
EASTERN OKLAHOMA PRAIRIE FARM SIZES WHEN PRICES FOR COMPETING PRODUCTS ARE
AT BASE PRICES MINUS 30 PERCENT

Item	13.2		17.6		22.0		26.4		30.8	
	small	large	small	large	small	large	small	large	small	large
Cotton	.11	.04	.11	.04	.57	.57	.57	.57	.57	.57
Peanuts										
Wheat	.23	.23	.18	.18	.18	.24	.18	.24	.18	.24
Soybeans		.12		.12						
Grain Sorghum	.46	.41	.46	.41						
Oats										
Alfalfa										
Bermuda	.10	.10	.05	.04						
Idle Land	.10	.10	.20	.21	.25	.19	.25	.19	.25	.19

Small farm results as a percentage of large farms

Cattle	.4667		.4285		.3750		.3750		.3750	
Operator Labor	.7739		.7963		.8091		.8091		.8091	
Total Capital	.4401		.4506		.4199		.4199		.4199	
Annual Capital	.4398		.4514		.4290		.4290		.4290	
Net Income	.3809		.4682		.4278		.4191		.4154	

TABLE XIX

CROPLAND ALLOCATION PERCENTAGES AND SELECTED NON-LAND ITEM COMPARISONS FOR TWO REPRESENTATIVE
EASTERN OKLAHOMA PRAIRIE FARM SIZES WHEN PRICES FOR COMPETING PRODUCTS ARE
AT BASE PRICES PLUS 30 PERCENT

Item	13.2 small	13.2 large	17.6 small	17.6 large	22.0 small	22.0 large	26.4 small	26.4 large	30.8 small	30.8 large
Cotton							.11	.03	.11	.03
Peanuts	.57	.57	.57	.57	.57	.57	.47	.54	.47	.54
Wheat	.18	.18	.18	.18	.18	.18	.18	.18	.16	.15
Soybeans										
Grain Sorghum										
Oats										
Alfalfa									.03	.03
Bermuda	.25	.25	.25	.25	.25	.25	.25	.25	.24	.25

Small farm results as a percentage of large farm

Item	13.2	17.6	22.0	26.4	30.8
Cattle	.4049	.4049	.4049	.3861	.3838
Operator Labor	.5893	.5893	.5893	.7615	.7666
Total Capital	.4184	.4184	.4184	.4043	.4003
Annual Capital	.4242	.4242	.4242	.4153	.4109
Net Income	.3963	.3963	.3963	.3985	.4092

each price level of competing products. A discrete function was
obtained as only five cotton prices (13.2, 17.6, 22.0, 26.4 and 30.8
cents) were used. However, stability ranges allow estimation of more
points on the discrete function.

Supply With Competing Product Prices at Base Plus 30 Percent

With competing products at base price plus 30 percent, cotton is
unable to compete favorably for available resources. At the highest
cotton price, 30.8 cents, only 2.7 percent of the cropland is in
cotton (See Figure 3).

Cotton Price
(cents/pound)
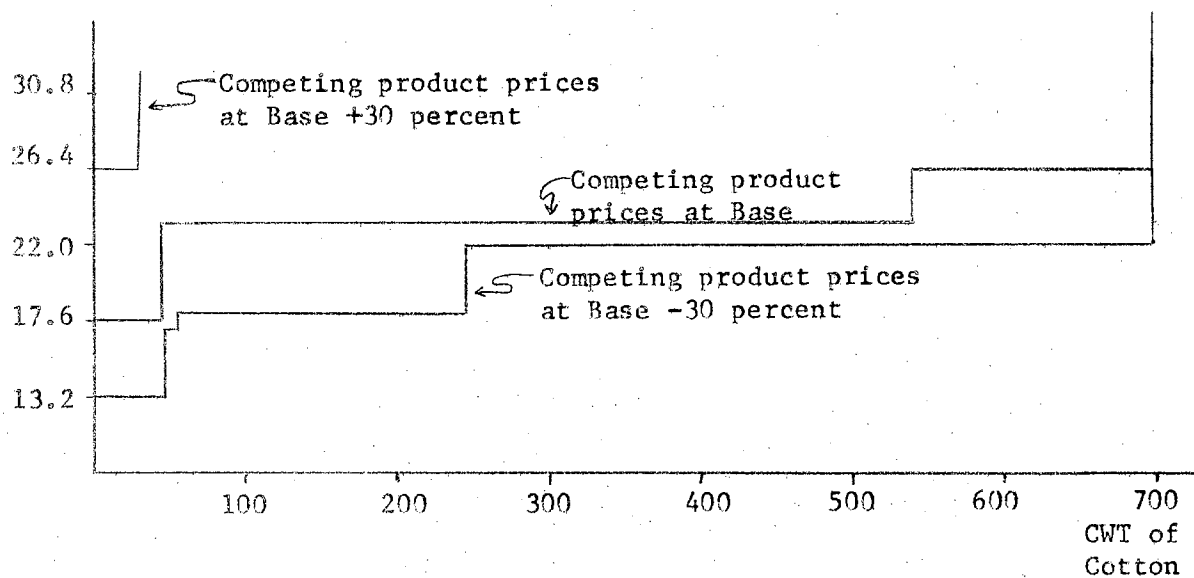
Figure 3. Intermediate Run Cotton Supply Response at Three Price Levels
for Competing Products on a Representative Eastern Oklahoma Prairie Soils
Farm

Supply With Competing Product Prices at Base

Cotton assumes a more competitive position with competing products at base prices. Cotton production is small at prices of 13.2, 17.6 and 22.0 cents. However, between 22.0 and 26.4 cents per pound the supply becomes highly elastic and per farm production jumps from 45 cwt. to 698 cwt (See Figure 3). Stability range limits indicate that much of this increase actually occurs at 23.43 cents. At this price, production increases to 539.02 cwt. Available land per farm limits cotton production to a 698.63 cwt. maximum and, as a result, the supply curve becomes inelastic at all cotton prices greater than 26.4.

Supply With Competing Product Prices at Base Minus 30 Percent

A decrease in prices for competing products to base prices minus 30 percent results in a downward shift in the cotton supply curve. Alternative crop enterprises become less profitable and cotton becomes relatively more profitable at all cotton prices. Supply is relatively inelastic for the discrete function up to a price of 18.0 cents. At 18.0 cents supply increases to 244.94 cwt. The supply curve is highly elastic between 17.6 cents and 22.0 cents as production increases from 49.85 cwt. to 698.63 cwt. Available land again restricts cotton production per farm to 698.63 cwt. and causes the curve to become inelastic at all prices above 22.0 cents.

The preceeding discussion implies that even though competing product prices might fall to a price level of base prices minus 30 percent (16.40 stocker calves, $0.84 wheat) that very little cotton will be produced in the prairie soils area at cotton prices of less than 18.0 cents per pound. This furnishes information for policymakers interested in

comparing inter-regional advantages in cotton production. Supply functions also indicate the level to which cotton prices must fall for cotton to be replaced by other major enterprises. When competing products are at base prices, cotton becomes the major enterprise at 23.43 cents. For competing products at base minus 30 percent, this cotton price is 18.0 cents.

Net Income Effects of Inflexible Organization Strategies

Farmers have many reasons for not adjusting to changing prices and moving to optimum organization. Personal strategies such as specialization of skill and managerial ability in a particular enterprise or the purchase of highly specialized machinery and equipment as a result of anticipated returns may create inflexibility in organization. For example, heavy fixed costs or inability to manage other enterprises can reduce ability to adjust over even a relatively long period.

Two organizations were chosen as possible strategies farmers in eastern Oklahoma might follow. Organizations determined optimum at cotton prices of 22.0 cents and 30.8 cents were selected to represent the future cotton prices anticipated by a pessimistic farmer and an optimistic farmer. To allow study of effects of inflexibility, the organizational strategies were held constant and net income determined for each organization at the five cotton prices. This procedure was followed for the three price levels of competing products. Net incomes from these two organizational strategies were compared. Net incomes were also compared to net income from the optimum organization.

Competing Products at Base Prices Plus 30 Percent

Figures from Table XX indicate that at base plus 30 percent prices

for competing products neither of the two organization strategies gives

a net income very different from the maximum possible from optimum

organization. The strategy (farm plan) for high cotton prices (30.8

cents) suffers the greatest variation in income ($547.45). That only

slight income variation would occur could be predicted as neither

organization had more than 9.25 acres of cotton.

TABLE XX

INFLUENCE OF TWO INFLEXIBLE STRATEGIES UPON MAXIMUM ATTAINABLE
NET INCOME WHEN COTTON PRICES ARE VARIED

Price Strategies	13.2	17.6	22.0	26.4	30.8
Base Price Plus 30 Percent					
Optimum Plan	16128.30	16128.30	16128.30	16157.15	16296.18
Plan for 30.8 Cotton	15748.73	15854.86	16021.00	16157.15	16296.18
Plan for 22.0 Cotton	16128.30	16128.30	16128.30	16128.30	16128.30
Base Prices					
Optimum Plan	7327.73	7376.78	7573.99	9649.20	12723.14
Plan for 30.8 Cotton	427.35	3501.30	6575.25	9649.20	12723.14
Plan for 22.0 Cotton	7130.52	7376.78	7573.99	7771.21	7968.41
Base Prices Minus 30 Percent					
Optimum Plan	1732.54	1944.67	4711.60	7785.55	10859.49
Plan for 30.8 Cotton	-1436.30	1637.65	4711.60	7785.55	10859.49
Plan for 22.0 Cotton	-1436.30	1637.65	4711.60	7785.55	10859.49

Competing Products at Base Prices

Choice of organizational strategies has a much more pronounced effect

when base prices for competing products are used and the two organizational

strategies are compared. The farmer planning on 22.0 cent cotton and using

that inflexible strategy assuming 22.0 cent cotton would only have income

variation of $837.08. However, if cotton prices were expected to stay

above 23.5 cents the strategy of assuming 30.8 cent cotton, while having

greater income variability, would give much higher returns over time

(See Figure 4). If cotton prices were expected to be in the low range,

then the organizational strategy for 22 cent cotton would be the best

strategy.
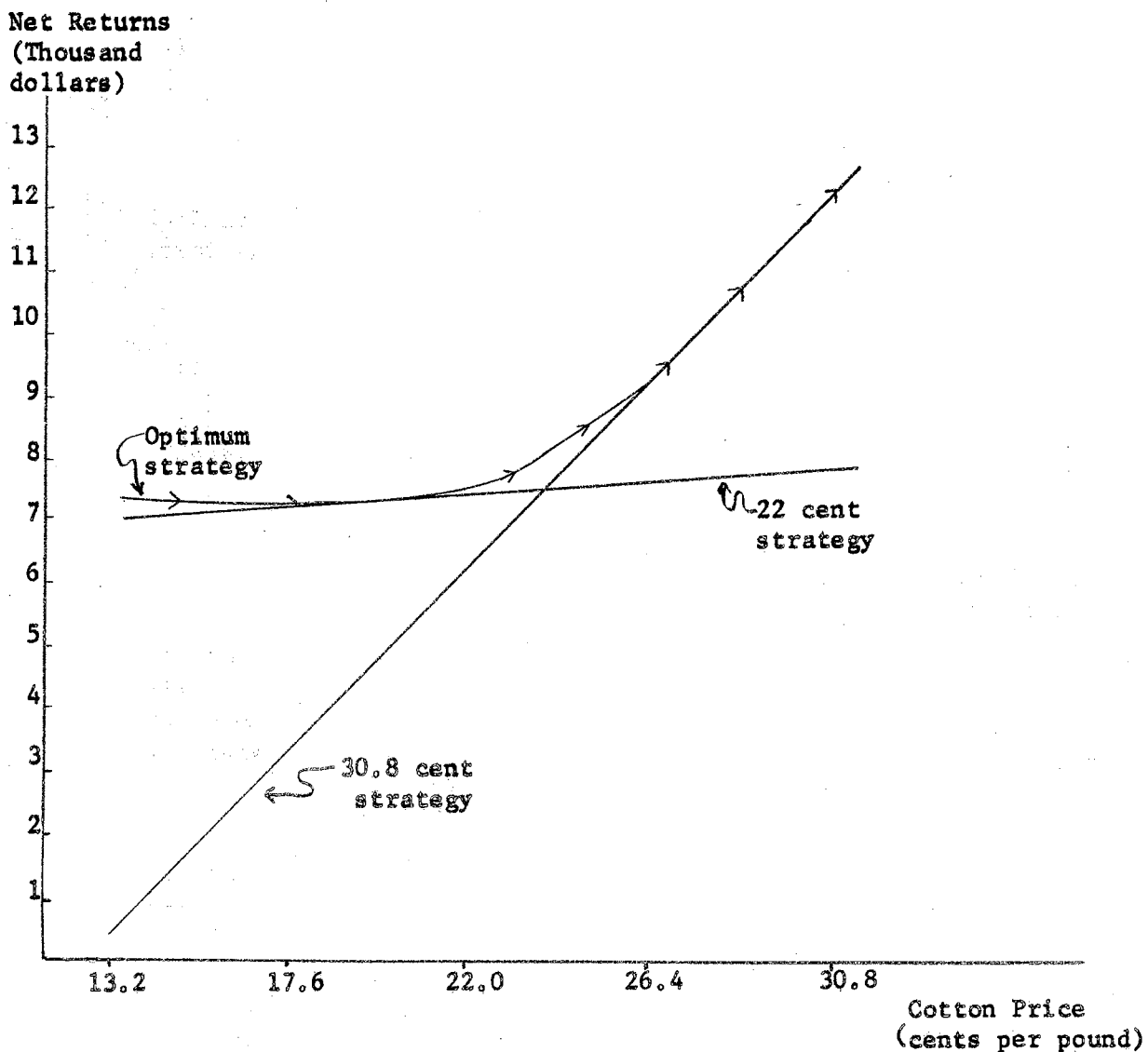
Figure 4. Income From Three Organization Strategies, Competing Products
at Base Prices

Competing Products at Base Prices Minus 30 Percent

At base minus 30 percent prices for competing products the two
inflexible organization strategies have identical effects on net income.
Both organizations are the same as the one determined optimum for all
cotton prices greater than 22 cents. The only drastic income effect
occurs at the very low cotton price of 13.2 cents where income
disparity between possible income from optimum organization and the
income from an inflexible organization is $3,168.84 (See Figure 5).

Net Returns
(Thousand dollars)
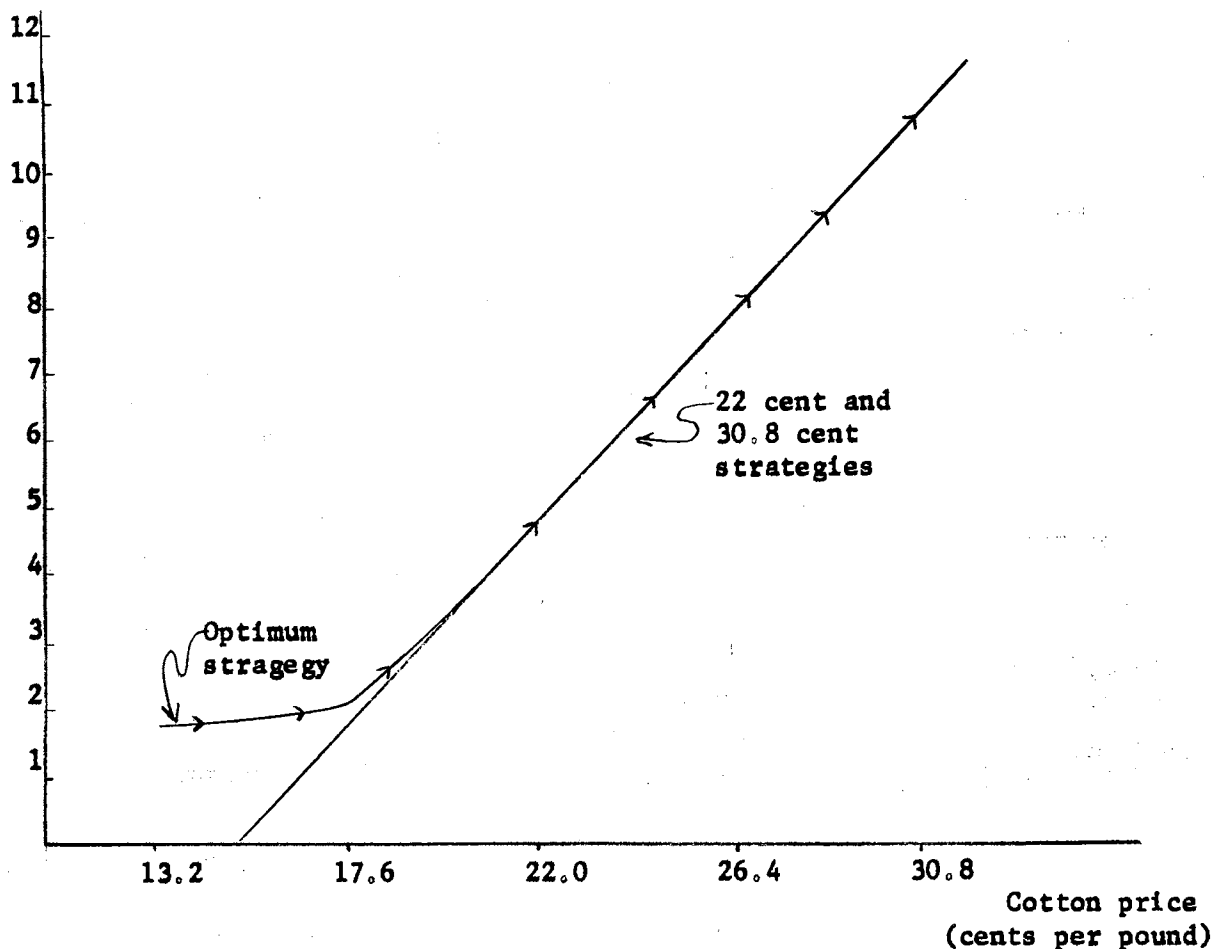
Figure 5. Income from Three Organization Strategies, Competing Product
Prices at Base Minus 30 Percent

CHAPTER V

OPTIMUM LIVESTOCK FARM ORGANIZATIONS AND BEEF SUPPLY POTENTIALS

Eastern Oklahoma farmers are enthusiastic about the possibilities
of the area as a major beef producing area. Interest in livestock-
bermuda grass systems is high and this interest has manifested itself
in the form of action on the part of some farmers. Records show
that bermuda grass acres sprigged in the past five years averages
about 4,000 acres annually in Muskogee, Okmulgee, and Bryan counties.

To fill information gaps concerning productivity of bermuda and
livestock gains on bermuda, the Eastern Oklahoma Pasture Station was
established and fertilizer demonstration plots have been initiated.
Economic data are needed to answer questions concerning (1) recovery
of the high establishment cost of bermuda, (2) effects of changes in
general livestock prices upon livestock farm net incomes and (3) most
profitable production practices under different economic conditions.
Such economic information is indispensible to farmers considering a
shift from crop to livestock farming since the change necessitates
initial commitment of large sums of money and ties up resources for
an indefinite time period. Land planted to bermuda cannot be easily
removed from production and returned to cash crops.

Only livestock-pasture systems are examined in this chapter. All
cash crop activities are excluded as possible alternatives. Eight
production practice levels for bermuda, wheat pasture, and rye-vetch

pasture are the "crops" included. Livestock activities used are those listed in Tables V and VI, Pages 13 and 14.

TABLE XXI

ASSUMED ANNUAL AVERAGE PRICE FOR THREE LIVESTOCK CLASSES
AT EIGHT PRICE LEVELS

Class and Grade	Price Levels							
	-30	-20	-10	Base	+10	+20	+30	+40
	(Prices in dollars per cwt.)							
Calves								
Good and Choice Steers, 500 lbs. and less	16.91	19.33	21.75	24.17	26.59	29.01	31.43	33.85
Steers:								
Good 500-800 lbs.	15.95	17.09	19.23	21.37	23.51	25.65	27.79	29.93
Cows:								
Utility	9.77	11.16	12.55	13.94	15.33	16.72	18.11	19.50

Variable Pricing Analysis

The variable pricing approach to livestock-pasture production analysis has application when determining livestock supply, optimum pasture production practices for different livestock prices and the profitability of adding more pasture.

The effects of price changes from base prices of plus or minus 10 percent, plus or minus 20 percent, plus or minus 30 percent and plus 40 percent upon profitability and optimum organization are examined for both cow-calf and buy-sell operations.[1] Livestock prices in this chapter

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[1]The selected percent price variation is arbitrary, but in line with relevant ranges of future livestock prices.

assume a $24.17 per hundred average annual price for 450 pound good-
choice stocker calves (See Table XXI).

Livestock Production at Base Prices Minus 30 Percent

At very low cattle prices cropland is idle and the 277 AUM's
of grazing available from native pasture on the representative farm
is utilized by 18 units of the cow-calf activity P34. Net income is
$392.15. Capital requirement is $4,517.37 and 208.67 hours of labor
are required.

Stability ranges[2] indicate that an increase of $0.02 in beef cows
revenue, less than .001 cents per pound, or a bermuda cost decrease of
$0.004 per acre would result in 55 cows, 33 steers and 310.5 acres of
bermuda entering the optimum basis. The bermuda would use production
practice level I, net income would decrease $1.22, and operating
capital requirements would increase $26,611.20. The very small decrease
in net income from that determined under the optimum plan could be
interpreted to indicate that farmers who already have bermuda pasture
and a cow herd would not change organization at the very low cattle
prices, but would only apply the low level of production practices.
This also indicates that livestock prices must fall to approximately
base prices minus 30 percent before a farmer who had decided to abandon
cash crop farming and go to livestock farming would have no incentive to
at least have a stand of bermuda on the abandoned cropland.

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[2]Appendix Tables A XXIX through A XXVI give stability ranges for
plans in this chapter.

TABLE XXII

OPTIMUM FARM ORGANIZATIONS, ALL LIVESTOCK ACTIVITIES INCLUDED,
EASTERN OKLAHOMA PRAIRIE SOILS RESOURCE SITUATION

Item	Unit	Price Levels							
		-30	-20	-10	Base	+10	+20	+30	+40
Bermuda aI[1]	acre		51.75	51.75					
Bermuda aIII	acre				51.75	51.75	51.75		
Bermuda aVI	acre							51.75	51.75
Bermuda bI	acre		207.00	207.00					
Bermuda bIII	acre				207.00	207.00	207.00		
Bermuda bVI	acre							207.00	207.00
Bermuda cI	acre		51.75	51.75	51.75	51.75	51.75	51.75	51.75
Bermuda dI	acre				34.50	34.50	34.50		
Bermuda dIII	acre							34.50	34.50
Beef cows	head	18.0	73.0						
Beef stockers	head		33.0	239.0	324.0	324.0	324.0	478.0	478.0
Total beef produced	lbs.	8,100.0	43,641.0	78,153.0	105,948.0	105,948.0	105,948.0	156,306.0	156,306.0
Operator labor	hrs.	208.67	1,155.99	1,214.03	1,657.97	1,657.97	1,657.97	1,917.18	1,917.18
Hired labor	hrs.							629.01	629.01
Total capital	dol.	4,517.37	26,611.20	36,624.95	53,283.40	56,695.40	60,107.71	97,478.32	102,530.37
Annual capital	dol.	4,407.27	25,221.66	31,183.51	43,441.46	47,660.66	50,502.64	80,771.16	84,981.20
Returns to Land, Labor, Management and Risk	dol.	392.15	1,153.00	2,117.56	3,653.49	5,321.80	6,990.10	9,056.79	11,541.82

[1]Refer to Table IV, Page 12 for explanation of bermuda activity symbols.

Livestock Production at Base Prices Minus 20 Percent

At livestock prices of base minus 20 percent, all Ca, Cb and Cc cropland can be planted to bermuda. Only the lowest level of production practices is profitable. Pasture establishment on the 34.5 acres of Cd cropland is not profitable. Seventy three units of spring calving cows P34 and 33 head of stockers P46 use the pasture. Net income is $1,153.00, capital requirement is $26,611.20 and labor requirements is 1155.99 hours (See Table XXII).

Stability ranges indicate that slight increases in revenue per unit from cows or slight decreases in revenue per unit from steers would give a plan with more cows and fewer steers. In fact, cow numbers could be increases to 86 head and all steers eliminated and net return would decrease by only $4.93.

Livestock Production at Base Price Minus 10 Percent

It is profitable to put all cropland to bermuda at cattle prices of base minus 10 percent. The lower bermuda practice level is the most profitable. The buy-sell steer activity is the only livestock activity included with 239 steers in the basis. No cows are included in this optimum plan. This indicates that the relative differences in costs and returns from steers changes more than it does from cows as prices rise. This is because there are more fixed costs associated with cows. The plan requires 58 more hours of labor (1214.03 hours) than the previous organization. Net income increases by $964.56 to $3,653.49 and $36,624.95 of capital is required (Table XXII).

The stability range on stocker steers indicates that a drop in revenue per unit of $1.21 would allow 66 head of spring calving cows P37

to enter the plan. An increase of $.30 in revenue per unit from stocker
steers would make production practice level III on bermuda more profitable
than level I and allow nine more stocker steers to enter the basis.

Livestock Production at Base Prices, Base Prices Plus 10 Percent, and
Base Price Plus 20 Percent

An increase in livestock prices to base prices allows use of higher
levels of production on the bermuda and as a result 85 more stocker-
steers P46 enter the optimum plan (See Table XXII). At this price
level, the use of fertilizer and improved technology in bermuda estab-
lishment and maintenance become profitable. Production practice levels
III and VIII on Ca and Cb land are absolute substitutes for each other
at this price level.

No organizational change results as cattle prices are increased
above base prices by either 10 or 20 percent. Net income and total
operating capital are the only factors affected by the price level
changes. Table XXIII gives the changes.

TABLE XXIII

CHANGES IN NET INCOME AND OPERATING CAPITAL FOR A GIVEN ORGANIZATION
OF STOCKER STEERS ON BERMUDA AS PRICES ARE VARIED AT THREE LEVELS

Item	Base Prices	Base Prices Plus 10 Percent	Base Prices Plus 20 Percent
Net Income	$ 3,653.49	$ 5,312.80	$ 6,990.10
Operating Capital	53,283.10	56,695.40	60,107.71

Livestock Production at Base Prices Plus 30 Percent and Plus 40 Percent

Cattle prices at base plus 30 percent gives a new organization. Higher levels of production practices allows the bermuda to carry 154 additional steers P46. A total of 478 steers is in the plan (See Table XXII). Practice level VI is the most profitable bermuda activity on Ca and Cb land. However, on Ca land, practice level VIII is equally profitable and could be substituted for practice VI. Net income would be $9,056.79 under either organization. Capital requirement is $97,478.32. The organization requires 1917.18 hours of labor of which 629.01 hours are hired. This price level is the first level at which it is profitable to hire additional labor.

Another 10 percent rise in prices to base plus 40 (450# calves at 32.79) has no effect upon organization. Net income increases to $11,542.82 and operating capital required to $102,530.37. Use of the budgeting technique and stability ranges indicate that this organization will remain constant until steer prices reach base plus 41.4 percent (33.13 cents per cwt. for 750 lb. steers).

Effects of Changing Prices Upon Livestock Production With Cows as the Only Alternative

In the previous section, steers proved to be more profitable than cows at most price levels. To allow a comparison between buy-sell and cow-calf organizations, optimum plans (See Table XXIV) were determined at all price levels for the representative farm when only cows were allowed to enter the basis. Such a comparison is valuable since beef herds are very popular with eastern Oklahoma farmers currently specializing in livestock farming.

TABLE XXIV

OPTIMUM FARM ORGANIZATION, ONLY COW-CALF ACTIVITIES INCLUDED, EASTERN OKLAHOMA PRAIRIE SOIL RESOURCE SITUATION

Item	Unit	Price Levels						
		-30	-20	-10	Base	+10	+20	+30
Bermuda aI[1]	acre		51.75	51.57	51.75			
Bermuda aIII	acre					51.75	51.75	51.75
Bermuda bI	acre		207.0	207.0	207.0			
Bermuda bIII	acre					207.0	207.0	207.0
Bermuda cI	acre		51.75	51.75	51.75	51.75	51.75	51.75
Bermuda dI	acre			34.50	34.50	34.50	34.50	34.50
Beef cows	head	18.0	86.0	92.0	92.0	124.0	124.0	124.0
Total beef produced	lbs.	8,100.0	38,700.0	41,400.0	41,400.0	55,800.0	55,800.0	55,800.0
Operator labor	hrs.	208.67	1,160.63	1,247.34	1,247.34	1,703.07	1,703.07	1,703.07
Total Capital	dol.	4,517.37	25,754.75	27,716.12	27,716.12	38,132.70	38,132.70	38,132.70
Annual Capital	dol.	4,407.27	24,919.06	26,789.72	26,789.72	36,186.54	36,186.54	36,186.54
Returns to Land, Labor, Management and Risk	dol.	392.15	1,148.07	1,967.33	2,826.50	3,763.97	4,927.49	6,091.01

[1]Refer to Table IV, Page 12 for explanation of bermuda activity symbols.

Results on total pounds of beef produced per farm are presented

in Table XXV. Total beef produced is much less from cow-calf at most

price levels and this fact is reflected in net income. For example,

at prices of base and above the steer plan returns appreciably more

net income than the cow-calf system (See Figure 6).

TABLE XXV

POUNDS OF BEEF PRODUCED PER FARM FROM OPTIMUM ORGANIZATIONS ALLOWING ALL
COW-CALF AND BUY-SELL ACTIVITIES AND OPTIMUM ORGANIZATIONS
ALLOWING ONLY COW-CALF ACTIVITIES

Activities Allowed in Basis	-30	-20	-10	Base	+10	+20	+30
Cow-Calf Only	8100	38700	41400	41400	55800	55800	55800
Both Cow-Calf and Buy-Sell	8100	43641	78153	105948	105948	105948	156306

Operating capital requirements are much lower for the cow-calf

organization at all price levels above base prices minus 10 percent (See

Figure 6). This might hold considerable appeal to farmers wanting to

avoid heavy capital commitments or to those farmers unable to get control

of the operating capital and buy-sell operation demands. At the base

plus 30 percent price level, the cow-calf system requires 214.11 hours

less labor per year than the steer system.

Effects of Changes in Factors Affecting Relative Profitability

Although a buy-sell system is more profitable on prairie soil

farms than a cow-calf system at prices greater than base minus 20

percent, there are questions concerning the degree of income stability

Net
Capital   Income
($1000) (dollars)

100 10000

90   9000

80   8000

70   7000   Net Income
                                       (Steers)

60   6000

50   5000   Net Income
          Operating   (Cows)
          Capital
          (Steers)
40   4000
                                                    Operating Capital
                                                       (Cows)
30   3000

20   2000

10   1000

    -30   -20   -10   Base   +10   +20   +30

                                    Livestock Price Levels
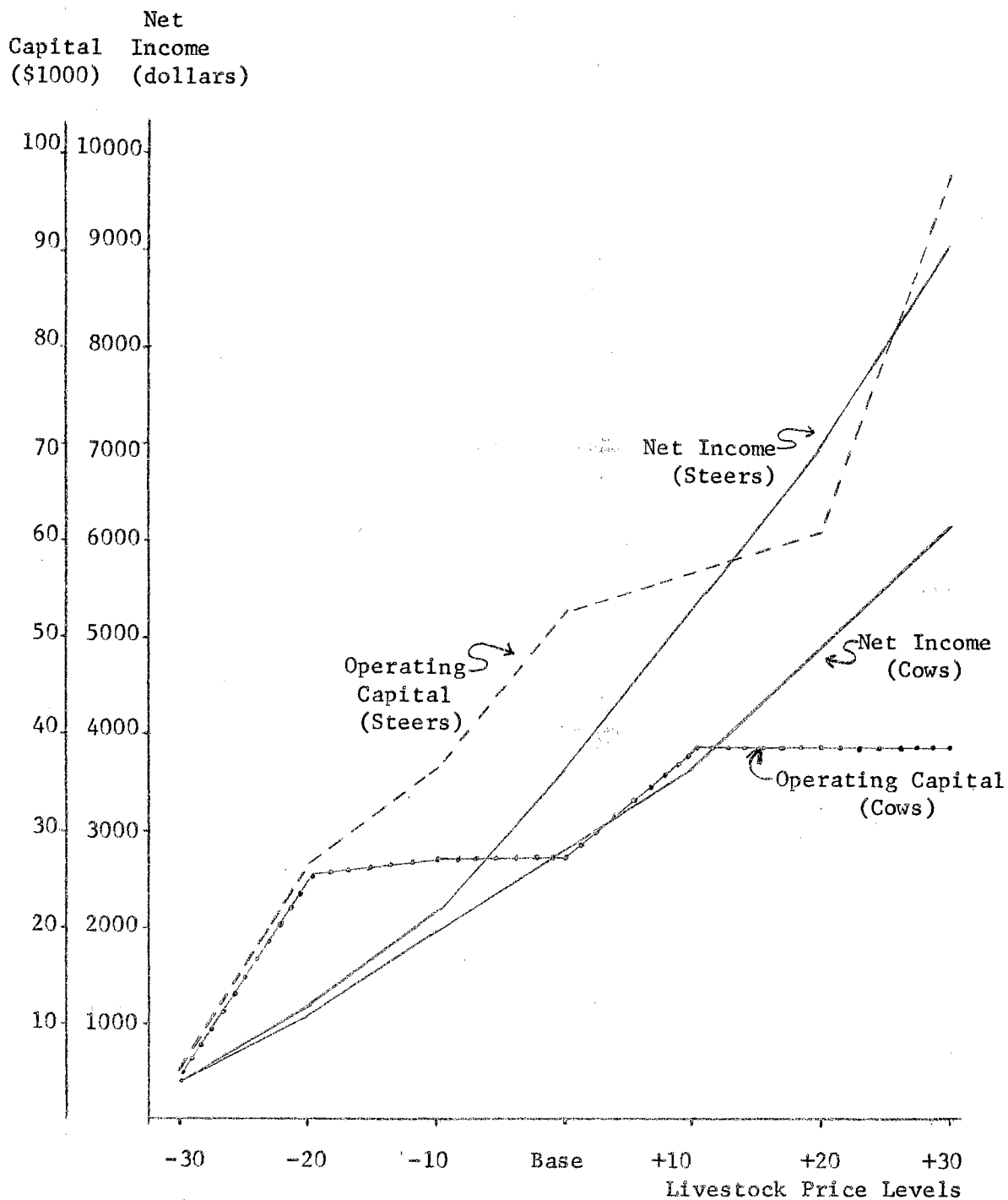
Figure 6:   Net Income and Capital Requirements for Optimum Organizations
for All Livestock Activities and Optimum Organizations for Only Cow-Calf
       Activities, Representative Prairie Soil Resource Situation

expected from a buy-sell organization. These questions arise because the end product (eg. a 750 pound steer) from a buy-sell system is less flexible and prone to greater per pound price fluctuations than that from a cow-calf system. The farm manager, therefore, needs information on the effects of changes in the relative prices of 450 pound calves (the product of a cow-calf system) and 750 pound stockers (the product of a buy-sell system) upon profitability and selection of optimum organization. For example, how much could 750 pound stocker prices decrease to make the 450 calves (cow-calf system) profitable?

Price per pound of 750 pound stockers was decreased by constant percentages, 450 pound calf prices constant at base prices, until some buy-sell stockers were replaced by cows, thus determining the point where steers were no longer absolutely dominate over cows. At a steer price of base price minus five percent, 66 cows replaced 257 steers. At base prices minus eight percent, buy-sell stockers were replaced by a cow herd (92 head). Prices of 750 pound steers relative to prices of 450 pound calves can change by as much as seven percent and some buy-sell steers profitably can be included in the optimum plan. However, the current price relationship must change by five percent before cows can be competitive with steers.

To test the importance of the previous statement, historical price relationships between 450 pound calves and 750 pound steers were obtained for the years 1939 to 1963. The average price ratio (P450/P750) for the 25 year period was 1.109 and the range was 1.036 to 1.212. A five percent decrease in 750 pound steer prices gives a ratio of 1.168. Only two of the 25 years had a relative price ratio greater than 1.168. Thus, the programming results appear quite stable with respect to possible beef price relationships in different years.

Effects of factors other than price such as, disease, death incidence, poor management, rates of gain, hereditary factors, feed additives and innovations upon relative profitability of steers and cows may be studied by using the relative price change analysis. The use of equation (1) will facilitate the analysis.

(1) $C_j = P_jY - p_j \bar{Y} - V$

C_j = net returns above cash costs from buy-sell steer

P_j = sale price per cwt.

Y = selling weight of steer (in cwt.)

p_j = purchase price per cwt.

$\bar{Y}$ = purchase weight of steer (in cwt.)

V = variable cash costs

C_j in equation (1) is the return to a unit of steers above cash costs, including the cost of the steer. Clearly, a decrease in P_j or Y, or an increase in p_j or V will decrease C_j. Earlier in this section P_j was changed. Now the effects of the P_j changes are interpreted as possible p_j, Y or V changes with a constant P_j.

Inserting the appropriate numerical values for selling price, selling weight, purchase price, purchase weight and variable cash costs into the equation (1) gives a figure for returns above cash costs at base prices.

$$C_j = 21.27 \ (7.77) - 23.42 \ (4.50) - 18.44 = 41.44$$

This equation contains two of the major variables (price and variable costs) affecting net revenue. The third, gain, may be obtained by letting $(Y - \bar{Y}) = G$ (total gain). This gives the equation

$$C_j = P_jG + (P_j\bar{Y} - p_j\bar{Y}) - V$$

Effects of any one of the variables upon net income may be analyzed by holding all variables, except the variable of concern, constant.

The Cj of $32.68 obtained for stocker steers P43 when cow-calf
prices were held at base and steer prices decreased by five percent
can be explained by changing Pj by five percent $21.35 to $20.18.

$$Cj = 20.18 (3.27) + [20.18 (4.50) - 23.42 (4.50)] - 18.42 = 32.68$$

To determine the percent decrease in steer gains that would have
the same effect on net income as a five percent price decrease, the
Pj value is held at base price. Since the Cj value is known, the only
unknown is G. The equation is

$$32.86 = 21.24 \; G \; [21.24 \; (4.50) - 23.42 \; (4.50)] - 18.64$$

$$21.24G - 32.86 = 9.81 + 18.64$$

$$G = 2.88$$

Thus, a 12 percent decrease in gain (from 327 pounds down to 288
pounds) can have the same effect upon net returns above cash costs as a
five percent price drop. Such a decrease in steer gains might be inter-
preted as resulting from poor pasture conditions, lower rates of gain
than used in the study, or decreased pasture carrying capacity per acre
for steers. For example, steer gains on bermuda commonly show a substantial
drop in July and August. This decrease in gainability could be absorbed
by the 12 percent decrease in total gain.

Changes in variable costs could be analyzed by the procedure used
above. If cattle prices and variable costs change together, effects of
joint changes may also be estimated.

The assignment of probability values to the possible changes in
any variable would allow investigation of the effects of the given
variable upon income stability.

Extensive Versus Intensive Expansion

Earlier in this chapter net incomes from optimum organization at base livestock prices indicated $3,653.49 could be earned from buy-sell steers and $2,826.50 from a cow-calf operation. Many farmers would not be satisfied with these incomes and might desire information on possibilities for expanding their operation to increase net income. The alternatives available are to either get more intensive or more extensive. One method of getting more acres would be to rent additional land. A farmer could add cropland, native pasture, or an aggregate[1] of cropland, pasture and waste. Assuming that available acres of each of the three types of pasture land are available, one can determine the amount a farmer with a representative 520 acre farm would pay for an additional acre of cropland.

Table XXVI lists the maximum amount a farmer adding an additional acre of each of the three pasture types to the already existing 520 acres on the representative farm could afford to pay. For example, at base livestock prices, $5.93 could be paid for an additional acre of cropland. The $5.93 price is a break-even price and would add nothing to net income. However, if cropland could be rented for less than $5.93 then there would be an opportunity to increase net income and thus, a pressure to increase farm size.

Data on Table XXVI indicates that as beef prices rise an additional acre of land is more and more valuable. The amount one could pay for cropland increases relatively faster than for pasture because it is influenced by both higher price levels and the possiblity of utilizing cropland more intensively, thus producing more AUM's of grazing. Pasture

---

[1]Contains cropland, pasture and waste in representative proportions.

TABLE XXVI

MAXIMUM PRICES THAT COULD BE PAID FOR ADDITIONAL ACRE OF RENTED LAND OF
THREE CLASSES AT EIGHT BEEF PRICE LEVELS

Beef Price Levels	Shadow Price for Renting		
	Cropland only	Native Pasture Only	Aggregate[1]
-30	0	1.70	.61
-20	.28	1.81	.80
-10	3.97	3.23	3.31
Base	5.93	3.90	4.61
+10	10.05	4.97	7.23
+20	14.18	6.04	9.85
+30	16.32	6.64	11.23
+40	22.81	7.70	15.14

[1]Assumes an acre of land includes cropland classes, pasture and waste
in same proportions as given in Table III.

land value increases at a slower rate because only beef prices affect

its shadow price. The relationship between native pasture shadow prices

and cropland shadow prices, with increasing beef prices, is as expected,

but may be misleading due to possible large differences in price for an

acre of each type of pasture. This analysis looks strictly at the demand

price for pasture and says nothing about supply or supply prices. Also,

even though one could afford to pay more for cropland than for native pasture

or the aggregate, the cropland could conceivably be less profitable due

to differences in rental rates.

As beef prices increase, the alternative of adding land to increase

beef production by the extensive route should be compared with the

alternative of increasing beef by intensive use of cropland. The fact that

land shadow prices in the programs increase suggests that at some point

the supply price for additional land may be less than the marginal value.

product of an additional acre of rental land. As a result, the extensive
rather than the intensive expansion route would be followed.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study is part of a southern regional study on farm
adjustment opportunities. Alternative adjustments for prairie
soils farms with at least one of the allotment crops (cotton, peanuts,
and wheat) were analyzed in this part of the study. The basic purpose
was to evaluate farming adjustments and to analyze the level and
combination of livestock and crop enterprises and the resulting net
incomes from alternative plans.

Three of the more pressing problems were selected for this study.
The first problem required an examination of organizational stability
and profitability of alternative short-run farm plans. The second
problem was intermediate-run in nature and application and required
analyzing the effects of changing relative cotton and competing
product prices upon individual farm organization and net income as
well as area cotton supply potential. Effects of beef cattle price
level changes upon organization (especially production practice levels
on bermuda), net incomes, and individual farm beef production (area
supply potential implicit) was the third problem considered.

Two farm sizes containing cropland, pasture and waste in represent-
ative proportions were specified as the basic units for analysis. The
farm sizes used are representative of a farm requiring a four-plow

tractor and machinery complement and one requiring two plow tractor and equipment. Available operator labor, levels of technology and management and prices consistent with each resource situation were specified. Custom harvesting was assumed on all crops except hand harvested cotton and pasture crops. Activity budgets for relevant crop and livestock alternatives were developed with emphasis on pasture crops and pasture using livestock activities.

Linear programming was used to determine optimum organization and net incomes within several price and/or restriction frameworks. Additional budgeting was used in parts of the analysis to allow examination of opportunity costs and other effects of non-optimal organization.

The short-run analysis (using current prices and fixed land acreage) in Chapter III gave organizational requirements and net incomes from alternative farm plans. A deletion process was used to allow examination and comparison of several possible farm plans and to determine a profitability ranking among included activities. With the given price and resource conditions, peanuts was determined the most profitable enterprise. Cotton was second most profitable and wheat third. These three crops were removed one at a time from the list of admissible alternative activities. As each was removed, net income was appreciably reduced. Removal of soybeans, oats, alfalfa and grain sorghum did not affect net income nearly as much, although organization was appreciably affected.

After all cash crops were eliminated through the deletion process, a livestock pasture plan determined optimum for given conditions was

derived. It was the least profitable of any of the alternative plans examined. In addition, it had one of the highest labor requirements and by far the highest capital requirement.

Among the cash crop plans, those plans that had one or both of the cotton and peanut activities had the heaviest operating capital requirements. Plans including cotton had the highest labor require-ments and plans with row-crops had greater machinery capital require-ments than those in which small grains predominated.

Stability ranges were used to determine how much price coefficients could change before a given organization would change. In the case of plans containing alfalfa, oats and/or soybeans, a small coefficient change appreciably altered organization. It would be necessary, therefore, for a farmer with a different set of coefficients than those specified to make necessary adjustments.

The variable pricing approach was used in Chapter IV to investigate the relative competitive position of cotton, as its price varies between 13.2 and 30.8 cents per pound and prices of the other crops are set at different levels. Results of this intermediate-run analysis indicate that at base prices minus 30 percent for competing products that cotton is competitive at all cotton prices greater than 18 cents per pound. At base prices for competing products, cotton price must be above 23.43 cents for cotton to remain competitive. With competing products at base prices plus 30 percent, cotton can scarcely compete, even at a cotton price as high as 30.8 cents per pound. With price levels for competing products at base prices minus 30 percent and at base prices, cotton, peanuts and wheat were the most profitable activities. Peanuts is the important crop when cotton price is less

than 18 cents and competing products are base prices minus 30 percent, (23.43 cent cotton at base prices) then cottom becomes the major crop. Wheat was almost always the most profitable non-row-crop. At competing product prices of base plus 30 percent, farm plans emphasizing livestock production were derived. As mentioned, cotton was non-competitive at this price level, however, peanuts and wheat were very important enterprises.

There were several organizational peculiarities in the 15 intermediate-run optimum plans. First, in no case was it profitable to hire labor in addition to that furnished by the operator. Secondly, machinery capital differences for the various programs were not very significant; although, the greater the percentage of cropland in row-crops, the greater were the machinery capital requirements. Thirdly, the greater the number of units of livestock, especially buy-sell activities, the greater the operating capital requirements.

Results from the examination of effects of inflexible organi-zation indicated that farmers who specialize in cotton production are on pretty safe ground as long as cotton price is above 23.43 cents per pound and prices of competing products are at base prices or lower.

The last part of the study dealt specifically with the organi-zation and net income differences of several alternative livestock-pasture plans. The variable pricing approach was used to determine differences in optimum organization as cattle prices ranged from base prices minus 30 percent to base prices plus 40 percent and all livestock activities were allowed to enter the optimum solution. The same procedure was used to determine optimum plans using only cow-calf activities. The resulting information indicated that steers were

relatively more profitable than cows at prices of base minus 10 percent and higher. The stocker steer activity P46 was always the steer activity most profitable. The removal of the steer P46 activity reduced maximum attainable income by $500 to $1,000 with the reduction being least at the lower beef prices and increasing as beef prices increased. At prices below base, the activity P46 is replaced by cows P37. Steers P45 replace P46 at base prices and above. Other results indicate that the higher the livestock price level the more intensive the bermuda production practices that were profitable. Maintenance or very low levels of production practices were the most profitable practices if prices were at base or lower.

A comparison of cow-calf and buy-sell plans showed operating capital requirements much less for cows than for steers. Total pounds of beef produced was less for cows and resulting net returns from cows was about one third less for cows at all price levels above base prices.

Effects of changes in the factors that can affect relative profitability of cows and steers were examined. A decrease of five percent in steer prices, cow-calf prices held at base, resulted in a price situation in which cows were more competitive with steers. However, historical price data for the past 25 years indicates that steer prices have varied from the base cow-steer price relationship by greater than five percent in only two years. These statistics lend confidence to the previously stated proposition that steers are generally more profitable per acre.

A twelve percent decrease in gain was determined to have the same effect on profitability as a five percent price decrease. Poor pasture conditions, disease and heavy death losses could also affect profitability.

Refinements and Additional Work

It was necessary to eliminate several important area adjustment problems in order to keep this study within managable proportions. The short-run analysis could be made more inclusive by adding more cattle activities and activities for other types of livestock and then examining a greater number of alternative plans. Additional allotment alternatives also might be examined.

Intermediate-run problems needing study are (1) problems of various price-allotment relationships, (2) effects of changing input demand upon rural town economics, (3) a more "in depth" examination of area supply potential for crops other than cotton, and (4) an examination of the areas' competitive position in the production of various livestock and cash crop products. Attention could also be given to interest rate which could change as a result of uncertainty or general changes in the credit market. Interest rate information would be especially useful for the intermediate-run analysis of this study with competing products at base prices plus 30 percent.

The most important long-run problem facing many farmers is the one concerning preservation of an "adequate" standard of living as the margin between costs and returns gets smaller. Since expanding production is one means of increasing income, the effects of intensive versus extensive expansion should be examined in greater detail. A more complete and exhaustive treatment on prices a farmer could afford to pay when either renting or purchasing land would also be valuable.

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APPENDICES

APPENDIX A

TABLE A, I

SHORT-RUN AND INTERMEDIATE-RUN PRICES FOR CROPS:
PRAIRIE SOIL RESOURCE SITUATION

Item	Unit	Short-Run Prices[1]	Intermediate-Run Prices[2]
Alfalfa	ton	20.48[3]	14.20
Cotton	cwt.	29.50	22.00
Grain Sorghum	cwt.	1.63	1.84
Oats	bu.	.83	.65
Peanuts	pound	0.104	0.08
Soybeans	bu.	1.97	2.00
Wheat	bu.	1.65[4]	1.20

[1]1958-62 average adjusted for area

[2]S-42 prices adjusted for area

[3]Price in field, Add $2.40 per ton to get value in the barn

[4]Approximate 1963-64 support price

TABLE A, II

ASSUMED PRICES PAID AND RECEIVED BY FARMERS,
EAST CENTRAL AND SOUTH CENTRAL OKLAHOMA[a]

Item	Unit	Price
Prices Paid		
Seed:		
Cotton	lb.	0.12
Peanuts	lb.	0.30
Grain Sorghum	lb.	0.20
Soybeans	lb.	0.06
Wheat	bu.	2.20
Oats	bu.	1.10
Alfalfa	lb.	.50
Broomcorn	lb.	.25
Rye	bu.	1.20
Custom rates:		
Mechanical strip cotton	cwt.	1.00
Defoliate cotton	acre	4.00
Haul, gin, wrap cotton	cwt.	1.10
Combine peanuts	lb.	.012
Dig-shake peanuts	acre	4.50
Haul and dry peanuts	lb.	.008
Combining:		
Wheat, Oats, and Grain Sorghum	acre	4.00
Soybeans	acre	5.00
Hauling:		
Wheat and Oats	bu.	.07
Grain Sorghum	bu.	.05
Soybeans	bu.	.08
Mow, rake, bale alfalfa	bale	0.20
Threshing broomcorn	ton	10.00 + labor
Baling broomcorn	ton	13.50 + labor
Hoeing (custom)	acre	3.00
Broomcorn baling wire	bale	.30

TABLE A, II (Continued)

Item	Unit	Price
Fertilizer and Chemicals:		
Nitrogen	lb.	0.12
Phosphorus	lb.	0.10
Potassium	lb.	0.05
Lime (custom applied)	ton	5.00
Sulphur Dust (custom applied)	application/acre	5.25
Cotton herbicide	application/acre	2.30
Cotton insecticide	application/acre	1.50
Peanut herbicide	application/acre	2.70
Grain Sorghum herbicide	application/acre	2.10
Soybeans	application/acre	2.70
Alfalfa insecticide	application/acre	1.75

Prices Received[b]

Cotton lint	cwt.	29.50
Cotton seed	cwt.	2.50
Grain Sorghum	cwt.	1.63
Wheat	bu.	1.65
Peanuts	lb.	.104
Peanut hay	ton	17.60
Oats	bu.	.63
Alfalfa hay (in field)	ton	20.48
Broomcorn straw	ton	334.00
Soybeans	lb.	.003

[a]These price assumptions are not to be interpreted as predictions of prospective prices.

[b]These are approximate prices prevailing in the area in 1963.

TABLE A, III

ASSUMED PRICES FOR CALVES AND STEERS BY MONTHS, SOUTHCENTRAL AND
EASTCENTRAL OKLAHOMA, BASED ON OKLAHOMA CITY MARKET

Class and Grade	Monthly Average												Yearly Average
	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Calves:													
Good and Choice Steers, 500 lbs. and less	23.64	24.37	25.02	25.26	24.97	24.73	24.20	24.12	24.03	23.42	23.23	23.08	24.17
Heifers, 500 lbs. and less	21.64	22.37	23.02	23.26	22.97	22.73	22.20	22.12	22.03	21.42	21.23	21.08	22.17
Cows, utility	13.83	14.09	14.53	14.87	14.94	14.55	13.95	13.49	13.35	13.13	13.06	13.43	13.94
Steers Good, 500-800 lbs.	21.13	21.75	22.12	22.42	22.29	21.86	21.35	21.24	21.05	20.23	20.47	20.58	21.37

TABLE A, IV

OPTIMUM SHORT-RUN FARM ORGANIZATIONS, ALL ENTERPRISES IN PROGRAM,
REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crop:				
P53 Wheat	acre	10.35	−28.46 to 10.21	−22.59
P51 Peanuts	acre	41.40	−73.81 to a	−71.47
P52 Peanuts	acre	142.83	−75.81 to 67.29	−69.47
P54 Wheat	acre	51.75	−33.16 to 5.11	−22.45
P49 Cotton (hand)	acre	12.42	−33.50 to 20.30	−31.32
P55 Wheat	acre	51.75	−31.38 to a	−22.31
P25 Bermuda	acre	34.50	− 4.61 to a	− 3.91
Livestock:				
P43 Buy-Sell	head	26.0	21.37 to 29.92	25.06
P44 Buy-Sell	head	39.0	16.97 to 22.44	21.05
P39 Spring calf	head	30.0	72.18 to 84.06	74.04
Sell Activities:				
P75 Cotton	cwt.	43.48	24.39 to 31.31	29.50
P76 Wheat	bu.	2877.30	1.44 to 2.71	1.65
P79 Peanuts	cwt.	2160.01	9.85 to 11.95	10.40
Capital Requirements:				
Total	dol.	30,947.57	.1652 to .0513	0.06
Annual	dol.	21,283.39	.0953 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	14,370.56		

aLimited by land restrictions.

TABLE A, V

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN PROGRAM
EXCEPT COTTON, REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crop:				
P53 Wheat	acre	10.35	−28.82 to 10.00	−22.59
P54 Wheat	acre	51.75	−33.22 to 4.90	−22.45
P55 Wheat	acre	51.75	−31.44 to a	−22.31
P51 Peanuts	acre	41.4	−104.06 to a	−71.47
P52 Peanuts	acre	155.25	−96.82 to a	−69.47
P27 Bermuda	acre	34.5	− 4.65 to a	− 3.91
Livestock:				
P43 Buy-Sell	head	28.0	21.37 to 29.18	25.06
P44 Buy-Sell	head	41.0	17.64 to 21.96	21.05
P39 Spring calf	head	30.0	72.81 to 84.63	74.04
Sell Activities:				
P75 Wheat	bu.	2877.30	1.42 to 2.70	1.65
P76 Peanuts	cwt.	2302.87	8.02 to 2762.86	10.40
Capital Requirements:				
Total	dol.	31,645.74	−.1720 to −.0542	− 0.06
Annual	dol.	21,622.90	−.1028 to 0.0	0.0
Returns to Land Labor, Management and Risk	dol.	14,148.42		

aLimited by land restriction.

TABLE A, VI

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN PROGRAM
EXCEPT PEANUTS, REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crop:				
P48 Cotton (machine)	acre	41.40	−57.34 to a	−56.83
P53 Wheat	acre	10.35	−28.32 to 1.66	−22.59
P49 Cotton (hand)	acre	14.00	−31.80 to −26.60	−31.32
P50 Cotton (machine)	acre	141.25	−60.29 to −55.09	−55.57
P55 Wheat	acre	51.75	−31.36 to a	−22.31
P25 Bermuda	acre	34.50	− 4.60 to a	− 3.91
Livestock:				
P39 Spring calf	head	31.0	71.96 to 83.86	74.04
P44 Buy-Sell	head	2.0	16.77 to 27.61	21.05
Sell Activities:				
P75 Cotton	cwt.	698.62	23.41 to 9102.23	29.50
P76 Wheat	bu.	2877.30	1.445 to 2.469	1.65
Capital Requirements:				
Total	dol.	21,142.22	−16.50 to −.0503	− 0.06
Annual	dol.	16,340.03	−.0939 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	13,107.85		

aLimited by land restriction.

TABLE A, VII

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN PROGRAM EXCEPT
COTTON AND PEANUTS, REPRESENTATIVE PRAIRIE SOILS RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	51.75	−26.53 to a	−22.59
P54 Wheat	acre	207.00	−32.73 to a	−22.45
P55 Wheat	acre	51.75	−31.44 to a	−22.31
P25 Bermuda	acre	34.50	− 4.65 to a	− 3.91
Livestock:				
P44 Buy-Sell	head	78.51	17.64 to 21.98	21.05
P39 Spring calf	head	30.0	72.81 to 84.63	74.04
Sell Activities:				
P76 Wheat	bu.	8073.00	1.51 to 785.52	1.65
Capital Requirements:				
Total	dol.	25,390.93	−.1535 to −.0542	− 0.06
Annual	dol.	18,940.26	−.1028 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	8,552.78		

[a]Limited by land restriction.

TABLE A, VIII

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN PROGRAM
EXCEPT COTTON, PEANUTS, AND WHEAT, REPRESENTATIVE
PRAIRIE SOILS RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (-) (dollars)
Crops:				
P56 Soybeans	acre	41.4	22.57 to a	24.86
P57 Soybeans	acre	155.25	15.14 to a	15.36
P60 Oats	acre	51.75	-27.20 to -22.11	-22.33
P61 Oats	acre	51.75	-26.80 to a	-22.19
P25 Bermuda	acre	34.50	- 4.74 to a	- 3.91
P65 Alfalfa	acre	10.35	18.73 to 24.65	22.36
Livestock:				
P46 Buy-Sell	head	18.0	28.80 to 29.95	29.32
P39 Spring calf	head	21.0	72.81 to 75.08	74.04
Sell Activities:				
P77 Oats	bu.	4036.5	.7086 to .8356	.8300
Capital Requirements:				
Total	dol.	17,332.30	-.0732 to -.054	- 0.06
Annual	dol.	14,313.80	-.0268 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	5,689.05		

aLimited by land restriction.

TABLE A, IX

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN PROGRAM EXCEPT
COTTON, PEANUTS, WHEAT AND SOYBEANS, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (-) (dollars)
Crops:				
P65 Alfalfa	acre	51.75	18.46 to a	22.36
P60 Oats	acre	207.00	-25.58 to a	-22.33
P61 Oats	acre	51.75	-26.17 to a	-22.19
P25 Bermuda	acre	34.50	- 4.65 to a	- 3.91
Livestock:				
P44 Buy-Sell	head	33.0	19.44 to 21.98	21.05
P39 Spring calf	head	31.0	72.81 to 80.65	74.04
Sell Activities:				
P77 Oats	bu.	10,246.50	.75 to .92	.83
Capital Requirements:				
Total	dol.	19,848.03	-.1720 to -.0542	- 0.06
Annual	dol.	15,687.08	-.1028 to 0.0	0.0
Returns to Land, Labor, Management and Risk		5,528.83		

aLimited by land restriction.

TABLE A, X

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES
EXCEPT COTTON, PEANUTS, WHEAT, SOYBEANS AND OATS,
REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crop:				
P65 Alfalfa	acre	51.75	16.83 to a	22.36
P63 Grain Sorghum	acre	155.25	−29.24 to a	−24.77
P11 Bermuda	acre	51.75	− 9.12 to −4.41	− 8.88
P17 Bermuda	acre	51.75	− 5.01 to a	− 3.81
P25 Bermuda	acre	34.50	− 4.74 to a	− 3.91
Livestock:				
P46 Buy-Sell	head	116.0	27.63 to 29.47	29.32
P39 Spring calf	head	11.0	13.74 to 90.84	74.04
Sell Activities:				
P78 Grain Sorghum	cwt.	3,648.37	1.439 to 1.693	1.63
Capital Requirements:				
Total	dol.	28,127.95	−.0777 to −.0587	− 0.06
Annual	dol.	22,800.84	−.0205 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	5,007.06		

aLimited by land restrictions.

TABLE A, XI

OPTIMUM SHORT RUN FARM ORGANIZATION, EXCLUDING ALL CASH CROPS
ENTERPRISES EXCEPT GRAIN SORGHUM, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
			(dollars)	(dollars)
Crop:				
P3 Bermuda	acre	10.35	−9.12 to −2.11	− 8.88
P62 Grain Sorghum	acre	41.40	−31.69 to a	−24.92
P11 Bermuda	acre	51.75	−9.12 to −4.41	− 8.88
P63 Grain Sorghum	acre	155.25	−29.24 to a	−24.77
P17 Bermuda	acre	51.75	−5.01 to a	− 3.81
P25 Bermuda	acre	34.50	−4.74 to a	− 3.91
Livestock:				
P46 Buy-Sell	head	120.00	27.63 to 29.47	29.32
P39 Spring calf	head	14.00	73.74 to 77.73	74.04
Sell Activities:				
P78 Grain Sorghum	cwt.	4,683.38	1.44 to 1.69	1.63
Capital Requirement:				
Total	dol.	29,455.65	−.0771 to −.0587	− 0.06
Annual	dol.	24,265.17	−.0220 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	4,650.59		

aLimited by land restriction.

TABLE A, XII

OPTIMUM SHORT RUN FARM ORGANIZATION, EXCLUDING ALL CASH CROP
ENTERPRISES, REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
Crop:				
P3 Bermuda	acre	51.75	−8.88 to a	− 8.88
P11 Bermuda	acre	207.00	−9.07 to −8.88	− 8.88
P17 Bermuda	acre	51.75	−7.57 to a	− 3.81
P25 Bermuda	acre	34.50	−5.50 to a	− 3.91
Livestock:				
P46 Buy–Sell	head	32.40	28.79 to 39.93	29.32
Capital Requirements:				
Total	dol.	53,283.10	−.0634 to −.0025	− 0.06
Annual	dol.	43,441.46	−.0041 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	3,653.49		

ᵃLimited by land restriction.

TABLE A, XIII

OPTIMUM SHORT RUN FARM ORGANIZATION, ALL ENTERPRISES IN
PROGRAM WITH COTTON, WHEAT AND PEANUTS RESTRICTED BY
ALLOTMENTS, REPRESENTATIVE PRAIRIE
SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crop:				
P65 Alfalfa	acre	10.35	17.98 to 24.65	22.30
P56 Soybeans	acre	20.65	23.40 to 54.41	24.86
P51 Peanuts	acre	20.75	−73.40 to −70.01	−71.47
P60 Oats	acre	17.25	−26.30 to −20.69	−22.33
P50 Cotton(mech.)	acre	58.88	−57.50 to −31.41	−55.57
P52 Peanuts	acre	82.75	−70.93 to −67.55	−69.47
P49 Cotton (hand)	acre	13.63	−33.59 to −26.60	−31.32
P54 Wheat	acre	34.50	−24.09 to a	−22.45
P61 Oats	acre	51.75	−23.83 to a	−22.19
P27 Bermuda	acre	34.50	−4.60 to a	− 3.91
Livestock:				
P39 Spring Calf	head	31.0	71.96 to 82.10	74.04
P44 Buy-Sell	head	15.0	21.37 to 28.76	25.06
P43 Buy-Sell	head	12.0	19.08 to 22.61	21.05
Sell Activities:				
P75 Cotton	cwt.	253.75	21.06 to 37.20	29.50
P76 Wheat	bu.	897.00	1.23 to 4.13	1.65
P77 Oats	bu.	2,656.50	.73 to .89	.83
P79 Peanuts	cwt.	1,211.00	8.11 to 11.50	10.40
Capital Requirements:				
Total	dol.	24,900.90	−.1650 to −.0503	− 0.06
Annual	dol.	18,152.92	−.0939 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	12,092.85		

aLimited by land restriction.

TABLE A, XIV

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE
MINUS 40 PERCENT AND COMPETING PRODUCTS AT BASE
PRICES, REPRESENTATIVE PRAIRIE SOIL
RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−24.86 to −7.40	−22.59
P51 Peanuts	acre	41.40	−78.00 to a	−71.47
P52 Peanuts	acre	155.25	−75.27 to a	−69.47
P54 Wheat	acre	51.75	−24.77 to −11.00	−22.45
P55 Wheat	acre	17.25	−24.62 to −22.28	−22.31
P64 Grain Sorghum	acre	34.50	−24.40 to a	−24.37
P25 Bermuda	acre	34.50	−4.65 to a	− 3.91
Livestock:				
P43 Buy-Sell	head	28.0	21.37 to 27.23	25.06
P44 Buy-Sell	head	31.0	19.95 to 21.15	21.05
P39 Spring calf	head	30.0	72.81 to 78.74	74.04
Sell Activities:				
P76 Wheat	bushel	2,049.30	1.119 to 1.201	1.200
P78 Grain Sorghum	cwt.	655.50	1.838 to 2.09	1.840
P79 Peanuts	cwt.	2,302.87	7.50 to 2,763.42	8.00
Capital Requirements:				
Total	dol.	30,661.23	−.1097 to −.0590	− 0.06
Annual	dol.	21,196.28	−.0740 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	7,327.73		

[a]Limited by land restriction.

TABLE A, XV

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE
MINUS 20 PERCENT AND COMPETING PRODUCTS AT BASE
PRICES, REPRESENTATIVE PRAIRIE SOIL
RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−24.77 to −7.35	−22.59
P51 Peanuts	acre	41.40	−74.36 to a	−71.47
P52 Peanuts	acre	142.44	−75.21 to −67.69	−69.47
P49 Cotton (hand)	acre	12.81	−33.10 to −6.25	−31.32
P54 Wheat	acre	51.75	−24.87 to −10.95	−22.45
P55 Wheat	acre	17.25	−24.61 to −22.24	−22.31
P64 Grain Sorghum	acre	34.50	−24.44 to a	−24.37
P25 Bermuda	acre	34.50	− 4.65 to a	− 3.91
Livestock:				
P43 Buy-Sell	head	28.0	19.90 to 21.29	21.05
P44 Buy-Sell	head	26.0	21.37 to 27.31	25.06
P39 Spring calf	head	30.0	72.76 to 78.95	74.04
Sell Activities:				
P75 Cotton	cwt.		16.51 to 23.43	17.60
P76 Wheat	bu.		1.122 to 1.202	1.20
P78 Grain Sorghum	cwt.		1.836 to 2.09	1.840
P79 Peanuts	cwt.		7.49 to 8.33	8.00
Capital Requirements:				
Total	dol.	29,941.56	−.1064 to −.0575	− 0.06
Annual	dol.	20,841.21	−.0698 to − 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	7,376.78		

a Limited by land restriction.

TABLE A, XVI

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE
AND COMPETING PRODUCTS AT BASE, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−24.41 to −7.17	−22.59
P51 Peanuts	acre	41.40	−73.38 to a	−71.47
P52 Peanuts	acre	142.44	−74.45 to −67.69	−69.47
P49 Cotton (hand)	acre	12.81	−33.10 to −21.65	−31.32
P54 Wheat	acre	51.75	−25.28 to −10.77	−22.46
P55 Wheat	acre	17.25	−24.54 to −22.09	−22.31
P64 Grain Sorghum	acre	34.50	−24.61 to a	−24.37
P25 Bermuda	acre	34.50	−4.61 to a	− 3.91
Livestock:				
P43 Buy-Sell	head	28.0	19.71 to 21.87	21.05
P44 Buy-Sell	head	26.0	21.37 to 27.69	25.06
P39 Spring calf	head	30.0	72.14 to 79.77	74.04
Sell Activities:				
P75 Cotton	cwt.	44.82	16.51 to 23.43	22.00
P76 Wheat	bu.	2,049.30	1.14 to 1.21	1.20
P78 Grain Sorghum	cwt.	655.50	1.83 to 2.09	1.84
P79 Peanuts	cwt.	2,155.61	7.57 to 9.67	8.00
Capital Requirements:				
Total	dol.	29,941.57	−.0989 to −.0517	− 0.06
Annual	dol	20,841.21	−.0584 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	7,573.99		

aLimited by land restriction.

TABLE A, XVII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE
PLUS 20 PERCENT AND COMPETING PRODUCTS
AT BASE, REPRESENTATIVE PRAIRIE
SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (-)
			(dollars)	(dollars)
P53 Wheat	acre	10.35	-24.69 to 2.24	-22.59
P48 Cotton, (mach.)	acre	41.40	-57.34 to a	-56.85
P50 Cotton, (mach.)	acre	141.18	-60.29 to -55.09	-55.57
P49 Cotton, (hand)	acre	14.07	-31.80 to -26.60	-31.32
P54 Wheat	acre	51.75	-26.53 to -20.71	-22.45
P55 Wheat	acre	45.47	-22.47 to -22.01	-22.31
P64 Grain Sorghum	acre	6.29	-24.67 to -24.21	-24.37
P16,25 Bermuda	acre	34.50	-4.70 to 1.98	- 3.91
Livestock:				
P39 Spring calf	head	31.0	73.30 to 83.17	74.04
Sell Activities:				
P75 Cotton	cwt.	698.63	24.04 to 9104.09	26.40
P76 Wheat	bu.	2,726.29	1.19 to 1.21	1.20
P78 Grain Sorghum	cwt.	119.55	1.824 to 1.848	1.840
Capital Requirements:				
Total	dol.	20,962.45	-.0813 to -.0513	- 0.06
Annual	dol.	16,250.91	-.0203 to .0827	0.0
Returns to Land, Labor, Management and Risk	dol.	9,649.20		

aLimited by land restriction.

TABLE A, XVIII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE
PLUS 40 PERCENT AND COMPETING PRODUCTS AT BASE,
REPRESENTATIVE PRAIRIE SOIL RESOURCE
SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−24.69 to 18.74	−22.59
P48 Cotton, (mach.)	acre	41.40	−57.34 to a	−56.83
P50 Cotton, (mach.)	acre	141.18	−60.29 to −55.09	−55.57
P49 Cotton, (hand)	acre	14.07	−31.80 to −26.60	−31.32
P54 Wheat	acre	51.75	−26.53 to −20.71	−22.45
P55 Wheat	acre	45.46	−22.47 to −22.01	−22.31
P64 Grain Sorghum	acre	6.29	−24.68 to −24.21	−24.37
P16,25 Bermuda	acre	34.50	−4.70 to a	− 3.91
Livestock:				
P39 Spring calf	head	31.0	73.30 to 83.17	74.04
Sell Activities:				
P75 Cotton	cwt	698.63	24.04 to 9104.09	30.80
P76 Wheat	bu.	2,726.29	1.19 to 1.21	1.20
P78 Grain Sorghum	cwt.	119.55	1.82 to 1.85	1.84
Capital Requirements:				
Total	dol.	20,962.45	−.0813 to −.0513	− 0.06
Annual	dol.	16,250.91	−.0203 to .0827	0.0
Returns to Land, Labor, Management and Risk	dol.	12,723.14		

aLimited by land restriction.

TABLE A, XIX

OPTIMUM FARM ORGANIZATION WITH COTTON PRICE OF BASE MINUS
40 PERCENT AND COMPETING PRODUCTS AT BASE
MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−25.67 to −17.42	−22.59
P54 Wheat	acre	51.75	−23.99 to −19.68	−22.45
P55 Wheat	acre	18.57	−22.69 to 20.77	−22.31
P56 Soybeans	acre	41.40	9.11 to a	10.31
P57 Grain Sorghum	acre	141.79	−27.39 to −23.66	−24.77
P49 Cotton, (hand)	acre	13.46	−32.42 to −22.09	−31.32
P17 Bermuda	acre	33.18	−4.191 to −3.11	− 3.81
Livestock:				
P39 Spring calf	head	33.0	44.60 to 56.25	45.95
Sell Activities:				
P75 Cotton	cwt.	47.115	11.09 to 15.83	13.2
P76 Wheat	bu.	2,080.94	.8238 to .964	.84
P78 Grain Sorghum	cwt.	3,332.028	1.178 to 1.337	1.29
Capital Requirements:				
Total	dol.	16,950.03	−.0636 to −.0368	− 0.06
Annual	dol.	14,529.41	−.0039 to 0	0.0
Returns to Land, Labor, Management and Risk	dol	1,732.54		

[a]Limited by land restriction.

TABLE A, XX

OPTIMUM FARM ORGANIZATON WITH COTTON PRICE OF BASE MINUS
20 PERCENT AND COMPETING PRODUCTS AT BASE
MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−25.41 to −16.97	−22.59
P54 Wheat	acre	51.75	−23.73 to −19.44	−22.45
P56 Soybeans	acre	41.40	8.89 to a	10.31
P63 Grain Sorghum	acre	141.01	−26.18 to −23.47	−24.77
P49 Cotton, (hand)	acre	14.24	−32.62 to −25.25	−31.32
P17 Bermuda	acre	14.26	−4.44 to −3.56	− 3.81
Livestock:				
P39 Spring calf	head	28.0	41.52 to 46.85	45.95
Sell Activities:				
P75 Cotton	cwt.	49.85	15.84 to 18.00	17.60
P76 Wheat	bu.	1,635.29	.79 to .85	.84
P78 Grain Sorghum	cwt.	3,313.66	1.23 to 1.345	1.29
Capital Requirements:				
Total	dol.		−.0719 to −.0576	− 0.06
Annual	dol.		−.0129 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	1,944.67		

[a]Limited by land restriction.

TABLE A, XXI

OPTIMUM FARM ORGANIZATION WITH COTTON PRICE AT BASE
AND COMPETING PRODUCTS AT BASE MINUS 30
PERCENT, REPRESENTATIVE PRAIRIE
SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
Crops:				
P53 Wheat	acre	10.35	−25.67 to −3.176	−22.59
P54 Wheat	acre	51.75	−23.99 to −5.736	−22.45
P55 Wheat	acre	21.12	−22.49 to 21.99	−22.31
P48 Cotton, (mach.)	acre	41.40	−57.34 to a	−56.83
P50 Cotton, (mech.)	acre	140.01	−60.29 to −55.09	−55.57
P49 Cotton, (hand)	acre	15.24	−33.80 to −26.60	−31.32
Livestock:				
P39 Spring calf	head	24.0	45.34 to 47.06	45.95
Sell Activities:				
P75 Cotton	cwt.	698.63	18.25 to 9,106.74	22.00
P76 Wheat	bu.	2,142.15	.8327 to .8533	.84
Capital Requirements:				
Total	dol.	17,880.69	−.0645 to −.0570	− 0.06
Annual	dol.	13,452.51	−.0055 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	4,711.60		

aLimited by land restriction.

TABLE A, XXII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICE AT BASE PLUS
20 PERCENT AND COMPETING PRODUCTS AT BASE
MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
Crops:				
P53 Wheat	acre	10.35	−25.67 to 13.32	−22.59
P54 Wheat	acre	51.75	−23.99 to 9.66	−22.45
P55 Wheat	acre	21.12	−22.48 to −21.99	−22.31
P48 Cotton, (mech.)	acre	41.40	−57.34 to a	−56.83
P50 Cotton, (mech.)	acre	140.01	−60.29 to −55.09	−55.57
P49 Cotton, (hand)	acre	15.24	−31.80 to 26.60	−31.32
Livestock:				
P39 Spring calf	head	23.78	45.34 to 47.06	45.95
Sell Activities:				
P75 Cotton	cwt.	698.63	18.25 to 9,106.	26.40
P76 Wheat	bu.	2,142.15	.833 to .853	.84
Capital Requirements:				
Total	dol.17,880.70		−.0645 to −.057	− 0.06
Annual	dol.13,452.51		−.0055 to 0	0.0
Returns to Land, Labor, Management and Risk	dol. 7,785.55			

aLimited by land restriction.

TABLE A, XXIII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE PLUS
40 PERCENT AND COMPETING PRODUCTS AT BASE
MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
Crops:				
P53 Wheat	acre	10.35	−25.67 to 29.82	−22.59
P54 Wheat	acre	51.75	−23.99 to 25.06	−22.45
P55 Wheat	acre	21.12	−22.48 to −25.99	−22.31
P48 Cotton, (mech.)	acre	41.40	−57.34 to a	−56.83
P50 Cotton, (mech.)	acre	140.01	−60.29 to −55.09	−55.57
P49 Cotton, (hand)	acre	15.24	−31.79 to −26.60	−31.32
Livestock:				
P39 Spring calf	head	24.0	45.34 to 47.07	45.95
Sell Activities:				
P75 Cotton	cwt.	698.62	18.252 to 9106.	30.80
P76 Wheat	bu.	2,142.15	.8327 to .8533	.84
Capital Requirements:				
Total	dol.	17,880.70	−.0645 to −.0570	− 0.06
Annual	dol.	13,452.51	−.0055 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	10,859.49		

[a]Limited by land restrictions.

TABLE A, XXIV

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE MINUS 40 PERCENT
AND COMPETING PRODUCTS AT BASE PLUS 30 PERCENT
REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−23.06 to 12.33	−22.59
P55 Wheat	acre	51.75	−23.44 to a	−22.31
P51 Peanuts	acre	41.40	−96.32 to a	−71.47
P52 Peanuts	acre	155.75	−92.73 to a	−69.47
P16 Bermuda	acre	51.75	−13.36 to 15.52	−13.01
P27 Bermuda	acre	26.56	− 9.28 to − 8.16	− 9.04
P32 Bermuda	acre	7.94	−14.12 to −13.00	−13.24
Livestock:				
P46 Buy−Sell	head	116.0	45.69 to 47.38	46.71
P43 Buy−Sell	head	89.0	38.88 to 42.65	40.11
Sell Activities:				
P76 Wheat	bu.	1,531.80	1.54 to 1.60	1.56
P79 Peanuts	cwt.	2,302.87	8.41 to 2762.	10.40
Capital Requirements:				
Total	dol.	50,964.95	−.0675 to −.0571	− 0.06
Annual	dol.	37,719.99	−.0082 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	16,128.30		

[a]Limited by land restriction.

TABLE A, XXV

OPTIMUM FARM ORGANIZATION WITH COTTON PRICE AT BASE MINUS 20 PERCENT
AND COMPETING PRODUCTS AT BASE PLUS 30 PERCENT,
REPRESENTATIVE PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−23.06 to 12.33	−22.59
P55 Wheat	acre	51.75	−23.44 to a	−22.31
P51 Peanuts	acre	41.40	−96.32 to a	−71.47
P52 Peanuts	acre	155.25	−92.73 to a	−69.47
P16 Bermuda	acre	51.75	−13.36 to 15.52	−13.01
P27 Bermuda	acre	26.56	− 9.28 to − 8.16	− 9.04
P37 Bermuda	acre	7.94	−14.12 to −13.00	−13.24
Livestock:				
P46 Buy-Sell	head	116.0	45.69 to 47.38	46.71
P43 Buy-Sell	head	89.0	38.88 to 42.65	40.11
Sell Activities:				
P76 Wheat	bu.	1,531.80	1.54 to 1.60	1.56
P79 Peanuts	cwt.	2,302.87	8.41 to 2762.	10.40
Capital Requirements:				
Total	dol.	50,964.95	−.067 to −.057	− 0.06
Annual	dol.	37,719.99	−.008 to 0	0.0
Returns to Land, Labor, Management, and Risk	dol.	16,128.30		

aLimited by land restriction.

TABLE A, XXVI

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE AND
COMPETING PRODUCTS AT BASE PLUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P53 Wheat	acre	10.35	−23.06 to 12.33	−22.59
P51 Peanuts	acre	41.40	−86.54 to a	−71.47
P52 Peanuts	acre	155.25	−81.61 to a	−69.47
P16 Bermuda	acre	51.75	−13.36 to 15.52	−13.01
P55 Wheat	acre	51.75	−23.44 to a	−22.31
P27 Bermuda	acre	26.56	−9.27 to −8.16	− 9.04
P32 Bermuda	acre	34.50	−14.12 to −13.00	−13.24
Livestock:				
P43 Buy-Sell	head	89.21	38.88 to 42.65	40.11
P46 Buy-Sell	head	116.0	45.69 to 47.38	46.71
Sell Activities:				
P76 Wheat	bu.	1,531.8	1.543 to 1.597	1.56
P79 Peanuts	cwt.	2,302.87	9.34 to 2762	10.40
Capital Requirements:				
Total	dol.	50,964.92	−.0675 to −.0571	− 0.06
Annual	dol.	37,719.99	−.0082 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	16,128.30		

[a]Limited by land restriction.

TABLE A, XXVII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE PLUS 20 PERCENT
AND COMPETING PRODUCTS AT BASE PLUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (-)
			(dollars)	(dollars)
Crops:				
P53 Wheat	acre	10.35	-22.97 to 12.39	-22.59
P55 Wheat	acre	51.75	-23.37 to a	-22.31
P49 Cotton (hand)	acre	8.84	-33.25 to -22.86	-31.32
P52 Peanuts	acre	146.41	-77.93 to -67.54	-69.47
P16 Bermuda	acre	51.75	-13.55 to 15.52	-13.24
Livestock:				
P46 Buy-Sell	head	116.0	45.62 to 47.72	46.71
P43 Buy-Sell	head	86.0	39.25 to 42.78	40.11
Sell Activities:				
P75 Cotton	cwt.	30.95	25.47 to 28.82	26.40
P76 Wheat	bu.	1,531.80	1.55 to 1.60	1.56
P79 Peanuts	cwt.	2,201.18	9.66 to 10.68	10.40
Capital Requirements:				
Total	dol.	50,359.91	-.065 to -.0557	- 0.06
Annual	dol.	37,328.20	-.0058 to 0	0.0
Returns to Land, Labor, Management, and Risk	dol.	16,157.15		

aLimited by land restrictions.

TABLE A, XXVIII

OPTIMUM FARM ORGANIZATION WITH COTTON PRICES AT BASE PLUS 40 PERCENT AND
COMPETING PRODUCTS AT BASE PLUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P65 Alfalfa	acre	10.35	29.28 to 29.64	29.56
P51 Peanuts	acre	41.40	−73.54 to a	−71.47
P52 Peanuts	acre	146.00	−71.91 to −67.53	−69.47
P49 Cotton, (hand)	acre	9.25	−33.26 to −28.87	−31.32
P16 Bermuda	acre	51.75	−13.33 to 16.42	−13.01
P27 Bermuda	acre	35.50	−9.55 to a	− 9.04
P55 Wheat	acre	51.75	−23.28 to −4.40	−22.31
Livestock:				
P46 Buy−Sell	head	116.0	46.37 to 47.92	46.71
P43 Buy−Sell	head	82.0	39.82 to 40.82	40.11
Sell Activities:				
P75 Cotton	cwt.	32.38	28.82 to 35.50	30.80
P76 Wheat	bu.	1,244.76	1.556 to 1.57	1.56
P79 Peanuts	cwt	2,196.45	10.19 to 11.00	10.40
Capital Requirements:				
Total	dol.	49,688.90	−.0609 to −.0558	− 0.06
Annual	dol.	36,724.70	−.0011 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	16,296.18		

[a] Limited by land restriction.

TABLE A, XXIX

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES
AT BASE MINUS 30 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (-) (dollars)
Livestock:				
P37 Spring calf	head	18.0	30.03 to 36.22	36.20
Capital requirements:				
Total	dol.	4,517.37	-.1468 to -.0599	-0.06
Annual	dol.	4,407.27	-.0889 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	392.15		

aLimited by land restriction.

TABLE A, XXX

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES
AT BASE MINUS 20 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (-)
			(dollars)	(dollars)
Crops:				
P1 Bermuda	acre	51.75	-4.12 to a	- 3.81
P9 Bermuda	acre	207.00	-4.12 to a	- 3.81
P17 Bermuda	acre	51.75	-4.12 to a	- 3.81
Livestock:				
P37 Spring calf	head	73.0	42.09 to 45.96	45.57
P46 Buy-Sell	head	33.0	17.62 to 18.80	17.77
Capital Requirements:				
Total	dol.	26,611.20	-.0630 to -.0477	- 0.06
Annual	dol.	25,221.66	-.0040 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	1,153.00		

[a]Limited by land restriction.

TABLE A, XXXI

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES
AT BASE MINUS 10 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (-)
			(dollars)	(dollars)
Crops:				
P1 Bermuda	acre	51.75	-4.21 to a	- 3.81
P9 Bermuda	acre	207.00	-41.21 to a	- 3.81
P17 Bermuda	acre	51.75	-7.17 to a	- 3.81
P25 Bermuda	acre	34.50	-5.45 to a	- 3.91
Livestock:				
P46 Buy-Sell	head	239.0	23.33 to 24.84	23.54
Capital Requirements:				
Total	dol.	36,624.95	-.0656 to -.0517	- 0.06
Annual	dol.	31,183.51	-.0014 to 0.0	0.0
Returns to Land, Labor, Management and Risk	dol.	2,117.56		

aLimited by land restriction.

TABLE A, XXXII

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK
PRICES AT BASE, REPRESENTATIVE PRAIRIE
SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
			(dollars)	(dollars)
Crops:				
P3 Bermuda	acre	51.75	−8.88 to a	− 8.88
P11 Bermuda	acre	207.00	−9.07 to −8.88	− 8.88
P17 Bermuda	acre	51.75	−7.57 to a	− 3.81
P25 Bermuda	acre	34.50	−5.50 to a	− 3.91
Livestock:				
P46 Buy-Sell	head	324.0	28.79 to 39.93	29.32
Capital Requirements:				
Total	dol.	53,283.10	−.0634 to −.0025	− 0.06
Annual	dol.	43,441.46	−.0041 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	3,653.49		

aLimited by land restriction.

TABLE A, XXXIII

OPTIMUM LIVESTOCK FARM ORGANIZATION LIVESTOCK PRICES AT
BASE PLUS 10 PERCENT, REPRESENTATIVE
PRAIRIE SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range	Revenue/unit (+) or Cost/unit (−)
			(dollars)	(dollars)
Crops:				
P3 Bermuda	acre	51.75	−8.88 to a	− 8.88
P11 Bermuda	acre	207.00	−9.87 to −8.88	− 8.88
P17 Bermuda	acre	51.75	−7.48 to a	− 3.81
P25 Bermuda	acre	34.50	−4.79 to a	− 3.91
Livestock:				
P46 Buy-Sell	head	324.00	30.29 to 40.57	35.10
Capital Requirements:				
Total	dol.	56,965.40	−.0917 to −.0320	− 0.06
Annual	dol.	47,660.66	−.0391 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	5,321.80		

^aLimited by land restriction.

TABLE A, XXXIV

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES AT BASE
PLUS 20 PERCENT, REPRESENTATIVE PRAIRIE SOIL
RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P3 Bermuda	acre	51.75	−8.88 to a	− 8.88
P11 Bermuda	acre	207.00	−9.19 to 8.87	− 8.88
P17 Bermuda	acre	51.75	−7.28 to a	− 3.81
P25 Bermuda	acre	34.50	−3.97 to a	− 3.91
Livestock:				
P46 Buy-Sell	head	324.00	34.52 to 41.20	40.88
Capital Requirements:				
Total	dol.	60,107.71	−.1160 to −.0858	− 0.06
Annual	dol.	50,502.64	−.0583 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	6,990.10		

[a]Limited by land restriction.

TABLE A, XXXV

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES AT BASE
PLUS 30 PERCENT, REPRESENTATIVE PRAIRIE SOIL
RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (-) (dollars)
Crops:				
P6 Bermuda	acre	51.75	-24.36 to a	-24.36
P14 Bermuda	acre	207.00	-24.78 to -24.35	-24.36
P17 Bermuda	acre	51.75	-6.93 to a	- 3.81
P27 Bermuda	acre	34.50	-9.34 to a	- 9.04
Livestock:				
P46 Buy-Sell	head	478.0	45.98 to 53.71	46.71
Capital Requirements:				
Total	dol	97,478.32	-.0633 to -.0304	- 0.06
Annual	dol.	80,771.16	-.0041 to 0	0.0
Returns to Land, Labor, Management and Risk	dol	9,056.79		

[a]Limited by land restriction.

TABLE A, XXXVI

OPTIMUM LIVESTOCK FARM ORGANIZATION, LIVESTOCK PRICES AT
BASE PLUS 40 PERCENT, REPRESENTATIVE PRAIRIE
SOIL RESOURCE SITUATION

Activity	Unit	Level	Stability Range (dollars)	Revenue/unit (+) or Cost/unit (−) (dollars)
Crops:				
P6 Bermuda	acre	51.75	−24.36 to a	−24.36
P14 Bermuda	acre	207.00	−27.45 to −24.36	−24.36
P17 Bermuda	acre	51.75	−6.32 to a	− 3.81
P27 Bermuda	acre	34.50	−9.67 to a	− 9.04
Livestock:				
P46 Buy-Sell	head	478.0	46.11 to 54.34	52.54
Capital Requirements:				
Total	dol.	102,530.37	−.0855 to −.0527	− 0.06
Annual	dol.	84,981.20	−.0316 to 0	0.0
Returns to Land, Labor, Management and Risk	dol.	11,542.82		

aLimited by land restriction.

APPENDIX B

APPENDIX CHAPTER B

PROFITABLE SMALL FARM ADJUSTMENTS FOR THE INTERMEDIATE RUN

In Chapter IV, intermediate-run optimum farm organizations determined
by the variable price approach were compared for two representative
farm sizes. The analysis showed general organization to be quite similar,
although in most cases the hand harvest cotton activity occupied a
greater proportion of cropland on the small farm than on the large.
In all cases, the per acre operator labor required was much greater
for the small farm. Per acre capital requirements were greater for the
small farms, but to a much smaller degree than labor. In most cases
the slight increase in capital required resulted from greater per acre
machinery costs associated with the two-row machinery used on the small
farm.

Competing Products at Base Prices, Cotton Prices Varied

Three different farm plans (Appendix Table BI) are derived as
cotton is varied between 13.2 and 30.8 cents. Peanuts, wheat, bermuda,
beef stocker steers and beef cows are the included enterprises when
cotton price is at 13.2 cents. Total capital requirement for the 13.2
cent cotton plan is the highest of the five plans developed for this
price level of competing products. Labor and net income are the lowest
of the five plans.

TABLE B, I

OPTIMUM ORGANIZATION, COMPETING PRODUCTS AT BASE PRICES AND COTTON PRICES VARIED,
REPRESENTATIVE SMALL FARM PRAIRIE SOIL RESOURCE SITUATION

| Enterprise | Unit | Cotton Prices (cents per pound) | | | | |
		13.2	17.6	22.0	26.4	30.8
Cotton	acre		16.25	16.25	79.8	79.8
Peanuts	acre	79.80	63.55	63.55		
Wheat	acre	46.20	46.20	46.20	46.2	46.2
Soybeans	acre					
Grain Sorghum	acre					
Oats	acre					
Alfalfa	acre					
Bermuda	acre	14.0	14.0	14.0	14.0	14.0
Beef Cows	head	12.0	12.0	12.0	13.0	13.0
Beef Stockers	head	28.0	22.0	22.0		
Operator Labor	hours	847.66	1370.54	1370.54	1426.17	1426.15
Total Capital	dol.	13519.85	12601.31	12601.31	9200.59	9200.59
Annual Capital	dol.	9396.50	8963.11	8963.11	7237.57	7237.57
Returns to Land, Labor, Management and Risk	dol.	2811.46	2871.75	3122.11	4012.25	5259.65

At 17.6 and 22.0 cent cotton prices, 16.24 acres of cotton enters
the optimum plan (Appendix Table BI). The addition of cotton reduces
included acres of peanuts and buy-sell stocker steer numbers. Labor
required is 500 hours greater than the previous plan. Operating capital
requirements are reduced slightly and net income is $60 greater than the
previous plan. Net incomes for the 17.6 and 22.0 cent cotton plans are
$2,871.75 and $3,122.11, respectively.

All cropland suitable for cotton production is most profitably
planted to cotton as cotton prices increase to 26.4 and 30.8 cents.
Respective net incomes are $4,012.25 and $5,259.65. Wheat, bermuda,
and beef cows are other major enterprises (Appendix Table BI). Peanuts
and beef stockers are eliminated by cotton. The change slightly increases
labor requirements and appreciably decreases operating capital require-
ments.

Competing Products at Base Minus 30 Percent, Cotton Prices Varied

With a cotton price of 13.2 cents, cotton, wheat, grain sorghum,
bermuda and beef cows are the most profitable enterprises (Appendix
Table BII). Ten percent of the cropland is left idle with this optimum
organization. Net income is $660.01.

An increase in cotton price to 17.6 cents slighly increases cotton
acreage, decreases wheat and bermuda acreage, slightly reduces capital
and labor requirements and increase idle land to almost 20 percent.
Net income increases to $910.41.

Identical organizations are optimum at the three cotton prices of
22.0, 26.4 and 30.8 cents (Appendix Table BII). Cotton is the major
enterprise and uses all cropland suitable for its production. Wheat and

TABLE B, II

OPTIMUM ORGANIZATION, COMPETING PRODUCTS AT BASE PRICES MINUS 30 PERCENT AND COTTON PRICES VARIED,
REPRESENTATIVE SMALL FARM PRAIRIE SOIL RESOURCE SITUATION

| Enterprise | Unit | Cotton Prices (cents per pound) | | | | |
		13.2	17.6	22.0	26.4	30.8
Cotton	acre	14.92	15.18	79.80	79.80	79.80
Peanuts	acre					
Wheat	acre	31.81	25.20	25.20	25.20	25.20
Soybeans	acre					
Grain Sorghum	acre	64.88	64.62			
Oats	acre					
Alfalfa	acre					
Idle Land	acre	14.0	27.35	35.00	35.00	35.00
Bermuda	acre	14.39	7.65			
Beef Cows	head	14.00	12.00	9.0	9.0	9.0
Beef Stockers	head					
Operator Labor	hours	1208.41	1167.95	1322.50	1322.50	1322.50
Total Capital	dol.	7459.59	6737.71	7508.17	7508.17	7508.17
Annual Capital	dol.	6389.59	5730.11	5771.24	5771.24	5771.24
Returns to Land, Labor, Management and Risk	dol.	660.01	910.41	2015.82	3263.23	4510.63

beef cows are the other major enterprises. Capital and labor require-
ments increase slightly over the previous organization and 20 percent
of cropland is unused for any crop production. Net incomes are
$2,015.82, $3,263.23, and $4,510.63 for the respective cotton price
levels 22.0, 26.4, and 30.8 cents.

Competing Products at Base Prices Plus 30 Percent, Cotton Price Varied

At cotton prices of 13.2, 17.6, and 22.0 cents, cotton cannot
compete with other enterprises for available resources. Peanuts, wheat,
bermuda, and beef stockers are the major enterprises (Appendix Table BIII).
Labor requirements are appreciably lower than the requirements of plans
derived when competing products are at base prices or base prices minus
30 percent. Capital requirements are much higher due to the large number
of beef stockers included. Net income remains constant at $6,392.44
for the three cotton prices as no cotton is in the plan.

At the 26.4 and 30.8 cent cotton price, cotton replaces peanuts
on approximately 10 percent of available cropland (Appendix Table BIII).
With the inclusion of some cotton steer numbers and capital requirements
drop slightly. Labor requirements jump for 889.15 hours in the previous
plan to 1,364.86 hours in the present plan. Net income increases by
little more than $40.

TABLE B, III

OPTIMUM ORGANIZATION, COMPETING PRODUCTS AT BASE PRICES PLUS 30 PERCENT AND COTTON PRICES VARIED,
REPRESENTATIVE SMALL FARM PRAIRIE SOIL RESOURCE SITUATION

| Enterprise | Unit | Cotton Prices (cents per pound) | | | | |
		13.2	17.6	22.0	26.4	30.8
Cotton	acre				14.87	15.04
Peanuts	acre	79.8	79.8	79.8	64.93	64.76
Wheat	acre	25.2	25.2	25.2	25.20	22.50
Soybeans	acre					
Grain Sorghum	acre					
Oats	acre					
Alfalfa	acre					
Bermuda	acre	35.0	35.0	35.0	35.0	33.50
Beef Cows	head					
Beef Stockers	head	83.0	83.0	83.0	78.0	76.0
Operator Labor	hours	889.15	889.15	889.15	1364.86	1365.80
Total Capital	dol.	21322.21	21322.21	21322.21	20360.50	19890.27
Annual Capital	dol.	16100.71	16100.71	16100.71	15502.09	15091.71
Returns to Land, Labor, Management and Risk	dol.	6392.44	6392.44	6392.44	6438.76	6668.15

VITA

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