MARCH, 1941 BULLETIN 294

AGRICULTURAL EXPERIMENT STATION
KANSAS STATE COLLEGE OF AGRICULTURE
AND APPLIED SCIENCE
MANHATTAN, KANSAS

PLANNING THE FARM BUSINESS IN THE BLUESTEM BELT OF KANSAS

PRINTED BY KANSAS STATE PRINTING PLANT
W. C. AUSTIN, STATE PRINTER
TOPEKA 1941
18-7457

TABLE OF CONTENTS

Planning the Farm Business in the Bluestem Belt of Kansas[1]

BY RAYMOND J. DOLL

INTRODUCTION

Although agriculture has suffered severely during the past few years, many farmers have successfully adapted their farms to the existing conditions by preparing and following good farm plans. A general plan for the farm is necessary to determine the most desirable kinds and proportions of crops and livestock to produce.

The most satisfactory method of comparing different plans for the operation of the individual farm is the use of the comparative farm budget.[2] This method makes it possible to test the expected results and to determine in advance the plan which should be most profitable under normal or assumed conditions.

The study herein reported consists of the preparation of various budgets adapted to farms in the Bluestem Belt of Kansas. These budgets illustrate desirable farming practices in this area and also illustrate how the farmer may use the budget in planning his farm business. Budgets are being more and more frequently used as farmers attempt to comply with the requirements of various federal programs, many of which require that budgets be prepared in advance of the year's operations on the farm. A carefully prepared farm plan which has been tested in advance by use of the budget method permits the farmer to proceed more intelligently than would be possible without a definite plan.

OBJECTIVE OF FARM PLANNING

The chief objective in planning a farm business is to determine the organization which will be most profitable. Many factors must be considered in planning a farm business. These factors may be grouped as follows: (1) Size of business, (2) combination of enterprises, (3) productivity of enterprises, and (4) other economic factors. Size of business should be considered as the plan for the farm is developed and before the budget is prepared. The combination of enterprises, the productivity of the enterprises, and the effect of other economic factors should be considered as the budget for the farm plan is prepared.

The proper size of business is essential for the successful farm. A farm which is too small to support the farm family adequately is not desirable, just as a farm which is too large for a good farmer to

1. Contribution No. 108 from the Department of Agricultural Economics.

2. U. S. D. A. Farmers Bulletin No. 1564, "Farm Budgeting."

Acknowledgment: The author is indebted to J. J. Moxley of the Division of College Extension and to R. J. Eggert of the Agricultural Experiment Station for valuable assistance in the studies on which this manuscript is based and for valuable suggestions in its preparation.

handle efficiently is not desirable. In planning the farming program the size of the farm should be such that the managerial ability of the farmer will be utilized at maximum capacity. Farmers differ in their managerial abilities, since some farmers find their managerial abilities used to the maximum on 80-acre farms, while other farmers have the ability to manage much larger farms. In the Bluestem Belt of Kansas the most usual size of farm in recent years has been the quarter section, and this size farm in this area is not large enough for a farmer with average managerial ability.[3] If managerial ability of farmers is to be more fully utilized, larger farms are necessary. In the study herein reported, budgets were prepared for farms of two sizes (measuring size in terms of total area in the farm).[4] Both sizes used in the illustrations are larger than the usual farm in this area.

DESCRIPTION OF AREA

The Bluestem Belt is the most important grazing section of Kansas. More than one-half of the farm land is in pasture. The native grasses of the pastures consist chiefly of big and little Bluestem.

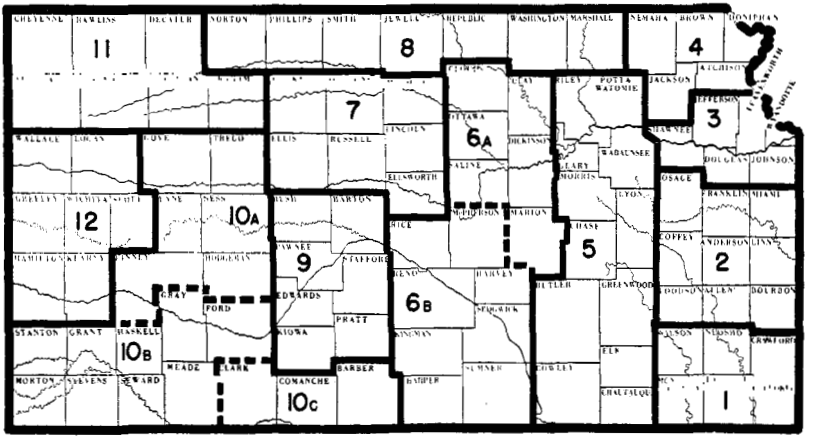

FIGURE 1. Type of farming areas in Kansas.

The topography of the area is rolling to hilly and the soils are of limestone origin; the parent limestone was high in silica content, and as it leached, fragments of rock were left which have a resistant, flinty surface. As a result, the soils are thin and filled with rock fragments and the surface portion frequently is acid. These conditions make it impracticable to grow cultivated crops on much of the upland of the area.[5]

3. In a recent study of farms in this area it was observed that many farmers on these smaller farms supplement their incomes by working for the larger operators in the area. A considerable number located near the cities have jobs in town in addition to operating these farms.

4. There are many different measures of size of farm business. In the Bluestem Belt (Type-of-farming Area 5) total acreage in the farm usually is the most satisfactory measure.

5. Kansas Agricultural Experiment Station Bulletin 251.

Beef cattle provide the major source of income on most of the farms of the area. Many cattle are shipped in to be grazed and then are sold at the end of the grazing season. Some cow herds are kept and some feeding of cattle in pastures or in feedlots is practiced. The success of a farm business depends upon the efficient utilization of large quantities of pasture grasses and roughage. There are several alternative farming systems available to farmers of the area but most of the better farm organizations are based upon one or another of the various methods of producing beef cattle.

Corn, a major crop in the area, is grown principally on the more fertile soils of the creek and river valleys. However, alfalfa and sorgo for silage are important crops used in the production of beef cattle and should have prominent places in the cropping systems of the area. Other important crops in the area are grain sorghums, oats, and wheat.

The most important types of farming in the Bluestem Belt are animal-specialty farms and stock ranches. Stock ranches in 1930 occupied approximately 27 percent of the farm land and other animal-specialty farms accounted for 6 percent.[6] General farming and cash-grain farming also are important types in this area.

PLANNING THE FARM BUSINESS

Farms for Which Budgets Were Prepared.— The farms selected for the preparation of budgets are of adequate size for efficient operation by a farmer who is a good manager. Budgets were prepared for the more important types of farming followed in the more typical portions of the Bluestem Belt. Since most of the cash-grain farms and many of the general farms of the area are located in the outskirts and not in the more typical portions of the area, the budgets presented and compared are for beef-cattle farms.

Production, Requirements for Production, and Disposal of Agricultural Products.— In preparing a farm budget, information commonly spoken of as "standards" for production is needed on crop yields, the kinds and quantities of feed required for livestock, the quantities of man and horse labor required for producing crops and livestock, the quantities of fuel, oil, and other supplies required in producing various farm products, and all other quantitative costs involved in the operation of the farm business. The value of the budget depends upon the accuracy of these standards and also the accuracy with which the budget is prepared. So one set of standards will apply to every farm in an area, since conditions vary from farm to farm. General standards, such as are used in this study, are valuable for comparison, but they must be adjusted to the conditions on the farm to which they are applied. General standards, computed by experiment-station workers, often are based on controlled experiments and must be adjusted to adapt them to farm conditions. The good farm manager usually finds that it is possible to obtain results comparable to those secured at the experiment stations.

6. United States Census, 1930.

The standards of production used in this study were not calculated from results on typical farms, but from data collected from better-than-average farmers and from the results of experiment-station work. These standards may be criticized because they are higher than those attained on typical farms. However, the purpose of this study is to indicate the results which may be expected if good practices are followed. The budgets presented set a high standard, which the farmer may attain if he handles good-quality livestock, uses proper feeding and management practices, and follows the markets carefully and intelligently.

The farmer's first task in budgeting is to figure a set of standards. Careful study will make it possible for him to prepare a set of standards applicable to his farm. Each change in production or marketing methods requires corresponding changes in the standards, and if these things are taken into account it is possible to prepare a budget on a practicable basis.

Information acquired by studying the farm business in past years is essential in preparing a budget. This information is secured most easily and satisfactorily from a good farm account book. The facts recorded in the account book provide much of the information needed to prepare desirable plans for the future of the farm business. Too frequently farmers attempt to solve their farming problems as the problems arise. Often this is impossible since many problems on the farm are the result of a chain of events. The most desirable method of solving many of these problems is to plan the farm program in advance and anticipate these problems. The budget does this.

Tables 1 to 4, inclusive, list the standards used in preparing the budgets presented in this study. The crop yields were estimated on the basis of long-time average yields for Riley county, Kansas.

TABLE 1. *Long-time average crop yields in Riley County, Kan.*

CROP.	Average.	River bottom.*	Upland.*
Wheat	18.8	23	17
Corn	23.8	30	20
Oats	29.5	33	28
Barley	22.4	26	21
Grain sorghum (bushels)	23.5	30	23
Forage sorghum (hay)	4.0 T	5 T	4 T
Forage sorghum silage	10.0 T	13 T	9 T
Alfalfa	2.6 T	3 T	2 T

* Based on estimates taken from "The Effect and Implications of the Agricultural Adjustment Administration Program in North Central Kansas," a coöperative report of the Kansas Agricultural Experiment Station and the United States Department of Agriculture.

Differences in yields for river-bottom and upland soils in this area were based upon a study made by the Kansas Agricultural Experiment Station in cooperation with the United States Department of Agriculture. Naturally, the individual farmer will use average crop yields for his farm instead of average yields for his county or community. The most difficult standards: to secure are those for man and horse hours, seed, twine, fuel, and oil required for crop production. These were based on records available from farms within the area.

TABLE 2. *Man and horse hours, seed, twine, fuel, and oil required for crop production in the Bluestem Belt.*

Line.	CROP AND METHOD.	Seed per acre.	Twine per acre.	Hours per acre.		Gallons per acre.	
				Man.	Horse.	Fuel.	Oil.
		(*bu.*)	(*lbs.*)				
1	Wheat, work with tractor, combine	1.25	.....	2.8	.....	5.0	.15
2	Wheat, work with tractor	1.25	2.0	2.0	.....	3.3	.125
3	Corn, all tractor except shucking	.10	.....	9.7	10.0	5.6	.167
4	Rowed sorghums, plow and disc with tractor	.20	2.5	12.6	21.0	3.5	.125
5	Rowed sorghum silage	.50	2.5	20.8	38.9	1.8	.120
6	Oats	2.00	2.0	7.2	6.6	3.3	.110
7	Alfalfa, put in barn	15[1]	.....	12.7	19.8	.....	.....
8	Alfalfa, new seeding	.....	.....	1.7	5.8	.....	.....
9	Sweet sorghum hay	.80	.....	10.0	23.0	.....	.....
10	Temporary pasture	.80	.....	4.4	18.0	.....	.....
11	Sweet clover pasture	20[1]	.....	1.7	6.0	.....	.....

1. Pounds.

The quantities of the various items required to produce an acre of a crop vary considerably from year to year. In addition to this difficulty, many farmers do not have records of the labor, fuel, oil, and other requirements for production. However, sufficient data were available to permit estimates of these requirements. The standards given in Table 2 are based upon farm-accounting studies, surveys of farm practices, and data from other sources.

In budgeting, it is essential to use prices for the items used in production and for the products produced. The prices used in preparing the budgets given herein were based upon average prices during a recent 15-year period. These average prices were adjusted when, in the judgment of those making the study, changed conditions warranted departing from the averages. Objection may be made to the use of these average prices. However, it must be remembered that

TABLE 3. *Prices used in making budget estimates.**

COMMODITY.	Average price.
Wheat, bu	$0.87
Corn, bu	.65
Oats, bu	.36
Barley, bu	.48
Grain sorghums, bu	.56
Hay,† all loose, ton	8.00
Alfalfa hay,† ton	11.00
Prairie hay,† ton	6.00
Alfalfa seed, bu	8.18
Sweet clover seed, bu	4.50
Sudan seed,† bu	3.00
Sweet sorghum seed,† bu	2.00
Threshing oats,† bu	.05
Threshing grain sorghums,† bu	.04
Combining,† acre	2.00
Twine,† lb	.10
Gasoline,† gal	.09
Oil,† gal	.60
Fat steers, good (November price§), cwt	11.05
Fat heifers, choice (November price§), cwt	10.80
Stocker steers, choice 500-800 pounds (April price§), cwt	9.17
Stocker steers, choice 500-800 pounds (September and October price§), cwt	8.57
Stocker steers, choice 500 pounds and less (September and October price§), cwt	8.70
Stocker heifers, choice 500 pounds and less, cwt	7.70
Cows, good, all weights (March price§), cwt	7.15
Veal calves, cwt	7.94
Hogs, cwt	7.55
Eggs, doz	.184
Chickens, lb	.133
Butterfat, lb	.30
Wool, lb	.233
Tankage,† cwt	2.25
Mill feed,† cwt	1.40
Cottonseed meal,† ton	30.00

farm plans must be made for a period of years. If equipment is purchased, it will aid in determining the products produced on that farm until the equipment is worn out or discarded. The cost of this equipment must be spread over the years of its use. The major products of the farm tend to remain the same as long as this equipment is used. Unless it is evident that conditions have resulted in a permanent change in price levels and costs, it seems safest to plan the farm business on the basis of the average costs and returns during a recent long-time period.

In most instances the production and feed requirements for livestock were more easily obtained than some of the other requirements. The results of studies made at the Kansas Agricultural Experiment Station furnish accurate standards for the feed requirements and production of the different kinds and classes of livestock. In addition, reliable data from farms were available from studies made by various agencies.

* Unless otherwise indicated, all prices are average (1924-1938) monthly farm prices for Kansas, taken from "Crops and Markets."

† Estimated.

§ Estimated on basis of average Kansas City prices for months indicated.

TABLE 4. *Production and corresponding feed requirements for livestock in the Bluestem Belt.*[1]

KIND OF ANIMAL.	Production.	Roughage.				Grain.		Protein supplement.	
		Non-legumes.	Legumes.	Silage.	Pasture (A).	Corn or sorghum.	Barley and oats.	Kind.	Quantity.
		tons.	*tons.*	*tons.*		*bu.*	*bu.*		
Work horses	800 hrs.	2	.....	.....	2½	27 and 31		.....	.....
Milk cows	175 lbs. butterfat	1	1½	2	5	4 or 10		.....	.....
Veal calves	250 lbs.	.....	.....	.....	.....	10	.....	.....	.....
Beef cows	500 lbs.	.....	1½	3	5	.....	.....	.....	.....
Beef heifer replacement	.....	.....	1½	2	4	5 or 8		.....	.....
Creep feeding calves	750 lbs.	.....	.18	½	.....	26	.....	Cs. meal,	100 lbs.
Deferred feeding of:									
Choice-quality steers:									
(wintered well)	525 lbs.	.....	¼	2	4	40	.....	Cs. meal,	300 lbs.
(roughed through winter)	485 lbs.	.....	¼	2	4	30	.....	Cs. meal,	300 lbs.
(dropped early; wintered well)	1,025 lbs.[2]	.....	½	2	4	40	.....	Cs. meal,	300 lbs.
Choice-quality beef heifers, wintered well	900 lbs.[2]	.....	⅓	2	.....	24	.....	Cs. meal,	100 lbs.
Wintering and grassing choice-quality steers	350 lbs.	.....	¼	2	4	.....	.....	.....	.....
Yearling steers on grass	225 lbs.	.....	.....	.....	5	.....	.....	.....	.....
Producing stocker calves	500 lbs.[3]	.....	.....	.....	.....	.....	.....	.....	.....
Hogs, per cwt	2,000 lbs.[4]	.....	.....	.....	.....	6.3	.....	Millfeed,	25 lbs.
								Tankage,	5 lbs.
Poultry, per 100 hens	8,000 eggs 400 lbs. poult.	.....	.....	.....	.....	7,500 lbs. grain[5]	.....	.....	.....

1. Based on standards calculated from data obtained in U. S. D. A. Department Bulletin No. 1454, consultation with Extension Specialists, and 1935 Agricultural Planning Project.
2. In this method, the calves are produced on the farm. They are dropped in January and February, and weigh about 500 pounds by October when they go into the winter feeding period.
3. Feed requirement figured in with cows.
4. Production per brood sow.
5. Mixed grain.

A Farm with Valley Crop Land and Upland Pasture.— Farms with valley crop land and upland pasture are common in the Bluestem Belt. These farms usually feature beef-cattle production, and the other enterprises on the farm supplement the beef-cattle enterprise. Such a farm business is desirable, since it permits satisfactory diversity of enterprises and income.

Budgets were prepared for a 595-acre farm having 140 acres of cultivated river or creek valley land, five acres of temporary pasture, 440 acres of upland pasture, and 10 acres in farmstead and waste land. There are several alternative methods of using the pasture on this farm in a profitable manner. A cow herd may be kept, or steers or heifers may be purchased from range territory and grazed, or the pasture may be leased to others. There are many variations to these methods and the farmer must choose the one to use. There are advantages and disadvantages to each method. Some of the methods are more speculative than others. For example, the practice of purchasing steers or heifers and grazing them usually is more speculative than keeping a cow herd. As a rule, the more conservative methods are preferable.

The budgets for the 595-acre farm are presented in Tables 5 and 6, and show five methods of utilizing the farm's resources. The following is a brief description of the organization of the farm under each method:

ORGANIZATION A. A herd of 45 cows would be kept and their calves finished under the deferred-feeding system.

ORGANIZATION B. A herd of 70 cows would be kept and the calves creep-fed.

ORGANIZATION C. Eighty choice yearling steers would be purchased in April of each year, to be grazed during the grass season and sold in the fall. Wheat would be stressed in the cropping system.

ORGANIZATION D. One hundred choice light stocker steers would be purchased in the fall of each year and then wintered on silage and alfalfa hay, placed on pasture May 1, and sold off grass in the fall.

ORGANIZATION E. One hundred choice light stocker steers would be purchased in the fall of each year, wintered well and grazed from May 1 to August 1, and then full-fed for approximately 100 days and sold in November.

In Organization A, 45 good-quality beef cows would be kept and their calves fed under the deferred-feeding system. Eight of the cows would be replaced annually, so each cow would be in production about six years. The 45 beef cows and the two milk cows should produce an average of 42 calves a year. Eight of the heifer calves would be kept for the replacements, leaving 34 heifers and steers to be fed and sold each year. The other livestock kept would consist of four work horses, one saddle horse, two beef bulls, two brood sows, and 100 hens.

TABLE 5. *Comparison of different farm organizations on a 595-acre farm in the Bluestem Belt.*

ORGANIZATION.	Organization A.		Organization B.		Organization C.		Organization D.		Organization E.	
	Acres.	Production.	Acres.	Production.	Acres.	Production.	Acres.	Production.	Acres.	Production.
CROPS:										
Wheat	30	690 bu.	27	621 bu.	80	1,840 bu.	40	920 bu.	22	506 bu.
Corn	50	1,500 bu.	54	1,620 bu.	25	750 bu.	34	1,020 bu.	54	1,620 bu.
Oats	15	495 bu.	10	330 bu.	10	330 bu.	10	330 bu.	10	330 bu.
Sweet sorghum silage	18	234 T.	21	273 T.	.....	.....	16	208 T.	16	208 T.
Sweet sorghum hay	3	15 T.	5	25 T.	5	25 T.	5	25 T.	5	25 T.
Grain sorghums	.....	.....	.....	.....	.....	.....	10	300 bu.	10	300 bu.
Alfalfa hay	24	72 T.	22	66 T.	18	54 T.	22	66 T.	22	66 T.
Alfalfa hog pasture	1	.....	1	.....	2	.....	3	.....	1	.....
Temporary pasture (sweet clover)	4	.....	5	.....	5	.....	5	.....	5	.....
Permanent pasture	440	.....	440	.....	440	.....	440	.....	440	.....
	Number.	Production.	Number.	Production.	Number.	Production.	Number.	Production.	Number.	Production.
LIVESTOCK:										
Horses	4	3,200 hrs.	4	3,200 hrs.	2	1,600 hrs.	4	3,200 hrs.	4	3,200 hrs.
Riding horses	1	.....	1	.....	1	.....	1	.....	1	.....
Milk cows	2	350 lbs.	2	350 lbs.	2	350 lbs.	2	350 lbs.	2	350 lbs.
Veal calves	.....	.....	2	500 lbs.	2	500 lbs.	2	500 lbs.	2	500 lbs.
Beef cows	45	8,000 lbs.	70	12,000 lbs.	.....	.....	.....	.....	.....	.....
Beef heifers for replacement	8	.....	12	.....	.....	.....	.....	.....	.....	.....
Beef bulls	2	.....	3	.....	.....	.....	.....	.....	.....	.....
Other cattle	34	21,525 lbs.[1]	50	37,500 lbs.[2]	80	62,000 lbs.[3]	100	72,500 lbs.[3]	100	90,000 lbs.[4]
Brood sows	2	4,000 lbs.	2	4,000 lbs.	4	8,000 lbs.	5	10,000 lbs.	2	4,000 lbs.
Hens	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.	200	1,333 doz. 800 lbs.	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.

1. Good-quality fat steers and heifers.
2. Creep-fed calves.
3. Choice-quality feeder steers.
4. Good-quality fat steers.

TABLE 6. *Comparison of the returns under different types of organizations on a 595-acre farm in the Bluestem Belt.*

	Organization A.	Organization B.	Organization C.	Organization D.	Organization E.
GROSS RECEIPTS:					
Crops:					
Wheat	$541.14	$480.24	$1,405.05	$713.40	$380.19
Corn			164.45	323.05	
Oats	83.16	29.16			34.56
Grain sorghums				34.72	
Alfalfa	264.00	121.00	561.00	319.00	330.00
Livestock and products:					
Veal calves		39.70	39.70	39.70	39.70
Butterfat	30.00	30.00	30.00	30.00	30.00
Beef cows	572.00	858.00			
Beef sales	3,611.72[1]	4,351.60[2]	5,289.83[3]	6,189.68[3]	9,914.61[4]
Hogs	264.25	264.25	566.25	717.25	264.25
Eggs	81.33	81.33	199.27	81.33	81.33
Poultry	39.90	39.90	93.10	39.90	39.90
Total receipts	$5,487.50	$6,295.18	$8,348.65	$8,488.03	$11,114.54
VARIABLE EXPENSES:					
Cattle purchased			$4,034.80	$3,262.50	$3,251.25
Purchased feed	$220.90	$184.50	37.00	46.25	2,110.40
Crop expense	145.55	131.28	48.72	166.58	130.58
Livestock expense	33.51	44.15	35.00	42.50	30.00
Fuel and oil	49.86	51.19	61.95	46.68	48.16
Variable machinery expense	20.00	25.00	100.00	20.00	20.00
Hired labor[5]	244.40	347.60	7.20	198.40	257.60
Taxes[6]	33.90	75.00	11.00	55.00	55.00
Death loss[7]	50.42	66.70	19.20	40.00	40.00
Interest	254.70	375.90	110.00	178.00	178.00
Selling expense[8]	204.75	246.12	308.62	361.12	448.62
Total variable expenses	$1,257.99	$1,547.44	$4,773.49	$4,417.03	$6,569.61
Receipts minus variable expenses	$4,229.51	$4,747.74	$3,575.16	$4,071.00	$4,544.93

1. Good-quality fat steers and heifers.
2. Creep-fed calves.
3. Choice-quality feeder steers.
4. Good-quality fat steers.
5. Estimated. All labor over 2,000 hours per year was hired at 20 cents an hour.
6. Only variable taxes were included.
7. Estimated on basis of U. S. D. A. Department Bulletin 1454.
8. Used only on cattle as Kansas City prices were used for cattle. Included freight, shrinkage, yardage, commissions, and insurance.

The cropping system used in preparing the budget given in Tables 5 and 6 involves a 16-year rotation with eight years of row crops, four years of small grains, and four years of legumes. One-half of the land would be in row crops, one-fourth in alfalfa or other legumes, and one-fourth in small grains each year. This cropping system would provide the feed needed for the livestock.

Where such a plan is followed, the calves should be dropped in February or early March. The following fall these calves should weigh approximately 450 to 500 pounds when they enter the wintering period. Unless they are this heavy by that time, it may be cheaper to buy light calves from the Southwest grass country. The steers should weigh approximately 1,025 pounds after wintering, grazing the next summer, and feeding for 100 days. The steers would be wintered well and should receive about four pounds of corn daily in addition to silage and alfalfa hay. In the summer they would be grazed until August 1 and then put into the feed lot and full-fed for 100 days. In November, when they would be sold, the prices of fat cattle usually are near their seasonal peak. The heifers produced under this plan should weigh approximately 900 pounds when they are marketed. They would be roughed through the winter on alfalfa hay and silage, but would receive no grain.[6] They would be grazed until August 1, full-fed for 100 days, and then sold at the same time the steers are sold. The heifers usually bring a lower price than the steers. They would be about 125 pounds lighter, but would have consumed only about one-half as much corn.

The plan outlined above should provide a good income above variable expenses. Organizations B and E show higher incomes above variable expenses than Organization A. However, both Organizations A and B are more conservative than Organization E. The variable expenses for Organization E are almost five times as large as for Organization A, which offers a profitable but conservative plan for the farmer who has a good equity in his business or is free from debt. A major criticism of Organization A is the necessity of feeding the steers and heifers separately during the wintering period which may result in less efficient use of labor and equipment.

In Organization B a herd of 70 cows would be kept and the calves would be creep-fed. The calves should be dropped in December or January so that they will be ready for the November market. If this program is carried out, the calves should weigh 750 pounds by November. This plan has the advantage of being even more conservative than Organization A because the variable expenses would be lower and there would be the alternative of selling feeder calves if corn prices were so high that feeding would not be profitable. This feature of Organization B illustrates one essential of a good farm plan. It is flexible and permits shifts which would avoid large losses under unfavorable circumstances, a particularly desirable feature in a farm producing beef cattle. In addition to offering a

6. Cottonseed meal or cake may be substituted for alfalfa hay at the rate of one pound of cottonseed meal for four pounds of alfalfa hay.

flexible and conservative program, Organization B would give higher receipts minus variable expenses than would any of the other organizations for this size of farm.

The cropping system used in preparing the budget for Organization B is similar to that for Organization A. The chief criticism would be the relatively large acreage of corn. However, the valley land on which the corn would be grown is well adapted to corn production.

Organization C presents a plan that is commonly followed in this area. It is not so desirable as the other organizations, but is included for purposes of comparison. Under Organization C, choice steers would be purchased in April of each year. They would be on grass during the grazing season and then sold in August, September, or October. The plan is highly speculative, as the purchase and sale prices of such cattle may fluctuate widely. In many years this type of cattle are high in price in the spring and relatively lower in the fall when the cattle are sold. Too frequently this seasonal trend of cattle prices caused heavy losses to cattlemen.

Livestock enterprises in Organization C, other than the steers, do not differ materially from the livestock in the other organizations. The poultry and hog enterprises are somewhat larger, so that labor may be used more efficiently during the winter months.

In Organization C, wheat is overemphasized. There should be a larger acreage of legumes and row crops and less small grain. As a rule, not more than one-third of the cultivated land should be in small grain.

Organization C has the disadvantages of a high degree of speculation, poor seasonal distribution of labor, and a poor cropping system. These disadvantages more than offset the advantage of the low labor requirement of this organization.

Organization D provides for the purchase of choice light stocker steers in the fall, wintering them on silage and alfalfa hay, and then carrying them on grass from May 1 until fall, when they would be sold and replaced immediately by another bunch of the same kind of cattle. These cattle would be purchased and sold in the fall months when prices of this type of cattle normally are relatively low. If this plan is followed consistently year after year, the risk of price fluctuations mould be minimized. Light stocker steers are suggested, since they make more efficient gains than yearling steers. An alternative for the farmer following this plan is to carry the steers for two years if conditions appear favorable for this deviation in plans. This system has proved successful in the Bluestem Belt. The cropping system is well balanced and is satisfactory from a rotation standpoint.

Organization E illustrates a deferred-feeding plan which is recommended for this area. The steers are of the same type and quality as in Organization D. They would be purchased in the fall, wintered on alfalfa hay and silage with some corn, go to grass on May 1, into the feed-lot on August 1 for a 90- to 100-day full-feeding period, and would be marketed in November as fat steers.

The cropping system under Organization E would have to be modified, compared with Organization D. More grain would be needed and as much as possible should be produced on the farm. Additional grain would have to be purchased. This organization is somewhat more speculative than Organizations A, B or D, but if choice steers are purchased and if markets are watched carefully, it offers opportunities for good profits. A major advantage is that this plan enables the farmer to sell good-grade fat cattle during November when they usually are at a seasonal high price.

In using organization E it is important that the farmer be able to vary the plan if conditions are unfavorable. In some years conditions do not warrant feeding large quantities of grain to the cattle. The farmer must be an excellent manager. He must use desirable practices and follow the markets closely. In years when feed costs are high relative to cattle prices, some other system should be substituted for the deferred-feeding system.

Table 7 compares the results of the five organizations. Organization E shows the highest receipts minus variable expenses. It gives approximately $1,200 more income than Organization C. Organizations A, B and D are somewhat more conservative, and for many farmers one or another of them might be preferable. It should be remembered that different results would be secured with different levels of prices and costs. The results may be criticized as being more favorable than most farmers can attain. The results have been obtained by using standards based, for the most part, on the experiences of successful farmers within the area. The prices used may be questioned, since they are based on long-time average prices. Current prices do not conform to these long-time averages. However, they serve to illustrate the method of preparing and comparing budgets, and, in the long run, these average prices will prove to be fairly reliable.

If plans such as those outlined are to be followed, it is essential that the cattle be of the quality recommended and that the practices described be followed if results comparable to those illustrated here are to be secured. In budgeting for farms, it usually is best to estimate the expected prices and costs for the coming year rather than to use an average of past prices. Before deciding upon a plan and the probable prices and costs, the available outlook information should be studied carefully. Any organization adopted should not be followed rigidly year after year, but should be modified on the basis of the best information available.

An Upland Farm of 320 Acres.— There are many upland farms in the Bluestem Belt. A half-section upland farm with approximately one-third of the land in cultivated crops is an efficient farming unit for a good manager with limited capital. Such a farm is of sufficient size to permit efficient operation and to give sufficient income to support the farm family in a desirable manner. The pasture must be utilized efficiently.

The organization of such a farm does not differ materially from the organization of a valley crop-land farm with upland pasture. The yields of crops on the upland are not so high as on the valley land and the acreage in crops tends to be smaller. As a consequence, less feed is produced on the upland farm. If a large number of cattle are to be fed on such an upland farm, considerable quantities of grain must be purchased. As a rule, the feeding of cattle on purchased grain is more speculative than when the grain is produced on the farm where it is fed. Usually the farm organization which requires the smaller quantities of grain, avoiding heavy purchases, is preferable for these upland farms. Purchased grain is more costly than home-grown grain, since it must be transported to the farm, often from without the area, and transportation costs and handling charges must be added to the purchase price, increasing feeding costs and lessening the opportunities for profitable operation.

Five types of organizations in which beef cattle constituted the major enterprise were used for the 320-acre upland farm. The following is a brief description of each of the organizations:

ORGANIZATION A. A bunch of 50 choice light stocker steers would be purchased each fall, wintered on silage and alfalfa hay, grazed during the grazing season, and sold in the fall.

ORGANIZATION B. Fifty-five choice light stocker steers would be purchased each fall, wintered well, carried on pasture from May 1 to August 1, and then full-fed for approximately 100 days. They would be marketed as fat cattle in November.

ORGANIZATION C. Fifty-five choice light stocker steers would be purchased in the fall of each year, roughed through the winter, carried on grass from May 1 to August 1, and then full-fed for 100 days. They would be sold in November.

ORGANIZATION D. In this plan 45 choice yearling steers would be purchased each spring, grazed during the summer, and sold in the fall.

ORGANIZATION E. A herd of 35 cows would be kept and their calves would be sold as stocker calves.

The steers kept in Organization A would be wintered on silage and alfalfa hay, but no grain would be fed. This plan would utilize the pasture of the farm in an efficient manner, but would not utilize any grain produced. The small quantity of grain produced under this plan would be sold for cash. This plan offers some opportunity for flexibility, since, if conditions appear unfavorable for the sale of the steers in the fall, they could be carried another year.

The cropping system for Organization A includes too large an acreage of small grains for this section of Kansas. The legume acreage is higher than most farms in the area have had in recent years. This plan is a combination of beef-cattle and wheat farming. The other enterprises were included to give additional diversity to the business and to make possible more efficient use of the resources of the farm.

TABLE 7. *Comparison of different farm organizations on a 320-acre farm in the Bluestem Belt.*

ORGANIZATION.	Organization A.		Organization B.		Organization C.		Organization D.		Organization E.	
	Acres.	Production.	Acres.	Production.	Acres.	Production.	Acres.	Production.	Acres.	Production.
CROPS:										
Wheat	35	595 bu.	10	170 bu.	10	170 bu.	44	748 bu.	35	595 bu.
Corn	15	300 bu.	15	300 bu.	15	300 bu.	14	280 bu.	.....	.....
Oats	9	252 bu.	10	280 bu.	10	280 bu.	10	280 bu.	10	280 bu.
Sweet sorghum silage	12	108 T.	13	117 T.	13	117 T.	.....	.....	14	126 T.
Sweet sorghum hay	.....	.....	2	8 T.	2	8 T.	.....	.....	2	8 T.
Grain sorghums	10	230 bu.	30	690 bu.	30	690 bu.	10	230 bu.	15	345 bu.
Alfalfa hay	10	20 T.	10	20 T.	10	20 T.	8	16 T.	15	30 T.
Alfalfa hog pasture	.....	.....	.....	.....	.....	.....	2	.....	.....	.....
Temporary pasture (sweet clover)	4	.....	5	.....	5	.....	7	.....	4	.....
Permanent pasture	220	.....	220	.....	220	.....	220	.....	220	.....
	Number.	Production.	Number.	Production.	Number.	Production.	Number.	Production.	Number.	Production.
LIVESTOCK:										
Horses	2	1,600 hrs.	2	1,600 hrs.	2	1,600 hrs.	2	1,600 hrs.	2	1,600 hrs.
Riding horses	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milk cows	3	525 lbs.	3	525 lbs.	3	525 lbs.	3	525 lbs.	3	525 lbs.
Beef cows	.....	.....	.....	.....	.....	.....	.....	.....	35	6,000 lbs
Beef heifers for replacement	.....	.....	.....	.....	.....	.....	.....	.....	6	.....
Beef bulls	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Other beef cattle	50	36,250 lbs.[1]	55	49,500 lbs.[2]	55	47,300 lbs.[2]	45	34,875 lbs.[3]	26	13,000 lbs.[4]
Veal calves	3	750 lbs.	3	750 lbs.	3	750 lbs.	3	750 lbs.	3	750 lbs.
Brood sows	1	2,000 lbs.	1	2,000 lbs.	1	2,000 lbs.	3	6,000 lbs.	2	4,000 lbs.
Hens	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.	100	667 doz. 400 lbs.

1. Stocker steers.
2. Good-quality fat steers.
3. Choice-quality feeder steers.
4. Stocker calves.

TABLE 8. *Comparison of the returns under different types of organizations on a 320-acre farm in the Bluestem Belt.*

	Organization A.	Organization B.	Organization C.	Organization D.	Organization E.
GROSS RECEIPTS:					
Crops:					
Wheat	$453.27	$93.09	$93.09	$559.41	$442.40
Corn	175.50	.....	.....	6.50	.....
Oats	29.88	.....	.....	42.48	.....
Grain sorghums	.....	.....	.....	.....	.....
Alfalfa	.....	.....	.....	121.00	38.50
Livestock and products:					
Veal calves	59.55	59.55	59.55	59.55	37.72
Butterfat	82.50	82.50	82.50	82.50	82.50
Beef cows	.....	.....	.....	.....	429.00
Beef sales	3,083.06[1]	5,439.36[2]	5,055.19[2]	2,965.22[3]	1,081.00[4]
Hogs	113.25	113.25	113.25	415.25	264.25
Eggs	81.33	81.33	81.33	81.33	81.33
Poultry	39.90	39.90	39.90	39.90	39.90
Total receipts	$4,118.24	$5,908.98	$5,525.84	$4,373.14	$2,496.60
VARIABLE EXPENSES:					
Cattle purchased	$1,625.62	$1,794.38	$1,794.38	$2,269.58	.....
Purchased feed	31.25	1,215.75	836.40	71.75	$18.50
Crop expense	122.98	99.23	99.23	124.63	132.73
Livestock expense	15.90	17.11	17.11	24.38	24.75
Fuel and oil	32.06	31.16	31.16	32.35	25.78
Variable machinery expense	10.00	5.00	5.00	10.00	.....
Hired labor[5]	.....	73.96	73.96	.....	.....
Taxes[6]	17.10	17.60	17.60	3.10	24.06
Death loss[7]	19.56	20.56	20.56	15.71	34.62
Interest	101.40	109.40	109.40	72.90	197.00
Selling expense[8]	183.75	249.87	238.87	176.75	97.37
Total variable expenses	$2,159.62	$3,635.02	$3,244.67	$2,801.15	$554.81
Receipts minus variable expenses	$1,958.62	$2,273.96	$2,280.14	$1,571.99	$1,941.79

1. Stocker steers.
2. Good-quality fat steers.
3. Choice-quality feeder steers.
4. Stocker calves.
5. Estimated. All labor over 2,000 hours per year was hired at 20 cents an hour.
6. Only variable taxes were included.
7. Estimated on basis of U. S. D. A. Department Bulletin 1454.
8. Used only on cattle as Kansas City prices were used for cattle. Included freight, shrinkage, yardage, commissions, and insurance.

Organizations B and C are similar. In both organizations choice light stocker steers would be purchased in the fall, wintered, grazed from May 1 to August 1, and then full-fed for 100 days. The only difference is that in Organization B the steers would receive approximately five pounds of corn, one pound of cottonseed meal, 18 pounds of silage, and two pounds of alfalfa hay each daily during the wintering period, while in Organization C the steers would be roughed through the winter on one pound of cottonseed meal, 24 pounds of silage, and two pounds of alfalfa hay each daily. The steers in Organization C would gain less during the winter than those in Organization B, but would make larger gains on grass. The steers in Organization B would gain approximately 40 pounds more than those in Organization C and usually would sell at a somewhat higher price. The steers in Organization C would get a larger percentage of their gain on grass, so the cost of the gain would be less than for the steers that would be wintered well. Approximately 10 bushels more corn per head would be consumed by the steers in Organization B than by those in Organization C.

The budgets for the two organizations indicate that the net returns would be nearly identical for the two plans. As a rule, however, it would be preferable to feed grain to the steers during the wintering period. Most farmers would be more certain to get a proper finish on the steers if corn were fed during the winter. The possibility also exists that there would be a significant difference in the prices of the steers that were wintered with grain and those that were wintered without grain.[7]

The same cropping system was used in both Organizations B and C. The emphasis placed upon livestock requires a larger acreage of row crops and a somewhat smaller acreage of small grains than would be desirable from the standpoint of the soil. Also, a larger acreage of legumes would be helpful in maintaining soil fertility. However, the crops as given meet the feed requirements of the farm.

Organizations B and C show larger incomes than any of the other organizations in Table 8. However, this does not mean that these organizations always are best for the upland farms in this area. In some years sufficient grain would not be grown to meet the requirements of the cattle. In such years grain prices probably would be relatively high and this would make it difficult to handle the cattle profitably. For this reason, Organizations B and C involve more risk than some of the other organizations.

In Organization D the steers would be purchased in the spring, grazed during the summer, and sold in the fall. This would not require the production of a large acreage of feed crops, and much of the cultivated acreage could be used for the production of cash grains. The chief advantage of this plan is that it does not require

7. During the three-year period (1927-1929) for which prices were available, the well-wintered steers averaged approximately 25 cents per hundredweight higher than the steers that were roughed through the winter. More recent experimental data are not available. Persons familiar with beef prices believe that there would be more difference in price spreads between these groups over a long period of years.

a large quantity of labor. The most important disadvantages are: (1) The small quantity of livestock on the farm during the winter would not provide efficient utilization of the farmer's labor; (2) the cropping system is undesirable, since cash grain crops would be grown and sold and soil fertility would be depleted; and (3) buying the steers in the spring when they usually are at a seasonal high price and selling them in the fall when they usually are at a seasonal low price may be unprofitable.

The other livestock enterprises in Organization D would be of minor importance. They would add some diversity to the business and furnish food for the household. The major enterprises would be the production of beef on grass and the production of grain for sale.

Organization E provides for the keeping of a herd of 35 cows. Their calves would be sold as stocker calves. This plan utilizes the pasture efficiently and does not require the purchase of large quantities of feed. The calves should be dropped in January and February and should weigh approximately 500 pounds when marketed the following fall. This plan compares favorably with Organization A. Both are adapted to the needs of the farmer who wishes to avoid large purchases of grain. In each of these plans the risk is kept lower than in the other organizations for this size of farm.

The cropping system for Organization E is similar to the system for Organization A. It is not ideal, but the crops and livestock are well balanced from a feed standpoint. Small grains are emphasized. This adds diversity to the farm business and the wheat gives an additional source of cash income. However, this cropping system does not make adequate provision for the maintenance of soil fertility.

Comparisons of the budgets for the five organizations for the 320-acre farm permit the following conclusions:

(1) Organizations B and C, which consist of two modifications of the deferred-feeding system with choice light steers, are almost identical in income possibilities and make efficient use of the farmer's resources.

(2) Organizations B and C require considerable quantities of grain feed. Grain is not a certain crop on upland farms; consequently, these organizations involve considerable risk.

(3) Organization A, which consists of purchasing choice light steers in the fall, wintering them on silage and alfalfa hay, grazing them during the summer, and selling them in the fall is the most successful of the organizations that do not require large quantities of grain.

(4) Organization E, which provides for a cow herd, is nearly as profitable as Organization A and might involve less risk.

(5) Organization D, which provides for the purchase of yearling steers in the spring and grazing them during the summer with sale off grass in the fall will prove the least successful in utilizing the resources of the farmer.

SUMMARY

Farm planning has been emphasized during recent years by the programs of various federal agencies. Definite plans have been required of those who comply with the requirements of these programs. Many farmers have kept farm accounts which give much of the information needed in preparing a good farm plan. With this information these farmers are ready to take the next step and work out a definite plan for their farm business for coming years. Those farmers who have not kept accounts can work out such plans on the basis of information available for their regions. The budget method is the most satisfactory way of preparing a good farm plan and gives an opportunity to test its probable profit.

In this study budgets were prepared for various methods of handling beef cattle on farms of two sizes in the Bluestem Belt of Kansas. The budgets indicate that the probable returns from these various methods would vary widely. Those methods offering the highest returns would require the highest managerial ability on the part of the farmer. The more desirable methods give the larger business and require more careful following of the markets. Careful study of the business in years which give promise of being unfavorable may make it possible to increase net returns above those indicated by the budget.

The budgets prepared are not applicable to all farms in the Bluestem Belt. Both of the farms for which budgets were prepared were larger than the average size of farm in this area. Many of the farmers within the area are limited by the small size of the farms which they operate. The business unit must be large enough to permit the farmer to use his managerial ability efficiently. However, budgets can be prepared for individual farms regardless of size or type. Preparing a good budget and using it to guide the operation of the farm are the farmer's best methods of increasing his income and thus promoting the welfare of himself and his family.

PRINTED BY KANSAS STATE PRINTING PLANT
W. C. AUSTIN, STATE PRINTER
TOPEKA 1941
18-7457