A SURVEY OF BEEF PRODUCTION IN KENTUCKY

By

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This report is based in part on research developed from regional research project S-67, "Evaluation of the Beef Production Industry in the South." This project is a cooperative effort of State Agricultural Experiment Stations in 12 Southern states, the Farm Production Economics Division of the Economic Research Service, and the Tennessee Valley Authority.

The overall objectives of the regional project were (1) to determine various resource characteristics and combinations employed in beef production in the South, evaluate selected operator attributes and appraise adjustment trends that have occurred, (2) to evaluate the micro and macro economic effects of selected aspects of alternative beef production systems, and (3) to estimate for selected alternative systems of beef production the relative effects on firm survival and/or growth of constraints such as forage production risks, price risks, institutional restrictions and changes in value of assets.

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Introduction

The beef production industry is a complex of different types of production processes, different sizes of enterprises, and different roles of the product in the farm business.

Reference to the beef industry is limited usually to beef cow herds kept for the purpose of producing beef, beef cow herds kept for the purpose of selling breeding stock, or various kinds of feeder cattle grazing or feeding operations. However, a considerable quantity of beef is produced as a joint product or supplementary product of dairy operations in the form of veal calves, cull cows and surplus dairy animals. Dairy cow numbers declined appreciably during the 1960's, but of the total inventory of cattle on Kentucky farms as of Jan. 1, 1970, 21 percent were listed as dairy stock.[1]

Probably the most dynamic development in Kentucky agriculture during the 1960's was the rapid growth in beef production. With the decline in dairy cattle numbers, it is evident that this growth is in enterprises having beef as the primary output. Growth was particularly fast in feeder calf production, as indicated by the fact that the number of beef cows in Kentucky doubled in the decade. Estimates show 515,000 beef cows on Kentucky farms on Jan. 1, 1960 and 1,087,000 for Jan. 1. 1970.[2] The importance of beef production in the state is evident in that 27.9 percent of all cash farm receipts in 1970 was from cattle and calves.[3] Thus, beef is second only to tobacco as a source of Kentucky cash farm receipts.

There are a number of reasons behind this growth and expectation for further growth in the years ahead. The land resources in the state are conducive to roughage production, thus providing the potential feed supply for a large roughage-oriented livestock industry. On the demand side, American consumers have shown a strong desire for beef (per capita consumption increased from 85 pounds in 1960 to 110 pounds in 1970) and a willingness to pay for their meat preference. Additionally, Kentucky has a strategically good geographic location in relation to the traditional Corn Belt feed lots and in relation to Midwest and East Coast population centers.

Other states in the South experienced growth in beef cattle numbers in the past

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[1]Data from reports published by the Kentucky Crop and Livestock Reporting Service.

[2]*Ibid.*

[3]Cattle and calves include dairy veal calves and cull and surplus dairy animals.

decade. But, also there was growing concern among farm management specialists about the profitableness of beef production on farms in the South. Analysis of the farm financial records revealed many cases in which net income from the beef enterprise was very low, yet the enterprise has continued to expand. And in some areas the beef industry was developing in a manner different from that which available economic data indicate would be most profitable.

Out of this concern grew the awareness that more research was needed on the economics of beef production in the South. Consequently, personnel of Agricultural Experiment Stations in 12 states, the TVA, and FPED-ERS-USDA developed a regional research project. It is officially known as S-67, "Evaluation of Beef Production in the South," and was formally activated on July 1, 1968.[4]

Objective of Study

Objective I of the regional project is to: "Determine various resource characteristics and combinations employed in beef production in the South, evaluate selected operator attributes and appraise adjustment trends that have occurred." To accomplish this objective each state conducted a survey in 1969, which provided a detailed description of beef cattle production—the size of beef herds, size and types of farms on which beef is produced, systems of beef production, systems of grain and roughage production, production practices and other important management aspects. This report is a descriptive summary of the findings of the 1969 beef production survey in Kentucky.

Areas of Study

Eighty-three Kentucky counties were included in the study. Thus the entire state, with the exception of 33 eastern and 4 metropolitan counties, was included. According to 1964 Census of Agriculture data, the 37 excluded counties contained only 7.9 percent of the beef cows and 4.3 percent of the cattle fed in Kentucky.[5]

The 83 counties were grouped into four areas based on land resources, existing types of farming and other variables (Fig. 1).

Area 1.—This area corresponds roughly to the Inner Bluegrass Area, and in this report is called the Bluegrass Area. The topography is gently rolling to steep, with burley tobacco and roughage-consuming livestock being the main farm enterprises. Burley tobacco allotments are large compared with those in other parts of the state. As the fertile land is conducive to high roughage yields, beef cattle production has increased considerably in the past decade. A substantial number of cattle are fed to stocker or slaughter weights.

Area 2.—Area 2 is a large, diverse area comprised of 46 counties. In this area are all or major portions of regions referred to as Eastern Pennyroyal, Knobs, Outer Bluegrass, and Intermediate Bluegrass. Also included is part of the Western Coal Fields. Land resource quality, size of farms, and type of farming vary greatly within the area. In many localities land is rolling to rough, and farms are small. Concentrations of medium-sized dairy farms are located in the area, primarily in counties near Louisville. And in still other localities large farms with major harvested crop and beef and/or hog enterprises are

[4] While beef produced as a part of dairy enterprises is still an important part of the total beef supply, this study is concerned only with enterprises which have beef feeder animals, beef breeding stock or slaughter cattle as their primary output. Unless specifically noted, for the remainder of this report mention of beef cattle, beef production and beef industry, refer to these types of enterprises.

[5] United States Bureau of Census, *1964 United States Census of Agriculture; Kentucky.*

Figure 1.--Areas in Kentucky delineated for (S-67) Survey - 1969

common. In general, tobacco allotments tend to be small and the land resources, because of rolling topography, favor pasture and hay production.

It would have been desirable to divide this area into three or more areas for this study, but financial resources for survey purposes were not adequate to do so (and still obtain the number of interviews needed to place confidence in the results). Instead, Area 2 was subdivided into four subregions and the sampling procedure set up to assure representation of each. This permitted some cursory studying of variations in beef-feed production systems within the area. But for this publication, results are presented for the area as a whole. Area 2 will be referred to as Mid-Kentucky.

Area 3.—Area 3 includes Pennyroyal Plains counties along the southern border of the state, the Lower Ohio Valley region on the North, and joined by a portion of the Western Coal Fields. In this publication Area 3 will be called the Pennyroyal-Ohio Valley Area. This is the major row-crop producing region of the state, with large commercial farms that are very similar to farms found in the Corn Belt. Corn and soybeans are the primary cash crops. Livestock enterprises are typically those associated with corn production (hogs) and supplemental roughage production (beef cattle).

In the Western Coal Field part of this area, however, farms are relatively small and land unproductive. Much of the acreage on these farms is in pasture.

Area 4.—Area 4 will be referred to as the Purchase Area, as it includes counties involved in the Jackson Purchase. The topography of the area is level to rolling. Farm size varies from small in the upland regions to large in the Mississippi bottomland section. Part-time farms are common, as off-farm employment is readily available (industry, public service, tourism). Dark tobacco is still an important crop, but declining in importance and becoming concentrated on fewer farms. Livestock enterprises tend to be small.

Sampling and Interviewing Procedures

The sampling technique employed in this study is known as land segment sampling, developed by the Statistical Research Service, U. S. Department of Agriculture. Delineated areas of land are drawn as a sample of the total area and all farmers who have "farm headquarters" in these drawn areas are subject to be interviewed.

Technically, this technique is not "purely" random sampling; rather, it is "systematic sampling with a random start." As segments are numbered in the Master Sample of Agriculture in a serpentine manner, this technique probably provides more uniform coverage than a purely random sample of farmers and reduces interviewing costs.

Farmers were interviewed in all counties in Areas 1, 3, and 4, and in 13 counties of Area 2. It would have been prohibitively expensive to interview in all 46 counties of Area 2, so a sampling scheme was developed to assure that farmers were interviewed in at least two counties in each of the four subregions (mentioned earlier).

To be classified as a farmer for purposes of this study, and thus be interviewed, a farmer had to control (own, rent, or manage) 50 or more acres of open land, or had gross farm receipts of at least $1,000 in 1968. This definition is more restrictive than the definition of a farm used in the 1969 Census of Agriculture. All farmers in the sample segments of land were interviewed. A comprehensive schedule of questions was completed on all farms which had 10 or more beef cows (or equivalent in feeder cattle) in 1968. These are classed as "beef farms." A much shorter schedule was completed on "non-beef" farms. The primary reasons for

obtaining data on non-beef farms were (1) to study differences in resources (including the human resource) between beef and non-beef farms and (2) to analyze their potential as future beef producers.

Findings of Survey

The remainder of this report contains the survey findings on 705 Kentucky farms.[6] Except for the first sections, in which comparisons between beef and non-beef farms are shown, the report will center on detailed data concerning beef farms.

Number of Farms in Survey

Table 1 presents the number of farms surveyed in each area of Kentucky, by size and type classification. Areas 1 and 3 had the highest proportion of beef farms in the survey, 63.2 percent and 65.9 percent of all farms, respectively. In the other two areas slightly over one-half of all farms surveyed were beef farms. While later sections will be devoted to an in-depth look at the size of beef enterprises and their relationship to the rest of the farm business, some comments should be made here.

Most of the beef cow herds were small, considering the enterprise as a source of net income for the farm family. Considering only beef cow herds surveyed, from 38.6 percent (Area 2) to 46.0 percent (Area 4) of the herds were composed of fewer than 20 cows. Only 13 surveyed farms had herds of at least 100 cows.[7]

The greatest amount of feeding purchased animals to stocker or slaughter weights was done in Area 1 (Bluegrass Area). On 15 farms in this area feeding of purchased animals was the only beef enterprise, and on a number of other farms there were both a beef cow herd and purchased cattle.

As expected, a high proportion of non-beef farms had less than 100 acres of open land. There were, however, some very large non-beef farms in the survey; making 300-over acres as the top size class conceals this fact.

Resources on Beef and Non-Beef Farms

A comparison of the land resources on beef and non-beef farms may be made using the data in Tables 2 and 3. Average farm size (acres owned and rented) by type and size class is presented in Table 2. In Table 3 is shown the average acreages of cropland and open pastureland on these farms.

The average size of farm was highest in Area 1 (260.7 acres), followed by Area 3 (250.6 acres). Farms in the Pennyroyal-Ohio Valley Area (Area 3) had the largest amount of cropland per farm. In the Purchase Area farm size averaged considerably smaller than in the other areas; this was associated with the common incidence of part-time farming. Farms in Area 2 were also relatively small and, as much of the area has rolling to rough topography, the average acreage of cropland per farm was only 103.6 acres.

Beef farms (as defined in this study) had more total acres than non-beef farms, averaging over twice as much land per farm in

[6] A total of 745 individuals were interviewed, but data collected on 40 were excluded because closer scrutiny revealed that they did not meet the definition of a farm or that the data were incomplete or inconsistent. Most of the excluded farms would have been in the non-beef category.

[7] While there were no herds of 500 or more cows in the sample, it should not be concluded that none exist in Kentucky.

TABLE 1

NUMBER OF FARMS IN SURVEY, BY AREA, TYPE AND SIZE[a]

SIZE AND TYPE DESCRIPTION	AREA OF STATE			
	1	2	3	4
	Number of Farms			
Beef Farms[b]				
No beef cows--only purchased animals	15	7	2	2
10-19 cows	29	44	42	40
20-49 cows	26	54	57	36
50-99 cows	12	11	6	8
100-499 cows	2	5	3	3
500-over	0	0	0	0
Total beef farms	84	121	110	89
Non-Beef Farms[c]				
Less than 50 acres openland	14	26	11	13
50-99 acres	16	28	15	18
100-199 acres	15	28	15	18
200-299 acres	2	3	3	7
300-over	2	3	8	6
Total non-beef farms	49	113	57	82
Total farms in area	133	234	167	171

[a]For the purposes of this survey, a farm is a place with at least 50 acres of openland, or with gross farm receipts amounting to at least $1,000 in 1968.

[b]To be classified as a beef farm, the operator had to have 10 or more beef cows (or equivalent in feeder cattle) in 1968.

[c]Size of non-beef farms is based on acres of openland (cropland and open pasture land).

TABLE 2

AVERAGE ACREAGE PER FARM (ALL LAND OPERATED) ON FARMS SURVEYED, BY AREA, TYPE AND SIZE

SIZE AND TYPE DESCRIPTION	AREA OF STATE			
	1	2	3	4
	Average Land Per Farm			
Beef Farms:				
No beef cows--only purchased animals	640.5	517.7	339.0	283.0
10-19 beef cows	134.5	147.7	185.3	120.2
20-49 cows	224.5	228.7	277.0	229.2
50-99 cows	576.7	429.1	444.0	552.5
100-499	785.0	1,573.4	1,300.7	783.3
500-over	--	--	--	--
Beef Farms	331.4	289.8	280.1	229.2
Non-Beef Farms:				
Less than 50 acres openland	63.7	64.2	87.0	49.3
50-99 acres	97.1	97.4	104.1	94.2
100-199 acres	187.7	164.7	150.7	154.8
200-299 acres	370.0	353.7	293.0	277.1
300-over	416.5	384.7	608.1	558.7
All non-beef farms	139.5	120.9	193.7	150.0
All farms in area	260.7	208.2	250.6	191.2

TABLE 3

AVERAGE ACREAGE OF CROPLAND AND OF OPEN PASTURELAND ON FARMS IN SURVEY, BY AREA, TYPE AND SIZE

SIZE AND TYPE DESCRIPTION	AREA OF STATE							
	1		2		3		4	
	(average per farm)							
Beef Farms	Cropland	Pasture	Cropland	Pasture	Cropland	Pasture	Cropland	Pasture
No beef cows--only purchased animals	518.9	48.3	307.1	119.7	264.0	25.0	187.5	22.5
10-19 beef cows	70.6	33.6	69.3	46.2	138.3	21.3	75.7	14.1
20-49 cows	160.5	46.5	124.4	56.1	207.5	34.8	111.1	45.4
50-99 cows	261.8	153.3	249.6	120.6	340.0	44.0	284.3	109.4
100-499 cows	700.0	35.0	560.0	296.0	1,224.0	16.7	374.0	327.7
500-over	--	--	--	--	--	--	--	--
All Beef Farms	235.1	57.4	144.3	72.0	217.0	29.5	118.0	46.0
Non-Beef Farms								
Less than 50 acres openland	27.9	5.5	26.8	11.9	29.3	6.5	22.4	9.6
50-99 acres	52.3	21.9	48.1	24.9	56.1	8.3	59.8	10.9
100-199 acres	110.7	26.3	90.2	43.8	97.7	27.8	103.9	25.1
200-299 acres	180.0	100.0	125.3	130.3	267.3	6.7	211.9	28.9
300-over	395.0	16.5	211.7	106.3	513.3	17.5	489.7	5.0
All Non-Beef Farms	82.4	21.5	60.0	31.5	137.2	14.3	108.0	14.9
All Farms in Area	178.8	44.2	103.6	52.4	189.8	24.3	113.2	31.1

Areas 1 and 2. The beef farms also had more cropland and open pastureland per farm. This was particularly true of open pastureland. There were, however, dairy farms (particularly in Area 2) which had sizable acreages of pastureland.

As a beef cow herd is a large roughage-consuming enterprise, the larger land acreages, particularly of pastureland, on beef farms is not surprising. The role that the beef cow herd plays in the total farm business, however, influences the land acreage devoted to the beef enterprise. For example, on some farms (especially in Area 3) the large farm acreage was not associated with the beef cow enterprise. The major source of income on these farms was crop production (sometimes hogs were very important) and the beef cow herd was only a supplemental enterprise; i.e., the beef cow herd was restricted to land that could not be used for crop production and sometimes utilized crop residues. Evidence of this role is that beef farms in Area 3 averaged only 29.5 acres of open pastureland.

Farms on which the beef enterprise involved only purchased animals generally had substantial land resources. This group included both farms on which the purchased animals were fed to stocker weight and those on which the animals were fattened out to slaughter weight. As shown in Tables 7A-7D, these enterprises typically involved a substantial number of cattle. On farms where cattle were fed to slaughter weights an abundance of grain was needed, whereas roughage production was emphasized for the stocker enterprises.

Land Use on Beef and Non-Beef Farms

Comparisons of the acreage of major harvested crops on beef and non-beef farms by area of the state are presented in Table 4. Shown are the percentage of total beef and non-beef farms reporting the specific crop and the average acreage per farm of that crop.[8] Caution should be exercised in examining the acreage of specific crops when only a few farmers produce the crop.

Burley tobacco was produced on nearly all farms surveyed in the Bluegrass Area (Area 1). The average tobacco allotment on beef farms in the area was twice as large in 1968 as on non-beef farms (6.0 vs. 3.0 acres). Other than burley tobacco, and except on a few dairy farms, there was very little crop production on non-beef farms in the Bluegrass Area. The average acreage of cropland on the non-beef farms was only 82 acres.

The beef farms in the Bluegrass Area had considerably more cropland and, consequently, greater crop production. The acreage of crops other than pasture, however, was not high in relation to the potential. Introduction of non-till systems of corn production in recent years has probably changed this situation. Indicated silage production was generally located on farms having cattle feeding or dairy enterprises.

Burley tobacco was also very important in the Mid-Kentucky Area (Area 2). While the average allotment size was smaller than in the Bluegrass Area, tobacco was produced on more than 92 percent of the farms surveyed. Allotments were larger on beef than non-beef farms (3.0 vs. 1.7 acres per farm).

The acreage of cropland on non-beef farms in Area 2 was quite small and, thus, crop production other than burley tobacco and hay was limited. Less than 40 percent of these farms produced corn. The beef farms had more cropland and crop production than did the non-beef farms. But rolling topography in major portions of the Mid-Kentucky Area was also evident on the

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[8] As the crop acreages are average per farm reporting and not per farm in group, individual items will not add up to total acreage of cropland. Cropland devoted to pasture is also omitted.

TABLE 4

CROP PRODUCTION ON FARMS: PERCENT OF FARMS REPORTING AND AVERAGE ACREAGE OF MOST IMPORTANT HARVESTED CROPS BY AREAS, 1968

	All Beef Farms Farms Reporting Crop		All Non-beef Farms Reporting Crop		All Beef Farms Farms Reporting Crop		All Non-beef Farms Reporting Crop	
	% of Farms	Average Acreage[a]	% of Farms	Average Acreage[a]	% of Farms	Average Acreage[a]	% of Farms	Average Acreage[a]
	AREA 1				AREA 2			
Cash Crop:								
Burley tobacco	94.0	6.0	91.8	3.0	92.5	3.0	92.0	1.7
Wheat	11.9	22.2	2.0	74.0	4.2	10.0	--	2.0
Corn (grain)	52.4	33.6	40.8	10.0	48.3	34.8	38.4	14.7
Barley or oats	3.6	11.3	10.2	7.0	3.3	11.5	0.9	12.0
Soybeans	2.4	42.5	4.1	3.5	1.7	11.0	0.9	13.0
Silage:								
Corn	16.7	29.3	12.2	11.2	15.8	26.0	7.1	16.8
Sorghum	1.2	52.0	2.0	5.0	0.8	10.0	1.8	12.0
Small grain	2.4	15.5	--	--	--	--	--	--
Hay:								
Small grain	6.0	18.4	6.1	3.7	--	--	--	--
Alfalfa	13.1	38.5	4.1	14.5	10.8	26.7	8.9	10.0
Other	95.2	30.1	87.8	16.8	98.3	34.3	87.5	17.2
Cropland Acreage		235.1		82.4		145.5		60.5
	AREA 3				AREA 4			
Cash Crop:								
Cotton	--	--	--	--	1.2	16.0	2.6	22.5
Tobacco	79.1	3.1	89.5	2.7	51.2	1.9	61.0	2.0
Wheat	36.4	35.8	26.3	54.2	2.3	25.5	9.1	47.7
Corn (grain)	70.9	82.0	66.7	65.4	32.6	33.9	49.4	58.5
Barley or oats	19.1	33.2	3.5	9.0	--	--	1.3	25.0
Soybeans	34.5	64.8	29.8	109.2	19.8	79.3	35.1	72.7
Silage:								
Corn	4.5	33.4	--	--	2.3	42.5	9.1	20.3
Sorghum	--	--	--	--	--	--	--	--
Small grain	0.9	10.0	--	--	--	--	1.3	25.0
Hay:								
Small grain	0.9	15.0	--	--	--	--	--	--
Alfalfa	16.4	18.6	1.8	12.0	1.2	22.0	2.6	8.0
Other	78.2	26.4	45.6	14.6	79.1	28.3	54.5	25.3
Cropland Acreage		217.0		137.2		122.1		115.0

[a]Average acreage per farm reporting that specific crop.

beef farms in that less than half the farmers produced corn for grain. Silage was grown on farms with cattle feeding operations and on dairy farms (some of these also have beef cows).

The much greater importance of cash-grain production in Area 3 is evident in Table 4. Soybeans and corn were primary sources of income on both beef and non-beef farms. Soybeans in 1968 tended to be relatively more important on non-beef farms, while corn was more important on beef farms. Tobacco was grown on a high percentage of the farms surveyed, but on most farms its importance to total farm income was considerably less than on farms in Areas 1 and 2. Tobacco acreages reported for this area and Area 4 included both dark and burley tobaccos, thus they are not strictly comparable with those previously mentioned.

In Area 4 the beef and non-beef farms had about the same average acreage of cropland, but there was a greater amount of grain production on the non-beef farms. This is contrary to the findings in Areas 1 and 2. Corn and soybeans were the main crops produced. Most of the tobacco grown was dark tobacco, and it was grown on a smaller percentage of the farms than in the other areas.

Characteristics of Farmers

Age and formal education of beef and non-beef farm operators are presented in Tables 5A and 5B.[9] Taking each group as a whole, there was not much difference between the age patterns of the "beef" and the "non-beef" farmers.[10] In three of the areas, and especially in Area 4, a higher proportion of non-beef farmers were 70 years old or older (and most of these had farms of less than 100 acres of openland).

Two noteworthy relationships are apparent in the data on the age of operators of beef farms. As expected, older farmers tended to have small beef herds; and of primary importance is that of the 50 herds comprised of at least 50 beef cows, only 4 were on farms where the operator was 65 years of age or older. The second important finding is that half of the operators with herds of 20-49 cows were under 50 years old. Thus, it appears that the age factor is favorable to further growth in beef cow numbers in Kentucky.

Of the 26 farmers who handled only purchased beef cattle, 22 were between the ages of 40 and 64. This age concentration is probably associated with the time necessary for a young farmer to build enough equity and lender confidence needed to borrow for feeder cattle—and, on the other end of this age range, the unwillingness of older farmers generally to assume the risk. Half of the farmers who handled only purchased beef animals did not have any high school education. The implications of this finding to the potential future growth of cattle feeding in Kentucky needs serious thought (considering the specialized skills required for this enterprise).

Beef farmers had more formal education, especially at the college level, than did non-beef farmers. This was less evident in the Purchase Area where off-farm employment of farm operators was high. There tended to be a slight positive relationship between size of beef cow herd and level of education, but it is doubtful that this relationship is statistically significant.

Younger farmers tended to have more education; but this was only a tendency as a number of young farmers had limited education, and an unexpectedly large number of farmers 65 years of age or older had high

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[9] If 2 or more operators are involved on a given farm, the data are for the operator who, in the judgment of the interviewer, is the primary decision maker.

[10] No statistical tests of the data have been made at this time.

Cropland Acreage 217.0 137.2 122.1 115.0

[a] Average acreage per farm reporting that specific crop.

TABLE 5A

AGE AND EDUCATION OF FARMERS SURVEYED, BY TYPE AND SIZE OF FARM IN AREAS 1 AND 2, 1968[a]

Type and Size of Farm	Age of Operator (Years)					Formal Education (Years)				
	Under 40	40-49	50-64	65-69	70 and over	Less than 8	8	9-11	12	More than 12
	(Number of Operators)					(Number of Operators)				
AREA 1										
Beef Farms										
Only purchased animals	1	5	8	1	0	2	5	1	4	3
10-19 cows[b]	3	10	12	4	0	3	9	4	8	3
20-49 cows	6	5	12	1	2	5	4	5	11	1
50-99 cows	4	1	7	0	0	3	1	2	1	5
100-499 cows	1	1	0	0	0	0	0	0	0	2
All Beef Farms	15	22	39	6	2	13	19	12	24	14
All Non-beef Farms	4	14	22	5	4	17	11	6	13	2
AREA 2[c]										
Beef Farms										
Only purchased animals	0	3	3	0	1	3	2	1	1	0
10-19 cows	8	3	23	4	6	12	15	3	9	4
20-49 cows	12	17	20	1	4	7	19	6	16	3
50-99 cows	0	4	5	1	1	0	2	1	6	2
100-499 cows	3	1	1	0	0	0	0	1	3	1
All Beef Farms	23	28	52	6	12	22	38	12	35	10
All Non-beef Farms	21	26	50	10	6	34	39	8	15	6

[a]If two or more operators are involved in a given farm business, the data presented here are for the operator who, in the judgment of the interviewer, is the primary decision maker.

[b]Educational achievement of two beef farmers in this group is unknown.

[c]Educational achievement of 4 beef farmers and 11 non-beef farmers in Area 2 is unknown.

TABLE 5B

AGE AND EDUCATION OF FARMERS SURVEYED, BY TYPE AND SIZE OF FARM IN AREAS 3 and 4, 1968[a]

Educational achievement of 4 beef farmers and 11 non-beef farmers in Area 2 is unknown.

TABLE 5B

AGE AND EDUCATION OF FARMERS SURVEYED, BY TYPE AND SIZE OF FARM IN AREAS 3 and 4, 1968[a]

Type and Size of Farm	Age of Operator (Years)					Formal Education (Years)				
	Under 40	40-49	50-64	65-69	70 and over	Less than 8	8	9-11	12	More than 12
	(Number of Operators)					(Number of Operators)				
AREA 3[b]										
Beef Farms										
Only purchased animals	0	0	2	0	0	0	1	0	0	0
10-19 cows	8	9	17	7	1	7	11	3	11	8
20-49 cows	8	19	21	4	3	10	12	5	14	11
50-99 cows	2	0	2	1	1	0	1	1	2	2
100-499 cows	0	2	1	0	0	0	0	1	1	1
All Beef Farms	18	30	43	12	5	17	25	10	28	22
All Non-beef Farms	9	15	19	5	9	16	15	4	16	4
AREA 4										
Beef Farms										
Only purchased animals	0	1	0	1	0	0	0	0	2	0
10-19 cows	7	3	20	6	4	5	12	5	16	2
20-49 cows	8	9	12	5	2	4	5	4	19	4
50-99 cows	0	3	5	0	0	1	1	0	3	3
100-499 cows	1	1	1	0	0	0	0	0	3	0
All Beef Farms	16	17	38	12	6	10	18	9	43	9
All Non-Beef Farms	18	18	27	7	12	12	22	9	29	10

[a]If two or more operators are involved in a given farm business, the data presented here are for the operator who, in the judgment of the interviewer, is the primary decision maker.

[b]The age of two beef farmers, and the educational achievement of 6 beef farmers and 3 non-beef farmers is unknown.

school or college education. There was considerable difference among localities within each area in the level of operator education, evidently associated with the strength of the school system and how much education was valued by farm people in specific localities.

Off-Farm Employment of Farm Operators

Tables 6A and 6B present data regarding the incidence of off-farm employment of farmers surveyed. Only a brief discussion of these data is given as a separate detailed report is to be published on part-time farmers, the types of off-farm jobs they have, off-farm income they receive and characteristics of their farm businesses.

The largest amount of off-farm employment by farm operators was in the Purchase Area. Of all the farmers surveyed in that area, 46.2 percent worked at least 100 days off the farm in 1968; 35.7 percent worked 250 days or more. Areas 2 and 3 also had substantial "part-time" farming, with 33.3 and 29.9 percent, respectively, of the farm operators having off-farm jobs involving at least 100 days employment annually. The smallest amount of off-farm employment was in the Bluegrass Area, but even in this area 13.5 percent of the operators worked year-around (250 days or more) and 19.5 percent worked at least 100 days. Except for Area 4, where part-time farms were scattered rather evenly throughout the area, there was considerable locational variation in the incidence of off-farm employment within each area (as off-farm employment opportunities vary).

As expected, there was a inverse relationship between size of farm business (herd size on beef farms and open land acreage on non-beef farms) and incidence of off-farm employment. Most beef farmers with off-farm jobs had between 10 and 49 beef cows. Similarly, most non-beef farmers with off-farm jobs had less than 100 acres of open land. There were, however, a few part-time farmers with large farm businesses.

Detailed Analysis of Beef Enterprises

Up to this point in the report data have been presented simply in terms of farms in beef cow herd size classes. However, classifying enterprises this way can mask important traits of the beef enterprise and its role in the farm business. A beef enterprise can involve a cow herd, only purchased animals, or a combination of the two. Moreover, calves produced by the herd can be sold as calves, kept on the farm and raised to stocker weights, or kept and fed to slaughter weight. Similarly, purchased animals can be resold as stocker cattle or fed to slaughter weight.

A breakdown of the beef enterprises in the four areas based on the above alternatives is presented in Tables 7A, 7B, 7C, and 7D. The first part of each table shows the number of farms which in 1968 had each of these alternative production systems. The lower part of the table shows the average number of animals involved in the enterprises.

Beef cattle production is important in the Bluegrass Area. The average size of beef herd in this survey was 34 cows, the highest average of the four areas.[11] There were 29 farmers with herds of fewer than 20 cows (42% of all beef farms). However, 11 of these had expanded their beef business from the typical cow-calf plan by raising their own calves to stocker weights or by purchasing calves to add with their own calves that are fed to stocker weights (650-700 pounds usually).

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[11] The average herd sizes mentioned in this report are about twice the average herd size frequently quoted. The reason is that farms with fewer than 10 cows were not considered a beef farm in this study.

TABLE 6A

OFF-FARM EMPLOYMENT BY OPERATORS OF BEEF FARMS IN 1968

Item	Off-Farm Employment			
	None	1-99 days	100-249 days	250-over days
	Number of Farm Operators			
AREA 1				
Only purchased animals	10	2	2	1
10-19 cows	18	1	1	9
20-49 cows	21	1	2	2
50-99 cows	11	1	0	0
100-499 cows	2	0	0	0
All Beef Farms in Area	62	5	5	12
AREA 2				
Only purchased animals	6	0	0	1
10-19 cows	28	2	6	8
20-49 cows	32	2	4	16
50-99 cows	8	1	1	1
100-499 cows	4	0	0	1
All Beef Farms in Area	78	5	11	27
AREA 3				
Only purchased animals	2	0	0	0
10-19 cows	22	3	2	15
20-49 cows	45	0	3	9
50-99 cows	4	1	0	1
100-499 cows	3	0	0	0
All Beef Farms in Area	76	4	5	25
AREA 4				
Only purchased animals	2	0	0	0
10-19 cows	17	3	3	17
20-49 cows	16	0	5	15
50-99 cows	4	0	1	3
100-499 cows	2	1	0	0
All Beef Farms in Area	41	4	9	35

TABLE 6B

OFF-FARM EMPLOYMENT BY OPERATORS OF NON-BEEF FARMS IN 1968

Item	Off-Farm Employment			
	None	1-99 days	100-249 days	250-over days
	Number of Farm Operators			
AREA 1				
Less than 50 acres	8	1	2	3
50-99 acres	12	1	0	3
100-199 acres	14	0	1	0
200-299 acres	1	1	0	0
300-over acres	2	0	0	0
All Non-Beef Farms in Area	37	3	3	6
AREA 2				
Less than 50 acres	14	0	5	7
50-99 acres	31	3	9	10
100-199 acres	18	1	4	5
200-299 acres	3	0	0	0
300-over acres	3	0	0	0
All Non-Beef Farms in Area	69	4	18	22
AREA 3				
Less than 50 acres	8	0	1	2
50-99 acres	12	0	1	7
100-199 acres	6	1	1	7
200-299 acres	1	1	0	1
300-over acres	8	0	0	0
All Non-Beef Farms in Area	35	2	3	17
AREA 4				
Less than 50 acres	10	1	0	2
50-99 acres	18	0	4	16
100-199 acres	10	0	2	6
200-299 acres	4	0	1	2
300-over acres	3	1	2	0
All Non-Beef Farms in Area	45	2	9	26

TABLE 7A

NUMBER OF FARMS HAVING STATED KIND OF BEEF ENTERPRISE AND AVERAGE SIZE OF ENTERPRISE, AREA 1

Size of Beef Enterprise	Beef Cow Herd Only			Cow Herd And Purchased Animals		Purchased Animals Only		Total
	Only Calves Sold	Stockers Sold[a]	Fat Cattle Sold[a]	Stockers Sold	Fat Cattle Sold	Stockers Sold	Fat Cattle Sold	
	Number of Farms							
Less than 20 cows	18	7	-	4	-	9	6	44
20-49 cows	17	6	1	1	1	-	-	26
50-99 cows	6	2	-	3	1	-	-	12
100-499 cows	1	1	-	-	-	-	-	2
Total	42	16	1	8	2	9	6	84

Average Size of Enterprises

	Beef Cow Herd Only			Cow Herd And Purchased Animals				Purchased Animals Only	
	Only Claves Sold	Stockers Sold	Fat Cattle Sold	Stockers Sold		Fat Cattle Sold		Animals Sold	
	(Cows)	(Cows)	(Cows)	(Cows)	(Stks.)[b]	(Cows)	(Fat Cattle)[b]	(Stks.)	(Fat Cattle)
Less than 20 cows	13	14	--	12	42	--	--	182	70
20-49 cows	31	31	35	40	72	20	140	--	--
50-99 cows	68	68	--	60	258	50	80	--	--
100-499 cows	200	191	--	--	--	--	--	--	--
Average	33	38	35	34	127	35	110	182	70

[a]Not all calves had to be sold as stockers or slaughter animals to be listed in these columns.

[b]Includes calves from herd, if any, fed to stocker or slaughter weight.

TABLE 7B

NUMBER OF FARMS HAVING STATED KIND OF BEEF ENTERPRISE AND AVERAGE SIZE OF ENTERPRISE, AREA @

Size of Beef Enterprise	Beef Cow Herd Only			Cow Herd and Purchased Animals		Purchased Animals Only		Total
	Only Calves Sold	Stockers Sold[a]	Fat Cattle Sold[a]	Stockers Sold	Fat Cattle Sold	Stockers Sold	Fat Cattle Sold	
	Number of farms							
Less than 20 cows	30	6	1	4	3	5	2	51
20-49 cows	38	10	5	1	-	-	-	54
50-99 cows	7	2	1	-	1	-	-	11
100-499 cows	2	3	-	-	-	-	-	5
Total	77	21	7	5	4	5	2	121

Average Size of Enterprises

	Beef Cow Herd Only			Cow Herd and Purchased Animals				Purchased Animals Only	
	Only Calves Sold	Stockers Sold	Fat Cattle Sold	Stockers Sold		Fat Cattle Sold		Animals Sold	
	(Cows)	(Cows)	(Cows)	(Cows)	(Stks.)[b]	(Cows)	(Fat Cattle)[b]	(Stks.)	(Fat Cattle)
Less than 20 cows	15	13	15	15	34	13	32	37	165
20-49 cows	28	30	30	30	20	--	--	--	--
50-99 cows	59	53	60	--	--	74	82	--	--
100-499 cows	203	165	--	--	--	--	--	--	--
Average	30	47	32	18	31	28	45	37	165

[a]Not all calves had to be sold as stockers or slaughter animals to be listed in these columns.

[b]Includes calves from herd, if any, fed to stocker or slaughter weight.

TABLE 7C

NUMBER OF FARMS HAVING STATED KIND OF BEEF ENTERPRISE AND AVERAGE SIZE OF ENTERPRISE, AREA 3

Size of Beef Enterprise	Beef Cow Herd Only: Only Calves Sold	Beef Cow Herd Only: Stockers Sold[a]	Beef Cow Herd Only: Fat Cattle Sold[a]	Cow Herd and Purchased Animals: Stockers Sold	Cow Herd and Purchased Animals: Fat Cattle Sold	Purchased Animals Only: Stockers Sold	Purchased Animals Only: Fat Cattle Sold	Total
	Number of farms							
Less than 20 cows	26	8	6	-	2	-	2	44
20-49 cows	32	11	11	3	-	-	-	57
50-99 cows	3	1	1	1	-	-	-	6
100-499 cows	1	-	-	2	-	-	-	3
Total	62	20	18	6	2	-	2	110

Average Size of Enterprises

	Beef Cow Herd Only: Only Calves Sold	Beef Cow Herd Only: Stockers Sold[a]	Beef Cow Herd Only: Fat Cattle Sold[a]	Cow Herd and Purchased Animals: Stockers Sold		Cow Herd and Purchased Animals: Fat Cattle Sold		Purchased Animals Only: Animals Sold	
	(Cows)	(Cows)	(Cows)	(Cows)	(Stks.)[b]	(Cows)	(Fat Cattle)[b]	(Stks.)	(Fat Cattle)
Less than 20 cows	13	13	14	--	--	18	42	-	88
20-49 cows	30	26	27	26	23	--	--	-	--
50-99 cows	76	80	56	61	51	--	--	-	--
100-499 cows	100	--	--	132	244	--	--	-	--
Average	26	23	25	67	101	18	42	-	88

[a]Not all calves had to be sold as stockers or slaughter animals to be listed in these columns.

[b]Includes calves from herd, if any, fed to stocker or slaughter weight.

TABLE 7D

NUMBER OF FARMS HAVING STATED KIND OF BEEF ENTERPRISE AND AVERAGE SIZE OF ENTERPRISE, AREA 4

Size of Beef Enterprise	Beef Cow Herd Only			Cow Herd and Purchased Animals		Purchased Animals Only		Total
	Only Calves Sold	Stockers Sold[a]	Fat Cattle Sold[a]	Stockers Sold	Fat Cattle Sold	Stockers Sold	Fat Cattle Sold	Total
	Number of farms							
Less than 20 cows	29	10	-	1	-	-	2	42
20-49 cows	29	4	2	-	1	-	-	36
50-99 cows	5	3	-	-	-	-	-	8
100-499 cows	3	-	-	-	-	-	-	3
Total	66	17	2	1	1	-	2	89

Average Size of Enterprises

	Beef Cow Herd Only			Cow Herd and Purchased Animals				Purchased Animals Only	
	Only Calves Sold	Stockers Sold[a]	Fat Cattle Sold[a]	Stockers Sold		Fat Cattle Sold		Animals Sold	
	(Cows)	(Cows)	(Cows)	(Cows)	(Stks.)[b]	(Cows)	(Fat Cattle)[b]	(Stks.)	(Fat Cattle)
Less than 20 cows	14	13	--	10	23	--	--	-	61
20-49 cows	28	30	28	--	--	32	26	-	--
50-99 cows	23	75	--	--	--	--	--	-	--
100-499 cows	173	--	--	--	--	--	--	-	--
Average	31	28	28	10	23	32	26	-	61

[a]Not all calves had to be sold as stockers or slaughter animals to be listed in these columns.

[b]Includes calves from herd, if any, fed to stocker or slaughter weight.

There was more purchasing of beef animals (primarily calves) for raising to sell as stocker or slaughter cattle in the Bluegrass Area than in any other part of the state. Fifteen farmers surveyed handled only purchased animals; 9 of these sold stockers and 6 sold slaughter animals. In addition, 10 farmers having beef cow herds also purchased feeders. Nearly all the farmers who fattened-out cattle to slaughter weights handled between 75 and 100 head. This was not large compared with commercial feedlots, but potentially a respectable source of income. The enterprises involving purchase of calves to be raised and sold as stockers tended to be either large (several hundred cattle) or quite small enterprises (20-30 head).

Beef cattle contributed substantially to agriculture in the Mid-Kentucky Area (Area 2). The large quantity of pasture land in this area is conductive to roughage-consuming enterprises like beef and dairy. The average beef herd size in the area was 33 cows. While 44 of the 114 beef cow herds had fewer than 20 cows, more herds of at least 100 cows were surveyed in this area than in other areas.

Fewer farmers in Area 2 purchased cattle and the number of cattle in these purchases were smaller than in Area 1, but more purchasing was done than in Areas 3 and 4. There was also a distinct difference in the cattle feeding enterprise in this area. Seven farmers surveyed, including 3 who handled purchased animals exclusively, purchased dairy calves and fed them to various weights (in two cases a substantial number of dairy calves were handled).

The average size of beef cow herd in the Pennyroyal-Ohio Valley Area was 28 cows, the smallest average herd size of the four areas. The low herd size average was not due to a large proportion of the herds in the smallest herd size category (less than 20 cows), but was due to the small number of 50- to 99-cow herds.

There was a more distinctive herd size in Area 3 than in any other area. The typical beef herd was comprised of 25-30 cows and one bull which utilized land not suitable for grain crops (plus, in some cases, crop residue). In other words, the beef herd was a supplemental enterprise. A fairly large proportion (44 percent) of the farmers in this herd size class kept their calves for further feeding.

A surprisingly few farmers in this area purchased cattle to raise to stocker or slaughter weights. Eleven farmers fattened out calves from their own herds, but very limited use was made of the abundant grain produced in the area to feed purchased cattle. Only three farmers surveyed purchased more than 50 cattle.

The average size of beef cow herds in the Purchase Area was 30 cows. This was slightly larger than in Area 3, but the average was unduly influenced by the three large cow herds in the area. The typical beef herd was actually smaller than in the other areas, as 40 of the 87 beef herds had fewer than 20 cows. There was very little purchasing of feeder cattle. Moreover, only about one-fourth of the farmers kept their calves beyond weaning weights.

Reasons for Having Beef Cattle

Beef farmers were asked the two most important reasons for having beef cattle on their farms. A large number of specific reasons were listed on a card from which they could choose the reasons which fit their situation (and they could add other reasons). Responses to this question are given in Table 8.

The two primary reasons given for having a beef enterprise were: (1) the farmer had otherwise unused land and/or roughage resources and (2) beef cattle required less labor to handle than alternative livestock enterprises. Enjoyment in handling beef cattle was an important reason for a number of farmers, particularly in the Bluegrass and

TABLE 8

REASONS REPORTED BY FARMERS FOR HAVING BEEF CATTLE ON THEIR FARMS, BY AREA

REASONS[a]	Most Important Reason	Second Most Important Reason	Most Important Reason	Second Most Important Reason
	Farmers Reporting Area 1		Farmers Reporting Area 2	
Cattle tradition	5	4	6	3
Enjoy handling cattle	16	13	13	15
Greater returns	10	13	10	10
Unused land and roughage resources	21	19	36	36
Less risk, and diversification	7	2	2	3
Less labor, and doesn't want to milk	15	27	40	34
Fits in well with off-farm work	8	3	8	8
Fits in well with farming program	0	0	1	0
All other reasons[b]	2	0	3	3
Total Responses	84	81	119	112
	Farmers Reporting Area 3		Farmers Reporting Area 4	
Cattle tradition	3	1	3	2
Enjoy handling cattle	11	9	11	7
Greater returns	16	10	13	13
Unused land and roughage resources	35	34	21	24
Less risk, and diversification	6	6	1	7
Less labor, and doesn't want to milk	19	28	20	23
Fits in well with off-farm work	12	3	17	9
Fits in well with farming program	4	1	0	0
All other reasons[b]	3	5	2	2
Total Responses	109	97	88	87

[a]These reasons are condensations of a larger list of specific reasons reported by farmers. Responses with the same or similar underlying reasons or motivation were combined. For example "Cattle tradition" is a combination of three responses: (1) "father was a cattleman"; (2) this is cattle country"; and (3) "cattle farmers are often leading farmers in the community."

[b]Examples of other responses are: (1) "keep land up"; (2) "keeps tenant busy"; (3) "get paid in lump sum"; and (4) 4H and FFA project."

Mid-Kentucky Areas. An almost equal number of farmers listed as their most or second most important reason that they received greater returns from the beef cattle (compared with other livestock). In Area 4, nearly half of all farmers said that beef fitted in well with off-farm work.

Each beef farmer was also asked about the role(s) that he considers beef cattle play in his total farm business (Table 9). The role an enterprise plays, or is supposed to play, in a farm business is important as it provides an overall criteria for evaluating the performance of an enterprise (i.e., how well it accomplishes the intended purpose), and to some extent influences the charges made against the enterprise in determining its profitableness.

The question was designed to provide the farmer with a single list of "equal" alternative roles from which to select the most and second most important role as he visualized his business. Results, however, suggest that the farmers interpreted the question differently. A very high percentage of the beef farmers selected as the most important role one of the three alternative roles that beef could play as a source of income (the major source, one of the major sources, or a minor source of income). These alternatives were at the top of the list given to them and appeared in a real sense different from the other items. If the farmer felt any other item applies to his business it was usually listed as the second most important role.

This different interpretation is understandable, especially in view of responses to "reason for having beef cattle," and results should be examined in terms of two different sublists. In other words, the role the farmer attached to beef as a source of income would be one response; the other items (not reflecting the importance of beef as an income source) would comprise alternatives for the second response. The second response should not necessarily be interpreted as of lesser importance than the first.

Farmers surveyed placed a great deal of importance on their beef cattle as a source of income. Even though 141 farmers had cow herds of fewer than 20 cows (and no purchased animals), a size of enterprise which will not make a large contribution to the net income of a farm family, only 41 considered their beef enterprise as a minor source of income.

Area differences in the role that farmers consider beef cattle have as a source of income can be explained reasonably well. The importance of burley tobacco in the Bluegrass Area is evident in that only 19 farmers considered beef as the major source of income. In Area 2, diversity of land resources and types of farming, generally more rolling topography, and smaller tobacco allotments account for the more diverse reaction to this question. Beef is a supplemental enterprise to grain crops on many farms in Area 3; thus, more farmers recognize their beef enterprise as a minor source of income.

Of the 89 farmers with beef enterprises in the Purchase Area, 50 farmers considered beef as the major source of income. On the surface, this is a surprisingly large number, considering the typical land acreage on beef farms. The relatively large number of older farmers and the importance of off-farm employment account for the large numbers who consider beef as the major source of farm income. It needs to be recognized that in the context of this question "the major source" is not synonymous with "absolute large income," rather it means income supplied relative to other farm income sources. If the only sales from a farm are 10 beef calves in a year, beef is the major source of income.

Considering the role of the beef enterprise other than as a source of income, it is again apparent that beef is produced on a large number of farms because of the availability of resources (particularly

TABLE 9

REPORTED ROLES OF BEEF CATTLE IN THE FARM BUSINESS, BY AREA

Role in Business	Most Important Role	Second Important Role
	(Number of Farmers Reporting)	
AREA 1		
The major source of income	19	0
One of the major sources of income	60	1
A minor source of income	3	1
A user of otherwise unused resources	2	44
Provide steady source of farm income	0	6
Makes farm look good	0	3
Income tax deduction	0	0
Other	0	0
Total Responses	84	55
AREA 2		
The major source of income	36	0
One of the major sources of income	58	7
A minor source of income	12	2
A user of otherwise unused resources	10	79
Provide steady source of farm income	1	12
Makes farm look good	2	5
Income tax deduction	0	2
Other	0	0
Total Responses	119	107
AREA 3		
The major source of income	31	1
One of the major sources of income	47	3
A minor source of income	18	1
A user of otherwise unused resources	5	46
Provide steady source of farm income	6	8
Makes farm look good	0	7
Income tax deduction	0	1
Other	1	0
Total Responses	108	67
AREA 4		
The major source of income	50	0
One of the major sources of income	32	1
A minor source of income	3	1
A user of otherwise unused resources	0	52
Provide steady source of farm income	1	10
Makes farm look good	1	4
Income tax deduction	0	0
Other	0	3
Total Responses	87	71

pastureland, and roughages produced on cropland) which would otherwise be unused or have poor income-producing alternatives. A steady source of income was also listed by a considerable number of farmers as the role that beef cattle have in their business.

Other Livestock on Beef Farms

On one-third of the beef farms in the Bluegrass Area there was also a swine herd in 1968 (Table 10A). The average size of these swine herds was approximately 13 sows. While two-thirds of these produced feeder pigs, farms which produced slaughter hogs had considerably larger enterprises. Four farmers purchased feeder pigs to raise to slaughter weight.

More than 26 percent of the beef farmers interviewed also had Grade C dairy enterprises, but these were usually primarily for family milk consumption. There were 4 Grade A dairy enterprises. Fifteen sheep enterprises were reported on beef farms surveyed. They typically were small (in terms of a source of income), but 3 enterprises involved large numbers of sheep.

Most of the major other livestock enterprises were on farms which had fewer than 50 beef cows. The farms in the Bluegrass Area having 100 or more beef cows concentrated exclusively on beef production.

Dairy farming is important in several counties in Area 2; thus, it is not surprising to see dairy cows on the beef farms. Thirty-six farmers had small Grade C dairy herds and 12 reported Grade A dairy herds (a few of these may actually have been Grade C). As reported earlier, in certain localities in this area feeding dairy calves was a significant beef enterprise.

About 23 percent of the beef farms in the Mid-Kentucky Area reported having a swine herd (average size was 13 sows). Fourteen farmers sold feeder pigs, 19 farmers sold slaughter hogs and 5 farmers sold both. Eight farmers bought feeder pigs to fatten out. This enterprise was more prevalent in the better feed-grain producing regions of this 46-county area.

Except on beef farms which had 100 or more beef cows there was a rather even distribution of the other livestock enterprises by beef herd size class in Area 2. One large beef farm had a major swine enterprise.

Swine was the major non-beef livestock enterprise on beef-farms in Area 3, as is expected with the large quantity of feed grains produced in the area. Of the farmers, 38.2 percent had swine herds; but swine herds were typically not large (averaging only 12 sows). Except on the small beef farms, most pigs were sold at slaughter weights. Eighteen farmers reported purchasing feeder pigs (two large feeding operations).

In terms of proportion of beef farmers having a given enterprise, swine was the most important non-beef enterprise in Area 4. On about 29 percent of the beef farms there was a swine herd. Despite the average swine herd size of 15.6 sows, the swine enterprises were small. Three major swine enterprises pulled the average up. Seven farmers purchased some feeder pigs. Dairy enterprises were found on 15 of the 89 beef farms, but nearly all were very small enterprises. Off-farm employment, undoubtedly, was a factor in the choice of livestock enterprises in this area.

Beef Cow Enterprise Management

Detailed data were collected on the beef cow herds, management practices and feed supply-use relationships. The rest of this report is devoted to these results.

Beef Herd Management

Based on all herds in an area, the average weaning age of calves was 7.9 months in Areas 1 and 2, 7.8 in Area 3, and 7.7 in Area 4 (Table 11). Differences existed in the average

TABLE 10A

OTHER LIVESTOCK ON BEEF FARMS IN SURVEY: NUMBER OF FARMS REPORTING AND AVERAGE SIZE OF OTHER LIVESTOCK ENTERPRISE[a]

	Less than 20 Beef Cows		20-49 Beef Cows		50-99 Beef Cows		100-499 Beef Cows		All Beef Farms	
	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size
AREA 1										
Farms in Group	44	--	26	--	12	--	2	--	84	--
Other Livestock										
Milk cows (Grade A)	--	--	2	27.5	2	33.0	-	--	4	30.2
Milk cows (Grade C)	12	3.3	4	13.0	5	4.8	1	1.0	22	5.3
Brood sows	15	11.2	8	12.9	5	18.0	0	0	28	12.9
Pigs, sold as feeders	11	62.0	6	73.3	2	90.0	0	0	19	68.5
Pigs, fed out	4	260.8	2	389.5	4	270.0	0	0	10	290.2
Bought pigs, fed out	2	245.0	1	10.0	1	145.0	0	0	4	161.2
Ewes	3	677.0	5	48.2	1	63.0	0	0	9	259.4
Lambs	1	2000.0	4	40.2	1	68.0	0	0	6	371.5
AREA 2										
Farms in Group	51	--	54	--	11	--	5	--	121	--
Other Livestock										
Milk cows (Grade A)	3	31.0	7	12.9	2	27.5	0	0	12	19.8
Milk cows (Grade C)	14	7.5	16	7.2	5	10.8	1	4.0	36	7.7
Brood sows	9	7.6	12	12.3	5	20.2	2	25.0	28	13.1
Pigs, sold as feeders	8	93.4	6	38.5	0	0	0	0	14	69.9
Pigs, fed out	6	32.3	7	270.9	5	285.9	1	600.0	19	216.8
Bought pigs, fed out	4	187.0	2	92.5	2	129.0	0	0	8	148.9
Ewes	1	12.0	0	0	0	0	0	0	1	12.0
Lambs	2	153.0	0	0	0	0	0	0	2	153.0

[a]Average size figures are the average size on those farms reporting the enterprise.

TABLE 10B

OTHER LIVESTOCK ON BEEF FARMS IN SURVEY: NUMBER OF FARMS REPORTING AND

[a]Average size figures are the average size on those farms reporting the enterprise.

TABLE 10B

OTHER LIVESTOCK ON BEEF FARMS IN SURVEY: NUMBER OF FARMS REPORTING AND AVERAGE SIZE OF OTHER LIVESTOCK ENTERPRISE

	Less than 20 Beef Cows		20-49 Beef Cows		50-99 Beef Cows		100-499 Beef Cows		All Beef Farms	
	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size	No. Farms	Ave. Size
AREA 3										
Farms in Group	44	--	57	--	6	--	3	--	110	--
Other Livestock										
Milk cows (Grade A)	0	0	2	59.0	0	0	0	0	2	59.0
Milk cows (Grade C)	5	12.8	8	5.0	1	2.0	0	0	14	7.6
Brood sows	16	10.1	24	12.8	2	21.5	0	0	42	12.1
Pigs, sold as feeders	8	63.1	6	118.2	0	0	0	0	14	86.7
Pigs, fed out	13	64.5	18	140.1	2	305.0	0	0	33	120.3
Bought pigs, fed out	9	99.4	7	230.0	1	3500.0	1	5000.0	18	611.4
Ewes	0	0	0	0	0	0	0	0	0	0
Lambs	0	0	0	0	0	0	0	0	0	0
AREA 4										
Farms in Group	42	--	36	--	8	--	3	--	89	--
Other Livestock										
Milk cows (Grade A)	3	14.3	0	0	0	0	0	0	3	14.3
Milk cows (Grade C)	4	3.0	6	3.0	1	20.0	1	10.0	12	4.6
Brood sows	12	7.2	10	9.5	2	90.5	2	22.5	26	15.6
Pigs, sold as feeders	4	118.8	5	181.4	0	0	1	625.0	10	200.7
Pigs, fed out	8	77.1	6	62.2	2	1470.0	1	91.0	17	246.5
Bought pigs, fed out	3	122.3	4	90.8	0	0	0	0	7	104.3
Ewes	0	0	2	11.0	0	0	0	0	2	11.0
Lambs	0	0	1	13.0	0	0	0	0	1	13.0

[a]Average size figures are the average size on those farms reporting the enterprise.

TABLE 11

BEEF HERD MANAGEMENT CHARACTERISTICS

	Avg. Weaning Age of Calves	Avg. Weaning Weight of Calves	Avg. Age of Cows when Culled
	(months)	(pounds)	(years)
All Beef Herds in:			
Area 1	7.9	496.6	9.9
Area 2	7.9	470.7	9.9
Area 3	7.8	464.4	10.3
Area 4	7.7	471.1	9.4

weaning age by beef-cow herd size class, but there was no consistent pattern. Weaning age varied considerably from one farm to another.

Farmers in Area 1 reported a higher average weaning weight than did farmers in the other areas. The 497-pound average (over 25 pounds higher than the other areas), however, is due largely to the heavier weight (522 pounds) reported by Bluegrass farmers with fewer than 20 cows. The 5 farmers in Area 2 who had 100 or more cows weaned their calves at an average weight of only 415 pounds, by far the lowest average for a beef herd size class. They also weaned calves at an earlier age. Farmers in Areas 3 and 4 with 50 or more cows reported heavier weaning weights than did farmers with smaller herds, but the small number of farmers with large herds limits drawing conclusions.

All herds considered, the average culling age was 9.9 years in Areas 1 and 2, slightly higher (10.3 years) in Area 3, and 9.4 years in Area 4. Considering all farms in a given size class regardless of where they are located in Kentucky, farmers with at least 100 beef cows culled their cows at an earlier age than did farmers with smaller herds (7.5 years). Culling age estimates are for replacement of cows which have been productive and not removed prematurely because of injury or disease.

Calving Dates

Many farmers indicated that their cows had calves all year around; i.e., they had no specific planned calving period (Table 12). This loose herd management was particularly common in Areas 4 and 2, where cows in 34.5 percent and 24.8 percent of all beef herds, respectively, calved all year around. Moreover, several farmers in each area indicated a 4- to 6-month calving period, which suggests lack of definite planned calving.

January-March was the most frequent calving period in all areas. Farmers in Area 1 indicated only a slight preference for late winter and spring months, but farmers in other areas (if they had definite planned calving period) showed a strong preference for calving from January to May.

On farms where calves were kept and raised to stocker or slaughter weight the calving pattern varied some from that of all herds. In Areas 1 and 2 farmers with those types of beef systems were about evenly split between "spring" and "fall" calving. On the other hand, in the Western Kentucky Areas (3 and 4) most farmers who raised their own calves, if they had any planned period, preferred calving in late winter and spring.

Breeding Practices

Most farmers surveyed owned one or more bulls. Only 15 of the 378 farmers with beef cow herds reported using artificial insemination for all or part of their breeding (Table 13). Greatest use of artificial insemination, but still only 6.2 percent of the herds, was made in Area 2 (where incidence of dairy farms was also highest).

Only 10 farmers said that they rented, borrowed, or had some other arrangement to use a bull owned by someone else. This is a surprisingly small number considering the large number of herds with fewer than 20 cows.

In the majority of cases, bulls ran with the herds the year around. In the Purchase Area, 4 of every 5 farmers permitted this; and even in Areas 1 and 3 (which have the lowest percentages), 3 of every 5 farmers let bulls run with the herd. Presumably, this practices reduces labor requirements and cost of facilities. However, with this practice it is very difficult, if not impossible, to control calving dates.

Only 21 farmers indicated that they used performance testing in selecting herd replacements. This was less than 6 percent of all farmers with beef cow herds. Likewise, the

TABLE 12

PLANNED CALVING PERIODS ON FARMS SURVEYED

	AREA OF STATE			
	1	2	3	4
	(number and percent of farms responding)			
TIME OF CALVING All Beef Cow Herds				
September	4 (5.8%)	1 (.9%)	0 (0%)	1 (1.2%)
October-December	16 (23.2%)	25 (22.1%)	17 (16.0%)	14 (16.1%)
January-March	23 (33.3%)	39 (34.5%)	42 (39.6%)	26 (29.9%)
April-May	3 (4.3%)	7 (6.2%)	16 (15.1%)	5 (5.7%)
3-month winter period (Nov.-Jan or Dec.-Feb.)	3 (4.3%)	6 (5.3%)	4 (3.8%)	4 (4.6%)
4-6 month period involving months in fall, winter, sprong	7 (10.1%)	7 (6.2%)	4 (3.8%)	7 (8.0%)
2 distinct periods (one fall, other spring)	0 (0%)	0 (0%)	4 (3.8%)	0 (0%)
Calve all year around	12 (17.4%)	28 (24.8%)	19 (17.9%)	30 (34.5%)
Calve in summer	1 (1.6%)	0 (0%)	0 (0%)	0 (0%)
Total Responses	69	113	106	87
TIME OF CALVING Herds producing Stockers or Fat Cattle				
September	1 (3.8%)	0 (0%)	0 (0%)	0 (0%)
October-December	8 (30.9%)	10 (28.6%)	6 (13.4%)	2 (9.5%)
January-March	9 (34.6%)	7 (20.0%)	17 (37.8%)	9 (42.9%)
April-May	1 (3.8%)	4 (11.4%)	10 (22.2%)	1 (4.7%)
3-month winter period (Nov.-Jan or Dec.-Feb.)	1 (3.8%)	4 (11.4%)	2 (4.4%)	1 (4.7%)
4-6 month period involving months in fall, winter, spring	1 (3.8%)	1 (2.9%)	1 (2.2%)	0 (0%)
2 distinct periods (one fall, other spring)	0 (0%)	0 (0%)	2 (4.4%)	0 (0%)
Calve all year around	4 (15.5%)	9 (25.7%)	7 (15.6%)	8 (38.2%)
Calve in summer	1 (3.8%)	0 (0%)	0 (0%)	0 (0%)
Total Responses	26	35	45	21

TABLE 13

INFORMATION ABOUT BREEDING PRACTICES ON FARMS IN SURVEY

	AREA OF STATE			
	1	2	3	4
	(number and percent of farms responding)[a]			
Breeding Practice				
Use of artificial insemination	3 (4.3%)	7 (6.2%)	3 (2.8%)	2 (2.3%)
Own bull	63 (91.4%)	104 (92.0%)	100 (93.5%)	84 (96.6%)
Rental bull	3 (4.3%)	2 (1.8%)	4 (3.7%)	1 (1.1%)
Handling of Bulls				
Bull run with herd all year	41 (59.4%)	82 (72.6%)	65 (60.7%)	69 (79.3%)
Restricted at least part of year	25 (36.3%)	28 (24.8%)	41 (38.3%)	16 (18.4%)
Other (no bull, etc.)	3 (4.3%)	3 (2.6%)	1 (1.0%)	2 (2.3%)
Other Management Practice				
Use performance testing in selecting herd replacements	2 (4.1%)	6 (5.6%)	8 (8.9%)	5 (7.4%)
Use pregnancy testing	0 (0%)	5 (4.8%)	5 (5.2%)	1 (1.2%)
Use heat control hormones	0 (0%)	2 (1.8%)	1 (1.0%)	1 (1.1%)

[a]An equal number of farmers did not respond to all questions asked in the interview, thus the same number of positive responses does not necessarily result in the same percentages. Percentages in this and other tables represent the percent of farmers responding to the specific question.

beef farmers made very little use of pregnancy testing or heat control hormones in their breeding program.

Beef Breeds

Breeds of beef cows and bulls on the farms surveyed are shown in Table 14. In Area 1 a majority of farmers had more than one breed of cows. More than 60 percent of the herds in Areas 2 and 3 were comprised of cows of the same breed and in Area 4 slightly more than one-half were of one breed.

Hereford and Angus cattle were the dominant breeds. In all areas there were more Hereford herds, out-numbering Angus herds about 2 to 1 in the Bluegrass and Purchase Areas.

The bull(s) used on a high percentage of farm was of the same breed as the dominant or single breed of cows in the herd. A rough indication of the extent of cross breeding in Kentucky is indicated by the fact that in 52 herds the bull or bulls were of a different breed than the dominant breed of cows. Moreover, of the 55 herds having two dominant breeds, 14 had bulls of a breed different from the two breeds of cows. While there were only a few Charolais cow herds on farms surveyed, one-third of the bulls listed as different from the cows in the herd were Charolais bulls. This percentage was about the same in all areas.

Registration of Cows

As shown in Table 15, the smallest amount of registration of beef cows occurred in the Pennyroyal-Ohio Valley Area (in 34.5% of the herds in Area 3, 50 percent or more of the cows were registered). The greatest extent of cow registration was in Area 2.

In general, the larger the beef cow herd the greater the amount of registration. By areas, from 58.5 to 69.0 percent of the herds with fewer than 20 cows had less than 50 percent of the cows registered. On the other hand, only 3 of the 11 herds (27.2 percent) with 100 cows had less than 50 percent registered.

Feeding Practices

As feed is the most important cost item in beef production, detailed data were collected on this aspect of beef herd management. Data in Table 16 are for the beef cows and calves up to weaning (excluding any creep feeding of calves); they do not include feeding after weaning. While a tabular breakdown by area and size of herds is not presented, the data were studied thoroughly and differences are discussed here.

Utilization of crop residues by the beef cow herd, primarily in late fall, was made regularly on 13.9 percent of the farms. There was less use made of crop residues on farms with herds of 10-19 cows than on farms with larger herds (10.5 percent regularly, compared with around 16.5 percent for the three larger herd size categories).

The greatest use of crop residues was made in the Pennyroyal-Ohio Valley Area, and, surprisingly, in Area 2. In the former area 19.4 percent of the farmers with beef cow herds employed the cow herd to utilize crop residues, while 17.9 percent of the farmers in Area 2 did so. The large amount of grain produced in Area 3, provided a greater opportunity to utilize crop residues. Very little use of crop residues was made in the Bluegrass Area (only 4.3 percent).

While there may be a number of reasons for not having the beef cow herd utilize crop residues on a given farm, there appears to be considerable under-utilization of this source of roughage. Corn for grain (the primary crop residue source) was produced on 52.4 percent of the farms in Area 1, 38.4 percent in Area 2, 71.0 percent in Area 3, and 32.6 percent in Area 4.

TABLE 14

INFORMATION ABOUT BEEF BREEDS ON FARMS IN SURVEY

ITEM	AREA OF STATE			
	1	2	3	4
	(number of farms responding)			
Cows in Herd				
All cows of same breed	31	66	65	45
More than one breed of cows	39	47	42	42
Breed of Cows				
Only, or dominant, breed in herd:				
Angus	18	46	46	24
Hereford	39	49	47	47
Shorthorn	2	0	0	1
Charolais	8	0	0	0
Two dominant breeds:				
(Angus and Hereford)	(5)	(10)	(12)	(9)
(Hereford and Shorthorn)	(0)	(0)	(1)	(1)
(Charolais and Hereford or Angus)	(1)	(0)	(0)	(1)
(Other combinations)	(2)	(8)	(1)	(2)
Breed of Bulls				
Where all cows same breed, or one breed dominant				
Same as cows	48	80	79	62
Not same breed as cows	13	15	14	10
Bull different from 2 breeds of cows listed as dominant	3	4	2	5

TABLE 15

PERCENTAGES OF REGISTERED COWS IN BEEF HERDS,
BY SIZE OF HERD AND AREA OF STATE

	Size of Herd				
	10-19 Cows	20-49 Cows	50-99 Cows	100-499 Cows	All Herds
AREA 1					
Percent of Cows in Herd Registered:					
Less than 20 percent	65.5	42.3	33.3	0.0	49.3
20-49 percent	3.5	3.9	8.4	0.0	4.4
50-99 percent	13.8	26.9	25.0	50.0	21.7
100 percent	17.2	26.9	33.3	50.0	24.6
AREA 2					
Percent Registered:					
Less than 20 percent	61.9	25.9	18.2	20.0	38.4
20-49 percent	2.3	3.8	18.2	0.0	4.5
50-99 percent	16.7	40.7	27.3	20.0	29.5
100 percent	19.1	29.6	36.3	60.0	27.6
AREA 3					
Percent Registered:					
Less than 20 percent	61.9	57.1	83.3	33.3	59.8
20-49 percent	2.3	7.2	16.7	0.0	5.7
50-99 percent	4.8	12.5	0.0	33.3	9.3
100 percent	31.0	23.2	0.0	33.3	25.2
AREA 4					
Percent Registered:					
Less than 20 percent	51.2	45.7	50.0	33.3	48.3
20-49 percent	7.3	14.4	0.0	0.0	9.2
50-99 percent	12.2	17.1	12.5	0.0	13.8
100 percent	29.3	22.8	37.5	66.7	28.7

TABLE 16

TABLE 16

NORMAL FEEDING PRACTICES, BEEF COW HERDS IN ALL KENTUCKY AREAS COMBINED[a]

Feed Utilization	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	(Percent of Beef cow herds utilizing given feed in specific month)											
Crop Residue:												
Occasionally	2.9	2.1	1.9	0	0	0	0	0	[b]	3.5	3.7	4.3
Regularly	2.9	2.4	1.9	2.4	2.1	2.4	2.4	2.7	3.2	9.9	13.9	6.7
Hay:												
Occasionally	4.3	4.3	5.9	19.4	6.4	1.3	1.3	1.6	[b]	2.7	11.5	9.9
Regularly	94.4	94.4	85.6	25.9	1.1	0	0	0	1.1	3.7	25.9	80.5
Silage:												
Occasionally	[b]	[b]	[b]	1.3	[b]	0	0	0	0	[b]	[b]	[b]
Regularly	8.0	8.0	7.8	2.9	0	0	0	0	0	0	1.1	5.1
Concentrates:												
Occasionally	10.7	10.4	8.8	4.3	2.4	1.3	1.1	1.3	1.3	1.9	3.7	8.6
Regularly	23.0	25.7	23.0	9.1	2.7	1.1	1.1	1.1	1.6	2.7	7.8	16.8
Protein Supplement:												
Occasionally	5.9	5.9	6.1	5.9	4.5	4.5	4.5	4.5	4.5	4.8	5.3	5.3
Regularly	22.7	21.9	19.8	11.2	8.6	6.7	6.7	6.7	7.0	7.8	13.1	19.8

[a] Includes only feed used by beef cow herd on 374 farms, not by any stockers of fattening cattle on those farms.

[b] Less than 1.0%.

Nearly all farmers fed some hay to their beef cows during the winter months. However, very little mechanically harvested roughage (hay or silage) was fed during the dry summer months. Only 1.6 percent of the farmers reported occasionally feeding hay in August, and 1.3 reported doing so in July. Thus, while substituting hay or silage for pasture in winter is taken for granted, this is not true in summer months when pastures are in poor condition. Farmers evidently prefer using lower grazing rates (more acreage per cow), which usually means under-utilizing pasture growth in spring and fall, to supplemental feeding of harvested roughage.

Silage was fed to beef cows on only 8 percent of the farms surveyed (almost always fed in winter months). Silage was most frequently fed in the Bluegrass and Mid-Kentucky Areas, 14.5 and 12.5 percent of the herds, respectively. The larger the beef cow herd, the greater the extent of silage feeding—18.9 percent of farms with 50-99 beef cows, and 58.9 percent of the farms with herds of 100 cows or more. This was expected as a substantial volume of use is needed to justify economically the capital investment involved in silage handling and storage.

Feeding silage to beef cows in Kentucky is often a spill-over from using it for other traditionally silage-utilizing enterprises (dairy cows and cattle feeding). In the Bluegrass Area 80 percent of the farmers who fed silage to beef cows had other cattle (stockers of fattening cattle) on their farm. In Area 2, the other area of considerable silage use, silage was predominantly fed on: (1) farms having both a dairy enterprise and a beef cow herds, and (2) farms having large beef cow herds.

A considerable amount of concentrate feeding was done on farms in the survey. As expected, most concentrate feeding was done in the winter months (although a few farmers fed grain the year around). Almost 1 of every 4 farmers fed concentrates regularly to their beef cows in January-March, and another 10 percent fed grain occasionally during those months. A larger proportion of farmers in the Bluegrass Area fed concentrates to beef cows than did farmers in the other areas (33.3 percent regularly and 9 percent occasionally).

There was an inverse relationship between size of beef cow herd and percentage of farmers feeding concentrates to their cows. About 40 percent of the farmers having herds of 10-19 cows fed concentrates regularly or occasionally. Only 2 (out of 12) farmers with at least 100 cows fed concentrates.

Creep feeding of calves (data not shown in Table) was reported by 31 percent of the farmers with beef cow herds. In 41 percent of the cases where calves were kept for additional feeding after weaning, calves were creep fed prior to weaning.

The feeding of protein supplement to beef cows followed much the same seasonal pattern as did that of other harvested feeds. Slightly more than 1 out of every 4 farmers fed protein supplement sometime during the winter months, and 11.2 percent reported feeding at least some protein supplement to beef cows in the summer. More than 44 percent of the beef farmers in the Pennyroyal-Ohio Valley Area reported feeding some protein supplement. For the other areas the percentages were: 37.6 percent in the Purchase Area, 21.7 percent in the Bluegrass, and only 10.7 percent in Mid-Kentucky. As protein supplemental can be fed as part of a concentrate ration or fed separately it is possible that the extent of protein supplement feeding could have been underestimated.

Cattle vs. Land

As a beef cow herd is basically a roughage-consuming livestock enterprise (and pasture is a high percentage of that), how large the herd on a given farm can be expanded depends on the land resources on that farm. Moreover, in analyzing the net income and efficiency of beef cow herd on a

farm it is necessary to look carefully at how efficiently the land devoted to that enterprise is being used.

Figures 2, 3, 4 and 5 show the acreage of land devoted to roughage-consuming livestock (or available to such livestock) per animal unit on the beef farms surveyed.[12] An animal unit is defined as one beef cow (and calf up to weaning) or its equivalent in feeder cattle, sheep, or dairy cattle. While these data were only for the beef farms surveyed, animal units of other livestock were counted in a farm's total. It should be noted also that woodland pasture and other "non-openland" were not included in determining acres per animal unit.

Each dot is the ratio of land devoted to roughage-consuming livestock to such livestock on *one* specific farm in the survey. Thus, the four figures show the land-livestock ratios on 405 actual beef farms. The lines were "fitted," using simple curvalinear regression analysis, and represent a reasonable average of what happened to land per animal unit with increasing number of animal units on these farms.

The first thing that is apparent is the tremendous variation in land used per cow (animal Unit) from farm to farm—from less than 2 acres to more than 10 acres per cow. The variation was particularly large on farms with fewer than 50 animal units, but considerable variation existed even among farms with larger livestock operations.

Acreage per cow declined with increased size of livestock enterprises, at least up to some point. As indicated by the "fitted" line, the acreage per cow tended to increase again for the very large enterprises. The decline in acreage per cow with increased size indicates that there is much room for improvement on farms with small beef herds. The higher acreage per cow on large herds is real and, while not so high as for small herds, it should be of concern to those farmers. With the large acreage involved on these farms, *total* net returns could be affected more than on small farms.

Average acreage per cow (animal unit) varied from area to area. The highest average was 4.66 per cow in Area 2, not surprising with the large amount of lower quality land in the Mid-Kentucky Area. The Bluegrass Area had the next highest average, 4.33 acres per cow. In view of the quality and price of land in the Bluegrass Area this average is exceedingly high. The average acreages per cow in Areas 3 and 4 were 3.95 and 3.72, respectively.

The land per cow ratio on a farm reflects the end-result of a number of variables, including land productivity, crops grown, fertilization program followed, stocking rates, pasture management, and feeding practices and efficiency. Beef farmers need to be particularly concerned about this matter. The above-mentioned findings point out probably the weakest aspect of beef production in Kentucky.

If all land costs (interest, taxes and/or rental charge) are charged to the cattle using the land, and this should be done in many farm businesses, there is no way for the farmers with the high acreage per cow to make a profit with their beef enterprise. Even achieving the average acreage per cow for the different areas leaves little room for profit. Simple calculating, using local land values, current interest rates, and current taxes, gives a clear indication of how important this land-cattle ratio is.

Two implications can be drawn from these results. The first is that much improvement can be made in the profitableness of bef enterprises in Kentucky by doing a better job of roughage production and utilization. As indicated by Figures 2-5, there are farmers now using 2 acres or less per

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[12] On some farms some open pastureland was idel, but could have been used by beef cattle, thus was included. Any land held idle in some governmental program or used for crops not consumed by roughage-consuming livestock was excluded.

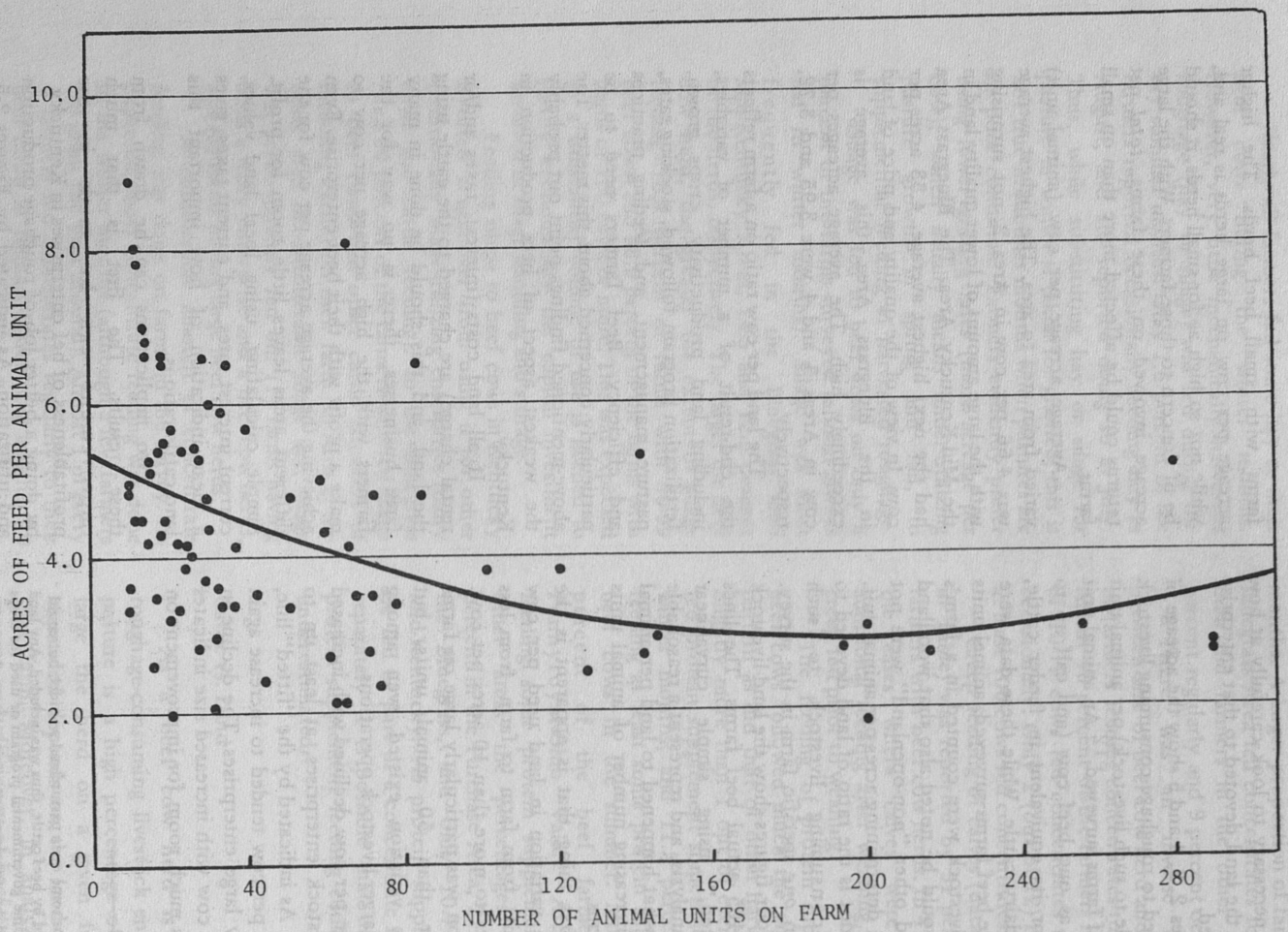

Figure 2.--Acres of land per animal unit (beef cow equiv.) devoted to roughage-consuming livestock on farms in the Bluegrass Area

roughage-consuming livestock on farms in the Bluegrass Area

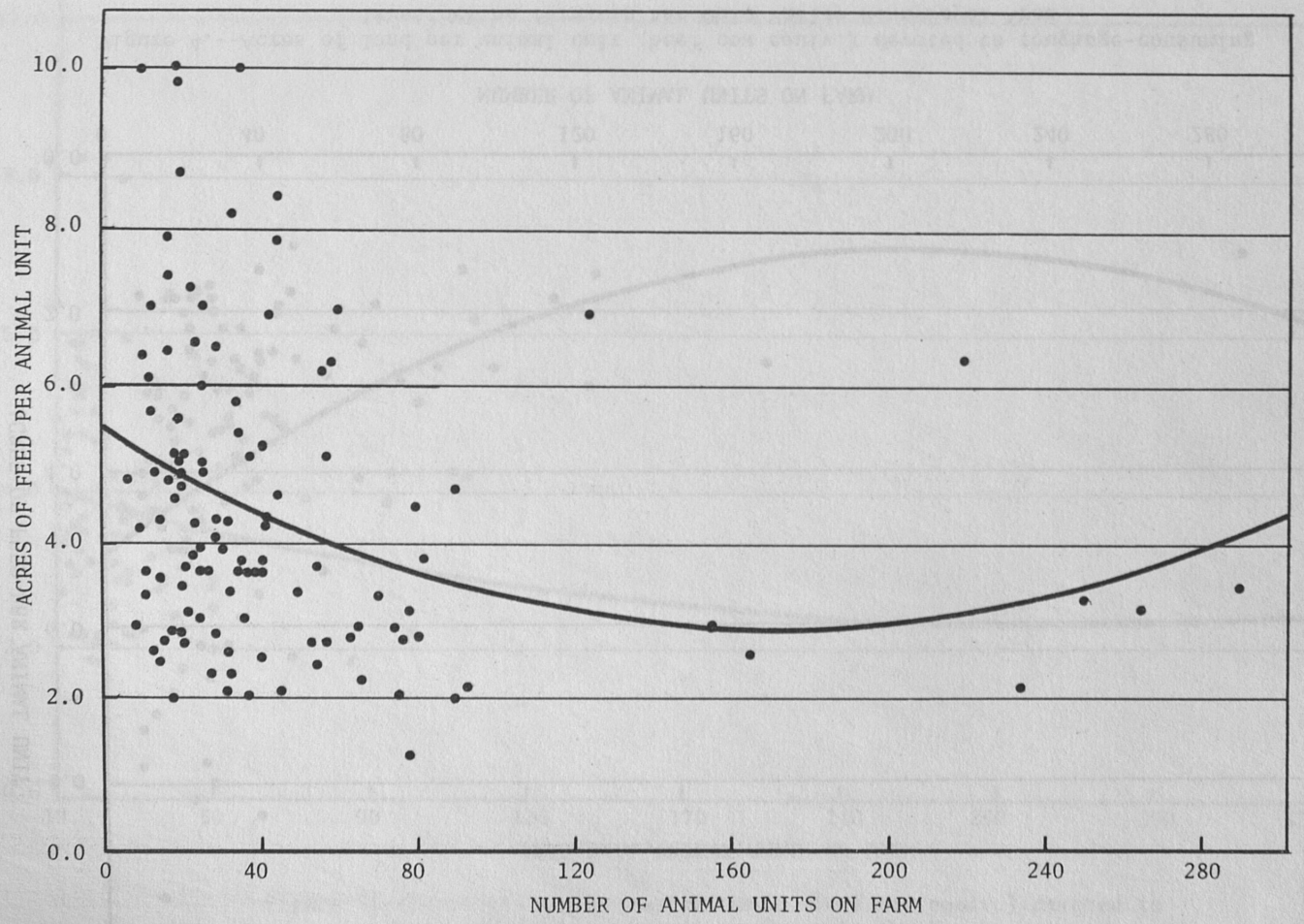

Figure 3.--Acres of land per animal unit (beef cow equiv.) devoted to roughage-consuming livestock on farms in the Mid-Kentucky Area

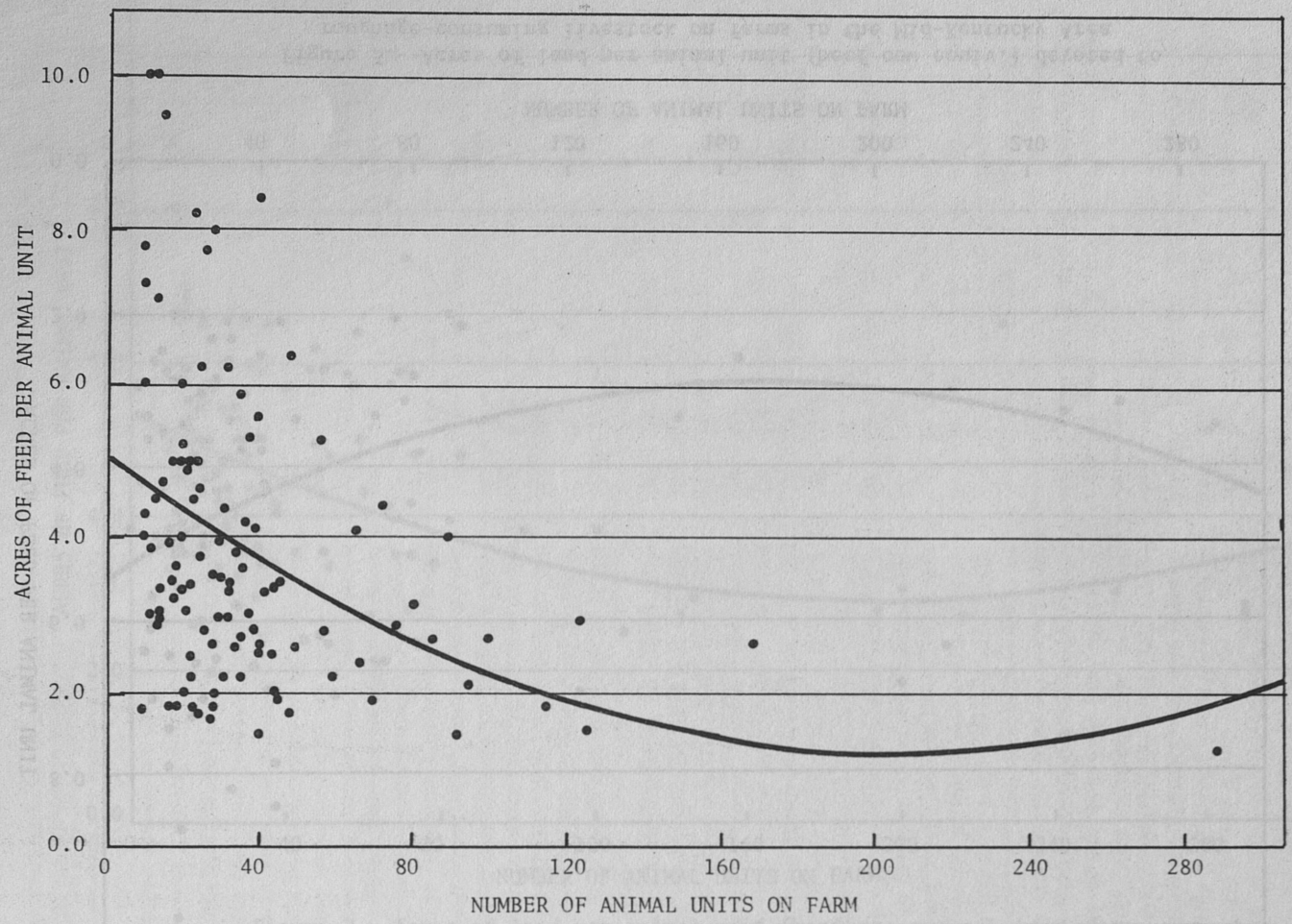

Figure 4.--Acres of land per animal unit (beef cow equiv.) devoted to roughage-consuming livestock on farms in the Ohio Valley-Pennyroyal Area

Figure 4.--Acres of land per animal unit (beef cow equiv.) devoted to roughage-consuming livestock on farms in the Ohio Valley-Pennyroyal Area

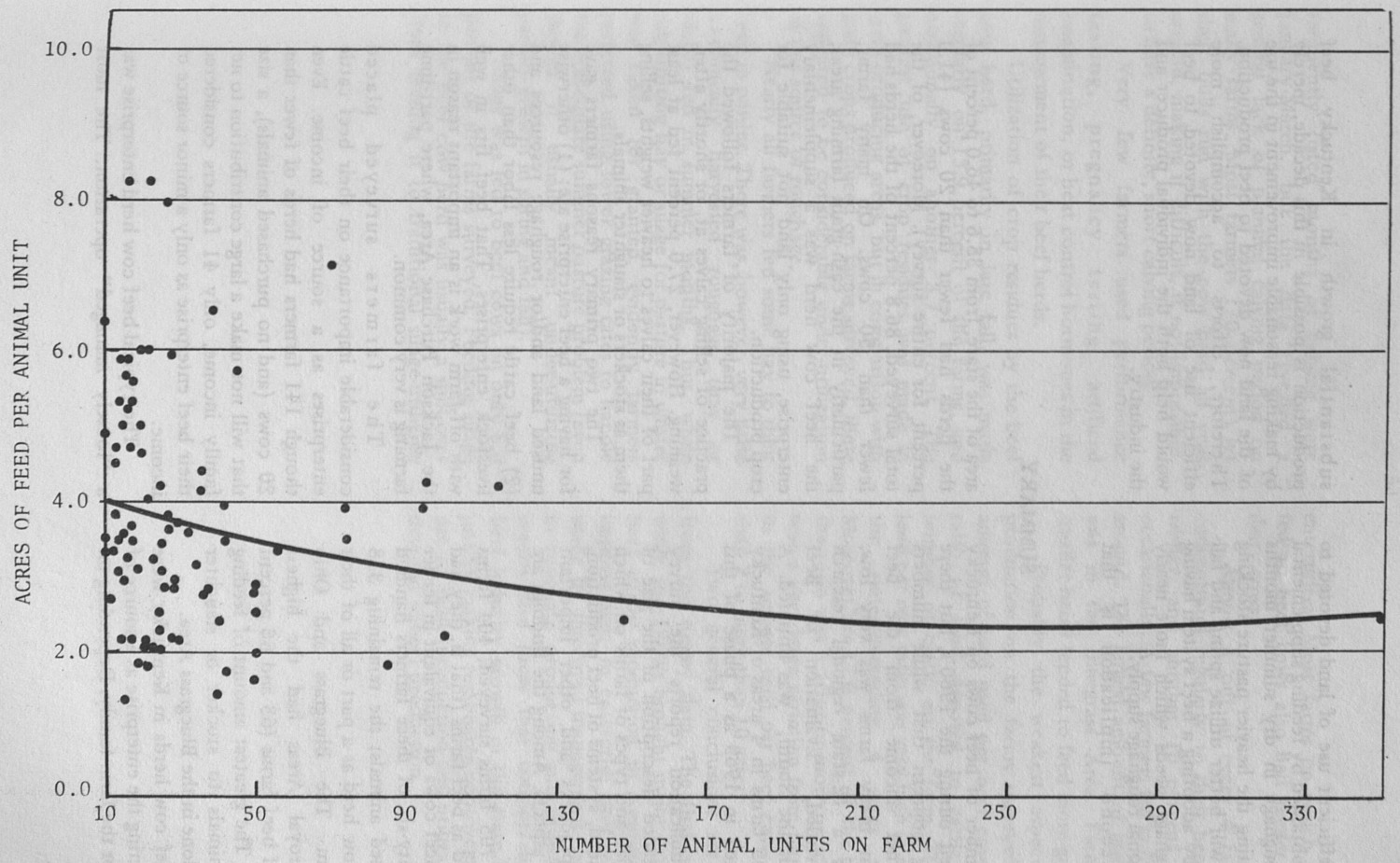

Figure 5.--Acres of land per animal unit (beef cow equiv.) devoted to roughage-consuming livestock on farms in the Purchase Area

cow. More efficient use of land devoted to beef can be obtained by feeding supplemental harvested roughage in dry summer months (thus permitting the heavier pasture stocking rates which will better utilize spring and fall growth), or by adopting a beef system having seasonal roughage needs which more nearly matches seasonal roughage supply.

The second implication is that substantial growth in Kentucky beef production is possible in this decade, merely by making reasonable improvement in the use of the land now devoted to beef production. Therefore, efforts to accomplish more efficient use of land now devoted to beef would help both the individual producer and the industry.

SUMMARY

The number of beef cows on Kentucky farms doubled during the 1960's, but there was growing concern that while numbers increased, net income from the beef enterprise on many farms was very low. Consequently a 12-state regional research project entitled, "Evaluation of Beef Production in the South," was initiated. A survey of 705 farms in 4 areas of Kentucky was conducted in 1969 as a phase of this research.

This publication reports the survey results—a detailed description of the size of beef herds, size and types of farms on which beef is produced, systems of beef production, production practices and other important management aspects. Among the findings are the following:

Of the 705 farms surveyed, 404 farms were classified as beef farms (that is, they had 10 or more beef cows or equivalent in feeder cattle). Twenty-six of these farmers handled only purchased animals; the remaining 378 had a beef cow herd as a part or all of their beef program. The Bluegrass and Ohio Valley-Pennyroyal Areas had the highest proportion of beef farms (63 and 66 percent of all farms). The greatest amount of feeding purchased animals to stocker or slaughter weights was done in the Bluegrass Area.

Most beef cow herds in Kentucky were small, considering the enterprise as a source of net income for the farm family. Depending on area of the state, from 38.6 to 46.0 percent of the herds had fewer than 20 cows (41.0 percent for entire survey). Moreover, of the total surveyed, 86.8 percent of the herds had fewer than 50 cows. On many farms, particularly in the cash-grain farming areas, the beef cow herd was a supplementary enterprise, using only land not suitable for crop production.

The majority of farmers followed the practice of selling calves at, or shortly after, weaning. However, 27.0 percent fed at least part of their calves to heavier weights, selling them as stockers or slaughter animals.

The two primary reasons farmers gave for having a beef enterprise are: (1) otherwise unused land and/or roughage resources and (2) beef cattle require less labor than other livestock enterprises. That beef fits in well with off-farm work is an important reason in the Jackson Purchase Area, where part-time farming is very common.

The farmers surveyed placed considerable importance on their beef cattle enterprises as a source of income. Even though 141 farmers had herds of fewer than 20 cows (and no purchased animals), a size that will not make a large contribution to net family income, only 41 farmers considered their beef enterprise as only a minor source of income.

The typical beef cow herd enterprise was a "loosely managed" operation. The most

frequently listed months of calving were January-March, but the data revealed a general lack of planned calving period on many farms. Most farmers (70 percent) let their bulls run with the cow herd all year around, making it difficult, if not impossible, to have a definite, short calving period.

Very few farmers used performance testing, pregnancy testing, artificial insemination, or heat control hormones in the management of their beef herds.

Utilization of crop residues by the beef cow herd, primarily in late fall, was made regularly on 13.9 percent of the farms, and occasionally on another 3.7 percent. The greatest use of crop residues was made in grain-producing areas, but in comparison with grain crops produced on farms surveyed, there appeared to be considerable under-utilization of this source of roughage.

Nearly all farmers fed some hay to their herd in winter. There was, however, very little mechnically harvested roughage (hay or silage) fed in summer months. Thus, while substituting hay or silage for pasture in winter was taken for granted, evidently farmers perferred using lower grazing rates to handle the inadequate summer pasture problem (even though it usually meant under-utilizing pasture growth in spring and fall).

Silage was fed to beef cows on only 8.0 percent of the farms surveyed. Feeding silage to the beef cow herd was usually a spill-over from feeding it to traditional silage-utilizing enterprises. Most farms on which silage was fed to beef cows also had feeder cattle or dairy cows.

Almost 1 out of every 4 farmers fed concentrates regularly to their beef cows in winter, and another 10 percent fed grain occasionally. A few farmers fed grain the year around. The largest amount of grain feeding was in the Bluegrass Area. Farmers with smaller herds tended to feed more grain.

Probably the weakest aspect of beef production on the farms surveyed was the amount of land used per beef cow, i.e., the ratio of land devoted to cattle and the number of cattle on the farm. The average land per cow ratio was very high in all areas of the state—exceeding 4 acres per cow. Moreover on 17.6 percent of the beef farms the ratio was 5 acres or more per cow. There was a very large variation from farm to farm in the acreage used per beef cow—from less than 2 to more than 10 acres.

Two general conclusions are apparent from the survey data. The first one is that while the 1960's brought major expansion in beef cattle production in Kentucky, much improvement in enterprise profits could be made by improved management—particularly in roughage production and utilization. The results also show that considerable further beef industry growth in the state is possible just by making reasonable improvement in the use of land (production and utilization) now devoted to beef production.

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