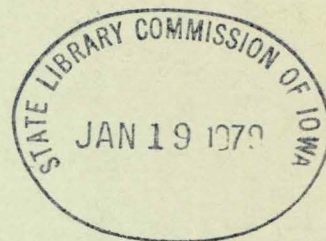


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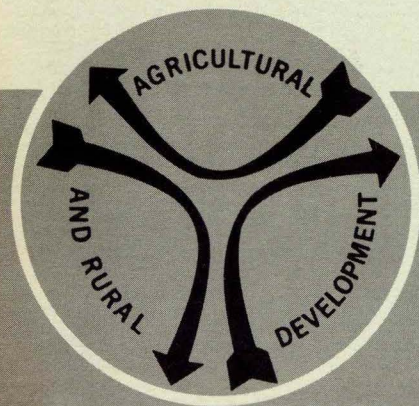
IOWA'S COMMERCIAL FARMS: An Analysis on the USDA Cost of Production Survey

By Steven C. Griffin,
P. Alan Treffeisen, and
Earl O. Heady



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MISCELLANEOUS REPORT



THE CENTER FOR
AGRICULTURE AND RURAL DEVELOPMENT
IOWA STATE UNIVERSITY, AMES, IOWA 50011

IOWA'S COMMERCIAL FARMS:
AN ANALYSIS OF THE USDA
COST OF PRODUCTION SURVEY

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Miscellaneous CARD Report

Center for Agricultural and Rural Development

Iowa State University

Ames, Iowa 50011

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The Authors

SUMMARY

The study summarizes a random sample of Iowa farms with 100 acres or more of land in 1975. The survey is a subset of a national survey initiated and conducted by the U.S. Department of Agriculture to obtain data on the cost of producing major farm products. The survey also included information on many other characteristics of farms. These data for Iowa are analyzed in the report.

Four subregions or FEDS areas were delineated within Iowa's boundaries. Within political boundaries (county and state) these areas combine, as much as possible, farming areas with similar enterprises, cropping practices, topography, and soil type. FEDS Area 100 consists of the majority of the three western tiers of counties in Iowa. FEDS Area 200 consists of a diagonal slice of counties from northcentral to southeastern Iowa. FEDS Area 300 is the northeastern corner of Iowa, and FEDS Area 400 consists of approximately the southern three tiers of counties in central Iowa. Regional differences in the Iowa sample are reported by these FEDS areas.

Statewide, the farms surveyed had a mean land area of 376 acres, crop sales of \$82,940, and livestock sales of \$50,773. Table 1 summarizes some of the regional differences revealed in the survey. The land area operated by a single farm unit averaged significantly larger in the west and south than in the north and east. Western Iowa farms also grossed significantly higher sales in crops and livestock

Table 1. Amount of average land operated, crop sales, livestock sales, and total horsepower hours used, per farm, by FEDS Area.

FEDS Area	Geographic Region of Iowa	Land Operated (acres)	Crop Sales Per Farm (dollars)	Livestock Sales Per Farm (dollars)	Total Horsepower Hours Used Per Farm (thousand)
100	West	422	\$ 114,392	\$ 91,216	86
200	North Central and East	350	\$ 84,694	\$ 45,627	76
300	Northeast	341	\$ 69,964	\$ 31,649	70
400	South Central	438	\$ 55,770	\$ 31,055	56
	State	376	\$ 82,940	\$ 50,773	NA

than the other regions of the state. Tractor horsepower used varied considerably by regions but not in direct proportion to average farm size, either in terms of land area or gross sales. No significant regional differences were found in the age of farm operators, their years of experience, or level of formal education.

Forty-eight percent of the farm operators surveyed in Iowa had 12 years of formal education (a high school diploma) and 18 percent had some post-high school training. On the average, Iowa farmers had 11.2 years of schooling. Education was positively correlated with most variables related to farm size.

Seventy-seven percent of the farmers surveyed were between 35 and 64 years of age. Eighteen percent were younger than 35 and 5 percent were 65 years of older. The mean age for the state was at the upper end of the 35-44 year group. Many variables related to farm size increased and then decreased in magnitude with operator age.

The average number of tractors owned per farm was 3.3. Forty percent had four tractors and less than 3 percent had only one.

Iowa's farms are nearly as diverse as they are numerous. Attempts to identify "outliers" (those farms which had characteristics two or more standard deviations from the mean of the sample) were difficult because nearly one-third of the sample was "unusual" in one or more characteristics. Therefore, defining a "typical" or average farm is very hard when many farm attributes are considered simultaneously. There were very few "average" farms in the sample.

The results of the survey closely followed those of the 1976 Iowa Family Farm Research project when allowances are made for the inclusion of much smaller farms in the latter survey. There were differences between the two surveys in the apparent use of hired labor by Iowa farmers, however.

INTRODUCTION

This report summarizes characteristics of a random sample of Iowa farms conducted by the U.S. Department of Agriculture. The population sampled included all farms operating 100 or more acres of cropland in 1975. The emphasis of the survey was on commercial farms.

The overall study was initiated to obtain data relating to production costs of major commodities on commercial farms. However, the survey also included information on the personal characteristics of farm operators and the size of their land and machinery holdings. Knowledge of these farm characteristics can be useful to research and educational personnel who design programs directed to farmers. Analysis of these data can be useful to policy administrators and legislators who formulate and enact policies directed at economic and social problems of farms generally or a particular strata of farms. This knowledge also can be of use to credit agencies, firms which produce agricultural inputs, or other institutions serving agriculture.

There is hardly a more encompassing or pervasive term than "farms" with which to describe the 2.7 million business firms which make up the production sector of American agriculture. Qualifying terms such as "average," "representative," "commercial," "small," and "family" farms have all been used to further target various government programs and voice public concerns about production agriculture.

Specific examples of farming operations are easy sources of agreement in discussions of what a firm needs to have or do to

qualify as a "farm." However, even with increasing commodity specialization and a declining number of farms, there continues such a diversity among agricultural production units that broad generalizations as to farm problems or conditions are almost impossible.

Periodic descriptive assessments of America's farms and farmers are needed to keep policy makers and other interested parties on target as to farming's current status and needs. Unfortunately, sample surveys of necessary breadth for statistical reliability and of significant detail for the information desired are both very expensive and time-consuming to conduct and analyze. It is therefore obvious that the maximum use be made of surveys already conducted.

The ERS Cost of Production Survey

As part of the Agriculture and Consumer Protection Act of 1973, the 93d Congress directed the Secretary of Agriculture to conduct studies of the cost of production for wheat, feed grains, cotton, and dairy products.¹ As a result of this legislation, the Economic Research Service (ERS) requested additional funding for cost-of-production surveys. Such funds were obtained, and in early 1975 the Statistical Reporting Service conducted a comprehensive national survey involving more than 6,500 farm interviews. The survey work was directed by a special ERS cost-of-production task force.

¹Section 808, Public Law 93-86, 93d Congress, Agriculture and Consumer Protection Act of 1973.

The survey was conducted in 40 production subregions delineated to represent the major crop production areas of the United States and to include areas with similar crops and cropping practices. Name lists of farm operators were compiled from ASCS lists of farmers on record by allotment farm. Multiple "farm" operators were merged into single operations. The lists were then arrayed by county and size (in acres of cropland farmed). The congressional mandate limited the study to those farms of a "size unit that required at least one man to farm on a full-time basis." Thus the farms selected for sampling ranged from a minimum of 50 acres of cropland in the Southeast to a minimum of 400 acres in the Northern Plains and the Pacific Northwest. Also, farms in counties with less than 10 percent of their total land area in cropland were excluded. The minimum amount of cropland required to be included in the Iowa sample was 100 acres (Economic Research Service, 1976).

A sample larger than needed to make statistically significant regional cost of production estimates was drawn because of the possibility that the 1973 list of farm operators was not fully representative of the farms in 1974. The sample size in each subregion varied due to the number of crops produced. The total number of farms excluded in the survey totaled 2,385 or 36.6 percent of total farms sampled. The majority of this number was excluded for not meeting the minimum cropland acreage requirement.

Cost of production data from the survey were used by USDA economists to construct Firm Enterprise Data System (FEDS) enterprise budgets.

From these FEDS budgets, national estimates of the cost of production of selected major crops were made by the Economic Research Service and reported to Congress (Economic Research Service, 1976).

In the course of the formentioned analysis, the survey questionnaire data were stored on a computer tape. From this tape, it was relatively easy to select the Iowa sample.

FEDS Areas in Iowa

Four subregions were delineated within Iowa's boundaries for the sample survey with two of these FEDS areas further divided into subareas. Within political boundaries (county and state) these areas combine, as much as possible, farming areas with similar enterprises, cropping practices, topography and soil type (See Figure 1).

FEDS Area 100 consists of the majority of the three western tiers of counties in Iowa. Marshall, Monona-Ida-Hamburg, and Galva-Pringhar-Sac are the principal soil association areas within this FEDS Area (Figure 1). Notably, the area contains the second, third, and fourth leading counties in Iowa for corn acres harvested for grain in 1976 (Figure 2). Five other counties in the area have over 165,000 acres in corn. FEDS Area 100 also includes the five leading counties in the number of grain-fed cattle marketed (Figure 3).

FEDS Area 200 (subareas 201, 202, and 203) consists of a diagonal slice of counties from north central to southeastern Iowa (Figure 2). This area contains the highly productive Clarion-Nicollet-Webster and other soils. The area includes the five leading counties in soybean

Figure 1. FEDS areas and principle soil association areas in Iowa.

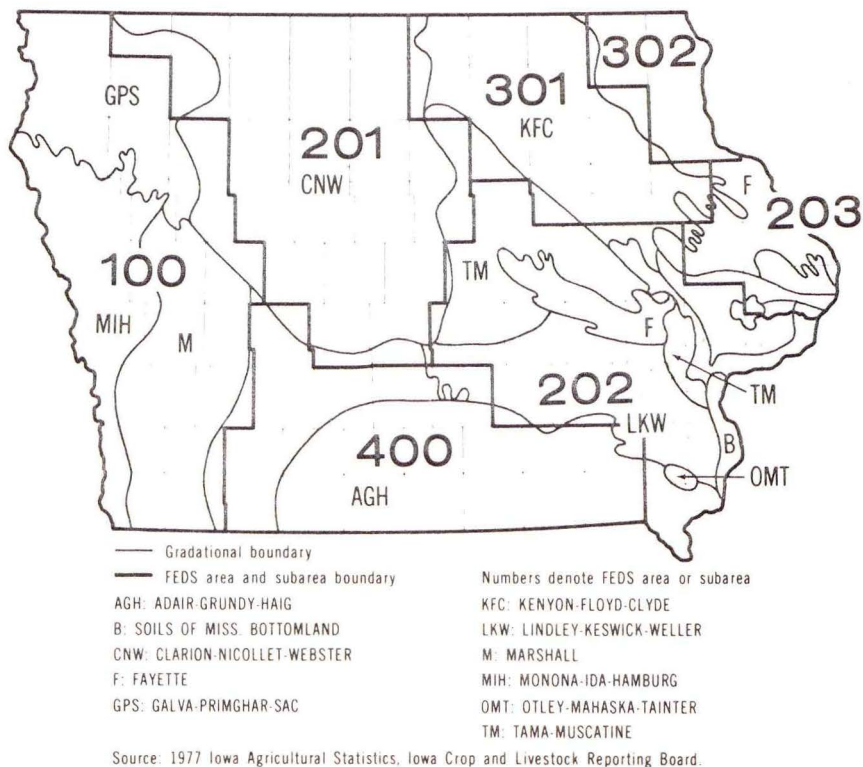


Figure 2. Corn acres harvested for grain, 1976.

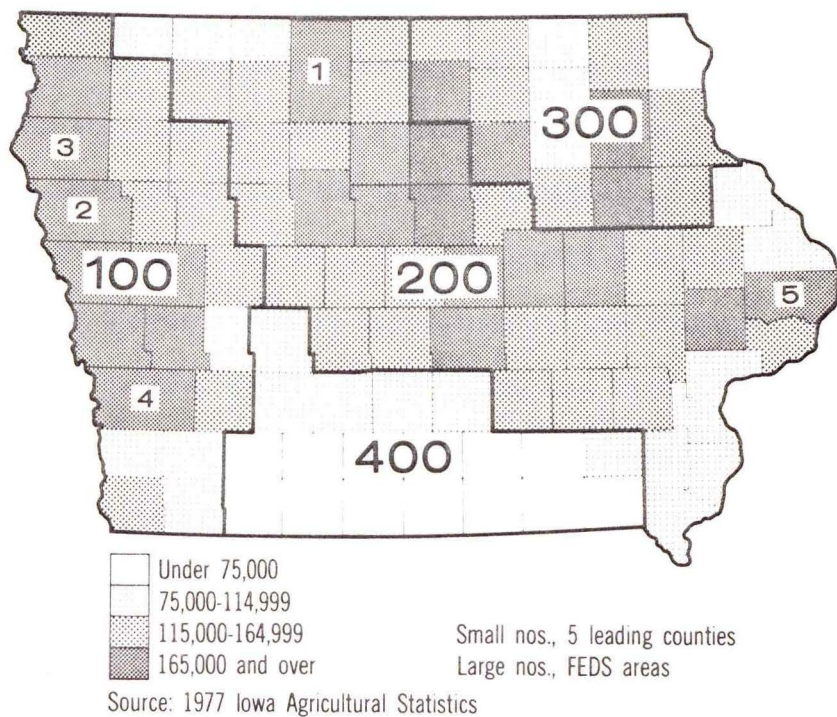
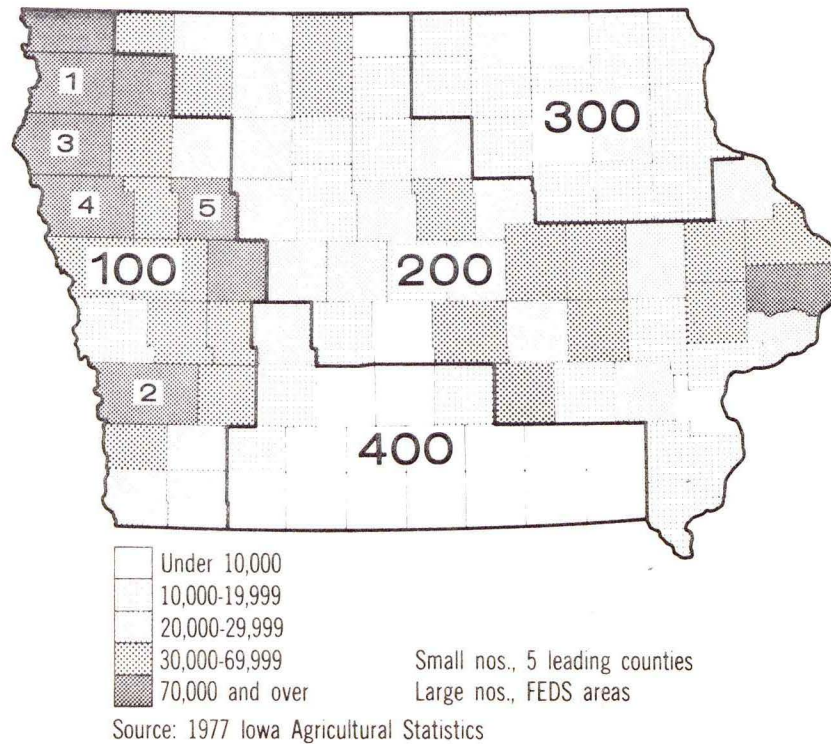


Figure 3. Number of grain-fed cattle marketed during 1976.



acreage (Figure 4) and the leading county in corn acreage harvested for grain in 1976 (Figure 2).

FEDS Area 300 (subareas 301 and 302) in northeastern Iowa (Figure 2) is notable for its high concentration of dairy production. Four of the five leading counties in number of milk cows are in this area (Figure 5). The area also contains the five leading counties in hay acres (all types) harvested and three of the five leading counties in oats acreage.

FEDS Area 400 consists of approximately the southern three tiers of counties in central Iowa. More rolling and with fewer tillable acres, this area has fewer acres in corn and soybeans than the other FEDS areas. Cow-calf enterprises are numerous, however. The area has three of the leading four counties in Iowa in number of beef cows and an additional eight counties with greater than 30,000 head (Figure 6).

Figure 4. Soybean acres harvested for beans, 1976.

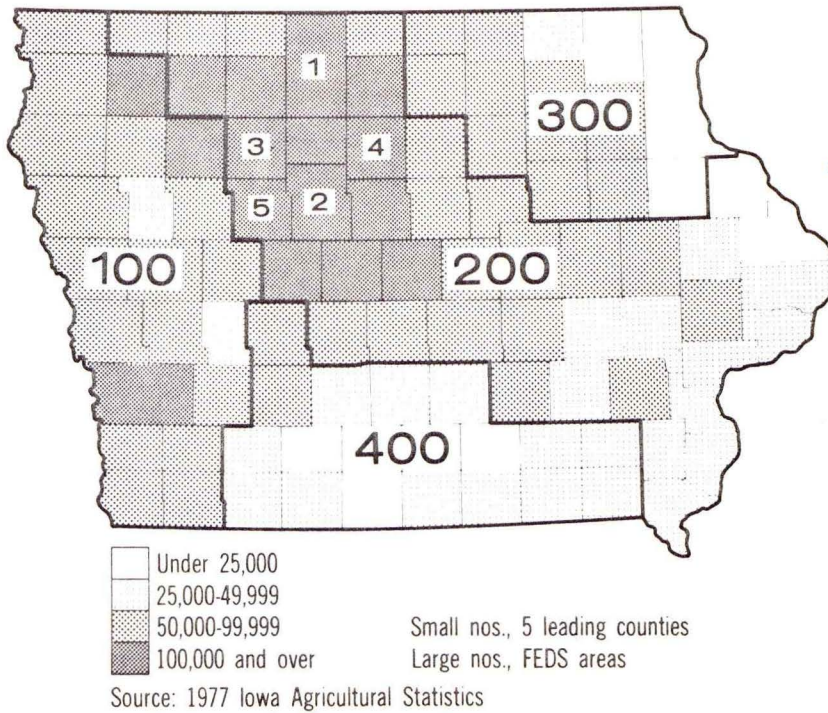


Figure 5. Number of milk cows and beefers that have calves, on farms, beginning 1977.

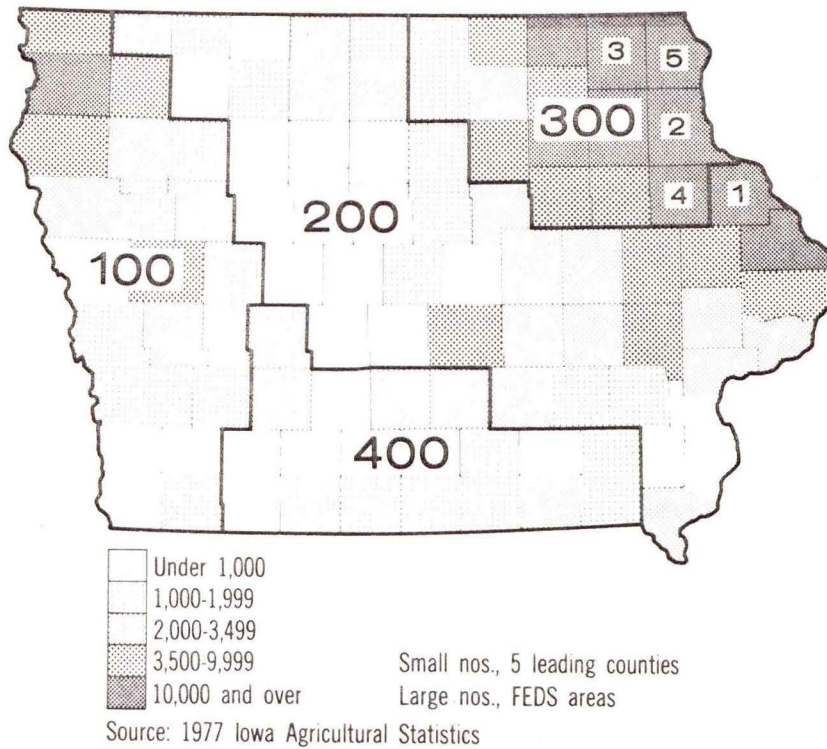
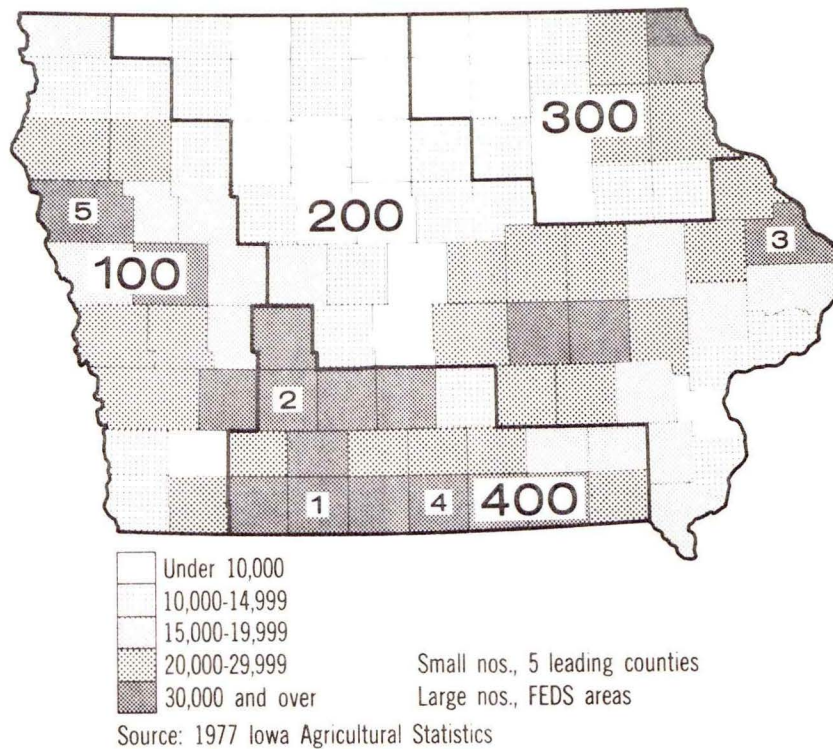


Figure 6. Number of beef cows and heifers that have calved, on farms, beginning 1977.



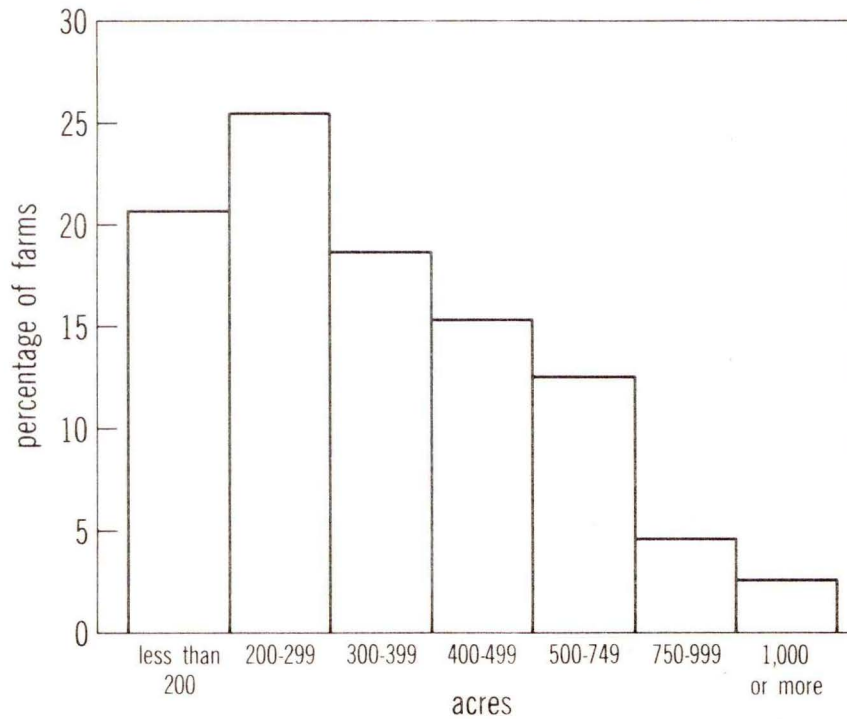
ANALYSIS OF THE COST OF PRODUCTION SURVEY

Farm Size

The Iowa farms surveyed had a mean land area of 376 acres with an average of 302 acres designated as cropland. Fully two-thirds of the farms operated on less than 400 acres, while approximately 20 percent were less than 200 acres or more than 500 acres (see Figure 7). Only 2.6 percent of the farms operated more than 1,000 acres. Fairly strong differences existed between FEDS areas.

Southern Iowa (FEDS Area 400) and western Iowa (FEDS Area 100) have relatively higher levels of land-extensive livestock activities,

Figure 7. Percentage of farms by land area operated.



and farms averaged 438 and 422 acres in size, respectively. North central and eastern Iowa and northeastern Iowa (FEDS areas 200 and 300) are more intensive cash grain and dairy areas. They averaged 350 and 341 acres in size, respectively.

The land area operated as a single farm exhibited a high degree of correlation with other variables associated with farm size, such as cropland ($R=.94$),² total land owned ($R=.60$), crop sales ($R=.60$), live-stock sales ($R=.48$), and number of tractors ($R=.39$). Crop sales ranged from a mean of \$37,878 in the less than 200 acre class to \$461,388 among farms 1,000 acres and larger, while livestock sales ranged from \$24,411 to \$434,664 per farm between these two size classes.

²The coefficient of correlation is calculated by $r = (\sum X_i y_i) / n S_x S_y$ where $S_x = \sqrt{\sum X_i^2 / n}$ and $S_y = \sqrt{\sum Y_i^2 / n}$. The square of the correlation coefficient, sometimes called the coefficient of determination, is equal to the proportion of the Y variance explained by the linear influence of X.

Land Tenure

Seventy-five percent of the farm operators surveyed owned land, and their holdings averaged 246 acres. The proportion of farmers owning land was considerably higher in the southern and northeastern FEDS Areas (84 and 82 percent, respectively) than in the western and north central areas (73 and 68 percent, respectively). The differences may be attributed either to the type of farming (e.g., more livestock breeding enterprises) or the relative lack in the latter areas of an active land rental market which would allow farmers to expand their operations without having to purchase additional land.

The proportion of farmers owning land rose continuously with the operator's age, from only 33 percent among the youngest farmers to more than 85 percent among those 65 or older. The larger operators were also more likely to own some of their own land. Sixty-eight percent of those farming less than 200 acres owned land, while 92 percent of the operators with 1,000 acres or more owned some land.

The sixty-eight percent of the farmers surveyed who rented land from others did so in an average amount of 285 acres. But, there were substantial differences among the FEDS areas as to the percent of farm operators participating in the land rental market. While nearly all of the operators in the western area rented some land, only three quarters of those in the southern and north central area and one-half of the farmers in the northeastern area rented land from others.

The proportion of operators renting land from others tended to decrease with the age of the operator, from 89 percent among those

under the age of 25 to only 42 percent among those 65 and older. The proportion of operators renting also increased with total land operated, from 47 percent in the lowest category to 92 percent in the largest category. Large farm operators were more likely than small operators to both own and rent land. Eighty-five percent of the farms surveyed with 1,000 or more acres had both owned and rented land, while only 15 percent of the farms with less than 200 acres had both owned and rented land.

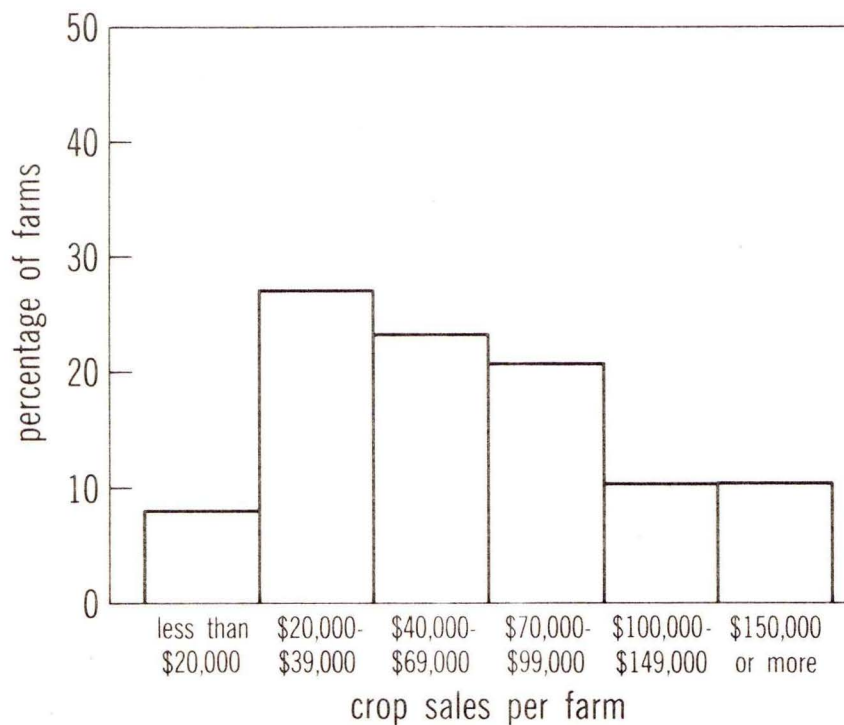
As might be expected, the incidence of operating farmers renting land to others was very small. Only two of the 502 farms sampled rented land to others.

Total Crop Sales Per Farm

Mean crop sales were \$82,940 per year, and almost 45 percent of the farms had crop sales between \$40,000 and \$100,000 (Figure 8). Approximately 28 percent had sales of between \$20,000 and \$40,000, while only eight percent had sales of less than \$20,000. Twenty percent of the farmers had crop sales of \$100,000 or greater.

Crop sales displayed a high positive correlation with variables relating to size of operation, including livestock sales ($R=.97$), total land operated ($R=.60$), and feeder cattle purchases ($R=.67$). Livestock sales ranged from \$7,411 in the less than \$20,000 crop sales category to \$232,441 in the \$150,000 or more class. Total land operated ranged from 241 to 727 acres for these two sales classes. Grain storage increased from 3,338 to 23,594 bushels between the lowest and

Figure 8. Percentage of farms by crop sales.



highest of these two sales classes. The farms in the smaller sales class had an average (3.0) of one less tractor than those in the largest sales class (3.9). Total labor hours hired increased from 150 to 1,842 hours, while the percentage hiring labor went from 5 to over 60 percent between these two sales classes.

There were striking differences in crop sales between FEDS areas as shown by these summary figures:

FEDS Area	Region of Iowa	Crop Sales Per Farm
100	western	\$114,392
200	north central and eastern	84,694
300	northeastern	69,964
400	southern central	55,770

The high correlation between crop sales and livestock sales ($R=.97$) is evidence of a complementary relationship between the two activities. The better known livestock areas had much higher crop sales than did the other areas.

Crop Sales as a Proportion of Total Sales

Crop sales represented an average of 74 percent of the total sales of the farms surveyed. Approximately 28 percent of the farms had crop sales which represented a proportion from 0 to 59 percent of their total sales. Thirty-five percent of the farms fell into the 60 to 79 percent category, 22 percent into the 80 to 99 percent category, and 14 percent had all crop sales (no livestock sales). The dairy and cash grain areas had a higher percentage of their sales in crops than did the livestock and pasture areas, as shown in the following summary:

Crop Sales as a Proportion of Total Sales

FEDS Area	Region of Iowa	Percentage
300	northeastern	76.9
200	north central and eastern	76.7
100	western	70.0
400	southern	67.0

Crop sales and livestock sales seem to be complementary activities, both negatively correlated with the ratio of crop sales to total sales. Livestock sales averaged \$108,789 in the group of farms with grain representing 0-59 percent of total sales, declining to zero as grain made up an increasingly large percentage of total sales. Sales of crops ranged from \$121,345 in the group with 0-59 percent of sales from crops to \$65,084 in the group with all crop sales (no livestock sales).

Livestock Sales

Overall, 86 percent of the farms surveyed had livestock sales. The proportions ranged from 91 percent in western and southern FEDS areas to 86 percent in the northeastern FEDS area and 80 percent in the north central FEDS area. The average sales were \$50,773 per year at the state level, with sales of \$91,216 for the western, \$45,627 in the north central, \$31,649 in the northeastern and \$31,055 in southern FEDS areas.

Feeder Cattle Purchases

Feeder cattle purchases were, of course, concentrated in high livestock sales areas. Twenty-nine percent of the operators surveyed purchased feeder cattle in an average amount of \$34,896. The percentage of farms purchasing feeder cattle by FEDS area was 43 percent for the western, 29 percent for the north central, 22 for the northeastern, and 16 percent for the southern areas. Average purchases per farm followed

almost the same order with \$54,129 for the western area, \$30,305 for the north central area, \$20,165 for the southern area, and \$16,681 for the northeastern area.

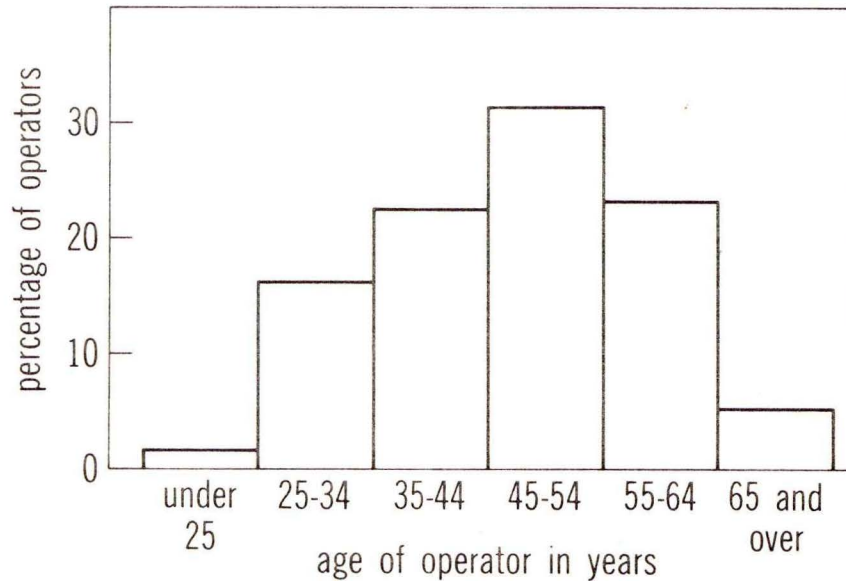
Age Distribution of Operators

Operator age was a coded variable in the survey. The mean age for the state was at the upper end of the 35-44 year group. The age group 45-54 years contained 31 percent of the operators (see Figure 9). Seventy-seven percent was between 35 and 64, 18 percent was younger than 35, and five percent was 65 years or older. Only 1.8 percent of the operators surveyed was under 25 years of age. There were no significant differences in average age among FEDS areas.

Age was negatively correlated ($R=-.41$) with schooling but displayed a strong positive correlation ($R=.84$) with experience. Farmers younger than 25 had an average of three years more schooling (12.8) than those 65 years and older (9.8 years). The average farming experience of the two groups was 3.0 and 40.3 years, respectively. If we take age as normally distributed within the classes, the farmers surveyed began farming at an average age of 23 among the 25-34 age group and at 28 among the 55-64 age group.

Many variables related to farm size increased and then decreased with operator age. Total land operated went from an average of 329 acres in the less than 25 years of age group to 408 acres in the 35-44 group and back down to 242 acres among farmers 65 years and older. Land owned increased from 160 acres among the farmers in the youngest group who

Figure 9. Percentage of farm operators by age.



owned land to 263 acres in the 55-64 group and then fell back to 209 acres among operators 65 and over. The percentage of farmers owning land increased throughout the range, however, from 33 percent of those less than 25 years old to 85 percent among those 65 and over.

The average amount of land rented from others fell from 310 acres to 182 acres between the youngest and oldest groups, while the proportion of the farmers renting from others declined from 89 percent to 42 percent.

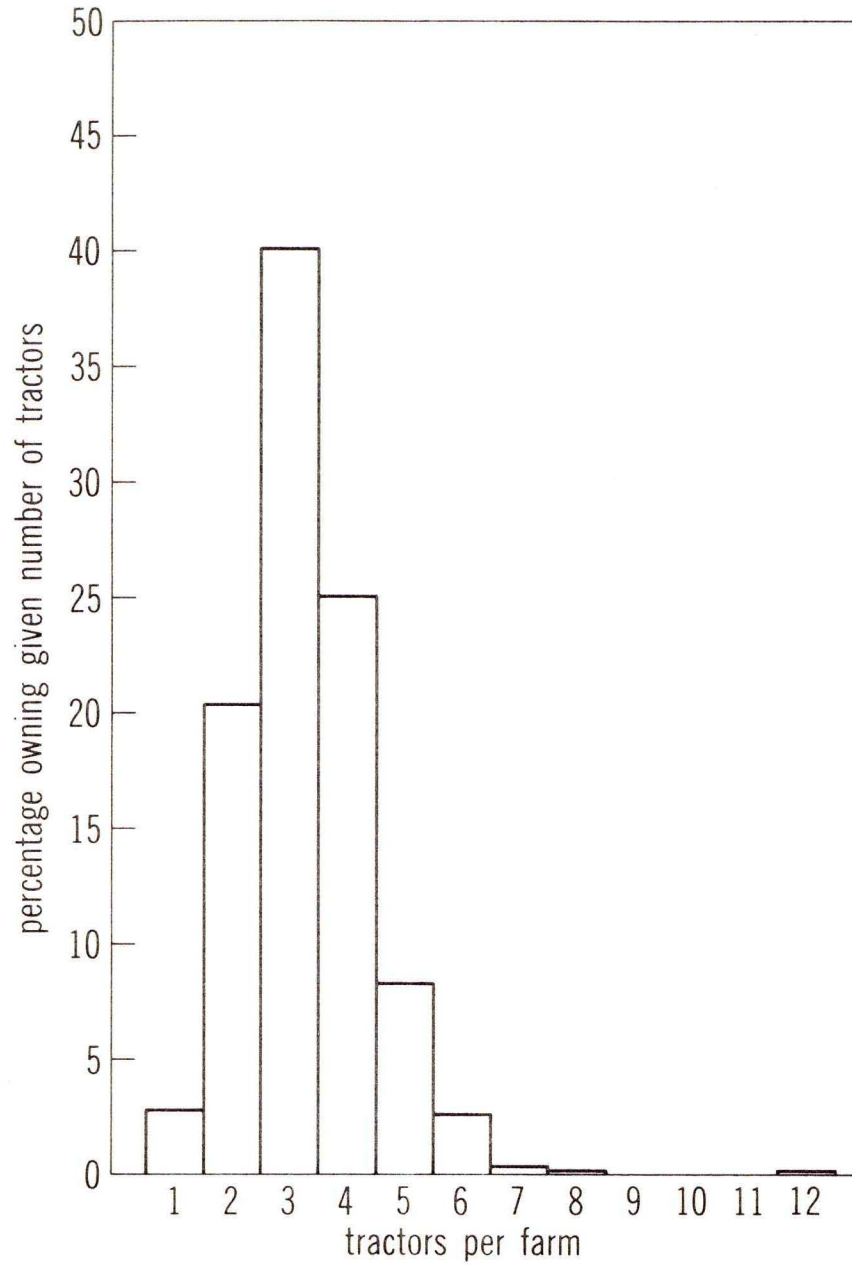
Farmers in the 35-44 age group had the highest crop (\$113,452) and livestock (\$78,778) sales. Operators ages 65 years and over had the lowest mean crop sales (\$38,322) and the second lowest livestock sales (\$21,571), while those less than 25 years old had the second lowest crop sales (\$46,083) and the lowest livestock sales (\$20,953). Eighty-nine percent of the farmers in the under 25 age group and 77 percent of those 65 years and older had livestock sales.

These findings tend to confirm the "life-cycle" hypothesis (Heady, 1952). Young farmers begin from a low equity base. Their farms are small relative to those of more established age groups and they rent much of the land they operate. As the farmer progresses through time, he builds his equity base and expands the overall size of the operation. Finally, as the farmer approaches retirement, long-term growth investments are foregone and some activities may even be cut back to provide greater leisure and easier work conditions.

Farming Experience of Operating Farmers

The average experience of the operators surveyed was 22.2 years (Figure 10), with geographic differences being nonsignificant. Judging from the data on age, the "average" farmer began his career when he was in his early twenties. A comparison of the distribution of age and experience shows that the distribution of operators age was skewed more to the right than was experience. Twenty-eight percent of the operators were 55 or over, but less than 14 percent had the 35 years of experience they would have acquired had they begun at age 20. At the other end, 10 percent of the operators had five years or less experience, while less than two percent were under 25 years of age. Such a large difference between the age and experience figures indicates significant numbers of operators either began at an older age or interrupted their farming career at some point for a few years, or both. The reasons for these actions could be manifold: schooling beyond high school (particularly in the case of farmers starting in

Figure 10. Percentage of farm operators by years of farming experience.



recent years), military service, or employment in other occupations. As a group, however, the operators were fairly seasoned--70 percent had 16 years or more experience in operating farms.

Farming experience was negatively correlated with schooling. Farmers with five years of less experience had an average of three years more formal education (13.0) than those with 35 years or more experience (10.1). As was the case with age, many variables related to farm size increased and then decreased in magnitude with farming experience. Total land operated went from 347 acres for farmers with five years or less experience to 396 acres for farmers with 15-24 years experience to 316 acres for 35 years of more of experience. Crop sales rose from \$69,911 among the least experienced operators to \$101,758 among those with 15 to 24 years experience in farming and down to \$59,419 among the most seasoned group.

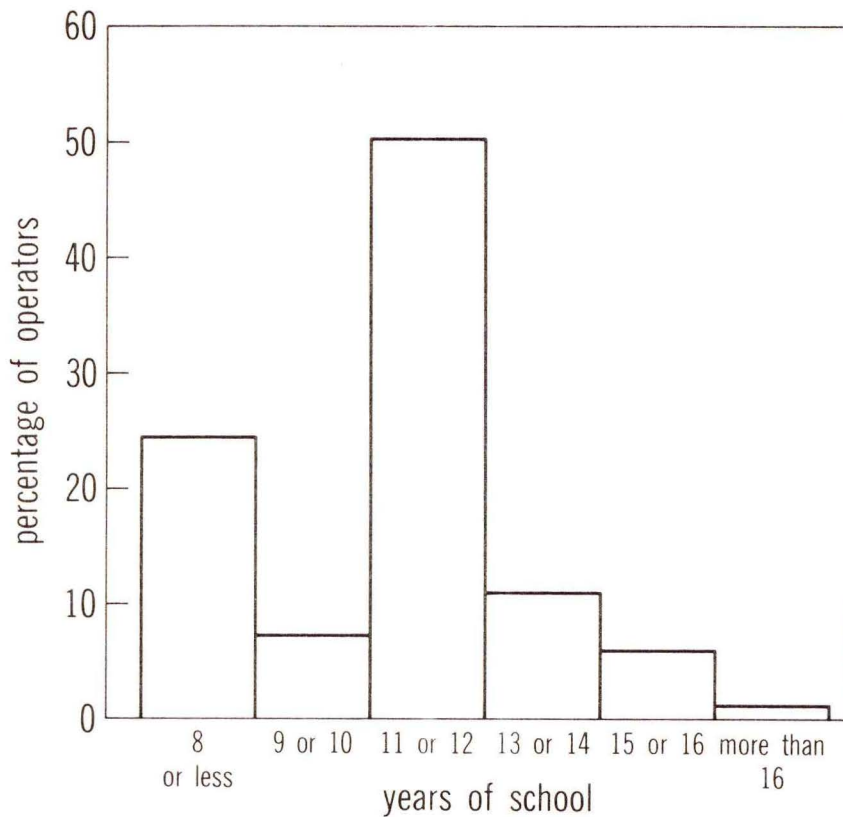
Total land owned, however, increased from 206 to 259 acres over these three groups. The proportion owning land also increased continuously, from 48 percent to 86 percent. Land rented from others, on the other hand, dropped from 310 to 204 acres and the proportion of farmers renting from others declined from 80 percent to 50 percent between the least experience and most experienced groups.

The average number of labor hours hired rose from 313 to 1,867 hours over the experience groups. There were no significant differences in the percentage hiring labor between operators grouped according to experience.

Educational Level of Farmers

Farm operators in the state sample had an average of 11.2 years of schooling. Forty-eight percent had 12 years of schooling and 18 percent had some post-high school education (Figure 11). Thus, more than two-thirds of the farmers had at least a high school education. There were no significant differences between FEDS areas with respect to education.

Figure 11. Percentage of farm operators by years of schooling.



Twenty-two percent of the operators surveyed had eight years of formal education and only 2 percent had less than a junior high level of education. Older farmers had less schooling than younger ones. Hence, as older operators retire in the coming years, the overall average educational level of Iowa farmers should increase considerably.

The negative correlation of education with age and experience has already been mentioned. From another perspective, those farmers with 8 years or less formal education had an average age of around 50, while those with some post-high school training averaged in the mid-thirties. Average experience ranged from 27.4 years among the group with the least formal education to 10.5 years among the operators with more than 16 years of schooling.

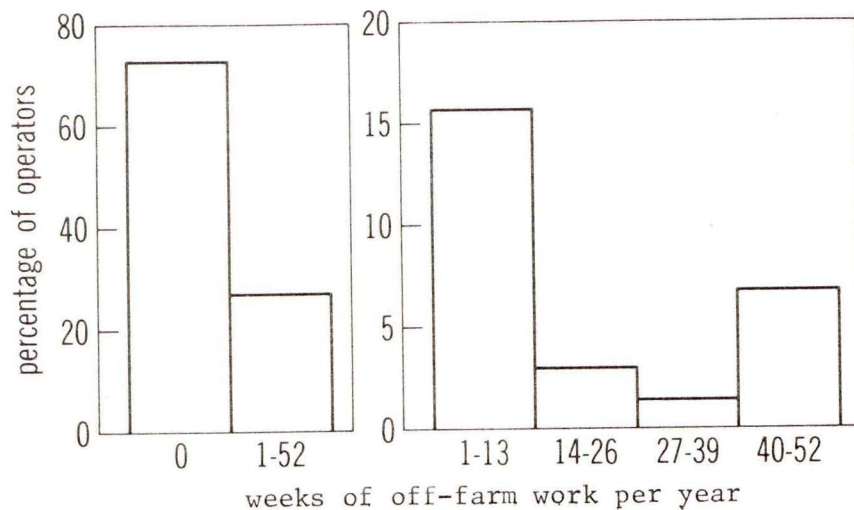
Education was positively correlated, though not always significantly, with most variables related to farm size. Farmers with some post-high school education tended to have larger farms than their counterparts with less schooling. Farms of operators with more than 16 years of schooling were on the average smaller than those of operators with slightly less formal education. Total land operated rose from 346 acres in the group with eight years or less schooling to 438 acres in the 15 to 16 years group but then fell slightly to 421 acres among operators with more than 16 years of formal education. Farmers with 13 to 14 and 15 to 16 years of formal education had mean crop sales of \$127,492 and \$94,382, respectively, compared with sales of \$83,791 for the 11 to 12 years group and \$77,590 for the operators with the most formal education.

Off-Farm Work

More than 72 percent of the operators in the survey did not engage in off-farm work (Figure 12). The 28 percent of the operators who worked off the farm did so an average of 19 weeks per year, almost four and one-half months. Nearly 16 percent of the operators worked from 1 to 3 weeks, 3.0 percent from 4 to 13 weeks, 1.4 percent from 14 to 26, 1.4 percent from 27 to 39, and 6.8 percent from 40 to 52 weeks. The north central area of Iowa (FEDS Area 200) had the greatest proportion (30 percent) of operators engaging in off-farm work. The figures for the northeastern and western area were 27 and 25 percent, respectively, while in the southern area the proportion working off the farm was 22 percent. The averages of off-farm work were 21.4 weeks for the northeastern, 19.6 weeks for the southern, 18.9 weeks for north central and eastern, and 15.8 weeks for the western areas. A ranking of the proportion of operators working off the farm followed closely the FEDS area ranking of from smallest to largest of total land operated per farm. (There was a negative correlation of $R=-.90$ between farm size and off-farm work). The true relationship, however, may have been more between off-farm work and type of farm, rather than between off-farm work and farm size per se. Of the farms surveyed, the northeast dairy area had the smallest farms, the highest percentage of operators working off the farm, and the highest average off-farm work.

There was only a small positive relationship ($R=.16$), between education and off-farm work. Off-farm work rose from 12.7 weeks among operators with the least schooling to 34 weeks among those with the most

Figure 12. Percentage of farm operators engaging in off-farm work.



formal education. The proportion of operators working off the farm also increased from 21 percent to 50 percent between those with less than a junior high school education to those with more than a four year college education, respectively.

Number, Size, and Age of Tractors on Farm

Forty percent of the farmers surveyed owned three tractors (Figure 13). Twenty percent had two tractors, 25 percent had four, and less than 3 percent had only one. The average number of tractors owned per farm was 3.3.

The tractor data were coded according to horsepower. Tractors in the 25-35, 35-49, and 50-64 horsepower range were the most common size, comprising respectively 15, 26, and 19 percent of the total number of tractors on the farms surveyed (Figure 14). Half of the operators owned

Figure 13. Percentage of farms owning given number of tractors.

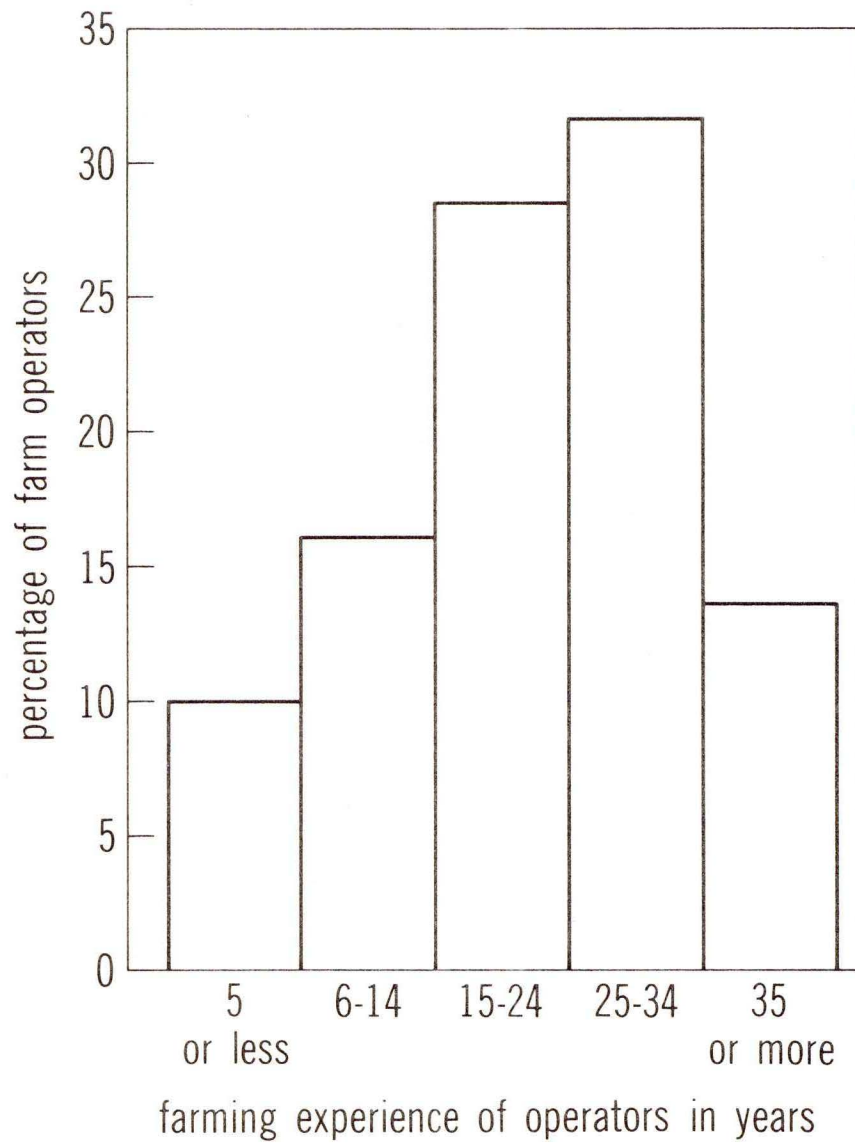
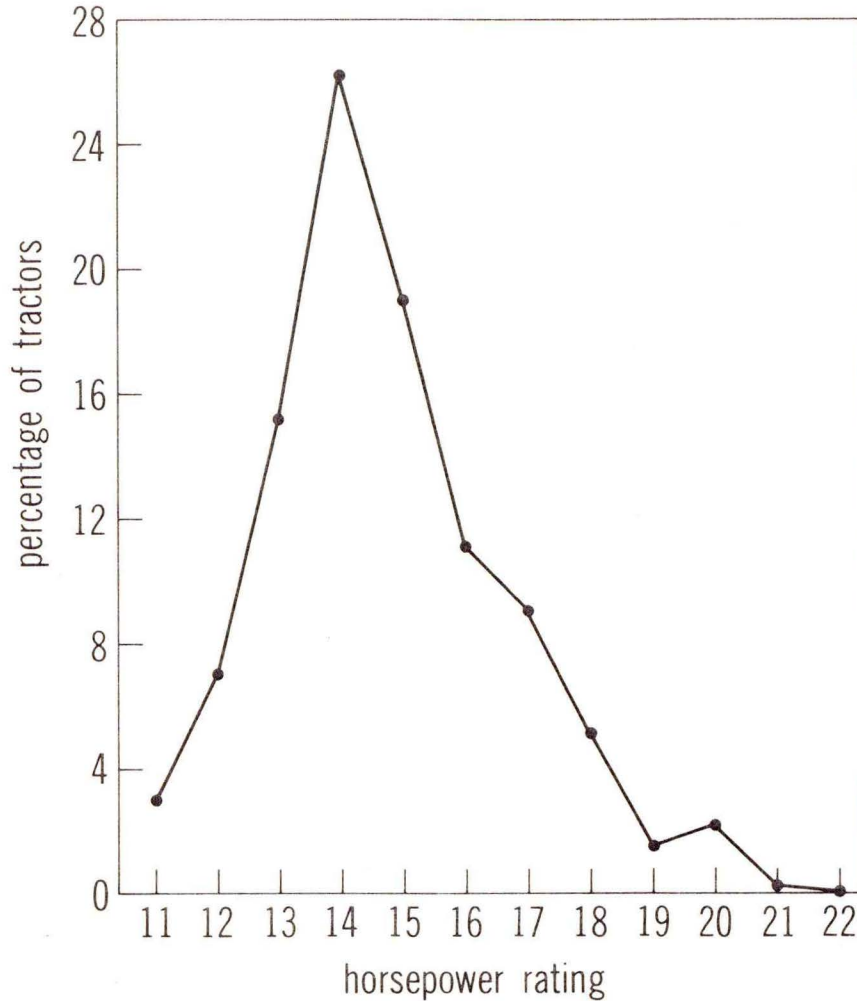


Figure 14. Percentage of tractors on farms by horsepower rating.



at least one tractor of 50-64 horsepower, and 40 percent owned at least one of 25-34 horsepower.

Larger tractors (95 horsepower or more) were fairly new in 1974, having an average year of manufacture in the 1970s. The average years of manufacture for the previously mentioned most common tractor sizes were 1953 and 1962, respectively.

The tractor complements were used for an average total of 1,160 hours (355 hours per tractor). Regional averages were 1,287 hours, in the western area, 1,185 in the northeastern area, 1,127 in the north central/eastern area, and 991 hours in the southern area. Total horsepower hours used followed in a similar fashion with 86, 76, 70, and 56 thousand horsepower hours used in the four FEDS areas, respectively. The southern FEDS area farms had fewer, less expensive tractors and used them less than any other area.

Average number of operating hours per tractor varied by region. The western area was highest, operating tractors on the average of 402 hours. The north central area followed with 344 hours. Both the northeastern and southern areas averaged 341 hours per tractor.

CONCLUSIONS

This study summarizes a statewide sample of Iowa farms taken in 1975. The 502-farm random sample was drawn from lists of farms of 100 acres or more in size. The sample was restricted to this population so that the results would especially reflect conditions of commercial farms. The survey was initiated by the Economic Research Service of the U.S. Department of Agriculture to provide data on production costs, resource inputs, and related characteristics of farms.

Iowa's farms are nearly as diverse as they are numerous. In fact, each of the 502 farms in the Iowa sample was unique in some way. Attempts to identify "outliers" (those farms which had characteristics two or more standard deviations from the mean) of the sample were

frustrated in that nearly one-third of the sample was "unusual" in one or more characteristics. A single frame profile of a "typical" Iowa farming operation is, however, a highly desired and logical product.

The Typical (Average) Iowa Farm Operator

Judging from the central tendency of the characteristics measured in this survey, it can be tentatively said that the "typical" (average) Iowa farmer is in his forties and has 18 to 28 years of experience. He is a high school graduate and operates between 250 and 500 acres, three-fourths of which is in crops. The farm operates both owned and rented land and is larger if in the southern and western regions of Iowa than in the north central and eastern areas.

The "typical" farmer has crop sales of \$60,000 to \$80,000 per year; more if in the better known livestock areas. Livestock sales comprise approximately one-fourth of total sales. He maintains between 9,000 and 10,000 bushels of grain storage and 1,250 and 1,450 gallons of fuel storage capacity. The operator owns three tractors with a total book value of approximately \$15,000. One tractor is probably a small, very old utility tractor and the others are newer, higher horsepower models. The typical farmer uses his three tractors a total of 1,200 hours per year, but again it is likely that one of the tractors is used significantly less than the other two. The total horsepower of the tractors owned is approximately 180 to 200, but from the information obtained on tractor distribution by size, it is evident that tractors smaller than 65 horsepower predominate. Any discussion of the "typical"

farm, however, must take into account the diversity of Iowa's agricultural operations. For instance, only 18 of the 502 farms in the sample fit the above rather broad delineation in every detail. Significantly more farms fit the description if one, two, or more exceptions to the above described characteristics are allowed.

The Next Ten Years

There is wide concern that not enough young farmers are establishing themselves to take the place of those who will retire in coming years. The results of the survey indicate, however, no immediate cause for alarm. The age distribution of current farm operators does not show a slow-down in young people entering farming in recent years. Within the next 10 years, most of the farmers who were in the 55-64 and over 65 categories at the time of the survey (23 and 5 percent of the sample, respectively) will become inactive. Those operators less than 25 or between 25 and 34 at the time of the survey (2 and 16 percent of the total) will become an important economic force and will have increased their holdings and their equity over 1974 levels.

The farm "life-cycle" will undoubtedly continue to be an important characteristic of Iowa agriculture. It has often been said that farmers "live poor and die rich." These prospects remain for farmers in the survey. The great majority (85 percent) owned some land, an average of 208 acres, by the age of 65. This land, along with investments in buildings, animals and machinery, provides a strong capital base from which a retirement can be financed or can serve as a springboard for the young farmer who inherits the estate.

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APPENDIX

COMPARISON OF RESULTS OF THE 1974 COST OF
PRODUCTION SURVEY AND THE 1976
IOWA FAMILY FARM RESEARCH PROJECT

In 1976 the Iowa Agriculture and Home Economics Experiment Station initiated jointly with the Iowa State University Extension Service a study entitled the Iowa Family Farm Research Project. As part of the project, a survey of 933 Iowa farm households was made in early 1977 for the year 1976. Many of the same variables were analyzed as in the 1974 Cost of Production Survey, so a comparison of some of the results is useful.

The Iowa Family Farm Research Project considered only farms with gross sales of at least \$2,500. The Cost of Production Survey, on the other hand, excluded farms with less than 100 acres total land operated. Thus, the latter was the more restrictive of the two surveys. Approximately 7 or 8 percent of the farms in the Family Farm Survey had a total area operated of less than 100 acres, and this may have been the chief factor behind the differences in results between the two surveys. Furthermore, the two studies did not in general have identical classification intervals for comparable variables, so it was not always possible to make exact comparisons.

The age, schooling, and land ownership distributions were not significantly different in the two surveys. Figures on land rented can be expected to change with yearly economic conditions. Thus, only differences

in total land operated, labor hired, number of tractors, and experience were analyzed.

The Family Farm Research Project sample had mean land operated of 332 acres and 58.2 percent of all farms with less than 320 acres. The Cost of Production Survey farms, on the other hand, had a mean of 376 acres operated with 46.2 percent less than 300 acres. The percentage of farms having only one tractor was 10.6 and 2.8 for the two surveys, respectively. These differences were almost certainly due to the inclusion of much smaller farms in the Family Farm Research Project survey.

The 1976 study had 60 percent of the operators hiring labor whereas only 30 percent in the 1974 sample did so. The average amounts of labor were 569 and 1,162 hours, respectively.

The results of the Cost of Production survey showed that operators with fewer than 200 acres were less likely to hire labor than were their larger scale counterparts. Thus, the apparent use of hired labor by a greater percentage of the operators in the 1976 sample may be attributed to sampling error in the two surveys or to other factors (possibly relating to year-to-year economic fluctuations) besides the inclusion of smaller farms in the Family Farm survey.

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