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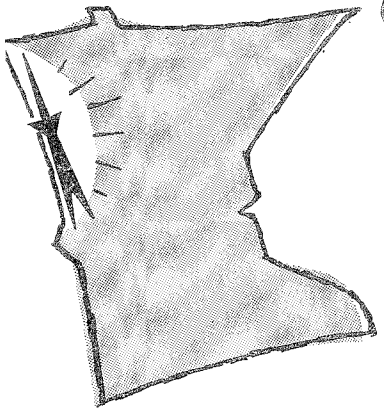

COST ADVANTAGES to SIZE of FARM in RED RIVER VALLEY FARMING

• L. C. RIXE
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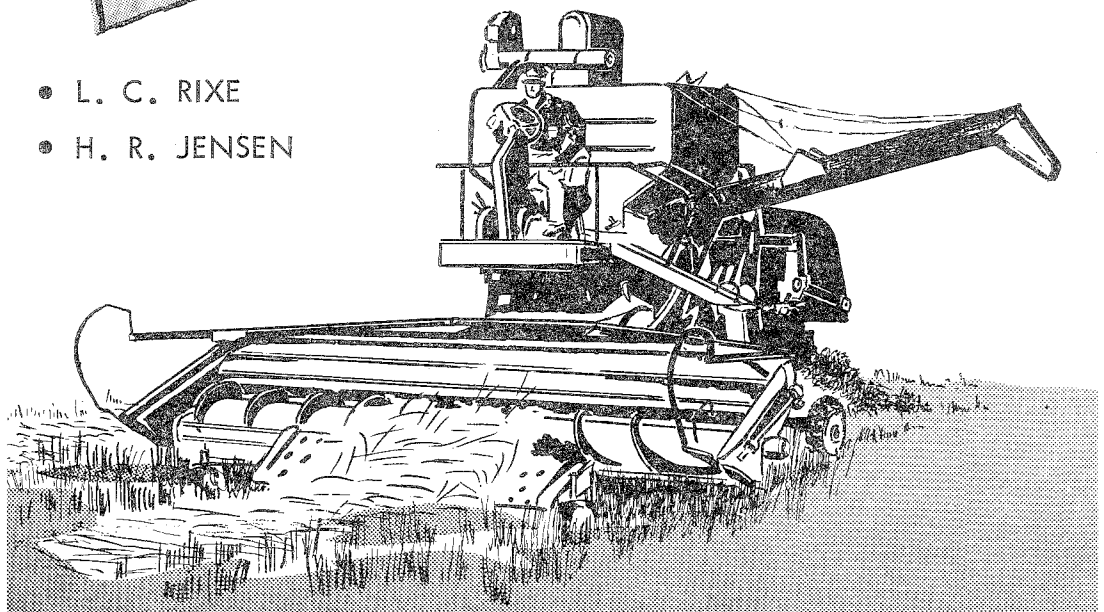

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Cost Advantages to size of farm in Red River Valley Farming

L. C. Rixe and H. R. Jensen

With farm costs mounting relative to prices received, farmers are seeking income-improving adjustments (figure 1). Several alternatives exist.

One alternative is to improve the efficiency of resources now used on the existing farm units—either by producing more product from the same resources or the same product from fewer resources. In either case, cost per unit of product is reduced.

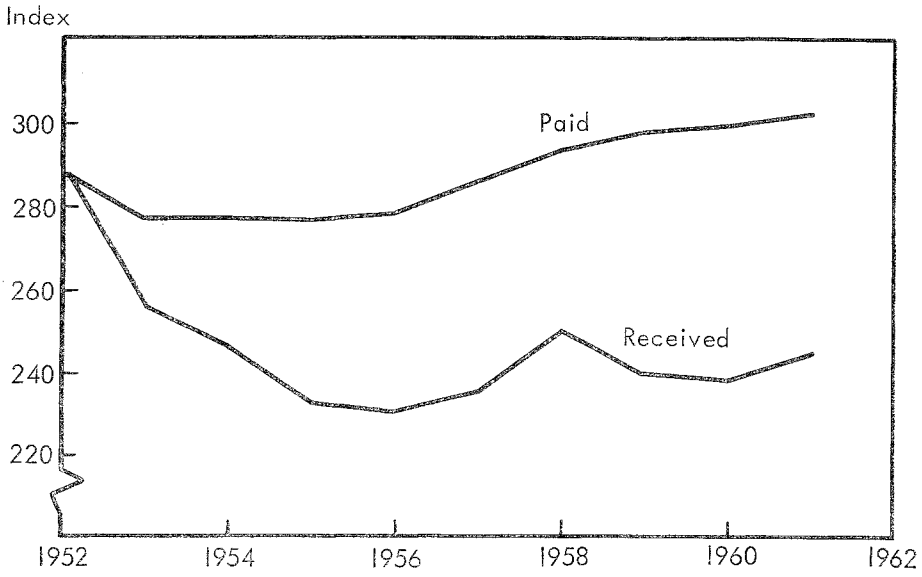

Fig. 1. Index of prices paid and of prices received by U. S. farmers (1910-14 = 100). Source: Minnesota Agricultural Statistics.

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A second alternative is to reallocate existing resources to produce a different product mix—one with a higher value. Some farmers, for example, shift resources out of oats into soybeans to produce a higher valued product. Others drop one or more livestock enterprises and shift their idled resources into the remaining livestock enterprises to attain a higher valued product. In these instances, gross incomes increase relative to costs, and costs per $100 gross income decrease. So net incomes increase.

On farms where resources are flexible in use, this alternative holds more promise than where resources are highly specialized for specific uses. The costs of modifying or adapting these specialized resources to new lines of production may more than offset the increase in income from a higher valued product.

A third alternative is to increase the size of operations by adding more capital and labor to existing land. Some farmers increase their incomes on their present acreage by applying additional fertilizer and sprays or by expanding livestock production.

A fourth alternative is to expand the size of operation by adding more land. Some farmers have the opportunity to add acreage by renting, some by buying. In either case, other farmers must then retire or move out of farming since total land area is relatively fixed.[1] This alternative appeals to many farmers who can handle more land with their existing power, machinery, and labor.

Of the 148 farm operators interviewed in this study, 70 percent believed they could operate more land with their existing power, machinery, and labor. A slightly higher percentage believed it would pay to add more land. This study investigated the economics of expanding the size of operation by adding more land as an adjustment alternative for Minnesota Red River Valley farmers.

Changes in Farm Size in the Red River Valley

As in the nation and the state, the number of farms in the Valley is decreasing while the average farm size is increasing. In 1950 the U. S. Census enumerated 14,046 farms in the seven Valley counties of Kittson, Marshall, Polk, Norman, Clay, Wilkin, and Traverse. In 1959 the count was 11,513—over 18 percent less than in 1950. This change represents a decrease of over 2,500 farms in a 10-year period. In the same period the average acre size of farms in these counties increased from 331 to 388—an increase of 57 acres. This change represents about a 17-percent increase in the average acre size of farms.

To say that the total number of farms decreased and the average size increased doesn't tell the whole story. The numbers in some size groups may have increased while others decreased or remained the same. Figure 2 shows recent changes in farm numbers by various acre size groups in the seven Valley counties. Note that from 1950 to 1959, farm numbers declined consistently in all size groups except in the two largest groups where they increased.

More specifically, since 1950 the number of farms of 500 acres or above increased while the numbers in all other size groups decreased. How-

[1] Actually the total land area for farming is being reduced in the United States as more acres are being diverted to nonfarm uses than are being reclaimed for agricultural purposes.

ever, we continue to have more farms in the 260-499 acre group than in any other group.

These figures firmly indicate that over the last decade the Valley underwent a change, not only to fewer farms in total but also to fewer farms in all size categories except in the two largest. These changes, in turn, meant a larger average acre size of farm.

Purposes of the Study

A study of farm size is of interest to consumers as well as farmers. Consumer interest focuses on the size that allows efficient operation and food at reasonable prices. Farmer interest is directed toward the size that permits efficient operation and a satisfactory income.

Farm size is related to income in two ways:

1. Where neither cost economies nor diseconomies to size exist for farms of various sizes (unit costs remain the same regardless of farm size), the larger farm has more income simply because it has a larger volume of business.

2. If costs per unit of product or per $100 gross income decline with size, the 800-acre farm nets more than twice as much income as the 400-acre farm.

Consequently, when farmers decide whether to farm or whether to increase size of operation, they need to know what happens to costs per acre or per $100 gross income as size increases.

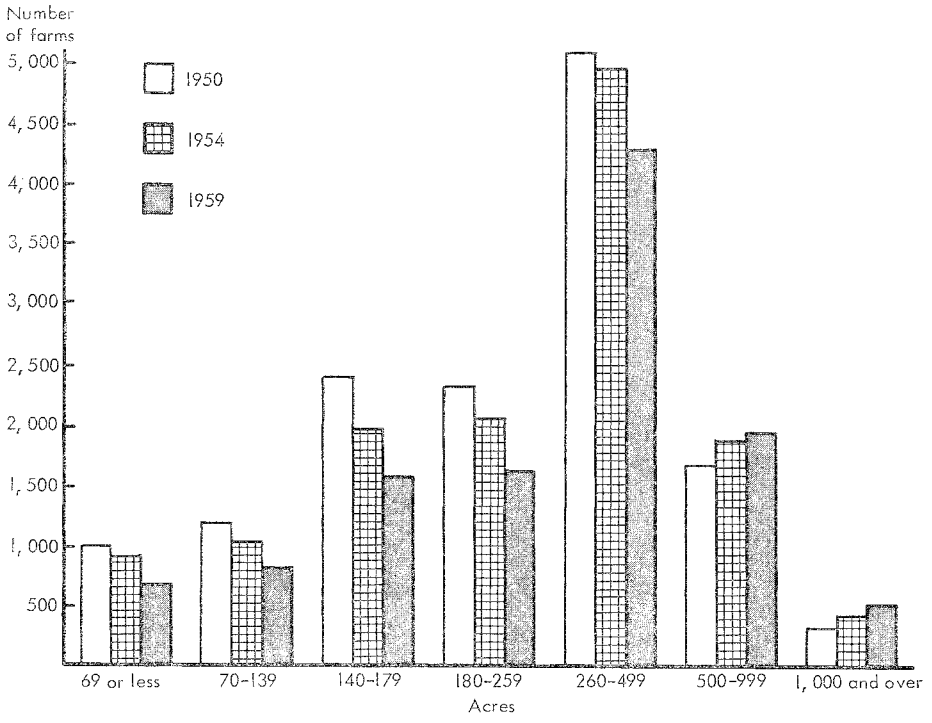

Fig. 2. Number of farms in 1950, 1954, and 1959 by acre-size groups in Minnesota's Red River Valley. Source: U. S. Census of Agriculture.

Farmers, of course, are interested in knowing what farm size is necessary to cover all costs, both cash and imputed costs, over a long time period. In other words, if a farmer is going to stay in farming over the long run, he wants a farm that pays not only the operating expenses but also yields him a rent on his land, an interest on his capital, a wage to his labor, and depreciation on his machinery and equipment. If a farm can't meet these outlays or demands over time, in terms of income the operator is better off renting his land; selling his machinery, equipment, and livestock and investing the money from such sale elsewhere; and going to work for a wage.

Since increasing farm size is one adjustment opportunity open to farmers, since farm size is importantly related to income, and since many farmers are deciding on the farm size required to make a satisfactory income, this study was made to help answer these questions for Red River Valley farmers:

1. What happens to costs per crop acre on different types of farms as acres increase?

2. What happens to costs per $100 gross income on different types of farms as gross income increases?

3. If per unit costs decline with increases in farm size, at what size have the largest declines taken place? How does this size compare with the typical farm size now in the area?

Description of the Area Studied

The study area included the Fargo-Bearden soils of the seven counties along Minnesota's northwest border known as the Red River Valley (see figure 3). A sample of 148 farms was randomly selected from the Fargo-Bearden soils area of the three central Valley counties—Clay, Norman, and Polk. From analysis of these sample farms, inferences can be made about farms located on the Fargo-Bearden soils in these three counties. Moreover, the results of the study should apply generally to farms on the Fargo-Bearden soils in all seven Valley counties because of the similarity of these soils and of the type of farming carried on over the entire area.

Fargo-Bearden soils are highly suitable for cash grain production.[2] Soils in this series are black silty clay loams and clays. Their subsoils are clay and silty clay loams. Therefore, they have high water-holding capacity—to the point where drainage can be a problem. These soils are often drained by line and highway road ditches, together with a series of field ditches. Nearly all soils of this type are used for production of cultivated cash crops.

Rainfall in the area averages approximately 20 inches annually. Over 60 percent of the moisture can be expected in May through August with each month recording 2.5 inches or more.[3] The annual average temperature is approximately 40° at both the towns of Ada and Crookston which are located in the area. The average temperature in both towns is approxi-

[2] For further explanation of the soils see H. F. Arneman, *Soils of Minnesota*, Univ. of Minn. Ext. Bull. 278, June 1963.

[3] Data on rainfall, temperature, and growing season are from Minnesota Agricultural Statistics, March 1962; U. S. Department of Commerce, *Climatological Data*, Minnesota Weather Bureau Annual Summary, 66 (13); U. S. Weather Bureau Office, *Weekly Weather, Crop, and Livestock Report*, Supplement, Minnesota, August 29, 1961 and April 24, 1962.

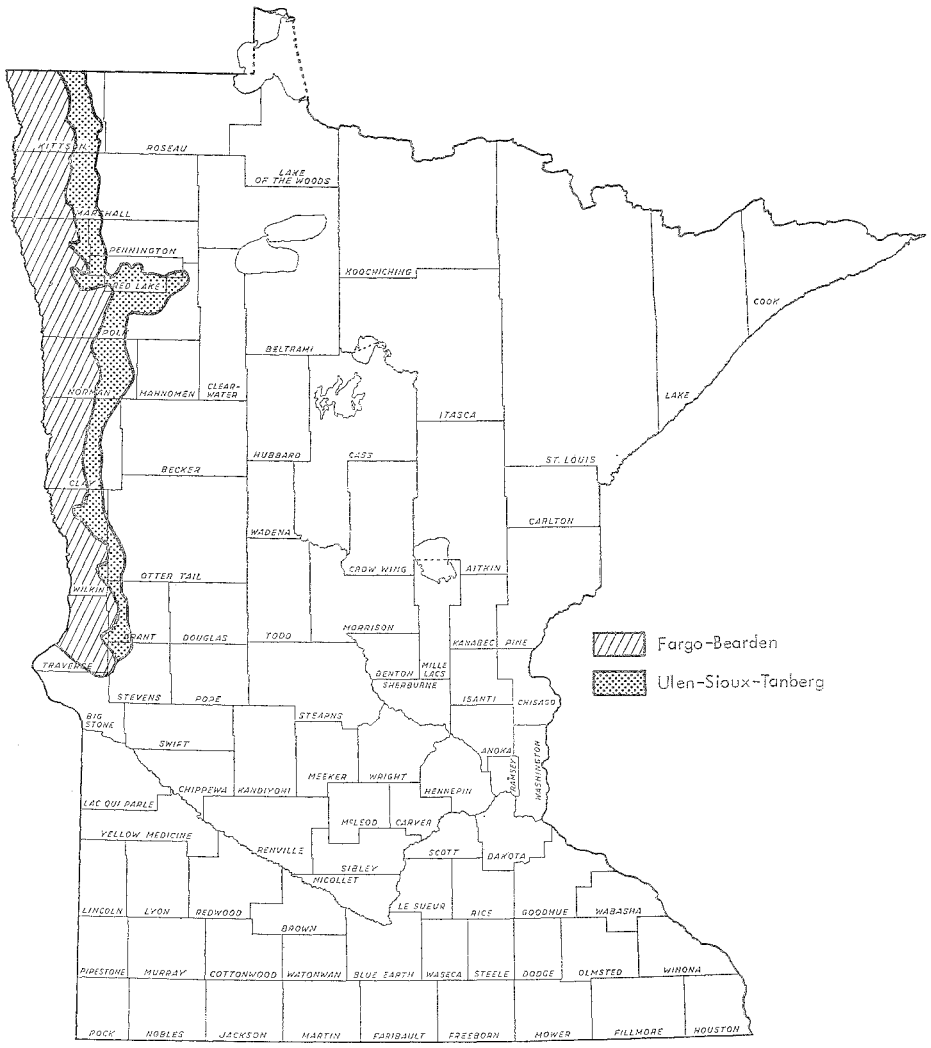

Fig. 3. The Fargo-Bearden soils area in Minnesota's Red River Valley.

mately 70° in July and August and falls to the low 60's in June and September.

Growing season length in the area varies considerably from year to year. The last killing frost at Crookston falls between May 10 and 20, 19 years out of 50, but it occurs after May 30 only 5 years out of 50. The 1960 data show that the last killing frost at Crookston was May 11 and the first killing frost was September 11, but the temperature was 32° on August 29.

The sample farms were nearly all organized on a cash crop basis. The principal cash grain was wheat, with barley and oats produced on a high percentage of the farms. Corn, soybeans, flax, and some other crops are also grown by the area's farmers.

Sugar beets and potatoes are important and are grown in rotation with the cash grains on many farms.

The amount of wheat grown is largely set by acreage allotments. Nearly all farmers in the sample indicated that they would increase the amount of wheat grown under present price conditions if they could increase their allotments. Barley acreage is increasing in the area, in response to less wheat acreage allotment. Corn is not a very important crop due to growing season restrictions. But corn is found on a high percentage of the farms with livestock where it is used as silage or feed grain. Soybean acreage is increasing rapidly; soybeans along with corn are grown in the four lower Valley counties to a much greater extent than in the Valley's northern section. Sugar beets and potatoes occupy a relatively low percentage of total cropland in the area but contribute significantly to the area's agriculture.

The most important livestock enterprise is dairying, but livestock in the Valley area studied is of relatively minor importance. Nearly all livestock classes are found in the area as supplementary enterprises to cash crops.

Information Obtained and Analytical Procedures

Prior to sampling, the farms in the sample area were grouped into eight size groups on the basis of crop acres (table 1).

About the same number of farms were randomly drawn from each size group. This was done to insure a wide range in crop acre size in the sample —a necessary condition for studying the relationship between farm costs and size.

Table 1. Crop acre size groups

Group number	Range in crop acre size
1	66-135
2	136-175
3	176-240
4	241-320
5	321-450
6	451-675
7	676-855
8	856 and over

Through personal interviews with farmers, a schedule of information was collected for each sample farm. The schedule included detailed information on costs, yields, inventories, crop and livestock practices, and farm organization relative to the individual farm business in 1960.

Yields and other production data were obtained in physical quantities. They were then multiplied by a constant price in order to measure production in dollar terms. Constant prices were used on the assumption that all farm operators in such a small geographic area received about the same prices. More important, this study was concerned with measuring the relationship between costs and farm size; and if prices received by farmers did vary considerably from farm to farm, the measure of costs per $100 gross income in relation to gross income (size) would reflect not only variations in farm size but also variations in prices received by farmers. The crop prices used were the season average prices for Minnesota in 1960;[4] the livestock prices used

[4] Crop Prices: *Minnesota Agricultural Statistics*, State Crop and Livestock Reporting Service, USDA, June 1961, p. 8.

Livestock Prices: *Livestock and Meat Statistics, Supplement for 1960*, AMS, ERS, SRS, USDA, Stat. Bull. 230, June 1961.

were obtained from prices reported at markets in or near the study area. Gross farm income consisted of three parts (see Appendix).

Production inputs were divided into these following cost groups: seed costs, fertilizer costs, land costs, noncash machinery costs, cash machinery costs, labor costs, and "other" costs. (See Appendix for definition and explanation of these cost items.) The costs for each farm were computed on the basis of costs for the faming unit as a whole—not for individual crop and livestock enterprises.

Costs, in this study, include rates of return in alternative uses to the capital and labor supplied and used by the farm operator and his family in the farm business. These rates of return are the real costs of using capital and labor in farming; in any longrun planning analysis these costs must be included. The capital invested in a farming operation has alternative investment opportunities where it would yield a return. The same can be said for the farm operator and family labor. These resources are not likely to move into or to remain in farming in the long run if they do not earn at least a return comparable to what they could earn elsewhere.

This study's main purpose was to measure and determine the relationship between unit costs and farm size. Before this relationship can be expressed, both unit costs and farm size must be defined or measured. In this study farm size was measured in two ways: (1) number of crop acres, and (2) amount of gross income. Both were used because number of crop acres is not always an accurate measure of farm business size. For instance, some farms with relatively few crop acres carry on a large volume of business because they use large amounts of capital and labor on their limited crop acreages. So a farm that processes large amounts of feed through livestock may be a relatively small farm when measured by number of crop acres but a large farm when measured in terms of volume of business or gross income.

As noted earlier, farming in the study area is primarily cash crop farming. In this type of farming, number of crop acres or amount of gross income serves equally well as a measure of farm size—the two are positively and highly correlated. However, since some sample farms combined livestock production with feed and cash crops, farm size was measured in both ways. Unit costs also were computed on a per crop acre basis and in terms of costs per $100 gross income. The analysis was then carried on to express the relationships between: (1) costs per crop acre and number of crop acres, and (2) costs per $100 gross income and amount of gross income.

In a study like this stronger inferences can be made from the sample farms to all farms on Fargo-Bearden soils when the relationship between unit costs and farm size can be established for groups of farms using similar inputs and producing similar products. To increase the similarity of the farms studied, sample farms were divided into three groups:

- Cash grain farms.
- Cash grain farms with sugar beets.
- Cash crop farms with some livestock.

Cash grain farms are farms with only cash grain crops—no sugar beets, potatoes, or livestock. The 54 cash grain farms studied were highly simi-

lar in terms of enterprise organization and varied greatly in farm size.

Cash grain farms with sugar beets are defined exactly the same as cash grain farms, but they include a sugar beet enterprise. The sugar beet enterprise varied considerably in size within this sample group of 29 farms.

The group of farms with livestock plus cash crops was less homogeneous than the other two groups. All classes of livestock were found on the 42 farms within the group. The importance or size of the livestock enterprise varied considerably between farms, but cash crop production dominated on nearly all of them.

Costs in relation to farm size then were established for each farm group using linear regression models. With this grouping procedure, inferences can be made from each group to other similar groups in the population of farms. So the results are more meaningful than if all farms were studied as a single group.

Cost Per Crop Acre Analysis

Costs per crop acre in relation to crop acres were estimated for both the cash grain and cash grain plus sugar beet farms. But costs per $100 gross income in relation to amount of gross income yields a more accurate measure of the relationship between unit costs and farm size on the cash crop plus livestock farms.

Table 2 shows the relationship between costs per crop acre and number of crop acres for cash grain and cash grain plus sugar beet farms.[5] As expected, costs per crop acre were considerably higher for farms with sugar beets because sugar beets are a high resource-using crop.

Table 2. Estimated costs per crop acre in relation to crop acres

Crop acre size	Estimated cost per crop acre	
	Cash grain farms	Cash grain plus sugar beet farms
	dollars	
100	45.70	64.80
200	41.21	56.70
300	38.79	52.44
400	37.16	49.62
600	34.99	45.88
800	33.51	43.40
1,000	32.42	41.58
1,200	31.55	40.14
1,400	30.83	38.97
1,600	30.23	37.98
1,800	.....	37.12
2,000	.....	36.38

The 54 farms in the cash grain category ranged in size from 53 to 1,683 crop acres. Only 8 of the 54 observations exceeded 700 acres. Table 2 and figure 4 show that per acre costs dropped rapidly as crop acre size increased at the small acre size levels. Most of the decrease in costs per crop acre was achieved at about the 800-crop acre size. However, costs per crop acre showed some gradual decline beyond that point.

Farms in the cash grain plus sugar beet group were, on the average, much larger than the cash grain farms. The

[5] The average cost per crop acre estimates for cash grain farms are shown in table 2 and figure 4. They were derived from the following estimating equation: $\log \hat{Y} = 1.95793 - 0.14903 \log (x)$, where x equals crop acres and $\hat{Y}$ equals estimated average cost per crop acre. The value of r^2 was 0.2763.

The average cost per crop acre estimates for the cash grain plus sugar beet farms are shown in table 2 and figure 5. They were derived from the following estimating equation: $\log \hat{Y} = 2.19706 - 0.19273 \log (x)$, where x equals the number of crop acres and $\hat{Y}$ equals the estimated cost per crop acre. $r^2 = 0.5410$.

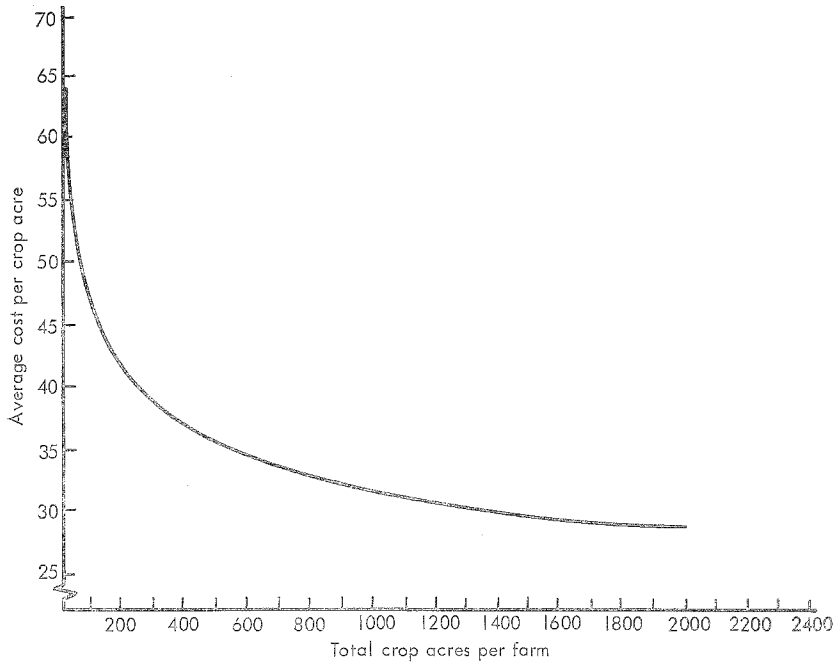

Fig. 4. Cash grain farms: average cost per crop acre in relation to crop acres (derived from the average cost curve [log $\hat{Y}$=1.95793—0.14903 log X])

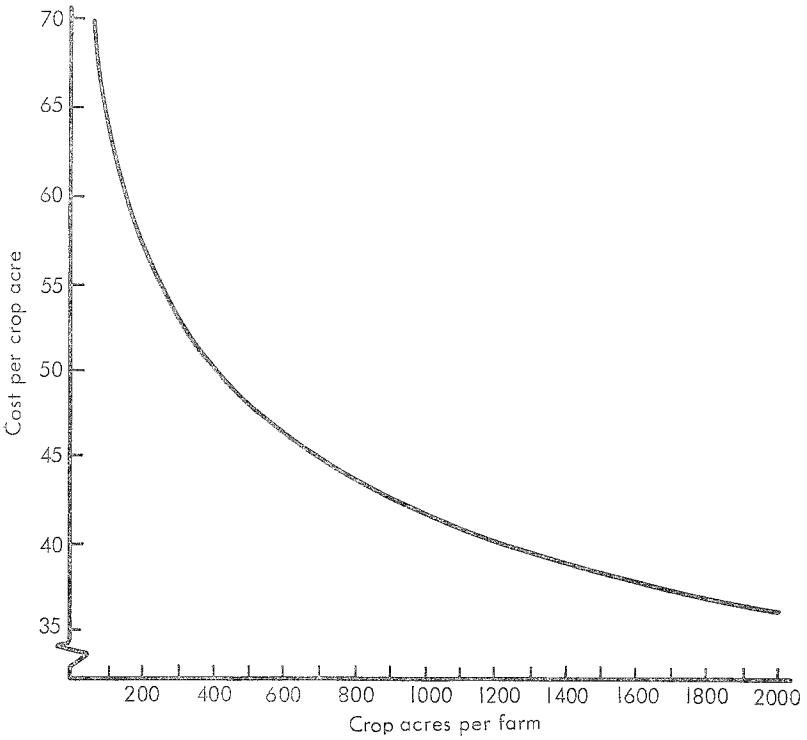

Fig. 5. Cash grain plus beet farms: average cost per crop acre in relation to crop acres (derived from the estimated average cost curve [log $\hat{Y}$=2.19706—0.19273 log X])

29 farms ranged from 153 to approximately 2,000 acres, with an average size of nearly 700 crop acres. This group also shows that costs per crop acre declined sharply at the smaller crop acre sizes with a leveling off at the larger acre sizes (table 2 and figure 5).

A move from 400 to 600 crop acres reduced costs per acre by more than $2 on cash grain farms and by approximately $3.75 on cash grain plus sugar beet farms. Average cost per crop acre for the cash grain plus sugar beet farms declined faster than on the cash grain farms over most of the acre range.

Cost Per $100 Gross Income Analysis

Costs per $100 gross income in relation to amount of gross income were estimated for all three groups (table 3).

The gross incomes ranged from $2,000 to nearly $75,000 on the 54 farms in the cash grain group. Figure 6 and table 3 show the estimated cost per $100 gross income in relation to gross income.[6]

Estimates of cost per $100 gross income in relation to gross income for the cash grain plus sugar beet group are shown in figure 7 and table 3.[7] Gross incomes ranged from slightly under $10,000 to nearly $120,000.

Table 3. Estimated cost per $100 gross income as gross income per farm increases

Gross income per farm	Estimated cost per $100 gross income		
	Cash grain farms	Cash grain plus sugar beet farms	Cash crop farms with livestock
		dollars	
2,000	176.85	.....	204.15
5,000	140.21	.....	156.09
7,000	128.75	102.27	141.77
10,000	117.63	97.43	127.41
15,000	106.15	92.20	113.14
20,000	98.70	88.67	103.99
30,000	89.06	83.91	92.35
40,000	82.80	80.70	84.88
50,000	78.24	78.28	79.51
60,000	74.72	76.37	75.37
70,000	71.85	74.79	72.04
80,000	69.46	73.44	69.28
90,000	.....	72.21	66.93
100,000	.....	71.25	.....
120,000	.....	69.50	.....

[6] The estimating equation from which the estimates were made is: $\log \hat{Y} = 2.32386 - 0.25332 \log (x)$ where $\hat{Y}$ is estimated cost per $100 gross income and x is total gross income in thousands. $r^2 = 0.5114$.

[7] The estimating equation from which the estimates were made is: $\log \hat{Y} = 2.12460 - 0.13592 \log (x)$ where $\hat{Y}$ is estimated cost per $100 gross income and x is total gross income in thousands. $r^2 = 0.2342$.

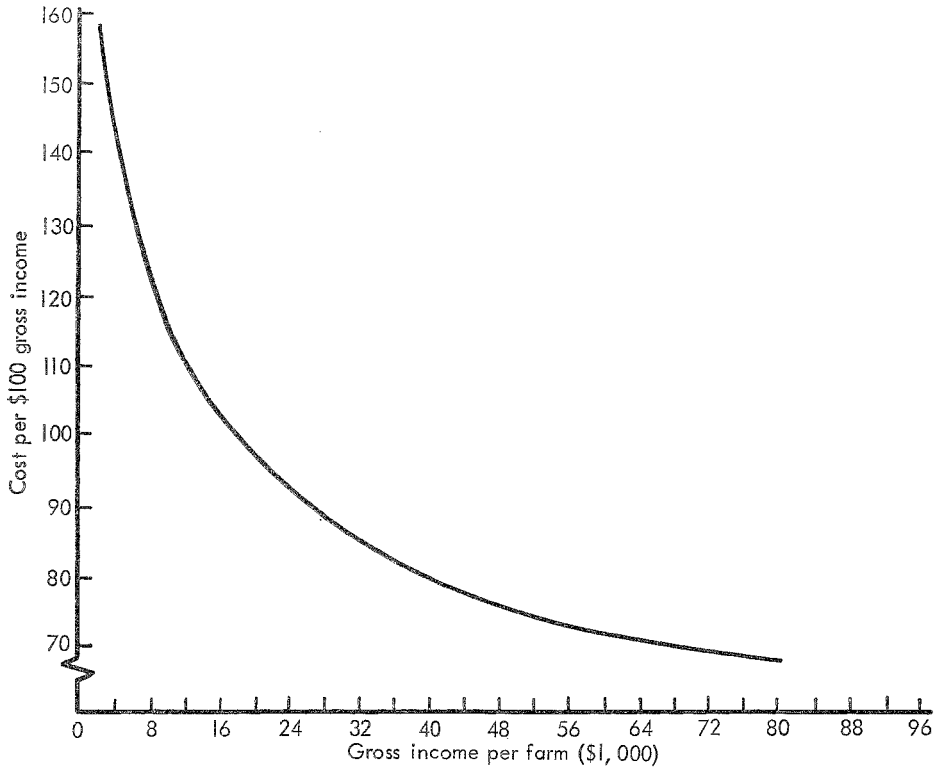

Fig. 6. Cash grain farms: cost per $100 gross income in relation to level of gross income (derived from the estimated average cost [log $\hat{Y} = 2.32857 - 0.25332$ log X]).

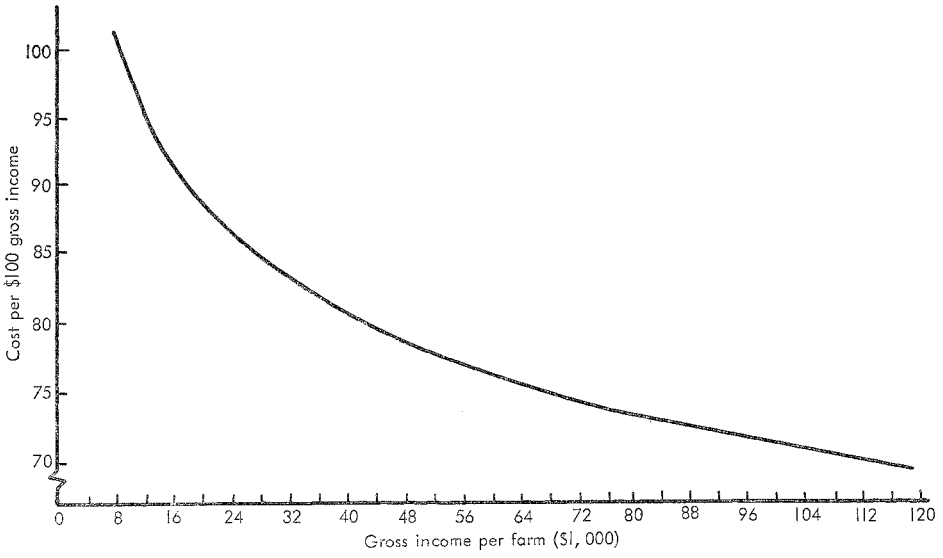

Fig. 7. Cash grain plus beet farms: cost per $100 gross income in relation to level of gross income (derived from the estimated average cost [log $\hat{Y} = 2.12460 - 0.13592$ log X]).

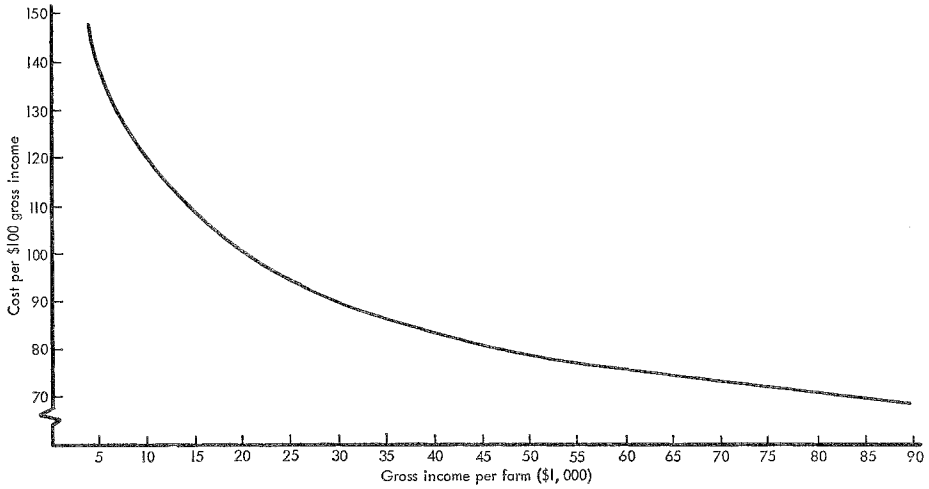

Fig. 8. Cash crop plus livestock farms: cost per $100 gross income in relation to level of gross income (derived from the estimated average cost [log $\hat{Y} = 2.39814 - 0.29295$ log X]).

Costs per $100 gross income tended to be lower for the cash grain plus sugar beet farms than for the straight cash grain farms. But costs per acre on the cash grain plus sugar beet farms were higher than on the straight cash grain farms. Although sugar beets are a large user of resources, they are a high valued crop. The latter usually more than offsets the former, giving a lower cost per $100 gross income.

Table 3 and figure 8 show the estimated relationship between costs per $100 gross income and gross income for cash crop farms with livestock.[8]

The analysis shows that costs per $100 gross income declined sharply for all three farm groups at the low gross income levels. All three groups had approximately the same costs per $100 gross income in the $40,000 to $50,000 gross income range. Unit costs dropped quite slowly in all groups beyond this point.

Remember, however, that this analysis includes not only cash expenditures but indirect costs such as depreciation and alternative returns to resources supplied by the operator in the form of labor and capital. Thus, costs cover all resources employed. The point where costs per $100 gross income equals $100 is where cash costs are covered and the alternative rates of return on capital (including land) and labor are achieved. Where costs per $100 gross income were less than $100, the farmers received higher returns on their labor and capital in their farming operations than these resources could have earned elsewhere at the rates of return assumed.

The point where resources earn as much as in alternative opportunities at the assumed rates of return is at a gross income level of: (1) between

[8] The estimating equation from which the estimates were made is: $\log \hat{Y} = 2.3981 - 0.29295 \log (x)$ where $\hat{Y}$ is estimated cost per $100 gross income and x is total gross income in thousands. $r^2 = 0.6738$.

$15,000 and $20,000 for the cash grain group, (2) less than $10,000 for the cash grain plus sugar beet group, and (3) somewhat over $20,000 for the cash crop with livestock group.

Summary and Conclusions

Both the analyses of per acre costs and costs per $100 gross income lead to the conclusion that there are cost advantages as farm size increases. These cost advantages are apparent for all three groups of farms studied.

The cost advantages or economies are large when moving from one farm size level to another within the smaller size range. Most cost economies have been realized when farms reach a $40,000 gross income size. This income level corresponds to a farm of about 1,100 crop acres in the cash grain group and to 700 crop acres in the cash grain plus sugar beet group.

When per unit costs decrease as size increases, an incentive exists (particularly for above average managers) to increase the size of business. So the upward pressure on farm size is likely to continue as many farmers seek to improve their income positions through the lower unit costs and larger gross incomes associated with increasing size. This upward pressure was also suggested by many farm operators in the sample. Approximately 70 percent of all farmers interviewed indicated they could handle more land with their present power, labor, and machinery. More than 70 percent believed it would be profitable for them to handle more land.

The strong pressure for more land to add to existing farming units will tend to hold land prices at relatively high levels. As a consequence, some farm owners will be encouraged to sell while others may hold off in anticipation of higher future land prices. If many hold off and land prices increase, unit costs will increase. Then the profitability of adding land to an existing unit may no longer be clearly evident. However, as long as adding land to an existing unit adds to the profits of the expanded unit, an incentive exists for increasing the size of the farm.

This analysis suggests that farms in the study area are likely to grow larger and to decrease in numbers for some years to come. In considering enlarging their farming units, farmers may want to evaluate carefully the alternatives available. Adding land through purchase is one alternative. Adding land through renting is another alternative, and it may be cheaper. Another alternative may be to add more capital and labor to existing land. One alternative may be best in one farm situation while another may be best in a different situation. The choice of any one or of a combination of these alternatives means handling more resources. This is likely to require more management.

APPENDIX

This appendix defines gross farm income, the cost items, and the assumptions made in their calculations.

Gross farm income consisted of three parts—crop income, livestock income, and income from custom hire. Custom hire was of minor importance and nonexistent on most farms. Crop and livestock incomes were calculated by multiplying the 1960 physical quantities reported as produced on the farm times a constant price. The state season average prices received in Minnesota for 1960 were used for all crops. Livestock prices used were those reported in 1960 at specific large markets in the study area.

Seed cost per acre was assumed uniform for all farmers for all crops except sugar beets. So uniform seed cost per acre was calculated by multiplying the recommended seeding rate times a uniform seed price which is equal to the market price of the commodity plus the treating, cleaning, and bagging cost. The sugar beet seed cost was computed by using the rate and kind of seed reported in the questionnaire and a uniform price for each kind of seed.

Fertilizer costs were computed using a uniform price for each specific analysis. The specific analysis and amounts applied were reported on the questionnaire.

Land cost was handled uniformly for each farm as all the farms were in a small geographic area on the same soil type. A value of $11 was used as the cost per crop acre. This was derived by comparing full owner costs (real estate taxes plus a 5.5-percent alternative interest charge for invested capital in real estate) with the common crop share arrangement in the area. Both yielded an average cost per crop acre at approximately $11.

Noncash machinery cost consisted of annual depreciation (15 percent of total machinery investment) and an alternative rate of interest on capital invested in machinery (5.5 percent).

Cash machinery costs, as reported on the questionnaire, included fuel, oil and lubricants, machinery repairs, machinery license, and machine custom hire.

Labor costs were divided into two groups—hired and family. Hired labor was valued directly as reported by the farmers on the questionnaire. Total hours of family labor were reported and were valued at $1.25 per hour. This rate represents what these farmers could expect to receive in alternative employment opportunities.

Other costs such as spray materials, hail and crop insurance, building repairs, feed bought, and veterinary expenses were taken directly as reported.

sugar beets, potatoes, peas, and sweet corn. But these alternatives are not usually available to all so they were not included in this area analysis. The desirability of including any of them in the cropping program must be determined for each individual farm situation.

This analysis using representative farms includes an acre limit on corn. The results emphasize that corn should be included at the maximum level permitted. On most farms and in most price situations considered, farm income can be maximized by devoting the bulk of the remaining cropland to soybeans. Wheat does not yield as high a return per acre. However, since the labor requirements for wheat are distributed differently than for corn and soybeans, the larger farms especially might profitably include wheat in their cropping program. This analysis suggests that corn silage can, particularly with the high beef price, be used profitably to extend the farm supply of alfalfa-brome.

The livestock enterprise combinations that maximize profits varied considerably over the range of hog and beef prices considered. For the price levels considered, however, all farms will find it profitable to have beef and/or hogs as the principal livestock enterprise(s).

If all farms in the 11-county area change their farm organizations as the analysis of the representative farms at the medium price projections suggests, the aggregate output of soybeans and pork from the area would be expanded greatly, while total output from dairy would decrease. The area would become a corn-deficit area.

But changes of this magnitude are unlikely for a number of reasons:

- This analysis gives but little consideration to the risk or uncertainties of production, price, technology, and institutions such as government programs. Facing these risks or uncertainties, farmers will use a portion of their resources to set up precautions or protection against unfavorable outcomes. They will use fewer resources than are available or profitable, particularly credit, because of the fear of overextending themselves into financial difficulties.

- Above-average management, which is assumed in this study, is unlikely to exist on all farms in the area over the planning period.

- Morever, if soybean and pork production were to expand within the whole Corn Belt as the analysis suggests for this 11-county area (a small portion of the Corn Belt), prices for these products probably would be lower than those projected and increases of this magnitude would no longer be profitable.

Therefore, the full extent or magnitude of adjustment indicated by this study is unlikely to occur within this decade. But the direction of adjustment in resource use suggested by this analysis merits serious consideration by farmers in this study area.

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