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What Happens When Farms Consolidate?

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A S SOME FARM operators leave farming, their farms often are purchased or rented by remaining operators to enlarge existing units. This consolidation process results in fewer but larger, and often more efficient, farms. But it also results in fewer farmers and a change in the structure of other resources used in farming.

Between 1940 and 1959, the number of farms in the United States dropped by 30 percent, and the average size of farm increased by nearly a third. The number of workers decreased by 35 percent, but the amount of capital per worker more than doubled. During this same period, our farm output increased by over 50 percent.

The change hasn’t been so drastic in Iowa. There were fewer very small farms in the state in the first place. But changes of the same general nature have been taking place. From 1940 to 1959, the number of Iowa farms declined by 12½ percent, while the average acreage increased by 14 percent. In some parts of the state this change has been even greater. For example, in four southwestern counties—Fremont, Mills, Montgomery and Page—the number of farms dropped by 22 percent between 1940 and 1959.

What happens to the structure of farming when farms are consolidated? Do the better managers or the poorer managers leave? Do those who remain use the land more efficiently? Will this consolidating process increase or decrease farm output? How is the general structure of resource use affected?

We Studied Some . . .

To answer questions such as these, we studied the farms and farm operators involved in the process of consolidation in 1956 in the four southwestern Iowa counties just mentioned. There were 214 farms involved—99 farms, whose operators left farming or moved to other units, were consolidated into 115 remaining farms. The average size, before consolidation, of the 99 farms was 160 acres. The average size of the remaining 115 farms was 253 acres before consolidation. After consolidation, the enlarged units averaged 390 acres.

Forty-four of the enlarged farms consolidated adjacent land. The average distance between the nonadjacent units that were combined into one farm was about 5½ miles. Some were as close as half a mile and others as far apart as 30 miles.

To keep things straight for the rest of the story, we’ll use these terms: “remaining farmers” are those who remained on their farms and absorbed all or part of another farm. “Leaving farmers” are those who gave up a farm, which was then consolidated with another, and moved elsewhere. “Consolidated farm” refers to the enlarged unit resulting from a combination of one of the remaining farms with all or part of a farm given up by a “leaving farmer.”

Of the remaining farmers, 43 percent were mainly owners, and 57 percent were mainly renters. Of those leaving farming who hadn’t retired or died, 27 percent were owners, 73 percent renters.

Leaving Farmers . . .

Here’s what happened to the leaving farmers—24 percent took a nonfarm job outside of Iowa, 22 percent took a nonfarm job in Iowa, 19 percent moved to a larger farm, 10 percent moved to a smaller farm, 20 percent retired and 5 percent died. Only one leaving operator moved as far east as the Mississippi River. And practically all of those taking a nonfarm job outside of the state moved to California, Oregon or Washington.

Some of the operators who “pulled stakes” and moved a long distance to nonfarm jobs appeared to be some of the better managers. But, as an average for all the operators leaving farming, those who left used fewer information sources and poorer farming practices than those who remained and consolidated.

How Groups Differ . . .

How did the total of leaving operators, on the average, differ from remaining operators?
Some comparisons among "leaving" and "remaining" farm operators, their farms and the resulting consolidated units.

### THE OPERATORS:

<table>
<thead>
<tr>
<th></th>
<th>Leaving operators</th>
<th>Remaining operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainly owners</td>
<td>27%</td>
<td>43%</td>
</tr>
<tr>
<td>Mainly renters</td>
<td>73%</td>
<td>57%</td>
</tr>
<tr>
<td>Used fertilizer in 1956</td>
<td>15%</td>
<td>35%</td>
</tr>
<tr>
<td>Made soil test since 1954</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td>Sprayed weeds in corn</td>
<td>39%</td>
<td>45%</td>
</tr>
<tr>
<td>Read agricultural college publications</td>
<td>25%</td>
<td>41%</td>
</tr>
<tr>
<td>Active contact with county extension director</td>
<td>16%</td>
<td>26%</td>
</tr>
<tr>
<td>Read farm magazines</td>
<td>82%</td>
<td>94%</td>
</tr>
</tbody>
</table>

### THE FARMS:

<table>
<thead>
<tr>
<th></th>
<th>Leaving operators</th>
<th>Remaining operators</th>
<th>Consolidated units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm size</td>
<td>160 A.</td>
<td>253 A.</td>
<td>390 A.</td>
</tr>
<tr>
<td>Corn yield per acre</td>
<td>43 bu.</td>
<td>48 bu.</td>
<td>48 bu.*</td>
</tr>
<tr>
<td>Soybean yield per acre</td>
<td>21 bu.</td>
<td>25 bu.</td>
<td>25 bu.*</td>
</tr>
<tr>
<td>Value of fertilizer used</td>
<td>$300</td>
<td>$208</td>
<td>$401*</td>
</tr>
<tr>
<td>Value of machinery</td>
<td>$2,930</td>
<td>$7,344</td>
<td>$8,981</td>
</tr>
<tr>
<td>Capital used per man</td>
<td>$35,745</td>
<td>$50,044</td>
<td>$62,681</td>
</tr>
</tbody>
</table>

*Expected.

Before consolidation — by giving up off-farm work, by employing family labor more fully and by using some hired labor. But the value of machinery and the amount of labor used on the total farm acreage was less after consolidation than the amounts used on the separate units before consolidation.

Remaining operators replaced only 30 percent of the labor withdrawn by the leaving operators. They replaced only 65 percent of the value of machinery used by the previous owners. Many of the remaining farmers didn’t add machinery after consolidation since they had surplus capacity before consolidation. The 115 remaining operators added only 23 tractors, 11 cultivators, 7 planters and a few pieces of other machinery in the first crop year after consolidation. This compares with over 100 tractors which originally existed on the 99 farms taken over. Of course, more machines may be added later on the consolidated units.

The proportions with which resources were used changed considerably after consolidation. The value of capital used per man, as an average for both groups of operators, was $44,974 before consolidation. But after consolidation, the remaining operators were using $62,681 of capital per man.

Before consolidation, as an average for both groups, about 21 hours of labor were used per acre on crops and livestock. After consolidation, only 14 hours were used. But the amount of machinery investment per man-year jumped from $3,744 before consolidation to $5,960 after consolidation. (These figures are based on the value of machinery on the farms. The purchase or new value would be much higher.)

In general, then, capital and machinery were substituted for labor through the process of consolidation. And the combination of resources changed. The land area remained the same after consolidation, but less total capital was represented by machinery and more was represented by fertilizer and related capital resources.

Leaving farmers had spent only about $30 a year for fertilizer. Remaining farmers, even before consolidating, spent $208 and used about 70 percent more fertilizer per acre than the leaving farmers.

Before consolidation, yields per acre were 10-15 percent higher on the farms of remaining operators — even though the soils were generally the same on the two groups of farms. And the remaining operators expected to get yields from the land they took over as high as those they were getting from their previous unit.

Leaving operators had realized a crop volume of $5,572 per 160 acres. From this same acreage, the remaining farmers expected to get a crop volume of $8,015. They expected to get this increase on the consolidated acreage by using more row-crop acreage than that used by leaving operators. The remaining operators also expected to use more fertilizer, better practices, and to shift some pasture to rotation crops to help get this increase. And from the job they were already doing, it seems probable that they’ll get greater per-acre yields and a greater output from the land they absorbed than had the operators who previously farmed it.

Remaining operators, before consolidating, produced 2½ times the value of livestock (on a per-farm basis) than that produced by the operators leaving farming. Feeder cattle contributed the largest share of the total value of livestock produced by remaining operators. On the other hand, hogs supplied the largest share of the total value of livestock produced by operators leaving agriculture.

Nearly 70 percent of the remaining operators planned to expand livestock production after consolidation. Those that planned to keep livestock production at about the same level mentioned high debt loads and limitations in labor as important reasons. All in all, plans for the short run at least indicated that the over-all changes in livestock production after consolidation wouldn’t be enough to replace the livestock produced by all leaving operators. So total livestock production would be slightly less than that produced on the separate units before consolidation.

### More Labor, Machines?

As the leaving operators gave up their farms, they sold off their machinery and withdrew their labor. Did the remaining operators turn around and buy more machinery and labor to make up for it? Not quite. They did add some machinery—particularly larger-capacity equipment and power units. And they did add some more labor than they had used before consolidation — by giving up off-farm work, by employing family labor more fully and by using some hired labor. But the value of machinery and the amount of labor used on the total farm acreage was less after consolidation than the amounts used on the separate units before consolidation.

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Total labor input was smaller. The total of capital used in crop production, excluding land, was smaller after consolidation.

We didn’t directly measure changes in building investment, but it was apparent that many of the buildings in the absorbed units weren’t in use or weren’t going to be used. Less than a quarter of the vacated houses were going to be used as residences.

In Summary . . .

Farm consolidation seems to result in the use of better management and farm practices on the land which is taken over. Output from a given land area tends to increase accordingly. Thus, consolidation tends to result in a more efficient farm unit, with higher returns for the resources used.

But this is to be expected as people leave agriculture. Most of those leaving have been at the greatest income disadvantage because of shortages of capital or farming knowledge and skills. Aside from farmers who retire or die, “income prospects” is the major reason that operators leave.

This is one important difference between farming and other industries. If the operator of a grocery store decides to give up the business and move to another occupation, chances are that the “building resource” will move out of grocery retailing too. It may be converted to an apartment house or a drug store. This kind of shift seldom takes place as a family gives up farming. Like the grocery store building, someone takes it over. But unlike the grocery store, the new owner keeps right on producing the same products.

And, as our study indicates, the new owner may do better than the man who left. So the labor force can shrink without shrinking the farm production plant. Output can increase through this process. This is exactly what has been happening over the last 20 years. Operators with more capital and managerial skills have stayed on and enlarged their farms. Those who have left have, on the average, possessed less capital and management skill.

Why Use Soil Insecticides?

Last Year was a “good” one for soil insects. And it was a convincing one for farm operators who left untreated check strips, deliberately or accidentally, in cornfields treated with soil insecticides. High winds and heavy rains early in August made damage, particularly from root-attacking insects, much more obvious.

Iowa farmers have known for many years that harmful insects which attack seeds, seedlings and established corn plants are present in the soil. But 25 years ago about the only way to try to prevent damage was to use judgment in when and where to plant corn. When cutworms attacked, a corn grower could always mix an arsenic-bran bait and broadcast it in the infested field. Sometimes he stopped the damage. More often, he replanted his field after the cutworms matured.

Research was begun about 10 years ago with the new synthetic organic insecticides in the control of soil insects. Two of these, aldrin and heptachlor, became readily available and relatively cheap. The first official recommendations from Iowa State on the use of these materials as soil insecticides were made in 1952. About 25,000 Iowa acres were treated with soil insecticides in that year. The treated acreage had increased to about 1½ million acres in 1956-57. Last year, the treated Iowa acreage approached 5½ million acres.

Treat What?

There are 20-24 species of insect pests that make up the total soil insect complex. Some of these are present in every planted cornfield every year. Some are most likely to be abundant in first-year corn following sod. Others, especially the rootworms, are more abundant in second- and third-year corn. Both previous cropping history and weather conditions during the growing season influence the numbers and kinds of insects present and the amount of damage they do.

In 1960, for example, seed corn...