1960

Income and resource changes resulting from farm consolidation in Southwest Iowa

Randall Arnold Hoffmann Jr.
Iowa State University

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INCOME AND RESOURCE CHANGES RESULTING FROM FARM CONSOLIDATION IN SOUTHWEST IOWA

by

Randall Arnold Hoffmann, Jr.

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of The Requirements of the Degree of DOCTOR OF PHILOSOPHY

Major Subject: Agricultural Economics

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

Head of Major Department

Signature was redacted for privacy.

Dean of Graduate College

Iowa State University Of Science and Technology Ames, Iowa 1960
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INTRODUCTION

During the past five years increasing attention has been focused upon the adjustment problem of agriculture. Although the general national economy expanded during most of this period, farm income declined. Evidence of agriculture's difficulties appeared in the form of increased surpluses, lower farm prices, higher farm costs, and lower farm incomes (1, 2, 3). Many solutions have been suggested for solving the "farm problem." The majority of these solutions may be classified as falling within the general categories of sending more farm products abroad, eating more farm products at home, restricting farm production, finding new commercial uses for farm products, and reducing the agricultural labor force through further farm consolidation or other size changes. The effect of this last approach upon agricultural adjustment has been hypothesized by Ogg and Malone (14, p. 1):

The immediate and most obvious effects of adjustment toward a balance in American agriculture would be a further consolidation of farms into more adequate units and an increase in the incomes of families who remain in farming.

Little empirical data is available which would support or deny this hypothesis in terms of either short-run or long-run change. The study of farm consolidation described in this thesis is an attempt to provide empirical data concerning the farm consolidation process as one part of the overall adjustment problem of agriculture.
Farm consolidation is not a new process in Iowa. Since 1940 the total number of Iowa farms has declined at an increasing rate as shown in Table 1. Farm numbers declined 2.1 percent from 1940 to 1945. The percentage decline increased to 2.8 percent during the next five years and further increased to 5.0 percent for the period 1950 to 1954. Evidently farm consolidation in Iowa has been taking place at an increasing rate over the past two decades.

Table 1. Total number of Iowa farms from 1940 to 1954a

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Iowa farms</th>
<th>Percent change each 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Apr.) 1940</td>
<td>213,318</td>
<td></td>
</tr>
<tr>
<td>(Jan.) 1945</td>
<td>208,934</td>
<td>-2.1</td>
</tr>
<tr>
<td>(Apr.) 1950</td>
<td>203,155</td>
<td>-2.8</td>
</tr>
<tr>
<td>(Nov.) 1954</td>
<td>192,933</td>
<td>-5.0</td>
</tr>
</tbody>
</table>

aSource: (18, p. 3).

A shift to fewer but larger farms in Iowa is apparent in Table 2. Although total farm numbers declined by 5 percent from 1950 to 1954, the number of farms in size groups of 180 acres and over increased. The size group 500 acres and over experienced the largest percentage increase of all groups with an increase of 14.8 percent. Conversely, the number of farms in size groups of 179 acres and under declined during the same period. Farm numbers in the size groups 10 - 49 acres and 50 -
99 acres declined by 12.8 percent over the five year period considered.

### Table 2. Number of farms in Iowa by size grouping, from 1950 to 1954

<table>
<thead>
<tr>
<th>Size (acres)</th>
<th>(Apr.) 1950</th>
<th>(Nov.) 1954</th>
<th>Percent change from 1950 to 1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>All farms</td>
<td>203,155</td>
<td>192,933</td>
<td>-5.0</td>
</tr>
<tr>
<td>Under 10 acres</td>
<td>9,585</td>
<td>9,138</td>
<td>-4.7</td>
</tr>
<tr>
<td>10 - 49 acres</td>
<td>16,515</td>
<td>14,402</td>
<td>-12.8</td>
</tr>
<tr>
<td>50 - 99 acres</td>
<td>25,894</td>
<td>22,582</td>
<td>-12.8</td>
</tr>
<tr>
<td>100 - 179 acres</td>
<td>77,566</td>
<td>70,487</td>
<td>-9.1</td>
</tr>
<tr>
<td>180 - 259 acres</td>
<td>42,353</td>
<td>42,809</td>
<td>+1.1</td>
</tr>
<tr>
<td>260 - 499 acres</td>
<td>28,144</td>
<td>29,960</td>
<td>+6.5</td>
</tr>
<tr>
<td>500 acres and over</td>
<td>3,098</td>
<td>3,555</td>
<td>+14.8</td>
</tr>
</tbody>
</table>

*Source: (18, p. 3)*

The process of farm consolidation not only affects farm size, but also, in many instances, results in additional changes within the farm unit as well. Figure 1 (16, p. 22) suggests some of these changes by comparing total farm resource use and production in the United States during 1955-57 with resource use and production during 1947-49. Although man hours and commercial farm numbers declined from 1947-49 to 1955-57, total farm output, output per man hour, and the number of tractors increased. The changes in resource use and production which are
Figure 1. Comparison of farm resource use and production in the United States during 1955-57 with resource use and production during 1947-1949
CHANGES IN FARMING
United States

1955-57 Compared with 1947-49

- Farm Output + 13%
- Livestock Production + 21%
- Crop Production + 6%
- Crop Prod. Per Acre + 9%
- Man-Hours - 18%
- Output Per Man-Hour + 37%
- Tractors + 86%*
- Commercial Farms - 21%*
- Noncommercial Farms + 12%*Δ

*1954 Compared with 1945
ΔPart-time and Residential Farms
suggested by Figure 1 are an important aspect of the role of farm consolidation in future agricultural adjustment.

Further evidence of farm consolidation is found in the proportion of land purchases which were made for farm enlargement. Figure 2 (16, p. 18) shows that on a nationwide basis purchases of land for farm enlargement increased from 22 percent in 1950 to nearly 40 percent of all purchases in 1958. Purchases of land for farm enlargement constituted 46 percent of all land purchases within the Corn Belt in 1958. Comparisons with other farming areas indicate that the largest proportion of purchases for farm enlargement occurred in the Wheat area, while smaller proportions occurred in the Lake States Dairy, Northeast Dairy, and General Farming areas.
Figure 2. Purchases of farmland for farm enlargement in different farming areas of the United States
FARMLAND PURCHASES FOR FARM ENLARGEMENT

<table>
<thead>
<tr>
<th>FARMING AREA</th>
<th>1957</th>
<th>1958</th>
<th>% OF TRANSFERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake States Dairy</td>
<td>26</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Northeast Dairy</td>
<td>18</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>General Farming</td>
<td>23</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Eastern Cotton</td>
<td>32</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Corn Belt</td>
<td>39</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Range-livestock</td>
<td>44</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Western Cotton</td>
<td>43</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Wheat (spring &amp; winter)</td>
<td>64</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

YEAR ENDING MARCH 1
OBJECTIVES OF STUDY

Continuing surpluses and declining farm incomes have created an increasing interest in the adjustment problem of agriculture. The general objective of this study is to analyze the effect of farm consolidation on agricultural adjustment. Specific objectives of the study are:

1. To determine changes in resource use and combination brought about by the consolidation process.
2. To analyze the effect of farm consolidation on agricultural output.
3. To examine the effect of farm consolidation on the income expectations of operators whose farms were involved in consolidation.
4. To determine the income levels that would induce farm operators to accept non-farm employment.
5. To examine farm operators' knowledge of government employment facilities and services.

The specific objectives of the study provide a broad framework for examining the effect of farm consolidation on agricultural adjustment. It is hoped that this study will provide a better understanding of the role of farm consolidation in the adjustment process of agriculture. However, it must be remembered that farm consolidation is but one part of the current farm problem.
RELIEF OF LITERATURE

Relatively few investigations have been concerned specifically with the problem of farm consolidation. In certain instances background information is available from studies of areas related to farm consolidation. These areas include farm size adjustments (6, 15), cost economies of farms of different sizes (7), and low income farms (12, 13, 19). However, for purposes of this review major emphasis is given to those studies directly concerned with the farm consolidation process.

One of the earliest attempts to study the effects of farm consolidation was made by Hoover (9). Hoover identified 56 consolidations in eighty randomly selected blocks throughout Iowa. Data concerning the consolidations was obtained from township Agricultural Conservation Committeemen. In analyzing the results of this study Hoover found that most of the absorbed units were less than 160 acres. Following consolidation 60 percent of the combined units exceeded 259 acres. In addition, nearly three-fourths of all absorbed units were tenant operated prior to consolidation, while only one-third of the adding units were tenant operated. Further results indicated that 75 percent of the absorbed units were added by renting rather than purchase. In examining the productivity of absorbed units Hoover found that more than half of all absorbed units were rated below average in productivity. Hoover further determined that following consolidation 42.9 percent of all operators of absorbed
units were farming elsewhere, 19.6 percent were retired, 16.1 percent had found non-farm jobs, 10.7 percent were deceased, 5.4 percent were working as farm laborers, and the status of 5.4 percent of the displaced operators was unknown.

Headington and Falconer (8) conducted a study in Ohio to determine the effect of farming additional land on the trend of farm size and related subjects. Data concerning farm enlargements was obtained by interview in three sample areas of 100 farms each. Farm operators were asked to respond to questions concerning all tracts of land farmed during 1938, 1939, and 1940. Results of the study of farm enlargement indicated that 16.3 percent of all farms in the sample areas had added additional land. Seventy-eight percent of all added units were acquired by renting. The proportion of added units that were rented approximates a similar proportion of 75 percent determined from Hoover's study (9). Headington and Falconer further determined that added units were an average of 1.3 miles from home tracts of land. Various reasons were given for adding additional tracts of land. Twenty-two percent of the farm operators replied that they wanted to keep their help and machinery busy, 21 percent said they added additional tracts of land because of a need for more feed and pasture, 16 percent indicated they were accommodating a neighbor unable to farm, and 11 percent of the operators indicated other miscellaneous reasons.
A more recent study of farm consolidations has been completed by Brown (4). Brown investigated consolidations that occurred in Hamilton County, Iowa, during the period 1952 to 1955. Data was obtained by personal interview of farm operators who added land through the consolidation process. In order to identify farm consolidations Brown utilized changes in A.S.C. farm listings to provide a preliminary list of consolidations. The preliminary list was corrected for additions or deletions by personnel of various county agencies. Sixty-eight farm consolidations were identified as having occurred during the three year period. Brown found that the rate of consolidation was greatest among small farms and least among large farms. Further results indicated that farm consolidation resulted in a greater use of fertilizer. Brown concluded that farm consolidation resulted in a 9 percent reduction in livestock production. Consolidation effects on total crop production were inconclusive. Resource changes following consolidation indicated a 22 percent reduction in total labor employed and a decline of 25 percent in machinery investment per rotated acre. Following consolidation 35 percent of the operators of absorbed units were retired or deceased, 29 percent had purchased or rented larger farms, 22 percent were employed in non-farm jobs, 8 percent had purchased or rented farms of unknown size, and the remaining 5 percent were employed in miscellaneous occupations.
A limited study of farm consolidations in one township of western Iowa was conducted by Heady (5) in the spring of 1955. In his analysis of consolidations Heady found that eight of ten operators whose farms had been absorbed were working in non-farm occupations. The absorbed units had been cropped almost continually to grain, and 1954 crop yields were a third lower than the township average. Crop yields of adding units were 20 percent greater than the township average in the same year. Following consolidation fertilizer outlay was more than doubled on the absorbed units, four of the ten absorbed farms were contour planted for the first time, and seedings were started on three absorbed farms. Heady concluded that it appeared the yield level would be increased on seven of the ten absorbed farms. Although adding operators increased machine investment, the total machine investment on the ten consolidated units was less than on the twenty separate farms. The limited study of consolidations by Heady provided a basis for the expanded study of farm consolidations described in this thesis.
METHOD OF PROCEDURE

Survey Area

Four counties in southwest Iowa were selected as the survey area for this study. These four counties include Fremont, Mills, Montgomery, and Page. The survey area was chosen for two reasons. First, a large decline in farm numbers since 1952 suggested a high rate of farm consolidation. Secondly, a major portion of the farmland in each county is of the same soil association, Marshall.

Three of the four counties in the survey area have consistently had a high percentage decline in farm numbers. During the three year period from 1952 to 1955 Fremont, Mills, and Page counties ranked among the top ten Iowa counties in the percentage decline in farm numbers. The ten Iowa counties which had the highest percentage decline in farm numbers from 1952 to 1955 are shown in Table 3. Mills county experienced the highest percentage decline of all Iowa counties. Fremont county ranked fourth and Page county ranked tenth during the same period. Although Montgomery county did not rank among the top ten counties, the percentage decline in farm numbers was well above the average of all counties in Iowa.

More than three-fourths of all farmland in the survey area is within the Marshall soil association. The predomi-
nance of one soil association in the survey area was desired in order to reduce the influence of soil differences on the results of the study. The four county survey area was the only contiguous area in Iowa that provided a predominant soil association and a high rate of decline in farm numbers.

Table 3. Iowa counties having the highest percentage decline in farm numbers from 1952 to 1955a

<table>
<thead>
<tr>
<th>County</th>
<th>Percent decline in farm numbers</th>
<th>Rank among Iowa counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mills</td>
<td>10.7</td>
<td>1</td>
</tr>
<tr>
<td>Warren</td>
<td>9.9</td>
<td>2</td>
</tr>
<tr>
<td>Polk</td>
<td>9.8</td>
<td>3</td>
</tr>
<tr>
<td>Fremont</td>
<td>9.2</td>
<td>4</td>
</tr>
<tr>
<td>Decator</td>
<td>8.8</td>
<td>5</td>
</tr>
<tr>
<td>Harrison</td>
<td>8.5</td>
<td>6</td>
</tr>
<tr>
<td>Ringgold</td>
<td>8.5</td>
<td>7</td>
</tr>
<tr>
<td>Linn</td>
<td>7.8</td>
<td>8</td>
</tr>
<tr>
<td>Davis</td>
<td>7.6</td>
<td>9</td>
</tr>
<tr>
<td>Page</td>
<td>7.6</td>
<td>10</td>
</tr>
<tr>
<td>All Iowa counties</td>
<td>2.9</td>
<td>-</td>
</tr>
</tbody>
</table>

aSource: (10).
Consolidations were considered as having occurred within the survey area, if the farm residences of the merged units were located inside the boundaries of Fremont, Mills, Montgomery, and Page counties. The study includes the complete population of farm consolidations within the four-county survey area. All consolidations took place following the 1956 crop year and were in effect during the 1957 crop year.

Identification of Consolidations

Identification of farm consolidations within the survey area required considerable time before initiation of the survey. Compilation of a preliminary list of consolidations from A.S.C. listings, as used by Brown (4), proved unworkable in the survey area. A satisfactory method of identification was achieved with the assistance of township assessors and A.S.C. committeemen. Township assessors and A.S.C. committeemen pointed out possible farm consolidations on farm residence maps. Inaccuracies in the farm residence maps were not a drawback, since the inaccuracies provided a check of the cooperators' knowledge of the area. All farm units involved in the consolidations pointed out by the cooperators were recorded on individual location cards shown in Appendix A. Information recorded on each location card included the county, township, and section location of the farm, and the name and current ad-
dress of the operator. All probable consolidations suggested by the cooperators were checked for validity by personal contact with the operators involved. Further, each merged and adding operator interviewed during the survey was asked to point out additional consolidations which might have been overlooked. This method of identification appeared to provide an accurate determination of consolidations within the survey area.

Source of Data

The data used in this study were obtained by personal interview and mail questionnaire. Operators of both merged and adding units living within or near the survey area were interviewed personally. In some instances operators of merged units had moved considerable distances from the survey area. Information from the group of merged operators who had moved a considerable distance from the survey area was obtained by mail questionnaire.

Because of the length of the questionnaire, each merged operator contacted by mail was offered five dollars for completing the questionnaire. The remuneration was offered in order to facilitate return of the questionnaire. A cover letter, background statement, questionnaire, invoice, and return envelope were sent to each person contacted by mail. Thirteen of the twenty-four merged operators contacted by mail
returned completed questionnaires after the first letter. Six additional questionnaires were returned after a second letter. Personal long distance calls were made to three of the five remaining merged operators, and their questionnaires were promptly returned. The two remaining merged operators were not listed in telephone directories. A final attempt was made to obtain information from these operators through use of a registered letter with return receipt requested. Signed receipts were received, but the questionnaires were not returned. Although the information received by mail questionnaire was not as complete as that obtained by personal interview, the cost of each mail questionnaire was approximately one third of the cost of a personal interview.

Definitions and Limitations

In order to delimit the study for analysis purposes it was necessary to establish a set of consolidation definitions and limitations. Only those consolidations which fulfilled the following limitations and definitions were considered for final analysis.

1. The "consolidation period" covered by this study was limited to one year. Only those consolidations which occurred following the 1956 crop year and were in effect during 1957 were considered. By limiting the "consolidation period" to one year it was possible
to contact all living operators of merged and adding units. In addition, it was felt that the one year period would eliminate a considerable amount of memory bias.

2. A "farm consolidation" is defined as having occurred when a farm unit disappeared as an independent operation because of a merger with one or more other farm units. The survey was limited to consolidations which resulted in total combined farm units of 70 acres or more following consolidation. A further limitation required that the entire land resource must have been absorbed by the adding unit or units. An exception to this last limitation was made if less than ten acres of land and the buildings of a merged unit were retained for a residence.

3. A "realignment" is said to have occurred when two or more independent farm units were involved in a reorganization of farm land. In the reorganization of farm land all of the farm units continued to operate as independent units. Since a "realignment" of farm units does not fulfill the requirements of a "farm consolidation", such instances of realignment are not included as observations in the study.

4. A "farm unit" is referred to, for purposes of this study, as an entrepreneurial unit. The definition
considers partnerships of two or more individuals and/or tracts of land as one unit, providing such combinations are operated and managed as a single unit.

5. A "merged unit" or "disappearing unit" is defined as a farm unit absorbed by one or more adding units through the consolidation process. Operators of merged units are referred to as "merged operators".

6. An "adding unit" or "base unit" is defined as the farm unit which annexes or affixes a merged unit in a farm consolidation. In consolidations involving more than one annexing unit all annexing units are considered as "base units" or "adding units". Operators of adding units are referred to as "adding operators" or "base unit operators".

Grouping of Merged and Adding Units for Analysis Purposes

Preliminary observation of questionnaire results suggested possible methods of grouping merged and adding units for analysis purposes. The preliminary results indicated that merged units would logically fit into groups based on operator status following consolidation. The following groups were established for merged units: (1) merged units whose operators were employed in non-farm jobs outside Iowa; (2) merged units whose operators were employed in non-farm jobs
within Iowa; (3) merged units whose operators were farming other farms of similar size or smaller; (4) merged units whose operators were farming larger farms; (5) merged units whose operators had retired; and (6) merged units whose operators were deceased. The grouping of adding units for analysis purposes was based on ownership of the base farm unit. Adding units were divided into two groups: (1) adding units whose operators owned 50 percent or more of the base unit; and (2) adding units whose operators rented more than 50 percent of the base unit. Base units whose operators owned more than half of the land resource are referred to in later discussions as "owned base units." Base units whose operators rented more than half of the land resource are referred to as "rented base units." The analysis of data and results presented in following chapters utilizes the six groups of merged units and two groups of adding units for comparison of results within and between the overall classification of merged units and adding units.
DESCRIPTION OF THE FARM CONSOLIDATION PROCESS

A total of 214 farm units were involved in consolidations analyzed in this study. Ninety-nine merged farm units were absorbed by 115 adding farm units. The number of adding units exceeds the number of merged units, because two or more adding units absorbed a single merged unit in several of the consolidations.

The various ways that merged units were absorbed by adding units are shown in Table 4. Although 84 of the farm consolidations were a result of a simple combination of one merged unit and one adding unit, multiple combinations occurred in 15 of the consolidations. Twelve multiple combinations resulted from one merged unit being absorbed by two adding units. Further instances of multiple combination occurred through the combining of one merged unit with three adding units, and through the absorption of one merged unit by four adding units. The remaining consolidation was more complicated since a single adding unit absorbed one entire merged unit and part of another merged unit. An interesting case of a multiple combination of farms was noted in the survey area. Nine farms units began farming nearly 1000 acres of a tenth farm of over 1100 acres. Since the nine farms did not absorb all of the land resource of the tenth farm, the combination does not meet the requirements of a farm consolidation and is not included in this study.
Table 4. Farm combinations resulting from farm consolidation

<table>
<thead>
<tr>
<th>Consolidation combinations</th>
<th>Number of combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One merged unit combined with one adding unit</td>
<td>84</td>
</tr>
<tr>
<td>2. One merged unit divided between two adding units</td>
<td>12</td>
</tr>
<tr>
<td>3. One merged unit divided among three adding units</td>
<td>1</td>
</tr>
<tr>
<td>4. One merged unit divided among four adding units</td>
<td>1</td>
</tr>
<tr>
<td>5. One merged unit and part of another merged unit combined with one adding unit</td>
<td>1</td>
</tr>
</tbody>
</table>

The illustration does suggest the possible complex combinations which might occur in some farm consolidations. Although multiple combinations do occur frequently, it appears that the majority of farm consolidations result from a simple combination of one merged unit and one adding unit.

Both merged and adding units were arranged in groups for analysis purposes. Table 5 shows the breakdown of merged units according to the groups set forth in the preceding chapter. Operator status following consolidation was used as the basis for grouping the merged units. Adding units were grouped on the basis of operator ownership of the adding unit. Results indicated that 50 adding operators owned more than half of the
<table>
<thead>
<tr>
<th>Operator status following consolidation</th>
<th>Number of merged farm units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Non-farm job outside Iowa</td>
<td>23</td>
</tr>
<tr>
<td>2. Non-farm job in Iowa</td>
<td>22</td>
</tr>
<tr>
<td>3. Farm operator--operating a unit the same size or smaller than the merged unit</td>
<td>10</td>
</tr>
<tr>
<td>4. Farm operator--operating a unit larger than the merged unit</td>
<td>19</td>
</tr>
<tr>
<td>5. Retired</td>
<td>20</td>
</tr>
<tr>
<td>6. Deceased</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 5. Merged farm units grouped on the basis of operator status following consolidation

base unit. The remaining 65 adding operators rented more than half of the base unit. The groupings of merged and adding units are used in future analysis for comparisons within and between the categories of merged and adding units.
RESOURCE USE AND COMBINATION

One of the most important results of farm consolidation is its effect on overall resource use and combination. Consolidation not only alters farm size, but also affects the resource combinations used in farming as well. The purpose of this chapter is to describe resource use and resource combination before and after consolidation.

Land Resources Involved in Consolidation

Nearly four percent of all farm land in the survey area was involved in consolidation. Merged units with land resources of 15,892 acres were absorbed by adding units consisting of 29,041 acres. The land resources involved in consolidation are discussed in terms of farm size, ownership, and productivity.

Merged unit land resources

The average size of the ninety-nine merged units before consolidation was 160.5 acres. This average size of merged units is considerably less than the 207.7 acre average of all farms in the four county survey area in 1956. Differences in farm size among the groups of merged units are shown in Table 6. The average size of the group of merged units whose operators retired was only 124.4 acres. The group of merged units whose operators moved to larger farms had the largest
Table 6. Farm size and ownership of merged units

<table>
<thead>
<tr>
<th>Farm size and ownership</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Tired farm</th>
<th>Ceased units</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total acres farmed</td>
<td>4,209</td>
<td>3,142</td>
<td>1,652</td>
<td>3,536</td>
<td>2,488</td>
<td>865</td>
<td>15,892</td>
</tr>
<tr>
<td>2. Av. size of farm</td>
<td>183.0</td>
<td>142.8</td>
<td>165.2</td>
<td>186.1</td>
<td>124.4</td>
<td>173.0</td>
<td>160.5</td>
</tr>
<tr>
<td>3. Av. number acres owned</td>
<td>41.6</td>
<td>25.2</td>
<td>30.8</td>
<td>48.4</td>
<td>94.1</td>
<td>173.0</td>
<td>55.4</td>
</tr>
<tr>
<td>4. Av. number acres rented</td>
<td>141.4</td>
<td>117.6</td>
<td>134.4</td>
<td>137.7</td>
<td>30.3</td>
<td>0.0</td>
<td>105.1</td>
</tr>
<tr>
<td>5. Percent of total acres owned</td>
<td>22.7</td>
<td>17.6</td>
<td>18.6</td>
<td>26.0</td>
<td>75.7</td>
<td>100.0</td>
<td>35.2</td>
</tr>
</tbody>
</table>

average farm size of all merged groups, 186.1 acres. None of the groups of merged units approached the average size of all farms in the survey area. Examination of the size distribution of merged farms indicated that only 17 percent of the merged units were larger than the survey area average of 207.7 acres. Thirty-three percent of the merged units ranged in size from 160 acres to 207 acres of land. The remaining fifty percent of the merged units contained less than 160 acres of land.

Operators of merged units owned 35.2 percent of all
merged land before consolidation. However, the proportion of land owned by the different groups of merged operators varied from 17.6 percent to 100.0 percent as shown in Table 6. Deceased operators of merged units owned all of the land resource, and retired operators owned 75.7 percent of the land resource. The remaining four groups of merged operators owned from 17.6 percent to 26.0 percent of the land resource. Since 46.2 percent of all land in the survey area was owned by farm operators, the four groups of merged operators who were not deceased or retired owned a much smaller proportion of the land resource than did all farmers in the survey area.

Further description of the merged land resource is provided by productivity ratings supplied by the merged operators. Merged operators rated 57.7 percent of all merged land as average and 27.2 percent as above average. Only 13.5 percent of the merged land was rated below average by merged operators. The remaining 1.8 percent of the merged land was rated as very poor. Comparisons of the land productivity of the different groups of merged units are shown in Table 7.

**Base unit land resources**

The average size of base units involved in consolidation was 252.5 acres. This average size of base units is 57 percent larger than the average size of merged units and 21.5 percent larger than the average farm size in the survey area.
Table 7. Productivity of merged farm land as rated by merged operators

<table>
<thead>
<tr>
<th>Productivity rating</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Tired</th>
<th>Ceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very poor</td>
<td>0</td>
<td>3.8</td>
<td>0</td>
<td>2.3</td>
<td>0</td>
<td>9.2</td>
<td>1.8</td>
</tr>
<tr>
<td>2. Below av.</td>
<td>16.6</td>
<td>26.1</td>
<td>0</td>
<td>4.5</td>
<td>3.4</td>
<td>44.5</td>
<td>13.5</td>
</tr>
<tr>
<td>3. Average</td>
<td>59.0</td>
<td>45.9</td>
<td>49.6</td>
<td>71.6</td>
<td>58.8</td>
<td>46.3</td>
<td>57.5</td>
</tr>
<tr>
<td>4. Above av.</td>
<td>24.4</td>
<td>24.2</td>
<td>50.4</td>
<td>21.5</td>
<td>37.8</td>
<td>0</td>
<td>27.2</td>
</tr>
</tbody>
</table>

*Productivity rating provided by adding operators.*

Comparison of the farm size distribution of base units with the average size of farms in the survey area showed that 44.4 percent of all base units were larger than the average farm size in the survey area. Only 17 percent of the merged units were larger than the area average. Farms of 160 or more acres constituted 80.9 percent of all base units. The same figure for merged units was only 50 percent. It is interesting to note that eight base units were larger than 500 acres, and three of these eight base units exceeded 1,000 acres.

From Table 8 it is apparent that little difference in average farm size existed between adding operators who owned
Table 8. Farm size and ownership of base units

<table>
<thead>
<tr>
<th>Farm size and ownership</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total acres farmed</td>
<td>12,719</td>
<td>16,322</td>
<td>29,041</td>
</tr>
<tr>
<td>2. Average size of farm</td>
<td>254.4</td>
<td>251.1</td>
<td>252.5</td>
</tr>
<tr>
<td>3. Average number of acres owned</td>
<td>239.4</td>
<td>20.9</td>
<td>115.9</td>
</tr>
<tr>
<td>4. Average number of acres rented</td>
<td>15.0</td>
<td>230.2</td>
<td>136.6</td>
</tr>
<tr>
<td>5. Percent of total acres owned</td>
<td>94.1</td>
<td>8.3</td>
<td>45.9</td>
</tr>
</tbody>
</table>

most of the base unit and adding operators who rented the majority of the base unit. Considerable difference existed, however, between the farm size distributions of the two groups of adding operators. Less than 10 percent of the rented base units were smaller than 160 acres. Thirty-two percent of the owned base units were smaller than 160 acres. Further, more than 50 percent of the rented base units were larger than the 207.7 acre average farm size of the survey area, while only 36 percent of the owned base units exceeded this figure.

Operators of base units owned 45.9 percent of the land of all base units. The proportion of land owned by adding
operators is nearly identical to the survey area percentage of 45.5 percent. Adding operators of owned base units rented less than six percent of the land resource, while operators of rented base units owned only 8.3 percent of the land resources.

Nearly all of the land resource of base units was rated as average or above by the adding operators. Less than one percent of all base unit land was rated below average, and none of the base unit land was rated as very poor. Adding operators classified 39.9 percent of the base unit land above average and 59.9 percent as average. Differences in land productivity between owned base units and rented base units are shown in Table 9. Operators of owned base units classified 48.8 percent of the base unit land as above average, while operators of rented base units rated only 32.9 percent of the base unit land as above average.

Table 9. Land productivity of base units as rated by adding operators

<table>
<thead>
<tr>
<th>Productivity rating</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>In percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very poor</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2. Below average</td>
<td>0.0</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>3. Average</td>
<td>51.2</td>
<td>66.7</td>
<td>59.9</td>
</tr>
<tr>
<td>4. Above average</td>
<td>48.8</td>
<td>32.9</td>
<td>39.9</td>
</tr>
</tbody>
</table>
Adding operators farmed larger units of higher productivity than did the operators of merged units. The average base unit size of adding operators was 252.5 acres. This is 57 percent larger than the 160.5 acre average unit farmed by merged operators. While 44.4 percent of the base units exceeded the area average farm size of 207.7 acres, only 17 percent of the merged units exceeded the survey area average. Adding operators rated 99.8 percent of the base unit land as average or above average. Merged operators rated only 84.7 percent of the merged land as average or above average. In addition, adding operators owned 45.9 percent of the base unit land in contrast to the 35.2 percent of the merged unit land owned by merged operators.

**Land reorganization following consolidation**

One of the main effects of farm consolidation is on the size of farm units. Consolidation with merged units increased the land resource of base units by 54.7 percent. This resulted in an average consolidated unit of 390.2 acres. Owned base units increased to an average consolidated unit of 393.7 acres, and rented base units increased to an average consolidated size of 388.5 acres. The effect of consolidation on farm size is further indicated by the change in farm size distribution following consolidation. Only 44.4 percent of all base farm units were larger than the 1956 survey area average
of 207.7 acres. Following consolidation 91.3 percent of the consolidated units exceeded the 1956 survey area average.

Nearly seventy percent of the merged land acquired by all adding operators was rented. Operators of rented base units acquired 81.8 percent of the merged land through rental agreements. Operators of owned base units rented only 53.3 percent of the merged land. The remaining merged land was either purchased or owned prior to consolidation.

The productivity of merged land as rated by adding operators is shown in Table 10. Operators of owned base units rated 27.1 percent of the absorbed land as above average. Only nine percent of the absorbed land was rated as above average by operators of rented base units. It thus appears that operators of owned base units absorbed a higher percentage of above average land than did operators of rented base units. When Table 10 is compared with Table 7 it is apparent that adding operators rated merged land somewhat lower than did the merged operators. Merged operators rated 27.2 percent of the merged land as above average, while only 16.9 percent of the merged land was rated above average by the adding operators.

Forty-four percent of all base units were located adjacent to absorbed merged units. Forty-six percent of the owned base units were adjacent to absorbed merged units, and 43 percent of the rented base units were adjacent to absorbed
Table 10. Productivity of merged farm land as rated by adding operators

<table>
<thead>
<tr>
<th>Productivity rating</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In percent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Very poor</td>
<td>3.4</td>
<td>2.9</td>
<td>3.1</td>
</tr>
<tr>
<td>2. Below average</td>
<td>17.1</td>
<td>19.1</td>
<td>18.2</td>
</tr>
<tr>
<td>3. Average</td>
<td>52.4</td>
<td>69.0</td>
<td>61.8</td>
</tr>
<tr>
<td>4. Above average</td>
<td>27.1</td>
<td>9.0</td>
<td>16.9</td>
</tr>
</tbody>
</table>

merged units. Non-adjacent merged units were an average distance of 5.6 miles from the absorbing base units. Owned base units were an average of 4.2 miles from non-adjacent merged units, while rented base units averaged 6.6 miles from the non-adjacent merged units. The location of non-adjacent merged units varied from .5 of a mile to 30 miles from the absorbing base units.

The expectations of adding operators for continued operation of the merged units are shown in Table 11. Six percent of the adding operators expected that the consolidation would be in effect for only one year. An additional 9.6 percent of the adding operators planned to farm the merged land from two to five years, and 32.1 percent indicated they planned to operate the absorbed land more than five years. The re-
Table 11. Expectations of adding operators for continued operation of merged units

<table>
<thead>
<tr>
<th>Expectation period</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One year</td>
<td>6.0</td>
<td>6.1</td>
<td>6.1</td>
</tr>
<tr>
<td>2. Two to five years</td>
<td>12.0</td>
<td>7.7</td>
<td>9.6</td>
</tr>
<tr>
<td>3. More than five years</td>
<td>48.0</td>
<td>20.0</td>
<td>32.1</td>
</tr>
<tr>
<td>4. As long as lease is</td>
<td>24.0</td>
<td>66.2</td>
<td>52.2</td>
</tr>
</tbody>
</table>

maining 52.2 percent of the adding operators planned to farm the absorbed land as long as the lease was renewed. Thus, it appears that a large majority of the adding operators considered the absorbed land as a part of their long-run plans.

Labor Resources Involved in Consolidation

The labor resources of farm units involved in consolidation are described in this section in terms of operator labor, family labor, and hired labor. In partnerships the labor of both partners is considered as operator labor. The utilization of labor is discussed in terms of man hours worked per year. Excluding all Sundays and five holidays an average eight hour work day during the year would total 2,456 man hours. Although hired custom work may be used as a substitute for both labor and machinery, the amount of custom work hired is included in the discussion of this section.
Merged labor resources

The average number of man hours worked per year on merged units prior to consolidation was 2,775 hours. Seventy-nine percent of the total labor consisted of operator labor, 16 percent was provided by family labor, and only 5 percent of the total labor was hired. The amount of labor used by the different groups of merged units is shown in Table 12. Operators who were farming larger units following consolidation used the most amount of labor per merged unit. This group of merged operators also farmed the largest average amount of land per unit, and hired the least amount of custom work. Only the groups of merged units whose operators retired or found non-farm jobs in Iowa utilized less than the average amount of labor used by all merged units. Partial explanation of the low amount of labor used by these two merged groups is found in the small average size of the merged farm units. The average numbers of acres farmed by merged operators who retired was only 124 acres. Merged operators who shifted to non-farm jobs in Iowa operated farms with an average size of 143 acres.

Operator labor supplied more than three-fourths of all labor used on the merged units. Merged operators who moved to larger farms averaged the largest number of man hours of operator labor. Operators of merged units who retired or found non-farm jobs in Iowa averaged the least number of operator
Table 12. Labor and custom hire used on merged units in 1956

<table>
<thead>
<tr>
<th>Labor use and custom hire</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>All Re-merged tired units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hours of labor used per unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. operator labor</td>
<td>2,489</td>
<td>1,801</td>
<td>2,543</td>
<td>2,632</td>
<td>1,750</td>
</tr>
<tr>
<td>b. family labor</td>
<td>356</td>
<td>670</td>
<td>272</td>
<td>562</td>
<td>221</td>
</tr>
<tr>
<td>c. hired labor</td>
<td>11</td>
<td>2</td>
<td>7</td>
<td>228</td>
<td>390</td>
</tr>
<tr>
<td>d. total labor</td>
<td>2,856</td>
<td>2,474</td>
<td>2,822</td>
<td>3,422</td>
<td>2,362</td>
</tr>
<tr>
<td>2. Acres of custom work hired per unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. plowing</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
<td>8.1</td>
</tr>
<tr>
<td>b. cultivating</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>8.1</td>
</tr>
<tr>
<td>c. combining</td>
<td>14.6</td>
<td>3.3</td>
<td>3.3</td>
<td>2.3</td>
<td>3.8</td>
</tr>
<tr>
<td>d. picking</td>
<td>20.2</td>
<td>15.2</td>
<td>6.6</td>
<td>2.8</td>
<td>21.7</td>
</tr>
<tr>
<td>e. baling</td>
<td>10.7</td>
<td>4.0</td>
<td>14.7</td>
<td>3.4</td>
<td>3.8</td>
</tr>
<tr>
<td>f. total acres custom work hired</td>
<td>46.2</td>
<td>22.5</td>
<td>24.6</td>
<td>9.4</td>
<td>45.5</td>
</tr>
</tbody>
</table>

Information concerning merged units whose operators were deceased was not available.

Man hours of all merged groups. These two groups of merged operators averaged less than six hours of work per day on the merged units. Many of the merged operators who found non-farm jobs in Iowa had part time jobs before consolidation. The part time jobs held by these operators provide some explanation of the low average number of hours worked on the merged units.
Family labor contributed an average of 1.4 hours of work per day on all merged units. The largest contribution of family labor occurred on the merged units whose operators found non-farm jobs in Iowa. Family labor on these farms appeared to be used as a replacement of the operator labor employed in part time jobs. The smallest amount of family labor was used on merged units whose operators retired. The limited number of children available for family labor was a factor in the small amount of family labor employed on the merged units of retired operators.

Hired labor supplied less than five percent of the total labor used on all merged units. However, it was an important source of labor on merged units whose operators retired or moved to larger farms. Hired labor supplied 17 percent of all labor on merged units whose operators retired and 7 percent of the total labor on merged units whose operators moved to larger farms.

Custom work was hired to replace labor, and machinery, on an average of 30.5 acres of all merged units. Nearly half of all custom work was hired for corn picking. An average of 6.6 acres of custom work was hired for baling, and 6.0 acres of custom work was hired for combining. The amount of custom work hired for plowing and cultivating was of minor importance in all groups of merged units. Table 12 shows the average
number of acres of custom work hired by the different groups of merged units. Groups of merged units whose operators retired or accepted non-farm jobs outside Iowa hired the largest amount of custom work per unit. Merged operators who moved to larger farms hired the least amount of custom work. The average number of acres of custom work hired by the group of merged operators who moved to larger farms was less than one-third of the average amount hired by all merged units.

**Base unit labor resources**

The average amount of labor used on base units was 41 percent greater than the average amount used on merged units. The average number of total man hours worked on base units in 1956 was 3,901 hours. Sixty-nine percent of all labor on the base units was supplied by the operators. Family labor provided 15 percent of the labor resource. Sixteen percent of all labor used on the base units was hired. Operators of base units worked an average of 8.8 hours a day on the base units. Family labor contributed an average of 1.9 hours of work per day, and hired labor supplied an average of 2.0 hours of work per day on the base units.

A comparison between the amounts of labor used on rented base units and owned base units is shown in Table 13. Operators of owned base units averaged fewer man hours of operator labor and family labor than did the operators of rented
Table 13. Labor and custom hire used on base units in 1956

<table>
<thead>
<tr>
<th>Labor use and custom hire</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hours of labor used per unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. operator labor</td>
<td>2,644</td>
<td>2,759</td>
<td>2,709</td>
</tr>
<tr>
<td>b. family labor</td>
<td>562</td>
<td>585</td>
<td>575</td>
</tr>
<tr>
<td>c. hired labor</td>
<td>763</td>
<td>507</td>
<td>617</td>
</tr>
<tr>
<td>d. total labor</td>
<td>3,968</td>
<td>3,851</td>
<td>3,901</td>
</tr>
<tr>
<td>2. Acres of custom work hired per unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. plowing</td>
<td>0</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>b. cultivating</td>
<td>0</td>
<td>1.5</td>
<td>0.9</td>
</tr>
<tr>
<td>c. combining</td>
<td>4.7</td>
<td>3.9</td>
<td>4.3</td>
</tr>
<tr>
<td>d. picking</td>
<td>8.9</td>
<td>2.5</td>
<td>5.2</td>
</tr>
<tr>
<td>e. baling</td>
<td>5.4</td>
<td>2.3</td>
<td>3.6</td>
</tr>
<tr>
<td>f. total acres custom work hired</td>
<td>19.0</td>
<td>11.5</td>
<td>14.7</td>
</tr>
</tbody>
</table>

Operators of base units hired an average of 14.7 acres of custom work per unit. The majority of custom work hired by base unit operators was for picking, baling, or combining. Less than eleven percent of all custom work hired by adding operators was for plowing or cultivating. A comparison of the amount of custom work hired by operators of rented and owned
base units is shown in Table 13. Operators of owned base units hired 65 percent more custom work per unit than did the operators of rented base units.

Operators of base units used more labor and less custom work per unit than did merged operators. The 3901 hours of labor used per base unit in 1956 is 41 percent larger than the 2775 hours of labor used per merged unit in the same year. Operator labor supplied a larger percentage of the total labor on merged units in comparison with the base units. However, base units utilized a higher percentage of hired labor than did merged units. Similar percentages of family labor were used on both merged and base units. Operators of merged units hired more than twice as many acres of custom work per unit than did the operators of base units.

**Labor resource reorganization following consolidation**

Reorganization of labor resources following consolidation occurred in several ways. Operators of merged units found non-farm employment, rented other farms, retired, or were deceased. Operators of adding units replaced the labor resource of the merged operators by hiring additional labor, increasing the amount of custom work hired, and giving up part-time jobs. A further result of labor resource reorganization involved substitution of machinery for the labor resource. The substitution of machinery for labor is discussed in a later sec-
As a result of consolidation the 274,449 hours of labor used on merged units in 1956 were transferred from the merged units. Adding operators replaced the merged labor with 50,806 hours of replacement labor. Only 18.2 percent of the merged labor was replaced by labor added to the existing amounts available on the base units. Nearly three-fourths of the replacement labor was added in the form of hired help. The remaining replacement labor was provided through the giving up of part-time jobs held by adding operators. Fifteen percent of the adding operators gave up part-time jobs because of the consolidations. However, half of all adding operators did not replace any of the merged labor.

The total labor used on both merged and base units in 1956 was 723,507 hours. By combining the existing labor on base units in 1956 with the replacement labor added following consolidation the total labor utilized on the consolidated units can be estimated at 499,507 hours. Based on this estimate the consolidation of merged and base units resulted in a 31 percent decrease in the total amount of labor used on the combined units.

Adding operators replaced 34 percent of the 3,034 acres of custom work hired on merged units in 1956. The additional custom work hired by adding operators resulted in a total of
2,720 acres of custom work used on the combined units following consolidation. In comparison with the 5,732 acres of custom work used on both merged and adding units in 1956 this represents a decline of 53 percent in the total number of acres of custom work hired.

Machine Resources Involved in Consolidation

Farm consolidation causes important changes in the amount of machine resources employed in farming. This section describes the machine resources used on merged and base units before consolidation and the changes which occurred as a result of consolidation.

Merged unit machine resources

Merged operators employed an average of $2,930 of machine resources on the merged units in 1956. The amount of machinery used by individual merged operators varied from $200 for horse drawn equipment to $10,500 for a complete set of machinery. Merged operators who moved to larger farms used an average of $4,632 of machinery on the merged units. Merged operators who retired had an average of only $1,860 invested in machinery prior to consolidation. The remaining groups of merged operators had average machine investments of from $2,350 to $2,850. Results of the study indicated that a large amount of the machinery investment used by merged operators was well depreciated. This provides some explanation for the low average
value of machinery investment on the merged units. Seventy-eight percent of the merged operators had machinery investments of less than $5,000. Less than four percent of the merged operators had machine resources valued above $7,500.

**Base unit machine resources**

The machine resources used on base units in 1956 had an average value of $7,344. The value of machine resources used per base unit was two and one half time greater than the $2,930 value of machine resources used per merged unit. The machinery investment of individual base unit operators varied from a low of $500 to a high of $35,000. The machinery investment of $35,000 was used on a base unit of over 1,000 acres and included bulldozers, irrigation equipment, and land reclamation equipment. Operators of all base units had an average machinery investment of $7,344. The difference between the $7,605 average investment of owned base unit operators and the $7,151 average investment of rented base unit operators was not significant. Forty-one percent of the base unit operators had machinery investments of less than $5,000. Thirty-seven percent of the base unit operators had machinery resources valued above $7,500. Less than 4 percent of the merged unit operators had machine resources valued above $7,500 while seventy-eight percent of the merged operators had machine resources valued below $5,000.
Machine resource changes

Changes in machine resources are described in terms of changes which were in effect at the time of the survey and planned changes adding operators expected to make. Changes in effect at the time of the survey occurred from the time of consolidation to the following oat harvest period when the survey was conducted. Planned changes include the expected changes of adding operators within a three year period following the time of the survey. Changes in machine resources were further divided between new additions to existing equipment and replacements of existing equipment. In the case of trade-in replacements only the added value above the trade-in allowance was included as an increase.

Fifty-two percent of all adding operators had made changes in their machine resources by the time of the survey. The changes resulted in an increased machine investment of $107,460 for all adding operators, or $934 per adding operator. Rented base unit operators had increased machine investment by $1,071 per operator, while owned base unit operators increased machine investment by only $757 per operator. Acquisition of additional equipment accounted for 81.5 percent of the increase in machine investment. The remaining 18.5 percent of the machinery increase resulted from trading in old machinery for new equipment. The increased machine investment at the time of
the survey represents an immediate replacement of 38 percent of the value of machine resources used by merged operators. The value of machine resources on the consolidated units at the time of the survey was 15.8 percent lower than the total value of machine resources on merged and base units before consolidation. The immediate changes in numbers and types of machines are summarized in Table 14. When more than one operator shared an added or replacement machine, only the share of ownership is represented as a change.

Adding operators further expected to increase machinery investment by $80,805 within three years of the time of the survey. The average future increase expected by all adding operators was $703. Owned base unit operators indicated a future increase of $539 per operator, and rented base unit operators planned an increase of $829 per operator. Seventy-six percent of the future increase in machinery investment was to occur as added machinery. The remaining 24 percent of the future increase was to occur as a result of trading in old machinery for new machinery. The numbers and types of future machinery changes are summarized in Table 15.

The overall effect of immediate and future machinery changes would increase the machinery investment of adding operators by $188,265, or $1,637 per operator. The combined changes would increase the machinery investment of owned base
Table 14. Number and value of machinery changes in effect at the time of the survey

<table>
<thead>
<tr>
<th>Type of machine</th>
<th>Number added</th>
<th>Number replaced</th>
<th>Value of changesa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tractors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 plow</td>
<td>14</td>
<td>2</td>
<td>$28,320</td>
</tr>
<tr>
<td>b. 3 plow</td>
<td>9</td>
<td>4</td>
<td>31,510</td>
</tr>
<tr>
<td>2. Planters and listers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 row</td>
<td>2</td>
<td>1</td>
<td>860</td>
</tr>
<tr>
<td>b. 4 row</td>
<td>5</td>
<td>2</td>
<td>3,290</td>
</tr>
<tr>
<td>3. Cultivators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 row</td>
<td>5</td>
<td>2</td>
<td>2,465</td>
</tr>
<tr>
<td>b. 4 row</td>
<td>6</td>
<td>2</td>
<td>4,165</td>
</tr>
<tr>
<td>4. Combines</td>
<td>3</td>
<td>1</td>
<td>5,190</td>
</tr>
<tr>
<td>5. Cornpickers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1 row</td>
<td>1</td>
<td>0</td>
<td>1,050</td>
</tr>
<tr>
<td>b. 2 row</td>
<td>2½</td>
<td>0</td>
<td>3,060</td>
</tr>
<tr>
<td>6. Plows</td>
<td>6</td>
<td>3</td>
<td>2,900</td>
</tr>
<tr>
<td>7. Disk</td>
<td>5½</td>
<td>3</td>
<td>2,150</td>
</tr>
<tr>
<td>8. Harrow</td>
<td>2</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>9. Drill</td>
<td>3½</td>
<td>0</td>
<td>1,720</td>
</tr>
<tr>
<td>10. Mower</td>
<td>4½</td>
<td>1</td>
<td>1,640</td>
</tr>
<tr>
<td>11. Rake</td>
<td>1</td>
<td>4</td>
<td>1,850</td>
</tr>
<tr>
<td>12. Baler</td>
<td>2½</td>
<td>1</td>
<td>6,650</td>
</tr>
<tr>
<td>13. Chopper</td>
<td>1</td>
<td>0</td>
<td>900</td>
</tr>
<tr>
<td>14. Spreader</td>
<td>3</td>
<td>0</td>
<td>1,490</td>
</tr>
<tr>
<td>15. Wagons and trailers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Racks</td>
<td>1</td>
<td>0</td>
<td>2,400</td>
</tr>
<tr>
<td>17. Trucks and pickups</td>
<td>2</td>
<td>1</td>
<td>3,500</td>
</tr>
</tbody>
</table>

aOnly the added value above the trade-in allowance is included as a change in value for the replaced machinery.
Table 14. (Continued)

<table>
<thead>
<tr>
<th>Type of machine</th>
<th>Number added</th>
<th>Number replaced</th>
<th>Value of changes$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Misc. machines</td>
<td>6</td>
<td>1</td>
<td>$2,025</td>
</tr>
<tr>
<td>19. Total value of</td>
<td></td>
<td></td>
<td>$107,460</td>
</tr>
<tr>
<td>machinery changes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15. Number and value of expected machinery changes within three years of the survey

<table>
<thead>
<tr>
<th>Type of machine</th>
<th>Number added</th>
<th>Number replaced</th>
<th>Value of changes$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tractors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 plow</td>
<td>2</td>
<td>1</td>
<td>$5,780</td>
</tr>
<tr>
<td>b. 3 plow</td>
<td>7</td>
<td>2</td>
<td>25,170</td>
</tr>
<tr>
<td>2. Planters and listers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 row</td>
<td>5</td>
<td>0</td>
<td>1,380</td>
</tr>
<tr>
<td>b. 4 row</td>
<td>1</td>
<td>3</td>
<td>1,520</td>
</tr>
<tr>
<td>3. Cultivators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 2 row</td>
<td>2</td>
<td>1</td>
<td>1,050</td>
</tr>
<tr>
<td>b. 4 row</td>
<td>4</td>
<td>4</td>
<td>4,600</td>
</tr>
<tr>
<td>4. Combines</td>
<td>$4\frac{1}{2}$</td>
<td>3</td>
<td>10,850</td>
</tr>
<tr>
<td>5. Cornpickers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1 row</td>
<td>1</td>
<td>0</td>
<td>1,050</td>
</tr>
<tr>
<td>b. 2 row</td>
<td>6</td>
<td>4</td>
<td>15,575</td>
</tr>
<tr>
<td>6. Plows</td>
<td>5</td>
<td>1</td>
<td>2,105</td>
</tr>
<tr>
<td>7. Disk</td>
<td>2</td>
<td>0</td>
<td>600</td>
</tr>
<tr>
<td>8. Harrow</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>9. Drill</td>
<td>3</td>
<td>0</td>
<td>1,800</td>
</tr>
</tbody>
</table>

$^a$Only the added value above the trade-in allowance is included as a change in value for replaced machinery.
Table 15. (Continued)

| Type of machine          | Number added | Number replaced | Value of changes*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Mower</td>
<td>2</td>
<td>0</td>
<td>$ 900</td>
</tr>
<tr>
<td>11. Rake</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. Baler</td>
<td>1</td>
<td>0</td>
<td>2,200</td>
</tr>
<tr>
<td>13. Chopper</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14. Spreader</td>
<td>4</td>
<td>0</td>
<td>2,000</td>
</tr>
<tr>
<td>15. Wagon and trailers</td>
<td>1</td>
<td>0</td>
<td>400</td>
</tr>
<tr>
<td>16. Racks</td>
<td>1</td>
<td>0</td>
<td>125</td>
</tr>
<tr>
<td>17. Trucks and pickups</td>
<td>1</td>
<td>0</td>
<td>3,000</td>
</tr>
<tr>
<td>18. Misc. machines</td>
<td>1</td>
<td>0</td>
<td>600</td>
</tr>
<tr>
<td>19. Total value of machinery changes</td>
<td></td>
<td></td>
<td>$80,805</td>
</tr>
</tbody>
</table>

unit operators by $1,296 per operator. The machinery changes would increase the machinery investment of rented base unit operators by $1,899 per operator. Seventy-nine percent of the value of immediate and planned changes would result from added machinery, while 21 percent would result from replacement of existing equipment. The value of the overall machinery changes of adding operators would replace 65.8 percent of the machinery investment of merged operators. The total machinery investment of both merged and adding operators prior to consolidation was $1,131,122. If both immediate and planned machinery
increases are added to the original machinery investment of base unit operators, the resulting machinery investment would total $1,033,379. Based on these total machinery investments farm consolidation would result in a decrease of 8.6 percent in the total value of machine resources employed on the consolidated units. Excluding all replacement trade-ins the machinery investment would decline by 12.1 percent following consolidation. In analyzing the decrease in machinery investment following consolidation it should be noted that the machinery investment of base unit operators comprised 75 percent of total machine resources before consolidation. Thus, if base unit operators had made no changes in machine resources after consolidation, total machine resources on the consolidated units would have declined by only 25 percent.

One important aspect of the overall change in machinery resources was an emphasis on increased machine capacity. Five adding operators indicated they had changed, or planned to change, from two-row to four-row planting equipment. Six of the adding operators said they had changed, or planned to change, from two-row to four-row cultivating equipment. Further, three adding operators planned to change from one-row corn pickers to two-row corn pickers. Since fewer man hours of labor are required per acre with larger equipment, a change to larger equipment reflects a substitution of capital for the labor resource.
Fertilizer Use before and after Consolidation

Application of commercial fertilizer on farm units represents the use of one form of capital by farm operators. The use of commercial fertilizer on merged and adding farm units in 1956 is described in this section. Fertilizer use on the combined units following consolidation is also compared with total fertilizer use that occurred before consolidation on both merged and adding units.

Fertilizer use on merged units in 1956

Fertilizer use on merged units in 1956 is shown in Table 16. The average value of fertilizer used per merged farm was $29.83 in 1956. Merged operators who moved to non-farm jobs outside Iowa used the largest amount of fertilizer, $61.91, per merged unit. Merged operators who moved to farms of similar or smaller size used no commercial fertilizer at all. The group of merged operators who shifted to non-farm jobs in Iowa used only $1.18 of fertilizer per merged farm. The remaining groups of merged operators had average fertilizer expenditures between $30 and $42 per merged unit.

Commercial fertilizer was applied on only 6.2 percent of the rotated farm land of merged units in 1956. Merged operators who retired had the highest percentage, 12.3 percent, of rotated farm land that was fertilized. However, this group
Table 16. Fertilizer use on merged units in 1956

<table>
<thead>
<tr>
<th>Fertilizer use</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total value of fertilizer used</td>
<td>$1,424</td>
<td>$26</td>
<td>$0</td>
<td>$580</td>
<td>$716</td>
<td>$208</td>
<td>$2,954</td>
</tr>
<tr>
<td>2. Average value used per unit</td>
<td>61.91</td>
<td>1.18</td>
<td>0</td>
<td>30.53</td>
<td>35.80</td>
<td>41.60</td>
<td>29.83</td>
</tr>
<tr>
<td>3. Average value used per acre fertilized</td>
<td>4.56</td>
<td>2.60</td>
<td>0</td>
<td>4.57</td>
<td>3.02</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>4. Percent of rotated acres fertilized</td>
<td>9.3%</td>
<td>.5%</td>
<td>0%</td>
<td>5.1%</td>
<td>12.3%</td>
<td>7.5%</td>
<td>6.2%</td>
</tr>
<tr>
<td>5. Acres fertilized per farm</td>
<td>13.6</td>
<td>0.5</td>
<td>0.0</td>
<td>6.7</td>
<td>11.9</td>
<td>10.4</td>
<td>7.5</td>
</tr>
</tbody>
</table>

^Fertilizer data on merged units whose operators were deceased was provided by adding operators.
of retired operators used only $3.02 of fertilizer per acre fertilized in comparison with an average fertilizer expenditure by all merged operators of $4.00 per acre fertilized. Only half of one percent of the rotated farm land of merged operators who shifted to non-farm jobs in Iowa was fertilized in 1956. None of the rotated farm land of merged units whose operators moved to similar or smaller sized units was fertilized in 1956.

Merged operators who moved to non-farm jobs outside Iowa used the largest amount of commercial fertilizer per merged unit. This group of merged operators also ranked second among merged groups in the percent of rotated acres fertilized and in the value of fertilizer used per acre fertilized. Merged operators who moved to farms of similar or smaller size did not use any commercial fertilizer. A total of only $26 of fertilizer was used on merged units whose operators found non-farm jobs in Iowa.

**Fertilizer use on base units in 1956**

Operators of base units used an average value of $208.32 of fertilizer per base unit during 1956. This represents a value of fertilizer used per farm seven times larger than that of merged operators. Operators of owned base units used $264.64 of fertilizer per farm. Operators of rented base units
used $170.39 of fertilizer per farm.

Operators of base units used commercial fertilizer on 15.3 percent of the rotated base unit farm land in comparison with only 6.2 percent of the rotated farm land fertilized on all merged units. Owned base unit operators used commercial fertilizer on 19.8 percent of all rotated land, while rented base unit operators used commercial fertilizer on 11.7 percent of the rotated farm land. However, operators of rented base units used $7.50 of fertilizer per acre fertilized in comparison with only $6.39 of fertilizer used by operators of owned base units for each acre fertilized. Table 17 summarizes fertilizer use on base units in 1956. In 1956 both the value of fertilizer used per farm unit and the percentage of rotated acres fertilized were greater on the base units in comparison with the merged units.

**Fertilizer use on merged units in 1957**

Fertilizer use on merged units in 1957 is shown in Table 18.

The value of fertilizer used per merged farm increased from $29.83 in 1956 to $192.87 the first crop year following consolidation. This represents an increase of 6.5 times in the amount of fertilizer used per merged farm. The largest increases in fertilizer use per farm took place on merged farms whose operators had found non-farm jobs in Iowa or were
farming similar or smaller sized units.

Following consolidation 26.9 percent of the total rotated acres of merged units were fertilized. This compares with only 6.2 percent of the rotated acres fertilized in 1956. The amount of fertilizer used per acre fertilized increased from $4.00 in 1956 to $5.99 per acre fertilized in 1957.

Planned use of fertilizer on merged units after 1957

The plans of adding operators for future use of fertilizer on the merged units are also shown in Table 18. Adding operators planned to use an average value of $235.79 of fertilizer per merged farm after 1957. Table 18 shows that adding operators planned to use commercial fertilizer on 32.3 percent of

Table 17. Fertilizer use on base units in 1956

<table>
<thead>
<tr>
<th>Fertilizer use</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total value of fertilizer used</td>
<td>$12,882.00</td>
<td>$11,075.00</td>
<td>$23,957.00</td>
</tr>
<tr>
<td>2. Average value used per unit</td>
<td>264.64</td>
<td>170.39</td>
<td>208.32</td>
</tr>
<tr>
<td>3. Average value used per acre fertilized</td>
<td>6.39</td>
<td>7.50</td>
<td>6.86</td>
</tr>
<tr>
<td>4. Percent of rotated acres that were fertilized</td>
<td>19.8%</td>
<td>11.7%</td>
<td>15.3%</td>
</tr>
<tr>
<td>5. Acres fertilized per farm</td>
<td>40.3</td>
<td>22.7</td>
<td>30.4</td>
</tr>
</tbody>
</table>
Table 18. Fertilizer use on merged units following consolidation

<table>
<thead>
<tr>
<th>Fertilizer use</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fertilizer use in 1957</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Total value of fertilizer used</td>
<td>$5,923.00</td>
<td>$4,092.00</td>
<td>$1,671.00</td>
<td>$2,472.00</td>
<td>$4,475.00</td>
<td>$461.00</td>
<td>$19,094.00</td>
</tr>
<tr>
<td>b. Average value of fertilizer used per merged unit</td>
<td>257.52</td>
<td>186.00</td>
<td>167.10</td>
<td>130.11</td>
<td>223.75</td>
<td>92.20</td>
<td>192.87</td>
</tr>
<tr>
<td>c. Average value used per acre fertilized</td>
<td>7.32</td>
<td>5.99</td>
<td>5.51</td>
<td>4.26</td>
<td>7.06</td>
<td>2.56</td>
<td>5.99</td>
</tr>
<tr>
<td>d. Percent of rotated acres fertilized</td>
<td>25.8%</td>
<td>32.0%</td>
<td>23.7%</td>
<td>21.0%</td>
<td>33.2%</td>
<td>28.0%</td>
<td>26.9%</td>
</tr>
<tr>
<td>2. Long run planned fertilizer use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Total value of fertilizer</td>
<td>$6,483.00</td>
<td>$6,055.00</td>
<td>$1,985.00</td>
<td>$3,412.00</td>
<td>$4,947.00</td>
<td>$461.00</td>
<td>$23,343.00</td>
</tr>
<tr>
<td>b. Average value per merged unit</td>
<td>281.87</td>
<td>275.23</td>
<td>198.50</td>
<td>179.58</td>
<td>247.35</td>
<td>92.20</td>
<td>235.79</td>
</tr>
<tr>
<td>c. Average value per acre fertilized</td>
<td>6.94</td>
<td>6.26</td>
<td>5.30</td>
<td>4.36</td>
<td>6.33</td>
<td>2.56</td>
<td>5.81</td>
</tr>
<tr>
<td>d. Percent of rotated acres fertilized</td>
<td>28.13%</td>
<td>41.81%</td>
<td>28.45%</td>
<td>27.28%</td>
<td>40.48%</td>
<td>26.47%</td>
<td>32.34%</td>
</tr>
</tbody>
</table>
the rotated acres of merged units. Only 6.2 percent of the rotated farm land on merged units was fertilized before consolidation. More than 60 percent of the 115 adding operators planned to use fertilizer on merged units following consolidation. Less than 16 percent of the 99 merged operators used fertilizer on the merged farms before consolidation.

**Fertilizer used on combined units following consolidation**

For analysis purposes it can be assumed that fertilizer use on the base units did not change following consolidation. Based on this assumption the value of fertilizer used on combined merged and base units in 1957 totaled $43,051. The total value of fertilizer used on both merged and base units in 1956 was only $26,911. This represents an increase in 1957 of 60 percent above the total value of fertilizer used on both merged and base units before consolidation. Further, the long run plans of adding operators suggest future fertilizer use on the combined units 75 percent greater than the total value of fertilizer used in 1956 before consolidation.

**Total Capital Managed before and after Consolidation**

Total capital managed is included as a part of resource discussion because it reduces land, machinery, livestock, and other farm resources to one basis of measurement. Total
capital managed describes in a single measurement the value of land and capital resources used in the production process. Labor and management resources also contribute to production, however, these resources are not included in the measurement of total capital managed.

**Total capital managed by merged operators in 1956**

The average value of total capital managed by merged operators in 1956 was $40,403. Land value comprised 80.4 percent of the total capital managed by merged operators. The value of machine resources represented 7.3 percent of the total capital managed and livestock valuation supplied an additional 4.7 percent. The total capital managed by individual merged operators varied from a low of $7,430 to a high of $103,900. Comparisons of the total capital managed by the different groups of merged operators are shown in Table 19. The group of merged operators who moved to farms of similar size or smaller had the largest amount of total capital managed per farm. The total capital managed per farm by merged operators who shifted to non-farm jobs outside Iowa was just slightly less than that of the merged operators who moved to similar or smaller sized farm units. Merged operators who found non-farm jobs in Iowa had the smallest amount of total capital managed per farm unit.

Total capital managed includes the value of all assets
directed by the farm operator, but it does not consider ownership of these assets. Table 19 also shows the average value of all assets owned by merged operators. Merged operators who retired owned the largest average amount of assets. Merged operators who found non-farm jobs in Iowa owned the lowest average amount of assets. The average amount of assets owned by all merged operators was $17,816.

A measure of the net worth of merged operators was obtained by subtracting farm liabilities from the value of owned assets. The average net worth of all merged operators in 1956 was $15,155. Retired operators had the largest average net worth of all groups of merged operators. Merged operators who found non-farm jobs in Iowa had the lowest average net worth. Three merged operators indicated they had negative net worths at the time of consolidation.

**Total capital managed by adding operators in 1956**

The average total capital managed by adding operators, $80,422, was nearly twice the amount managed by merged operators. Seventy-six percent of the total capital managed by adding operators consisted of land valuation. The value of machine resources represented 9.1 percent of the total capital managed, and livestock valuation provided an additional 9.1 percent. The total capital managed by individual adding operators varied from a low $11,475 to a high of $643,025.
Table 19. Average total capital and net worth of merged operators in 1956<sup>a</sup>

<table>
<thead>
<tr>
<th>Assets and liabilities</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger Retired</th>
<th>All merged operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Machinery and equipment</td>
<td>$2,840.00</td>
<td>$2,389.00</td>
<td>$2,826.00</td>
<td>$4,632.00</td>
<td>$1,860.00</td>
</tr>
<tr>
<td>2. Livestock and poultry</td>
<td>2,395.00</td>
<td>1,220.00</td>
<td>4,343.00</td>
<td>1,764.00</td>
<td>914.00</td>
</tr>
<tr>
<td>3. Feeds and supplies</td>
<td>1,477.00</td>
<td>725.00</td>
<td>1,033.00</td>
<td>579.00</td>
<td>574.00</td>
</tr>
<tr>
<td>4. Other assets</td>
<td>1,739.00</td>
<td>968.00</td>
<td>1,417.00</td>
<td>2,391.00</td>
<td>4,627.00</td>
</tr>
<tr>
<td>5. Value of land farmed</td>
<td>39,620.00</td>
<td>25,944.00</td>
<td>39,133.00</td>
<td>34,588.00</td>
<td>25,877.00</td>
</tr>
<tr>
<td>6. Total capital managed</td>
<td>48,072.00</td>
<td>31,245.00</td>
<td>48,752.00</td>
<td>43,954.00</td>
<td>33,851.00</td>
</tr>
<tr>
<td>7. Total assets owned</td>
<td>18,638.00</td>
<td>9,302.00</td>
<td>19,130.00</td>
<td>16,814.00</td>
<td>27,742.00</td>
</tr>
<tr>
<td>8. Farm mortgages</td>
<td>2,083.00</td>
<td>726.00</td>
<td>1,389.00</td>
<td>1,526.00</td>
<td>2,412.00</td>
</tr>
<tr>
<td>9. Other debts</td>
<td>2,441.00</td>
<td>894.00</td>
<td>836.00</td>
<td>474.00</td>
<td>206.00</td>
</tr>
<tr>
<td>10. Total liabilities</td>
<td>4,524.00</td>
<td>1,620.00</td>
<td>2,225.00</td>
<td>2,000.00</td>
<td>2,618.00</td>
</tr>
<tr>
<td>11. Net worth</td>
<td>14,114.00</td>
<td>7,682.00</td>
<td>16,905.00</td>
<td>14,814.00</td>
<td>25,125.00</td>
</tr>
</tbody>
</table>

<sup>a</sup>Data concerning deceased operators was not available.
Adding operators who owned the base units had an average total capital managed of $81,739. The average total capital managed by operators who rented the base units was $79,452. Table 20 shows the average amounts of the various classes of assets managed by the two groups of adding operators.

The average amount of assets owned by all adding operators was $45,548. This is more than two and one-half times larger than the average amount owned by merged operators. The average amount of assets owned by operators of owned base units was $77,875. Operators of rented base units owned assets with an average value of only $23,415.

Adding operators had an average net worth of $40,704 in 1956. The average net worth of adding operators was 2.7 times larger than the average net worth of merged operators. The net worths of adding operators varied from $2,830 to $452,975. Operators of owned base units had an average net worth of $69,435. The average net worth of operators of rented base units was $19,488. None of the adding operators had a negative net worth in 1956.

Total capital managed by adding operators after consolidation

Although the survey did not specifically attempt to measure the total capital managed by adding operators following consolidation, it is possible to approximate this figure.
The total capital managed by adding operators after consolidation may be approximated by combining the total capital before consolidation with the value of land and machine resources added after consolidation. Based on this method of approximating total capital managed, adding operators had an average total capital managed of $110,882 following consolidation. In comparison with total capital managed before consolidation this represents an increase of 38 percent. Following consolidation the total capital managed by one adding operator was $743,025.
Management Resources Involved in Consolidation

Because of the intangible nature of the management resource, precise measurement of this resource is extremely difficult, if not impossible. The results of the study permit only a limited approximation of the management capabilities of the farm operators involved in consolidation. The management characteristics of merged and adding operators are evaluated in terms of the number of farm information sources and production practices used by the farm operators.

Information sources used by farm operators

Information sources available to farmers provide data and principles which may be used in formulating expectations. The use of such information sources by farm operators implies an effort on the part of the operators to assemble the data and principles necessary for formulating logical hypotheses. Thus, the number of operator contacts with available information sources provides one measure for comparing management characteristics of merged and adding operators. Farm information sources used for comparison include Iowa State University publications, U.S.D.A. publications, farm magazines, and county extension directors.

Information sources used by merged operators

The utilization of farm information sources by merged operators is shown in Table 21. Only 16.1 percent of all merged op-
Table 21. Farm information sources used by operators of merged units in 1956

<table>
<thead>
<tr>
<th>Farm information sources</th>
<th>Non-farm job outside Iowa</th>
<th>Non-farm job in Iowa</th>
<th>Farm operator same size or smaller unit</th>
<th>Farm operator larger sized unit</th>
<th>Retired</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percent that contacted extension directors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. no contacts</td>
<td>81.0</td>
<td>90.5</td>
<td>100.0</td>
<td>66.7</td>
<td>88.9</td>
<td>84.0</td>
</tr>
<tr>
<td>b. one or two</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
<td>11.1</td>
<td>11.1</td>
<td>6.9</td>
</tr>
<tr>
<td>c. three or more</td>
<td>4.8</td>
<td>9.5</td>
<td>0.0</td>
<td>22.1</td>
<td>0.0</td>
<td>9.2</td>
</tr>
<tr>
<td>2. Percent that read farm magazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. none read</td>
<td>4.8</td>
<td>14.3</td>
<td>0.0</td>
<td>5.55</td>
<td>11.1</td>
<td>8.0</td>
</tr>
<tr>
<td>b. one read</td>
<td>19.0</td>
<td>14.3</td>
<td>0.0</td>
<td>11.1</td>
<td>44.4</td>
<td>19.5</td>
</tr>
<tr>
<td>c. two read</td>
<td>42.9</td>
<td>14.3</td>
<td>11.1</td>
<td>5.55</td>
<td>16.7</td>
<td>19.5</td>
</tr>
<tr>
<td>d. three or more read</td>
<td>33.3</td>
<td>57.1</td>
<td>88.9</td>
<td>77.8</td>
<td>27.8</td>
<td>52.9</td>
</tr>
<tr>
<td>3. Percent that read ISU publications</td>
<td>47.6</td>
<td>28.6</td>
<td>11.1</td>
<td>33.3</td>
<td>0.0</td>
<td>26.4</td>
</tr>
<tr>
<td>4. Percent that read USDA publications</td>
<td>33.3</td>
<td>28.6</td>
<td>11.1</td>
<td>38.9</td>
<td>5.55</td>
<td>25.3</td>
</tr>
</tbody>
</table>

aData concerning deceased operators was not available.
operators contacted a county extension director for farm information in 1956. None of the merged operators who moved to farms of similar or smaller size used this source of information. The group of merged operators who moved to larger farms had the highest percentage of operators that had contacts with county extension directors. This group of merged operators who moved to larger farms also had the highest percentage of operators that read U.S.D.A. publications. Retired operators had the lowest percentage of operators that read U.S.D.A. publications, Iowa State University publications, and two or more farm magazines. It is interesting to note that merged operators who moved to non-farm jobs outside Iowa had the highest percentage of operators that read Iowa State University publications. This group of merged operators that moved outside Iowa also ranked second among the other merged groups in the percentage of operators that read U.S.D.A. publications and had contact with county extension directors.

**Information sources used by adding operators**

Table 22 shows that larger percentages of all adding operators made use of individual farm information sources than did all merged operators. When individual groups of merged operators are compared with the adding operator groups it is apparent that merged operators who moved to larger farms ranked above both adding operator groups in extension director contacts and the use of
Table 22. Farm information sources used by operators of adding units in 1956

<table>
<thead>
<tr>
<th>Farm information sources</th>
<th>Owner base units</th>
<th>Rented base units</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percent that contacted extension director</td>
<td></td>
<td></td>
<td>In percent</td>
</tr>
<tr>
<td>a. no contacts</td>
<td>68.7</td>
<td>78.5</td>
<td>74.3</td>
</tr>
<tr>
<td>b. one or two</td>
<td>16.7</td>
<td>12.3</td>
<td>14.2</td>
</tr>
<tr>
<td>c. three or more</td>
<td>14.6</td>
<td>9.2</td>
<td>11.5</td>
</tr>
<tr>
<td>2. Percent that read farm magazines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. none read</td>
<td>6.2</td>
<td>6.2</td>
<td>6.2</td>
</tr>
<tr>
<td>b. one read</td>
<td>12.5</td>
<td>10.8</td>
<td>11.5</td>
</tr>
<tr>
<td>c. two read</td>
<td>16.7</td>
<td>23.1</td>
<td>20.4</td>
</tr>
<tr>
<td>d. three or more read</td>
<td>64.6</td>
<td>60.0</td>
<td>61.9</td>
</tr>
<tr>
<td>3. Percent that read ISU publications</td>
<td>41.7</td>
<td>40.0</td>
<td>40.7</td>
</tr>
<tr>
<td>4. Percent that read USDA publications</td>
<td>35.4</td>
<td>3544</td>
<td>35.4</td>
</tr>
</tbody>
</table>

U.S.D.A. publications. In addition, merged operators who found non-farm jobs outside Iowa had a higher percentage of operators that read Iowa State University publications than did either of the two adding operator groups. Both groups of adding operators exceeded the remaining groups of merged operators in the percentage of operators that used each farm information source.

Only slight differences existed between the two groups of adding operators in the use of farm magazines, U.S.D.A.
publications, and Iowa State University publications. However, a higher percentage of operators of owned base units had extension director contacts than did operators of rented base units.

**Production practices used by merged and adding operators**

Crop and livestock production practices carried out by farm operators reflect the action role of previous management decisions. Thus, production practices provide an additional measure for comparing management characteristics of merged and adding operators.

**Production practices of merged operators**

Table 23 summarizes the various management practices carried out by merged operators. Only 18.2 percent of all merged operators conducted soil tests in 1956. An additional 17.0 percent had conducted soil tests as recently as 1955, and 5.7 percent had made soil tests in 1954. More than half of all merged operators stated that soil tests had never been made on their merged units or that they didn't know if any test had been made. The group of merged operators who found non-farm jobs outside Iowa had the highest percentage of operators that conducted soil tests from 1954 to 1956. The group of merged operators who retired had the lowest percentage of operators that made soil tests during the same period.
Table 23. Management practices used by operators of merged units

<table>
<thead>
<tr>
<th>Management practices</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>All merged operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most recent soil test:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1956</td>
<td>28.6</td>
<td>19.0</td>
<td>11.1</td>
<td>21.1</td>
<td>5.6</td>
<td>18.2</td>
</tr>
<tr>
<td>b. 1955</td>
<td>28.6</td>
<td>14.3</td>
<td>11.1</td>
<td>15.8</td>
<td>11.1</td>
<td>17.0</td>
</tr>
<tr>
<td>c. 1954</td>
<td>4.8</td>
<td>4.8</td>
<td>11.1</td>
<td>5.3</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>d. 1946-1953</td>
<td>0.0</td>
<td>9.5</td>
<td>0.0</td>
<td>5.3</td>
<td>11.1</td>
<td>5.7</td>
</tr>
<tr>
<td>e. didn't know or never tested</td>
<td>38.1</td>
<td>52.3</td>
<td>66.6</td>
<td>52.6</td>
<td>66.7</td>
<td>53.4</td>
</tr>
<tr>
<td>2. Percent that used fertilizer in 1956</td>
<td>26.1</td>
<td>4.5</td>
<td>0.0</td>
<td>21.1</td>
<td>15.0</td>
<td>15.2</td>
</tr>
<tr>
<td>3. Percent that sprayed weeds in corn in 1956</td>
<td>52.4</td>
<td>33.3</td>
<td>33.3</td>
<td>44.4</td>
<td>27.8</td>
<td>38.6</td>
</tr>
<tr>
<td>4. Percent that sprayed for corn borer in 1956</td>
<td>14.3</td>
<td>4.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>4.5</td>
</tr>
<tr>
<td>5. Percent that used treated seed oats in 1956</td>
<td>47.1</td>
<td>28.6</td>
<td>12.5</td>
<td>36.8</td>
<td>13.3</td>
<td>30.0</td>
</tr>
<tr>
<td>6. Percent that vaccinated hogs in 1956</td>
<td>70.6</td>
<td>64.3</td>
<td>100.0</td>
<td>64.3</td>
<td>92.3</td>
<td>75.8</td>
</tr>
</tbody>
</table>

Data concerning deceased operators was not available.
The percentage of all merged operators that used commercial fertilizer in 1956 was even less than the percentage which had made soil tests. While 15.2 percent of all merged operators used commercial fertilizer in 1956, none of the merged operators who moved to farms of similar or smaller size used commercial fertilizer. The group of merged operators who found non-farm jobs outside Iowa had the highest percentage of operators who used commercial fertilizer in 1956.

Nearly 39 percent of all merged operators sprayed weeds in corn during 1956. Merged operators who found non-farm jobs outside Iowa had the highest percentage of operators that carried out this production practice. Merged operators who retired had the lowest percentage of operators that sprayed weeds in corn during 1956.

Less than 5 percent of all merged operators sprayed for corn borers in 1956. None of the merged operators who retired or moved to other farms following consolidation sprayed for corn borers. The largest percentage of operators that sprayed for corn borers was in the merged group which found non-farm jobs outside Iowa.

Merged operators who found non-farm jobs outside Iowa also had the highest percentage of operators that seeded treated oats. The groups of merged operators who retired or moved to similar sized or smaller farms had the lowest percentages of
merged operators that used treated seed oats.

The questionnaire included only one livestock production practice. More than three-fourths of all merged operators vaccinated their hogs. However, the range among groups of merged operators extended from a low of 64.3 percent for those operators who found non-farm jobs in Iowa to a high of 100 percent for those operators who moved to farms of similar or smaller size. It is interesting to note that a high percentage, 92.3 percent, of retired operators vaccinated their hogs in 1956.

Merged operators who found non-farm jobs outside Iowa had the highest percentage of operators that carried out the production practices of making soil tests, using fertilizer, spraying weeds in corn, spraying for corn borers, and using treated seed oats. Merged operators who retired had the lowest percentage of operators that made soil tests, sprayed for weeds in corn, and sprayed for corn borers. Retired operators also ranked below the percentage of all merged operators in every production practice except that of vaccinating hogs.

Production practices used by adding operators Table 24 summarizes the production practices carried out by adding operators. Thirty-three percent of all adding operators made soil tests on the base units during 1956. An additional 13.9 percent of the adding operators had made soil tests as recently as 1955,
Table 24. Management practices used by operators of adding farm units

<table>
<thead>
<tr>
<th>Management practices</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Most recent soil test:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1956</td>
<td>38.0</td>
<td>29.2</td>
<td>33.0</td>
</tr>
<tr>
<td>b. 1955</td>
<td>10.0</td>
<td>16.9</td>
<td>13.9</td>
</tr>
<tr>
<td>c. 1954</td>
<td>12.0</td>
<td>12.3</td>
<td>12.2</td>
</tr>
<tr>
<td>d. 1946-1953</td>
<td>6.0</td>
<td>3.1</td>
<td>4.3</td>
</tr>
<tr>
<td>e. didn't know or never tested</td>
<td>34.0</td>
<td>38.5</td>
<td>36.5</td>
</tr>
<tr>
<td>2. Percent that used fertilizer in 1956</td>
<td>36.0</td>
<td>33.8</td>
<td>34.8</td>
</tr>
<tr>
<td>3. Percent that sprayed weeds in corn in 1956</td>
<td>44.7</td>
<td>44.6</td>
<td>44.6</td>
</tr>
<tr>
<td>4. Percent that sprayed for corn borer in 1956</td>
<td>7.5</td>
<td>1.6</td>
<td>4.5</td>
</tr>
<tr>
<td>5. Percent that used treated seed oats in 1956</td>
<td>35.0</td>
<td>27.3</td>
<td>30.5</td>
</tr>
<tr>
<td>6. Percent that vaccinated hogs in 1956</td>
<td>81.5</td>
<td>69.0</td>
<td>74.7</td>
</tr>
</tbody>
</table>

and 12.2 percent had made soil tests in 1954. Thus, 59.1 percent of all adding operators had made soil tests on base units from 1954 to 1956. This percentage far exceeds the 40.9 percent of all merged operators that made soil tests during the same period.

The percentage of all adding operators that used commercial fertilizer in 1956 was more than twice that of all merged opera-
tors. Nearly 35 percent of all adding operators used fertilizer in 1956. Both groups of adding operators had a larger percentage of operators that used commercial fertilizer than did any of the individual merged groups.

The percentage of all adding operators that sprayed weeds in corn during 1956 was 44.6 percent. A larger percentage of all adding operators sprayed weeds in corn than did merged operators. However, a higher percentage of merged operators that found non-farm jobs outside Iowa sprayed weeds in corn than did either group of adding operators.

The percentage of all adding operators that sprayed for corn borers in 1956 was the same as that of all merged operators. As in the case of spraying weeds in corn, merged operators who found non-farm jobs outside Iowa had a larger percentage of operators that sprayed for corn borers than did either group of adding operators.

The percentage of all adding operators that seeded treated oats was approximately the same as that of all merged operators. Again, a larger percentage of merged operators who found non-farm jobs outside Iowa seeded treated oats than did either group of adding operators.

Nearly 75 percent of all adding operators vaccinated hogs in 1956. A larger percentage of operators of owned base units
vaccinated hogs than did operators of rented base units. The percentage of rented base unit operators that vaccinated hogs was less than that of all merged groups except the merged group whose operators found non-farm jobs in Iowa.

Larger percentages of owned base unit operators sprayed for corn borers, seeded treated oats, vaccinated hogs, and conducted soil tests in 1956 in comparison with rented base unit operators. Only slight differences existed between the two groups of adding operators in the use of commercial fertilizer and the spraying of weeds in corn. A much larger percentage of all adding operators conducted soil tests and used fertilizer than did all merged operators. Similar percentages of merged and adding operators sprayed for corn borers, seeded treated oats, and vaccinated hogs. It is interesting to note that the group of merged operators who moved to non-farm jobs outside Iowa exceeded all groups of merged and adding operators in the percentage of operators that conducted soil tests, sprayed weeds in corn, seeded treated oats, and sprayed for corn borers.

Resource Combinations before and after Consolidation

The combinations of resources used by merged and adding operators provide additional information of value to the study. Resource combinations before and after consolidation indicate in summary form the effect of consolidation on resource use. This section describes the resource combinations of land,
labor, and machinery that occurred before and after consolidation.

Resource combinations on merged units in 1956

The resource combinations which existed on merged units in 1956 prior to consolidation are shown in Table 25. Comparison of the machinery investment with the number of acres of rotated crop land indicates that all merged operators had a machinery investment of $24.12 for each acre of rotated crop land. The groups of merged operators who retired or found non-farm jobs outside Iowa had the lowest machinery investments per rotated acre. Operators who moved to larger farms had the highest machinery investment of $35.08 per rotated acre.

The amount of labor used per rotated acre on merged units indicated a combination of 23.2 hours of labor for each acre of rotated crop land. Merged operators who moved to non-farm jobs outside Iowa had the lowest amount of labor per rotated acre. The groups of merged units whose operators moved to larger farms or accepted non-farm jobs in Iowa used the largest amounts of labor per acre of rotated crop land.

Comparison of the machinery and labor resources of merged operators shows a combination of $1.04 of machinery investment per man hour of labor. Merged units whose operators moved to larger farms had the largest amount of machinery investment per man hour of labor. Merged units whose operators retired had a
Table 25. Resource use and combinations on merged units in 1956

<table>
<thead>
<tr>
<th>Resources and combinations</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total rotated acres</td>
<td>3,350</td>
<td>2,154</td>
<td>1,227</td>
<td>2,509</td>
<td>1,925</td>
<td>691</td>
<td>11,856</td>
</tr>
<tr>
<td>2. Total machinery value</td>
<td>$65,326</td>
<td>$52,566</td>
<td>$28,264</td>
<td>$88,009</td>
<td>$37,193</td>
<td>$14,650a</td>
<td>$286,008</td>
</tr>
<tr>
<td>3. Total hours of labor used</td>
<td>65,684</td>
<td>54,419</td>
<td>28,222</td>
<td>65,015</td>
<td>47,234</td>
<td>13,875a</td>
<td>274,449</td>
</tr>
<tr>
<td>5. Labor/land ratio</td>
<td>19.6:1</td>
<td>25.3:1</td>
<td>23.0:1</td>
<td>25.9:1</td>
<td>24.5:1</td>
<td>20.1:1</td>
<td>23.2:1</td>
</tr>
<tr>
<td>6. Machinery/labor ratio</td>
<td>.99:1</td>
<td>.97:1</td>
<td>1.00:1</td>
<td>1.35:1</td>
<td>.79:1</td>
<td>1.06:1</td>
<td>1.04:1</td>
</tr>
</tbody>
</table>

*aEstimated.*
low of $.79 of machinery investment per man hour of labor.

Merged operators who moved to larger farms had the highest machinery investment per rotated acre and per man hour of labor in comparison with the other groups of merged operator. Operators of merged units who retired had the least amount of machinery investment per rotated acre and per man hour of labor. Merged operators who moved to non-farm jobs outside Iowa used the lowest amount of labor per rotated acre.

Resource combinations on base units in 1956

The resource combinations of adding operators differ from those of merged operators primarily in the two machinery ratios as shown in Table 26. All adding operators had an average machinery investment of $37.03 per rotated acre. This represents a machinery investment per rotated acre more than 50 percent greater than that of all merged operators. Only the group of merged operators who moved to larger farms came close to adding operators in machinery investment per rotated acre. Very little difference existed between the two groups of adding operators in machinery investment per rotated acre.

Operators of adding units also had 81 percent more machinery investment per man hour of labor than did operators of merged units. None of the individual groups of merged operators came close to the $1.88 machinery investment per man
Table 26. Resource use and combinations on base units in 1956

<table>
<thead>
<tr>
<th>Resources and combinations</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total rotated acres</td>
<td>10,179</td>
<td>12,642</td>
<td>22,821</td>
</tr>
<tr>
<td>2. Total machinery value</td>
<td>$380,274</td>
<td>$464,840</td>
<td>$845,114</td>
</tr>
<tr>
<td>3. Total hours of labor used</td>
<td>198,411</td>
<td>250,290</td>
<td>448,701</td>
</tr>
<tr>
<td>4. Machinery/land ratio</td>
<td>37.6:1</td>
<td>36.8:1</td>
<td>37.0:1</td>
</tr>
<tr>
<td>5. Labor/land ratio</td>
<td>19.5:1</td>
<td>20.0:1</td>
<td>19.7:1</td>
</tr>
<tr>
<td>6. Machinery/labor ratio</td>
<td>1.92:1</td>
<td>1.86:1</td>
<td>1.88:1</td>
</tr>
<tr>
<td>7. Capital/man year</td>
<td>$50,600</td>
<td>$50,671</td>
<td>$50,644</td>
</tr>
</tbody>
</table>

Adding operators used fewer man hours of labor per rotated acre than did merged operators. The adding operators used 19.7 man hours of labor for each rotated acre, or 15 percent fewer man hours per rotated acre than used by merged operators. Operators of rented base units used slightly more labor per rotated acre than did operators of owned base units.

Differences between operators of owned and rented base
units in terms of resource combinations were relatively small. Operators of owned base units used slightly more machinery investment per rotated acre and per man hour of labor than did operators of rented base units. However, operators of rented base units used more labor per rotated acre than did the operators of owned base units. Adding operators had larger machinery investments per rotated acre and per man hour of labor in comparison with merged operators. Merged operators used more labor per rotated acre than did the adding operators.

**Resource combinations on consolidated units**

Important changes in resource combinations resulted from the consolidation of merged and base units. The planned resource combinations on the consolidated units are shown in Table 27. The total resources and resource combinations of merged and base units in 1956 are shown in the same table for comparison purposes.

The resource ratios in Table 27 indicate a 10 percent overall reduction in machinery investment per rotated acre following consolidation. A comparison of base unit resources before consolidation with the combined unit resources after consolidation shows that the machinery investment per rotated acre on consolidated units was 21 percent less than on the base units. The consolidated units, however, had a larger machinery investment per rotated acre in comparison with merged units before consolidation.
Table 27. Summary of resource use and combinations before and after consolidation

<table>
<thead>
<tr>
<th>Resources and combinations</th>
<th>Merged and base units in 1956</th>
<th>Combined units after consolidation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total rotated acres</td>
<td>34,677</td>
<td>35,253</td>
</tr>
<tr>
<td>2. Total machinery value</td>
<td>$1,131,122</td>
<td>$1,033,122</td>
</tr>
<tr>
<td>3. Total hours of labor</td>
<td>723,158</td>
<td>499,515</td>
</tr>
<tr>
<td>4. Machinery/land ratio</td>
<td>32.6:1</td>
<td>29.3:1</td>
</tr>
<tr>
<td>5. Labor/land ratio</td>
<td>20.9:1</td>
<td>14.2:1</td>
</tr>
<tr>
<td>6. Machinery/labor ratio</td>
<td>1.56:1</td>
<td>2.07:1</td>
</tr>
<tr>
<td>7. Capital/man year</td>
<td>$44,974</td>
<td>$62,681</td>
</tr>
</tbody>
</table>

The resource ratios in Table 27 indicate a 10 percent overall reduction in machinery investment per rotated acre following consolidation. A comparison of base unit resources before consolidation with the combined unit resources after consolidation shows that the machinery investment per rotated acre on consolidated units was 21 percent less than on the base units. The consolidated units, however, had a larger machinery investment per rotated acre in comparison with merged units before consolidation.

The largest change in resource combination following consolidation occurred in the comparison of labor and land resources. The number of man hours of labor per rotated acre
declined from 20.9:1 to 14.2:1 following consolidation. In contrast to the 19.7 man hours of labor used per rotated acre on base units in 1956 the consolidated units used 28 percent fewer man hour of labor per rotated acre. Consolidated units used 39 percent fewer man hours of labor per rotated acre in comparison with merged units.

Both machinery investment and man hours of labor per rotated acre declined following consolidation. However, the amount of labor was reduced even more than the machinery investment. The result was a 32 percent increase in the machinery investment per man hour of labor following consolidation. The $2.07 machinery investment per man hour of labor on consolidated units was 10 percent larger than the amount used on base units and nearly double the machinery investment per man hour of labor on merged units.

In summarizing resource changes following consolidation it appears that both machinery investment per rotated acre and man hours of labor per rotated acre declined after consolidation. However, the reduction in total man hours of labor was proportionally greater than that of machinery. Machinery investment per man hour of labor thus increased 32 percent following consolidation. The consolidated units used less machinery and labor per rotated acre in comparison with the amounts used on base units before consolidation. Consoli-
dated units also used less labor per rotated acre but more machinery per rotated acre in comparison with merged units. Both merged and base unit groups used less machinery investment per man hour of labor in contrast to the amount used on the combined units following consolidation.
EFFECTS OF CONSOLIDATION ON CROP AND LIVESTOCK PRODUCTION

One of the important results of farm consolidation is its effect on the volume of crop and livestock production. The changes in resource use and combination resulting from consolidation provide the basis for additional changes in crop and livestock production. This chapter presents an analysis of the volume of crop and livestock production before and after farm consolidation.

Effects of Consolidation on Crop Production

The total volume of crop production is influenced by the distribution of crop acreage among the various crops and by the average yield per acre of each crop. Crop acreage distributions and yields per acre are considered in this section as part of the changes in crop production resulting from consolidation. The analysis of the effects of farm consolidation on crop production is based on a comparison of adjusted crop production on merged units before consolidation with expected crop production following consolidation. During 1956 hail and drouth reduced 1956 crop yields in the survey area below the levels of previous years. The reduced yields in 1956 have been adjusted upward to provide a more accurate measure of the effects of consolidation on crop production. Crop yields in the survey area during the five year period
from 1951 through 1955 were used as the basis for adjusting 1956 crop production.

Crop acreage distributions before and after consolidation

Acreage distributions on merged units in 1956

The distributions of various crops raised on merged units before consolidation are presented in Table 28. The table shows both the average number of acres in each crop per merged farm and the number of crop acres for each 100 acres of merged land. Before consolidation 38.8 percent of all merged land was in corn. Only 12.5 percent of the merged land was in oats. Less than 8.5 percent of the merged land was composed of any of the remaining rotation crops. The distributions of merged crop acres varied considerably among the groups of merged units. For example, the acreage devoted to corn by merged operators who moved to non-farm jobs outside Iowa was 46.8 percent of the merged land. The group of merged operators who moved to similar or smaller sized farms had only 32.0 percent of the land resource in corn. Although permanent pasture made up 14.1 percent of all merged land, the range among individual groups extended from a low of 5.6 percent on units of deceased operators to a high of 22.2 percent on units whose operators found non-farm jobs in Iowa. The groups of merged units whose operators were deceased or had found non-farm jobs outside Iowa had the highest percentages of merged land in row
Table 28. Crop acreage distributions on merged units in 1956

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Crop acres per merged unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>85.6</td>
<td>47.5</td>
<td>52.8</td>
<td>62.1</td>
<td>52.3</td>
<td>80.4</td>
<td>62.3</td>
</tr>
<tr>
<td>b. silage</td>
<td>1.9</td>
<td>3.3</td>
<td>2.5</td>
<td>1.2</td>
<td>.5</td>
<td>0.0</td>
<td>1.1</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>4.0</td>
<td>3.2</td>
<td>3.5</td>
<td>2.5</td>
<td>0.0</td>
<td>0.0</td>
<td>2.4</td>
</tr>
<tr>
<td>d. oats</td>
<td>17.3</td>
<td>20.6</td>
<td>26.5</td>
<td>19.4</td>
<td>19.6</td>
<td>21.0</td>
<td>20.0</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>3.5</td>
<td>4.0</td>
<td>3.0</td>
<td>4.2</td>
<td>2.9</td>
<td>12.0</td>
<td>4.0</td>
</tr>
<tr>
<td>f. wheat</td>
<td>9.4</td>
<td>5.1</td>
<td>8.8</td>
<td>5.9</td>
<td>2.3</td>
<td>18.8</td>
<td>5.8</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>14.9</td>
<td>10.3</td>
<td>19.1</td>
<td>16.7</td>
<td>11.1</td>
<td>6.8</td>
<td>13.5</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>9.1</td>
<td>6.9</td>
<td>14.5</td>
<td>20.1</td>
<td>7.7</td>
<td>1.2</td>
<td>10.6</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>19.0</td>
<td>31.7</td>
<td>27.0</td>
<td>30.6</td>
<td>10.1</td>
<td>9.6</td>
<td>22.6</td>
</tr>
<tr>
<td>j. government program</td>
<td>5.0</td>
<td>3.9</td>
<td>1.0</td>
<td>2.8</td>
<td>9.5</td>
<td>0.0</td>
<td>4.6</td>
</tr>
<tr>
<td>k. waste, build- ings, misc.</td>
<td>13.3</td>
<td>9.3</td>
<td>14.5</td>
<td>20.7</td>
<td>8.6</td>
<td>25.1</td>
<td>13.6</td>
</tr>
<tr>
<td>1. total acres</td>
<td>183.9</td>
<td>142.8</td>
<td>165.2</td>
<td>186.1</td>
<td>124.4</td>
<td>173.0</td>
<td>160.5</td>
</tr>
</tbody>
</table>

2. Crop acres per 100 acres of land

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. corn</td>
<td>46.78</td>
<td>33.26</td>
<td>31.96</td>
<td>33.34</td>
<td>42.00</td>
<td>46.47</td>
<td>38.81</td>
</tr>
<tr>
<td>b. silage</td>
<td>1.05</td>
<td>.19</td>
<td>1.51</td>
<td>.62</td>
<td>.40</td>
<td>.00</td>
<td>.67</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>2.16</td>
<td>2.23</td>
<td>2.12</td>
<td>1.33</td>
<td>.00</td>
<td>.00</td>
<td>1.53</td>
</tr>
<tr>
<td>d. oats</td>
<td>9.43</td>
<td>14.42</td>
<td>16.04</td>
<td>10.41</td>
<td>15.76</td>
<td>12.14</td>
<td>12.46</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>1.90</td>
<td>2.80</td>
<td>1.82</td>
<td>2.26</td>
<td>2.33</td>
<td>6.94</td>
<td>2.49</td>
</tr>
<tr>
<td>f. wheat</td>
<td>5.16</td>
<td>2.60</td>
<td>.48</td>
<td>3.20</td>
<td>1.85</td>
<td>9.71</td>
<td>3.66</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>8.13</td>
<td>7.22</td>
<td>11.56</td>
<td>8.99</td>
<td>8.88</td>
<td>3.93</td>
<td>8.39</td>
</tr>
<tr>
<td>h. rota. pasture</td>
<td>4.99</td>
<td>4.84</td>
<td>8.78</td>
<td>10.80</td>
<td>6.15</td>
<td>.69</td>
<td>6.59</td>
</tr>
<tr>
<td>i. perm. pasture</td>
<td>10.38</td>
<td>22.22</td>
<td>16.34</td>
<td>16.43</td>
<td>8.12</td>
<td>5.55</td>
<td>14.07</td>
</tr>
</tbody>
</table>
Table 28. (Continued)

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Non-farm outside</th>
<th>Non-farm within or smaller</th>
<th>Same size farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>j. government program</td>
<td>2.73</td>
<td>2.74</td>
<td>.61</td>
<td>1.50</td>
<td>7.64</td>
<td>.00</td>
<td>2.86</td>
</tr>
<tr>
<td>k. waste, buildings, misc.</td>
<td>7.29</td>
<td>6.49</td>
<td>8.78</td>
<td>11.11</td>
<td>6.87</td>
<td>14.57</td>
<td>8.47</td>
</tr>
<tr>
<td>l. total acres</td>
<td>100.00</td>
<td>100.01</td>
<td>100.00</td>
<td>99.99</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

3. Percent of land in row crops

|                | 51.9% | 38.5% | 37.4% | 37.6% | 44.7% | 53.7% | 43.5% |

4. Percent of land in rotation

|                | 79.6% | 68.9% | 74.3% | 71.0% | 77.4% | 77.9% | 74.6% |
crops. The two groups of merged units whose operators continued farming after consolidation had the lowest percentages of total acres in row crops. Merged operators who shifted to non-farm jobs in Iowa had both the next to lowest percentage of their land in corn and the highest percentage of land in permanent pasture.

Acreage distributions on base units in 1956 Table 29 shows the distributions of the various crops on base units in 1956. Some differences between the two groups of base units are apparent in terms of crop distribution. For example, rented base units had 38.7 acres of corn for every 100 acres of land in contrast to only 34.9 acres of corn on owned base units. Rented base units also had a higher percentage of land in permanent pasture than did owned base units. Owned base units had 18.3 percent of all land in rotation pasture and legume hay in comparison with only 12.5 percent on rented base units. Eighty percent of the land of owned base units was in rotation, while only 77.5 percent of the land of rented base units was in rotation. When only row crop acres are compared, rented base units had a larger percentage of land in row crops in comparison with owned base units.

Contrasts between base units and merged unit exist in both row crop acres and rotation acres. Base units had 45.5 percent of the land resource in row crops in comparison with
Table 29. Crop acreage distributions on base units in 1956

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Crop acres per base unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>88.6</td>
<td>97.2</td>
<td>93.5</td>
</tr>
<tr>
<td>b. silage</td>
<td>5.1</td>
<td>3.4</td>
<td>4.1</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>7.4</td>
<td>4.6</td>
<td>5.8</td>
</tr>
<tr>
<td>d. oats</td>
<td>34.0</td>
<td>35.4</td>
<td>34.8</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>12.5</td>
<td>10.6</td>
<td>11.4</td>
</tr>
<tr>
<td>f. wheat</td>
<td>9.5</td>
<td>11.8</td>
<td>10.8</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>24.6</td>
<td>22.6</td>
<td>23.5</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>21.9</td>
<td>8.9</td>
<td>14.5</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>30.4</td>
<td>37.3</td>
<td>34.3</td>
</tr>
<tr>
<td>j. government program</td>
<td>5.0</td>
<td>4.1</td>
<td>4.5</td>
</tr>
<tr>
<td>k. waste, buildings</td>
<td>15.4</td>
<td>15.2</td>
<td>15.3</td>
</tr>
<tr>
<td>1. total acres</td>
<td>254.4</td>
<td>251.1</td>
<td>252.5</td>
</tr>
</tbody>
</table>

2. Crop acres per 100 acres of land

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. corn</td>
<td>34.85</td>
<td>38.73</td>
<td>37.02</td>
</tr>
<tr>
<td>b. silage</td>
<td>1.99</td>
<td>1.35</td>
<td>1.63</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>2.89</td>
<td>1.82</td>
<td>2.29</td>
</tr>
<tr>
<td>d. oats</td>
<td>13.37</td>
<td>14.09</td>
<td>13.77</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>4.92</td>
<td>4.22</td>
<td>4.52</td>
</tr>
<tr>
<td>f. wheat</td>
<td>3.74</td>
<td>4.72</td>
<td>4.29</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>9.68</td>
<td>8.99</td>
<td>9.29</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>8.59</td>
<td>3.55</td>
<td>5.76</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>11.93</td>
<td>14.85</td>
<td>13.57</td>
</tr>
<tr>
<td>j. government program</td>
<td>1.95</td>
<td>1.62</td>
<td>1.77</td>
</tr>
<tr>
<td>k. waste, buildings</td>
<td>6.09</td>
<td>6.07</td>
<td>6.08</td>
</tr>
<tr>
<td>1. total acres</td>
<td><strong>100.00</strong></td>
<td><strong>100.01</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

3. Percent of land in row crops

<table>
<thead>
<tr>
<th></th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.7%</td>
<td>46.1%</td>
<td>45.5%</td>
<td></td>
</tr>
</tbody>
</table>

4. Percent of land in rotation

<table>
<thead>
<tr>
<th></th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.0%</td>
<td>77.5%</td>
<td>78.6%</td>
<td></td>
</tr>
</tbody>
</table>

only 43.5 percent on merged units. Base units also had a higher percentage of the land in rotation than did merged units. Merged units had larger percentages of the land resource in permanent pasture and in government program land.
Acreage distributions on merged units after consolidation

The long run plans of adding operators for cropping the merged units are shown in Table 30. Following consolidation adding operators planned to utilize only 32.4 percent of all land for corn. This represents a sharp reduction from the 38.8 percent of merged land planted to corn before consolidation. Although long run plans of adding operators indicated a larger percentage of land in both sorghum and soybeans following consolidation, the percentage of land planned for all row crops was 1.1 percent less than before consolidation. However, increases planned for other rotation crops would result in a change in the percent of all merged land in rotation from 74.6 percent before consolidation to 78.2 percent following consolidation. The percentage of land in permanent pasture would be decreased from 14.1 percent before consolidation to 10.4 percent following consolidation according to the plans of adding operators.

Major shifts in crop acreage distributions within the groups of merged units are apparent from Table 28 and Table 30. According to the plans of adding operators the percentage of land in permanent pasture would be decreased in all groups following consolidation. The largest decrease in the percent of land in permanent pasture would occur on the group of merged units whose operators found non-farm jobs in Iowa. Although
Table 30. Planned crop acreage distributions on merged units

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Crop acres per merged unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>61.5</td>
<td>42.6</td>
<td>57.6</td>
<td>61.9</td>
<td>39.7</td>
<td>51.8</td>
<td>52.1</td>
</tr>
<tr>
<td>b. silage</td>
<td>.7</td>
<td>.0</td>
<td>.0</td>
<td>.0</td>
<td>.5</td>
<td>.0</td>
<td>.3</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>16.3</td>
<td>6.5</td>
<td>2.0</td>
<td>3.7</td>
<td>6.8</td>
<td>21.8</td>
<td>8.6</td>
</tr>
<tr>
<td>d. oats</td>
<td>22.7</td>
<td>20.1</td>
<td>28.6</td>
<td>23.7</td>
<td>17.2</td>
<td>13.2</td>
<td>21.3</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>12.7</td>
<td>3.9</td>
<td>5.0</td>
<td>5.3</td>
<td>4.6</td>
<td>16.0</td>
<td>7.1</td>
</tr>
<tr>
<td>f. wheat</td>
<td>8.9</td>
<td>5.7</td>
<td>9.3</td>
<td>5.0</td>
<td>2.0</td>
<td>16.8</td>
<td>6.5</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>18.6</td>
<td>19.1</td>
<td>28.5</td>
<td>23.1</td>
<td>16.8</td>
<td>12.6</td>
<td>19.9</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>3.0</td>
<td>7.3</td>
<td>.8</td>
<td>28.3</td>
<td>9.1</td>
<td>3.8</td>
<td>9.8</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>14.2</td>
<td>22.7</td>
<td>24.6</td>
<td>23.2</td>
<td>6.1</td>
<td>2.0</td>
<td>16.6</td>
</tr>
<tr>
<td>j. government program</td>
<td>11.4</td>
<td>6.1</td>
<td>.0</td>
<td>1.6</td>
<td>13.4</td>
<td>8.0</td>
<td>7.4</td>
</tr>
<tr>
<td>k. waste, buildings,</td>
<td>13.0</td>
<td>8.7</td>
<td>8.8</td>
<td>10.4</td>
<td>8.3</td>
<td>27.0</td>
<td>10.9</td>
</tr>
<tr>
<td>misc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. total acres</td>
<td>100.0</td>
<td>142.8</td>
<td>165.2</td>
<td>186.1</td>
<td>124.4</td>
<td>173.0</td>
<td>160.5</td>
</tr>
<tr>
<td>2. Crop acres per 100 acres of land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>33.59</td>
<td>29.82</td>
<td>34.87</td>
<td>33.26</td>
<td>31.91</td>
<td>29.94</td>
<td>32.44</td>
</tr>
<tr>
<td>b. silage</td>
<td>.40</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.40</td>
<td>.00</td>
<td>.17</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>8.93</td>
<td>4.55</td>
<td>1.21</td>
<td>1.98</td>
<td>5.47</td>
<td>12.60</td>
<td>5.37</td>
</tr>
<tr>
<td>d. oats</td>
<td>12.40</td>
<td>14.07</td>
<td>17.31</td>
<td>12.73</td>
<td>13.83</td>
<td>7.63</td>
<td>13.28</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>6.91</td>
<td>2.74</td>
<td>3.03</td>
<td>2.83</td>
<td>3.70</td>
<td>9.25</td>
<td>4.40</td>
</tr>
<tr>
<td>f. wheat</td>
<td>4.87</td>
<td>3.98</td>
<td>5.63</td>
<td>2.69</td>
<td>1.61</td>
<td>9.71</td>
<td>4.04</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>10.15</td>
<td>13.40</td>
<td>17.25</td>
<td>12.39</td>
<td>13.46</td>
<td>7.28</td>
<td>12.39</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>1.62</td>
<td>5.12</td>
<td>.48</td>
<td>15.21</td>
<td>7.28</td>
<td>2.20</td>
<td>6.14</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>7.77</td>
<td>15.91</td>
<td>14.89</td>
<td>12.47</td>
<td>4.94</td>
<td>1.16</td>
<td>10.36</td>
</tr>
<tr>
<td>j. government program</td>
<td>6.22</td>
<td>4.30</td>
<td>.00</td>
<td>.88</td>
<td>10.73</td>
<td>4.62</td>
<td>4.63</td>
</tr>
</tbody>
</table>
Table 30. (Continued)

<table>
<thead>
<tr>
<th>Crop distributions</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger Retired farm</th>
<th>De-merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Crop acres per 100 acres of land (continued)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>k. waste, buildings, misc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. total acres</td>
<td>7.13</td>
<td>6.11</td>
<td>5.33</td>
<td>5.57</td>
<td>6.67</td>
</tr>
<tr>
<td>3. Percent of land in row crops</td>
<td>49.8%</td>
<td>37.1%</td>
<td>39.1%</td>
<td>38.1%</td>
<td>41.5%</td>
</tr>
<tr>
<td>4. Percent of land in rotation</td>
<td>78.9%</td>
<td>73.7%</td>
<td>79.8%</td>
<td>81.1%</td>
<td>77.7%</td>
</tr>
</tbody>
</table>
the percent of all merged land in row crops would decline on the basis of adding operator plans, the groups of merged units whose operators retired or found larger farms to operate would experience increases in the percent of land in row crops.

The effect of consolidation on the utilization of merged land indicated several important shifts in crop acreages. Following consolidation less land would be planted to corn, but more land would be utilized for sorghum and soybeans. However, the net result of these changes would be a decrease in the total acres of row crops. In addition, less land on the merged units would be kept in permanent pasture following consolidation. The plans of adding operators further indicated that the amount of merged land in rotation would be increased as a result of farm consolidation.

**Crop yields before and after consolidation**

_Crop yields on merged units in 1956_ The per acre yields of crops produced on merged units before consolidation are shown in Table 31. This table also shows adjusted crop yields which were computed because of drouth and hail damage in the survey area during 1956. The actual yield of corn per acre on merged units in 1956 was 39.1 bushels per acre. The adjusted yield of corn per acre was 42.7 bushels. Merged
Table 31. Crop yields on merged units in 1956

<table>
<thead>
<tr>
<th>Crops</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Actual crop yields per acre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn (bu.)</td>
<td>42.07</td>
<td>39.81</td>
<td>37.70</td>
<td>37.49</td>
<td>35.92</td>
<td>37.91</td>
<td>39.13</td>
</tr>
<tr>
<td>b. silage (bu.)</td>
<td>38.98</td>
<td>45.00</td>
<td>45.00</td>
<td>44.59</td>
<td>40.00</td>
<td>41.97</td>
<td>41.97</td>
</tr>
<tr>
<td>c. sorghum (bu.)</td>
<td>47.58</td>
<td>46.71</td>
<td>49.29</td>
<td>41.06</td>
<td></td>
<td></td>
<td>46.32</td>
</tr>
<tr>
<td>d. oats (bu.)</td>
<td>12.21</td>
<td>12.09</td>
<td>11.41</td>
<td>11.50</td>
<td>10.94</td>
<td>11.72</td>
<td>11.67</td>
</tr>
<tr>
<td>e. soybeans (bu.)</td>
<td>16.65</td>
<td>16.36</td>
<td>16.00</td>
<td>24.58</td>
<td>18.45</td>
<td>15.00</td>
<td>18.15</td>
</tr>
<tr>
<td>f. wheat (bu.)</td>
<td>23.23</td>
<td>20.12</td>
<td>20.00</td>
<td>19.78</td>
<td>19.00</td>
<td>20.00</td>
<td>21.10</td>
</tr>
<tr>
<td>g. legume hay(tons)</td>
<td>2.12</td>
<td>1.82</td>
<td>2.03</td>
<td>2.00</td>
<td>2.13</td>
<td>2.06</td>
<td>2.04</td>
</tr>
</tbody>
</table>

2. Adjusted crop yields per acre

<table>
<thead>
<tr>
<th>Crops</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. corn (bu.)</td>
<td>45.90</td>
<td>43.43</td>
<td>41.13</td>
<td>40.90</td>
<td>39.19</td>
<td>41.36</td>
<td>42.69</td>
</tr>
<tr>
<td>b. silage (bu.)</td>
<td>42.52</td>
<td>49.17</td>
<td>49.08</td>
<td>48.64</td>
<td>43.60</td>
<td>50.53</td>
<td>50.53</td>
</tr>
<tr>
<td>c. sorghum (bu.)</td>
<td>51.91</td>
<td>50.97</td>
<td>53.77</td>
<td>44.81</td>
<td></td>
<td></td>
<td>50.31</td>
</tr>
<tr>
<td>d. oats (bu.)</td>
<td>30.44</td>
<td>30.13</td>
<td>28.45</td>
<td>28.68</td>
<td>27.27</td>
<td>29.23</td>
<td>29.08</td>
</tr>
<tr>
<td>e. soybeans (bu.)</td>
<td>18.91</td>
<td>18.59</td>
<td>18.17</td>
<td>27.91</td>
<td>20.95</td>
<td>17.03</td>
<td>20.62</td>
</tr>
<tr>
<td>f. wheat (bu.)</td>
<td>28.89</td>
<td>25.02</td>
<td>24.88</td>
<td>24.60</td>
<td>23.63</td>
<td>24.88</td>
<td>26.25</td>
</tr>
<tr>
<td>g. legume hay(tons)</td>
<td>2.42</td>
<td>2.16</td>
<td>2.32</td>
<td>2.29</td>
<td>2.44</td>
<td>2.35</td>
<td>2.33</td>
</tr>
</tbody>
</table>

*aSilage is shown in terms of corn equivalent.
units whose operators moved to non-farm jobs outside Iowa had the highest corn yield per acre of all merged groups. This same group of merged operators also had the highest per acre yields of oats and wheat in comparison with other groups of merged operators. The group of merged units whose operators retired had the lowest per acre yields of corn, oats, and wheat.

**Crop yields on base units in 1956** The actual yields and adjusted yields of base units in 1956 are shown in Table 31. With the exception of sorghum the per acre yields of all crops were higher on base units than on merged units, in 1956. The adjusted yield of corn on base units in 1956 was 48.4 bushels per acre in comparison with 42.7 bushels per acre on merged units. Per acre yields of both wheat and soybeans on base units were more than 20 percent larger than the per acre yields achieved on merged units. Comparisons between the two groups of base units show that owned base units had higher per acre yields in all crops except wheat in comparison with rented base units. The adjusted yield of wheat on owned base units was only 29.6 bushels per acre in 1956 in contrast with a per acre yield of 32.9 bushels on rented base units.

**Yield expectations on merged units following consolidation** The long run yield expectations of adding operators for crops produced on merged units are shown in Table 33. In
Table 32. Crop yields on base units in 1956

<table>
<thead>
<tr>
<th>Crops</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Actual crop yields per acre</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn (bu.)</td>
<td>45.84</td>
<td>43.31</td>
<td>44.35</td>
</tr>
<tr>
<td>b. silage (bu.)</td>
<td>48.52</td>
<td>43.39</td>
<td>46.13</td>
</tr>
<tr>
<td>c. sorghum (bu.)</td>
<td>45.16</td>
<td>43.83</td>
<td>44.57</td>
</tr>
<tr>
<td>d. oats (bu.)</td>
<td>13.64</td>
<td>12.12</td>
<td>12.76</td>
</tr>
<tr>
<td>e. soybeans (bu.)</td>
<td>22.77</td>
<td>20.82</td>
<td>21.75</td>
</tr>
<tr>
<td>f. wheat (bu.)</td>
<td>23.80</td>
<td>26.44</td>
<td>25.44</td>
</tr>
<tr>
<td>g. legume hay (tons)</td>
<td>2.80</td>
<td>2.28</td>
<td>2.52</td>
</tr>
<tr>
<td><strong>2. Adjusted crop yields per acre</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn (bu.)</td>
<td>50.01</td>
<td>47.25</td>
<td>48.39</td>
</tr>
<tr>
<td>b. silage (bu.)</td>
<td>52.93</td>
<td>47.34</td>
<td>50.33</td>
</tr>
<tr>
<td>c. sorghum (bu.)</td>
<td>49.27</td>
<td>47.82</td>
<td>48.62</td>
</tr>
<tr>
<td>d. oats (bu.)</td>
<td>34.01</td>
<td>30.21</td>
<td>31.82</td>
</tr>
<tr>
<td>e. soybeans (bu.)</td>
<td>25.87</td>
<td>23.65</td>
<td>24.71</td>
</tr>
<tr>
<td>f. wheat (bu.)</td>
<td>29.61</td>
<td>32.89</td>
<td>31.64</td>
</tr>
<tr>
<td>g. legume hay (tons)</td>
<td>3.20</td>
<td>2.61</td>
<td>2.88</td>
</tr>
</tbody>
</table>

*Silage is shown in terms of corn equivalent.

every crop the adding operators expected to achieve a higher yield per acre than the adjusted yield of merged operators in 1956. Adding operators expected to achieve a corn yield of 62.2 bushels per acre on the merged units following consolidation. The adjusted corn yield on merged units in 1956 was only 42.7 bushels per acre. Thus, adding operators expected a long run per acre corn yield 46.7 percent larger than the adjusted corn yield of merged operators in 1956. The expected per acre yields of the remaining crops varied from 13.5 to 40.2 percent larger than the adjusted yields obtained on the merged units in 1956. On the basis of the expectations of
Table 33. Long-run crop yields expected on merged units following consolidation

<table>
<thead>
<tr>
<th>Crops</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger Retired farm</th>
<th>Deceased merged units</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. corn (bu.)</td>
<td>61.81</td>
<td>63.21</td>
<td>68.00</td>
<td>60.47</td>
<td>62.98</td>
<td>52.90</td>
</tr>
<tr>
<td>b. silage (bu.)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>62.94</td>
<td>50.00</td>
<td>58.15</td>
<td>50.00</td>
<td>57.35</td>
<td></td>
</tr>
<tr>
<td>c. sorghum (bu.)</td>
<td>58.42</td>
<td>57.34</td>
<td>50.00</td>
<td>60.00</td>
<td>60.04</td>
<td>50.00</td>
</tr>
<tr>
<td>d. oats (bu.)</td>
<td>40.91</td>
<td>35.93</td>
<td>43.22</td>
<td>38.61</td>
<td>38.36</td>
<td>33.94</td>
</tr>
<tr>
<td>e. soybeans (bu.)</td>
<td>29.00</td>
<td>29.30</td>
<td>30.00</td>
<td>30.00</td>
<td>28.75</td>
<td>26.25</td>
</tr>
<tr>
<td>f. wheat (bu.)</td>
<td>35.98</td>
<td>36.80</td>
<td>40.16</td>
<td>34.74</td>
<td>31.89</td>
<td>35.00</td>
</tr>
<tr>
<td>g. legume hay (tons)</td>
<td>3.01</td>
<td>3.20</td>
<td>2.56</td>
<td>2.94</td>
<td>3.08</td>
<td>2.60</td>
</tr>
</tbody>
</table>

<sup>a</sup>Silage is reported in terms of corn equivalent.
adding operators the per acre yields of individual crops produced on merged units would increase from 13.5 to 46.7 percent following consolidation.

**Total volume of crop production**

The preceding sections have discussed the changes in crop distributions and expected yields on merged units following consolidation. Both of these changes effect the volume of total crop production on the merged units after consolidation. Value of crop production before and after consolidation is used as a measure of the effect of consolidation on the total volume of crop production.

**Value of crop production on merged units in 1956**  Table 34 shows both actual and adjusted values of crop production per merged unit in 1956. The value of adjusted crop production per merged unit in 1956 was $5,572. Corn contributed 62.5 percent of this amount and legume hay contributed 10.5 percent. Each of the remaining crops contributed less than 10 percent to the value of crop production. The adjusted value of crops produced per acre on all merged units was $37.92 in 1956. The group of merged units whose operators moved to non-farm jobs outside Iowa had the largest value of crop production per acre. The group of merged units whose operators moved to farms of similar or smaller size had the smallest value of crop production per acre.
Table 34. Value of 1956 crop production per merged unit

<table>
<thead>
<tr>
<th>Crops</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm retired</th>
<th>Deceased units</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Value of actual crop production per unit:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>$4,718</td>
<td>$2,447</td>
<td>$2,607</td>
<td>$3,047</td>
<td>$2,459</td>
<td>$3,993</td>
</tr>
<tr>
<td>b. silage</td>
<td>98</td>
<td>16</td>
<td>147</td>
<td>68</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>200</td>
<td>158</td>
<td>183</td>
<td>108</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>d. oats</td>
<td>141</td>
<td>167</td>
<td>203</td>
<td>149</td>
<td>144</td>
<td>165</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>138</td>
<td>156</td>
<td>115</td>
<td>247</td>
<td>128</td>
<td>430</td>
</tr>
<tr>
<td>f. wheat</td>
<td>436</td>
<td>206</td>
<td>32</td>
<td>236</td>
<td>87</td>
<td>669</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>585</td>
<td>363</td>
<td>720</td>
<td>623</td>
<td>438</td>
<td>260</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>110</td>
<td>83</td>
<td>174</td>
<td>241</td>
<td>92</td>
<td>14</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>95</td>
<td>159</td>
<td>135</td>
<td>153</td>
<td>51</td>
<td>48</td>
</tr>
<tr>
<td>j. government program</td>
<td>198</td>
<td>114</td>
<td>29</td>
<td>84</td>
<td>306</td>
<td>0</td>
</tr>
<tr>
<td>k. total value</td>
<td>$6,719</td>
<td>$3,898</td>
<td>$4,345</td>
<td>$4,954</td>
<td>$3,729</td>
<td>$5,579</td>
</tr>
<tr>
<td>2. Value of actual crop production per acre</td>
<td>$39.60</td>
<td>$29.19</td>
<td>$28.83</td>
<td>$29.95</td>
<td>$32.19</td>
<td>$37.75</td>
</tr>
<tr>
<td>3. Value of adjusted crop production per unit:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>$5,148</td>
<td>$2,703</td>
<td>$2,845</td>
<td>$3,325</td>
<td>$2,682</td>
<td>$4,356</td>
</tr>
<tr>
<td>b. silage</td>
<td>107</td>
<td>18</td>
<td>161</td>
<td>74</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>218</td>
<td>172</td>
<td>200</td>
<td>117</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>d. oats</td>
<td>352</td>
<td>416</td>
<td>505</td>
<td>372</td>
<td>358</td>
<td>411</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>157</td>
<td>178</td>
<td>130</td>
<td>281</td>
<td>145</td>
<td>489</td>
</tr>
<tr>
<td>f. wheat</td>
<td>542</td>
<td>256</td>
<td>40</td>
<td>291</td>
<td>108</td>
<td>832</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>668</td>
<td>415</td>
<td>824</td>
<td>712</td>
<td>501</td>
<td>297</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>110</td>
<td>83</td>
<td>174</td>
<td>241</td>
<td>918</td>
<td>14</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>95</td>
<td>159</td>
<td>135</td>
<td>153</td>
<td>505</td>
<td>48</td>
</tr>
<tr>
<td>j. government program</td>
<td>225</td>
<td>133</td>
<td>34</td>
<td>95</td>
<td>354</td>
<td>0</td>
</tr>
<tr>
<td>k. total value</td>
<td>$7,621</td>
<td>$4,530</td>
<td>$5,046</td>
<td>$5,662</td>
<td>$4,320</td>
<td>$6,448</td>
</tr>
<tr>
<td>4. Value of adjusted crop production per acre</td>
<td>$44.92</td>
<td>$33.92</td>
<td>$33.48</td>
<td>$34.23</td>
<td>$37.29</td>
<td>$43.62</td>
</tr>
</tbody>
</table>

aSee Appendix B for prices used in computing crop values.

bValue of silage is shown in terms of corn equivalent.
Value of crop production on base units in 1956  The values of actual and adjusted crop production per base unit are shown in Table 35. The value of adjusted crop production per base unit in 1956 was $10,391. This is nearly twice the per unit value of adjusted crop production on merged units in 1956. Corn contributed 57.5 percent of the value of crops produced on base units. Legume hay contributed 12.1 percent of the value of base unit crop production. Each of the remaining crops contributed less than 10 percent of the value of crop production on base units in 1956. The value of adjusted crop production per acre on base units in 1956 was $43.81 per acre. The value of adjusted crop production per acre on merged units in 1956 was only $37.92 per acre.

Value of crop production following consolidation  In order to compare the volume of crop production before and after consolidation 1956 prices have been used to determine the value of expected crop production. Table 36 presents the value of crop production expected per merged unit following consolidation. The value of expected production per merged unit following consolidation was $8,015. This represents an increase of 43.8 percent over the adjusted value of crop production per merged unit in 1956. The value of crop production per acre increased from $37.92 per acre before consolidation to an expected value of $53.57 per acre following consolidation. Merged units whose operators moved to non-farm
Table 35. Value of 1956 crop production per base unit\(^a\)

<table>
<thead>
<tr>
<th>Crops</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Value of actual crop production per unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>$5,323</td>
<td>$5,671</td>
<td>$5,433</td>
</tr>
<tr>
<td>b. silage(^b)</td>
<td>322</td>
<td>194</td>
<td>249</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>352</td>
<td>212</td>
<td>273</td>
</tr>
<tr>
<td>d. oats</td>
<td>311</td>
<td>287</td>
<td>297</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>681</td>
<td>527</td>
<td>594</td>
</tr>
<tr>
<td>f. wheat</td>
<td>451</td>
<td>623</td>
<td>548</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>1,280</td>
<td>956</td>
<td>1,097</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>262</td>
<td>107</td>
<td>174</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>152</td>
<td>186</td>
<td>171</td>
</tr>
<tr>
<td>j. government program</td>
<td>194</td>
<td>151</td>
<td>170</td>
</tr>
<tr>
<td>k. total value</td>
<td>9,328</td>
<td>8,761</td>
<td>9,007</td>
</tr>
<tr>
<td>2. Value of actual crop production per acre</td>
<td>$39.04</td>
<td>$37.14</td>
<td>$37.98</td>
</tr>
<tr>
<td>3. Value of adjusted crop production per unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>$5,807</td>
<td>$6,019</td>
<td>$5,927</td>
</tr>
<tr>
<td>b. silage(^b)</td>
<td>351</td>
<td>210</td>
<td>271</td>
</tr>
<tr>
<td>c. sorghum</td>
<td>384</td>
<td>232</td>
<td>298</td>
</tr>
<tr>
<td>d. oats</td>
<td>775</td>
<td>716</td>
<td>742</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>774</td>
<td>598</td>
<td>675</td>
</tr>
<tr>
<td>f. wheat</td>
<td>561</td>
<td>775</td>
<td>682</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>1,464</td>
<td>1,094</td>
<td>1,255</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>262</td>
<td>107</td>
<td>174</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>152</td>
<td>186</td>
<td>171</td>
</tr>
<tr>
<td>j. government program</td>
<td>223</td>
<td>175</td>
<td>196</td>
</tr>
<tr>
<td>k. total value</td>
<td>$10,753</td>
<td>10,097</td>
<td>10,391</td>
</tr>
<tr>
<td>4. Value of adjusted crop production per acre</td>
<td>$45.01</td>
<td>$42.81</td>
<td>$43.81</td>
</tr>
</tbody>
</table>

\(^a\)See Appendix B for prices used in computing crop values.

\(^b\)Value of silage is shown in terms of corn equivalent.
Table 36. Value of expected crop production on merged units following consolidation

<table>
<thead>
<tr>
<th>Crops</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm retired</th>
<th>Deceased</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Value of expected crop production per unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. corn</td>
<td>$6,282</td>
<td>$3,527</td>
<td>$5,131</td>
<td>$4,903</td>
<td>$3,276</td>
<td>$3,589</td>
</tr>
<tr>
<td>b. silage</td>
<td>61</td>
<td>33</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. sorghum</td>
<td>1,012</td>
<td>395</td>
<td>106</td>
<td>234</td>
<td>433</td>
<td>1,155</td>
</tr>
<tr>
<td>d. oats</td>
<td>622</td>
<td>484</td>
<td>828</td>
<td>613</td>
<td>442</td>
<td>300</td>
</tr>
<tr>
<td>e. soybeans</td>
<td>877</td>
<td>274</td>
<td>359</td>
<td>377</td>
<td>316</td>
<td>1,004</td>
</tr>
<tr>
<td>f. wheat</td>
<td>638</td>
<td>416</td>
<td>743</td>
<td>346</td>
<td>127</td>
<td>1,170</td>
</tr>
<tr>
<td>g. legume hay</td>
<td>1,054</td>
<td>1,139</td>
<td>1,359</td>
<td>1,259</td>
<td>958</td>
<td>610</td>
</tr>
<tr>
<td>h. rotation pasture</td>
<td>35</td>
<td>88</td>
<td>10</td>
<td>340</td>
<td>109</td>
<td>46</td>
</tr>
<tr>
<td>i. permanent pasture</td>
<td>71</td>
<td>114</td>
<td>123</td>
<td>116</td>
<td>31</td>
<td>10</td>
</tr>
<tr>
<td>j. government program</td>
<td>673</td>
<td>309</td>
<td>744</td>
<td>77</td>
<td>744</td>
<td>457</td>
</tr>
<tr>
<td>k. total value</td>
<td>10,021</td>
<td>6,745</td>
<td>8,659</td>
<td>8,264</td>
<td>6,467</td>
<td>8,341</td>
</tr>
<tr>
<td>2. Value of expected crop production per acre</td>
<td>$58.96</td>
<td>$50.30</td>
<td>$55.36</td>
<td>$47.03</td>
<td>$55.70</td>
<td>$57.13</td>
</tr>
</tbody>
</table>

a See Appendix B for prices used in computing crop values.

b Value of silage is shown in terms of corn equivalent.
jobs outside Iowa had the highest value of crop production per acre both before and after consolidation. Based on the yield expectations of adding operators, the value of crop production per merged unit would be increased by 43.8 percent following consolidation.

In 1956 the value of adjusted crop production on merged and base units totaled $1,750,629. If the value of future expected crop production from merged units is added to the value of adjusted crop production from base units in 1956, the total value of crop production from the combined units would total $1,988,508. The combined total assumes that the value of crop production from base units would remain the same following consolidation. Based on this assumption the total value of crop production on the consolidated units would be 13.6 percent larger than the total value of adjusted crop production from merged and base units before consolidation.

Effects of Consolidation on Livestock Production

Consolidation of merged units with other adding units results in a withdrawal of the livestock production of merged operators. Following consolidation the adding operators may or may not replace the livestock production of merged operators. The purpose of this section is to examine livestock production on merged and base units before consolidation and
to analyze the intentions of adding operators for replacing the livestock production of merged operators following consolidation.

**Livestock production on merged units in 1956**

Table 37 summarizes the number of livestock produced on merged units in 1956. The table shows that hog production on merged units consisted primarily of spring pig production. An average of 50.3 spring pigs were weaned per unit in comparison with only 17.1 fall pigs weaned per unit. Merged operators weaned an average of 7.3 pigs per litter from the 6.9 litters farrowed per merged unit in the spring of 1956. Although the number of pigs weaned per litter was nearly the same for both fall and spring farrowings, the number of fall litters raised on merged units was only one-third of the number of spring litters. Merged operators who shifted to similar or smaller sized units after consolidation weaned the largest number of both fall and spring pigs per unit of all merged groups. This same group of merged operators who shifted to similar or smaller units also had the largest number of pigs weaned per litter from spring farrowings. Merged operators who found non-farm jobs outside Iowa weaned the largest number of fall pigs per litter in comparison with the other merged groups. In addition to the pigs farrowed on merged units the merged operators purchased and fed an average of
Table 37. Livestock and poultry production on merged units during 1956a

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>All merged units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spring pigs raised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. litters per unit</td>
<td>8.1</td>
<td>3.8</td>
<td>10.3</td>
<td>8.5</td>
<td>5.8</td>
<td>6.9</td>
</tr>
<tr>
<td>b. pigs weaned per litter</td>
<td>7.4</td>
<td>6.9</td>
<td>8.0</td>
<td>7.1</td>
<td>6.8</td>
<td>7.3</td>
</tr>
<tr>
<td>c. pigs weaned per unit</td>
<td>60.6</td>
<td>26.1</td>
<td>84.5</td>
<td>60.6</td>
<td>39.3</td>
<td>50.3</td>
</tr>
<tr>
<td>2. Fall pigs raised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. litters per unit</td>
<td>2.8</td>
<td>1.1</td>
<td>3.3</td>
<td>2.2</td>
<td>2.8</td>
<td>2.3</td>
</tr>
<tr>
<td>b. pigs weaned per litter</td>
<td>8.0</td>
<td>7.8</td>
<td>7.1</td>
<td>6.9</td>
<td>7.2</td>
<td>7.4</td>
</tr>
<tr>
<td>c. pigs weaned per unit</td>
<td>22.0</td>
<td>8.6</td>
<td>24.3</td>
<td>14.8</td>
<td>20.0</td>
<td>17.1</td>
</tr>
<tr>
<td>3. Feeder pigs fed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. spring pigs per unit</td>
<td>3.7</td>
<td>3.2</td>
<td>7.2</td>
<td>3.9</td>
<td>.8</td>
<td>3.4</td>
</tr>
<tr>
<td>b. fall pigs per unit</td>
<td>4.8</td>
<td>8.9</td>
<td></td>
<td>7.2</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>4. Dairy cows per unit</td>
<td>3.7</td>
<td>3.2</td>
<td>7.2</td>
<td>3.9</td>
<td>.8</td>
<td>3.4</td>
</tr>
<tr>
<td>5. Beef cows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. beef cows per unit</td>
<td>2.0</td>
<td>1.4</td>
<td>3.7</td>
<td>5.4</td>
<td>1.9</td>
<td>2.8</td>
</tr>
<tr>
<td>b. beef calves per unit</td>
<td>1.9</td>
<td>1.2</td>
<td>2.8</td>
<td>5.4</td>
<td>1.8</td>
<td>2.6</td>
</tr>
<tr>
<td>6. Feeder cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. no. fed per unit</td>
<td>7.0</td>
<td>5.1</td>
<td>21.6</td>
<td>9.7</td>
<td>10.7</td>
<td>9.4</td>
</tr>
<tr>
<td>b. wt. added per head</td>
<td>422</td>
<td>477</td>
<td>555</td>
<td>249</td>
<td>551</td>
<td>452</td>
</tr>
<tr>
<td>c. wt. added per unit</td>
<td>2,956</td>
<td>2,429</td>
<td>11,970</td>
<td>2,429</td>
<td>5,911</td>
<td>4,242</td>
</tr>
<tr>
<td>7. Poultry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. hens per unit</td>
<td>63.5</td>
<td>51.6</td>
<td>98.6</td>
<td>65.9</td>
<td>103.3</td>
<td>72.9</td>
</tr>
<tr>
<td>b. chicks raised per unit</td>
<td>81.0</td>
<td>92.6</td>
<td>193.3</td>
<td>109.2</td>
<td>97.2</td>
<td>104.7</td>
</tr>
</tbody>
</table>

aInformation concerning units whose operators were deceased was not available.
4.8 spring feeder pigs and 3.5 fall feeder pigs per merged unit. More than half of all feeder pigs were fed by the group of merged operators who retired following consolidation.

A limited number of dairy cows were kept on merged units. Merged operators kept only 3.4 dairy cows per unit. Among the groups of merged operators the number of dairy cows varied from less than one cow per unit on merged units whose operators retired to more than seven cows per unit on merged units whose operators shifted to similar or smaller sized units.

The number of beef cows kept on merged units was even less than the number of dairy cows. Merged operators kept only 2.8 beef cows per unit and raised an average of 2.6 beef calves per merged unit. More than 45 percent of all beef calves were raised on merged units whose operators shifted to larger farms following consolidation.

Merged operators fed 9.4 head of feeder cattle per merged unit and added an average of 452 pounds of weight to each animal before marketing. The total weight added to feeder cattle by merged operators was 4,242 pounds per merged unit. In comparison with other merged groups the group of merged operators who shifted to similar or smaller sized farms fed the largest number of feeder cattle per unit, added the heaviest weight per animal, and added the largest total weight per merged unit.
The group of merged operators who retired following consolidation ranked second among the merged groups in feeder cattle production. Table 37 shows that the two groups of merged operators who retired or shifted to similar or smaller farms also had the largest average net worths per operator in comparison with the other groups of merged operators. The table also shows that the group of merged operators who shifted to non-farm jobs in Iowa had the lowest average net worth in comparison with the other merged groups.

Poultry production was of minor importance on the majority of merged units. Merged operators kept only 72.9 hens per merged unit and raised 104.7 chicks per merged unit. The group of merged operators who retired kept the largest number of hens per merged unit. Merged operators who shifted to similar or smaller farms following consolidation raised the largest number of chicks per merged unit.

With the exception of the beef cow enterprise the group of merged operators who shifted to similar or smaller sized units produced and fed the largest number of animals per unit in each class of livestock. The group of merged operators who accepted non-farm jobs in Iowa following consolidation ranked below all other merged groups in the number of pigs raised per unit, the number of feeder cattle fed per unit, and the number of beef cows kept per unit. The group of merged operators who
shifted to similar or smaller sized units had the second largest average net worth among all merged groups, while the group of merged operators who accepted non-farm jobs in Iowa had the lowest average net worth of all merged groups.

Livestock production on base units in 1956

Table 38 summarizes the number of livestock produced on base units in 1956. Operators of base units weaned an average of 87.6 spring pigs per unit in 1956. The spring pig production was based on 11.6 litters farrowed per base unit with an average of 7.5 pigs weaned per litter. Both the number of spring litters per unit and the number of pigs weaned per litter on base units exceeded the comparable production figures on merged units of 6.9 litters per unit and 7.3 pigs weaned per litter. In addition, operators of base units raised 5.1 fall litters per base unit in comparison with only 2.1 fall litters raised per merged unit. The base unit operators weaned a total of 124.6 spring and fall pigs per unit in comparison with only 67.4 pigs weaned per unit by merged operators. The total number of spring and fall feeder pigs fed per unit on base units was more than double the number fed per unit on merged units. All base unit feeder pig production took place on owned base units. The total number of pigs fed per base unit in 1956, both raised and purchased, was 88 percent larger than the number of pigs fed per merged unit in the same year.
Table 38. Livestock and poultry production on base units during 1956

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Spring pigs raised</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. litters per unit</td>
<td>10.5</td>
<td>12.4</td>
<td>11.6</td>
</tr>
<tr>
<td>b. pigs weaned per litter</td>
<td>7.8</td>
<td>7.4</td>
<td>7.5</td>
</tr>
<tr>
<td>c. pigs weaned per unit</td>
<td>81.8</td>
<td>91.9</td>
<td>87.6</td>
</tr>
<tr>
<td>2. Fall pigs raised</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. litters per unit</td>
<td>5.0</td>
<td>5.1</td>
<td>5.1</td>
</tr>
<tr>
<td>b. pigs weaned per litter</td>
<td>7.5</td>
<td>7.2</td>
<td>7.3</td>
</tr>
<tr>
<td>c. pigs weaned per unit</td>
<td>37.3</td>
<td>36.8</td>
<td>37.0</td>
</tr>
<tr>
<td>3. Feeder pigs fed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. spring pigs per unit</td>
<td>20.3</td>
<td>0</td>
<td>8.6</td>
</tr>
<tr>
<td>b. fall pigs per unit</td>
<td>22.2</td>
<td>0</td>
<td>9.4</td>
</tr>
<tr>
<td>4. Dairy cows per unit</td>
<td>5.5</td>
<td>4.0</td>
<td>4.6</td>
</tr>
<tr>
<td>5. Beef cows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. beef cows per unit</td>
<td>5.6</td>
<td>8.2</td>
<td>7.1</td>
</tr>
<tr>
<td>b. beef calves per unit</td>
<td>5.5</td>
<td>7.9</td>
<td>6.9</td>
</tr>
<tr>
<td>6. Feeder cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. number fed per unit</td>
<td>88.9</td>
<td>64.0</td>
<td>74.5</td>
</tr>
<tr>
<td>b. weight added per head</td>
<td>359</td>
<td>330</td>
<td>345</td>
</tr>
<tr>
<td>c. weight added per unit</td>
<td>31,913</td>
<td>21,112</td>
<td>25,699</td>
</tr>
<tr>
<td>7. Poultry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. hens per unit</td>
<td>111.5</td>
<td>73.7</td>
<td>89.7</td>
</tr>
<tr>
<td>b. chicks raised per unit</td>
<td>125.7</td>
<td>111.5</td>
<td>117.5</td>
</tr>
</tbody>
</table>

The number of dairy cows kept per base unit in 1956 exceeded the number dairy cows kept per merged unit by 30 percent. Operators of owned base units kept an average of 5.5 dairy cows per unit, while operators of rented base units kept an average of 4.0 dairy cows per unit. The group of merged operators who shifted to similar or smaller sized units was
the only group of merged operators that maintained a larger number of dairy cows per unit than either of the two groups of base unit operators.

Operators of base units maintained 7.1 beef cows per unit in 1956 and raised 6.9 beef calves per base unit. The number of beef calves raised per base unit in 1956 was 2.7 times larger than the number of beef calves raised per merged unit. Both groups of base unit operators raised a larger number of beef calves per unit than any of the groups of merged operators.

The greatest difference in livestock production between merged and base units occurred in feeder cattle production. Although operators of base units added less weight per animal than did merged unit operators, the base unit operators fed an average of 74.5 feeder cattle per unit in comparison with only 9.4 feeder cattle fed per unit by merged operators. Base unit operators produced a total of 25,699 pounds of added weight per base unit in contrast to the 4,242 pounds of weight added to feeder cattle per unit by merged operators. Both groups of base unit operators fed more cattle per unit and added more weight per unit than did any group of merged operators. Comparison of the two groups of base unit operators shows that owned base unit operators fed a larger number of feeder cattle per unit and added more weight per animal than did rented base unit operators. Owned base unit operators added a total weight
of 31,913 pounds per unit in comparison with an added weight of 21,112 pounds per unit produced by rented base unit operators. Because of the high capital requirement of the feeder cattle enterprise it is interesting to compare the net worths of merged and base unit operators with the number of feeder cattle that were fed. Tables 19 and 20 show that the group of operators who owned base units had the largest average net worth of all groups of merged and base unit operators. This same group of owned base unit operators fed the largest number of feeder cattle per unit in comparison with other groups of merged and base unit operators. Merged operators who accepted non-farm jobs in Iowa had the lowest average net worth of all groups and fed the fewest number of feeder cattle per unit.

Poultry production on base units was of minor importance. Although operators of base units kept a larger number of hens per unit and raised more chicks per unit than did merged operators, base unit operators kept less than 90 hens per unit and raised less than 120 chicks per unit. Owned base unit operators kept more hens and raised more chicks per unit than did operators of rented base units.

Limited numbers of lambs were raised and fed on both merged and base units. In comparison with other livestock enterprises the numbers were so limited that discussion of the sheep and lamb enterprise is omitted from the sections devoted to physical
livestock production on merged and base units in 1956.

Operators of base units exceeded the per unit livestock production of merged operators in every class of livestock. However, the greatest difference in livestock production between base unit operators and merged unit operators occurred in the number of feeder cattle fed per unit. The number of feeder cattle fed per base unit was nearly eight times larger than the number fed per merged unit. The total number of pigs fed per base unit, both raised and purchased, was less than twice the number fed per merged unit.

**Value of livestock production on merged units in 1956**

The value of livestock production provides a single measure for comparison of all livestock enterprises. Table 39 summarizes the value of livestock produced on merged units in 1956. The production levels and prices used in calculating the value of livestock production are found in Appendix C and Appendix D.

The value of all livestock production on merged units in 1956 averaged $4,310 per unit. Nearly 54 percent of the total value of livestock production on the merged units came from the hog enterprise. Feeder cattle contributed 17.8 percent of the total value of livestock production and dairy cattle contributed 14.6 percent. Each of the remaining livestock enter-
prises on merged units contributed less than 10 percent of the total value of livestock production. The predominance of the hog enterprise on merged units is apparent from Table 39. Within all merged groups the value of spring pig production exceeded the values of other individual livestock enterprises. Although feeder cattle contributed 26.3 percent of the value of livestock production on merged units whose operators shifted to similar or smaller sized farms, the percentage contributed by feeder cattle was still less than that contributed by the hog enterprise.

The value of livestock production per merged unit varied considerably among the groups of merged operators. Merged operators who shifted to similar or smaller sized farms had the largest value of livestock production per unit, $8,242. Merged operators who accepted non-farm jobs in Iowa had the lowest value of livestock production per unit, $2,618. The remaining groups of merged operators all fell within $200 of the $4,310 average value of livestock production on all merged units in 1956.

Value of livestock production on base units in 1956

The value of all livestock production on base units in 1956 averaged $10,781 per base unit. In the same year the value of livestock production on merged units averaged $4,310
Table 39. Value of livestock and poultry production per merged unit in 1956\(^a\)

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller Iowa farm</th>
<th>Larger Re-farm</th>
<th>All merged units (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeder cattle</td>
<td>$535</td>
<td>$440</td>
<td>$2,167</td>
<td>$439</td>
<td>$1,070</td>
</tr>
<tr>
<td>2. Beef calves</td>
<td>123</td>
<td>80</td>
<td>180</td>
<td>348</td>
<td>115</td>
</tr>
<tr>
<td>3. Spring pigs raised</td>
<td>1,851</td>
<td>797</td>
<td>2,524</td>
<td>1,851</td>
<td>1,201</td>
</tr>
<tr>
<td>4. Fall pigs raised</td>
<td>673</td>
<td>262</td>
<td>743</td>
<td>452</td>
<td>611</td>
</tr>
<tr>
<td>5. Spring feeder pigs</td>
<td>0</td>
<td>0</td>
<td>254</td>
<td>0</td>
<td>583</td>
</tr>
<tr>
<td>6. Fall feeder pigs</td>
<td>0</td>
<td>145</td>
<td>271</td>
<td>0</td>
<td>221</td>
</tr>
<tr>
<td>7. Dairy cows (including veal calves)</td>
<td>682</td>
<td>567</td>
<td>1,501</td>
<td>683</td>
<td>135</td>
</tr>
<tr>
<td>8. Sheep and lambs</td>
<td>1</td>
<td>18</td>
<td>0</td>
<td>74</td>
<td>0</td>
</tr>
<tr>
<td>9. Hens (eggs)</td>
<td>304</td>
<td>247</td>
<td>472</td>
<td>316</td>
<td>495</td>
</tr>
<tr>
<td>10. Chicks raised</td>
<td>54</td>
<td>62</td>
<td>130</td>
<td>73</td>
<td>65</td>
</tr>
<tr>
<td>11. Total value</td>
<td>4,224</td>
<td>2,618</td>
<td>8,242</td>
<td>4,236</td>
<td>4,495</td>
</tr>
</tbody>
</table>

\(^a\)See Appendix C and Appendix D for production estimates and prices used in determining livestock and poultry values.

\(^b\)Does not include the group of deceased operators since information from this group of merged operators was not available.
per merged unit. Thus, the per unit value of livestock production on base units was more than 2.5 times larger than the per unit value of livestock production on merged units.

Table 40 summarizes the value of livestock production on base units in 1956. Feeder cattle contributed 43 percent of the total value of all livestock production on base units. Hog production contributed 41 percent of the total value of livestock production on base units. Each of the remaining livestock enterprises contributed less than 8 percent of the total value of base unit livestock production. In contrast to the livestock production on base units the feeder cattle enterprise contributed only 17.8 percent of the total value of livestock production on merged units. Hog production contributed the largest percentage of the total value of all merged unit livestock production, 53.8 percent.

Comparisons between the two groups of base units indicate that the per unit value of livestock production on owned base units was 34 percent larger than that of rented base units. In addition, the feeder cattle enterprise contributed 45.3 percent of the total value of livestock production on owned base units and only 40.2 percent on rented base units. The value of hog production on rented base units exceeded the value of feeder cattle production. The hog enterprise contributed 41.4 percent of the total value of livestock production on rented base units.
Table 40. Value of livestock and poultry production per base unit in 1956\(^a\)

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeder cattle</td>
<td>$5,776</td>
<td>$3,821</td>
<td>$4,652</td>
</tr>
<tr>
<td>2. Beef calves</td>
<td>354</td>
<td>511</td>
<td>444</td>
</tr>
<tr>
<td>3. Spring pigs raised</td>
<td>2,498</td>
<td>2,806</td>
<td>2,676</td>
</tr>
<tr>
<td>4. Fall pigs raised</td>
<td>1,140</td>
<td>1,124</td>
<td>1,131</td>
</tr>
<tr>
<td>5. Spring feeder pigs</td>
<td>620</td>
<td>0</td>
<td>263</td>
</tr>
<tr>
<td>6. Fall feeder pigs</td>
<td>679</td>
<td>0</td>
<td>288</td>
</tr>
<tr>
<td>7. Dairy cows (including veal calves)</td>
<td>1,047</td>
<td>699</td>
<td>847</td>
</tr>
<tr>
<td>8. Sheep and lambs</td>
<td>3</td>
<td>104</td>
<td>61</td>
</tr>
<tr>
<td>9. Hens (eggs)</td>
<td>534</td>
<td>353</td>
<td>430</td>
</tr>
<tr>
<td>10. Chicks raised</td>
<td>84</td>
<td>75</td>
<td>79</td>
</tr>
<tr>
<td>11. Total value</td>
<td>12,735</td>
<td>9,494</td>
<td>10,871</td>
</tr>
</tbody>
</table>

\(^a\)See Appendix C and Appendix D for production estimates and prices used in determining livestock and poultry values.

and only 38.7 percent on owned base units. Again, it should be pointed out that the average net worth of owned base unit operators was considerable larger than that of rented base unit operators.

In summary, the major livestock enterprise on owned base units in 1956 was the feeder cattle enterprise. On rented base units the hog enterprise and cattle feeding enterprise were of approximately equal importance. Just the opposite situation was found on merged units in 1956. Hog production was the most important livestock enterprise for each group of merged units. The average value of livestock production on base units was more than 2.5 times larger than the average
value of livestock produced on merged units.

Livestock production expectations following consolidation

The consolidation questionnaire did not measure specific changes in livestock programs following consolidation. However, the general livestock changes planned by adding operators are summarized in Table 41. Sixty-nine percent of all adding operators indicated that they planned to expand livestock production after consolidation. Less than 1 percent of the adding operators planned to decrease livestock production. Nearly 26 percent of the adding operators planned to retain the same level of livestock production that existed before consolidation. The remaining adding operators did not have livestock programs before consolidation and did not plan to add livestock programs following consolidation. Eighty

Table 41. Percent of adding operators planning changes in livestock production

<table>
<thead>
<tr>
<th>Livestock production expectations</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increase livestock production</td>
<td>54.2%</td>
<td>80.0%</td>
<td>69.0%</td>
</tr>
<tr>
<td>2. Same level of livestock production</td>
<td>41.7%</td>
<td>13.8%</td>
<td>25.7%</td>
</tr>
<tr>
<td>3. Reduce livestock production</td>
<td>2.1%</td>
<td>0.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>4. No livestock production planned</td>
<td>2.1%</td>
<td>6.2%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>
percent of the adding operators who rented base units planned livestock increases, while only 54.2 percent of the adding operators who owned base units planned to increase livestock production.

Adding operators were asked to give their reasons for future livestock planning. Nearly all of the adding operators who planned to increase livestock production indicated they planned larger livestock programs because of the increased grain and pasture available from the merged units. Additional reasons given for expanding livestock production included the availability of more building space and increased family or hired labor following consolidation. The most frequent reason given by adding operators who planned to retain previous livestock production levels was that the base unit had been overstocked with livestock before consolidation. Additional reasons given by adding operators who did not plan to increase livestock production included: (1) limited by the available labor supply; (2) limited by a high debt load; and (3) the price of livestock was too low. The adding operator who planned to decrease livestock production felt that hog prices were too low to make a profit.

Although 69 percent of all adding operators planned to increase livestock production following consolidation, it is somewhat doubtful if the increased production would be suffi-
cient to offset the previous livestock production of merged operators. Merged operators produced an estimated total value of livestock production of $429,104 in 1956. The adding operators who planned to increase livestock production following consolidation had a total value of livestock production of $760,744 in 1956. Thus, adding operators who planned livestock increases would have to expand their 1956 livestock production by 56 percent in order to offset the livestock production of merged operators. Although an expansion of 56 percent above the 1956 level of livestock production is not impossible, it seems unlikely that it would be accomplished except over a long run period. It seems more probable, at least on a short run basis, that increased livestock production by adding operators would not be sufficient to replace the livestock production of merged operators. Therefore, total livestock production on the combined units immediately following consolidation would in all probability be less than that which existed on merged and base units before consolidation.
Anticipated income differentials play an important role in many farm operators' decisions to either shift to non-farm employment or to change the size of the farm operation. This chapter examines the anticipated income differentials of both merged and adding operators by comparing farm incomes before consolidation with expected farm and non-farm incomes following consolidation. In addition, the mobility of the adding operators and the merged operators still farming after consolidation is discussed in terms of income levels that would induce these farm operators to shift to non-farm jobs.

Expected Income Differentials of Merged and Adding Operators

Excluding retired and deceased operators the survey data permits comparison of actual farm income earned in 1955 and 1956 with expected income in 1957, 1958, and 1961. The expected incomes of merged operators represent future earnings from both non-farm jobs and new farms. The expected incomes of adding operators represent future earnings from the combined merged and base units. In order to make further comparisons merged operators were asked to estimate incomes they might have earned in 1961 if they had remained on the merged units. Adding operators were asked to estimate earnings in 1957 and 1961 if they had quit farming and accepted
non-farm employment alternatives.

**Incomes of merged operators before and after consolidation**

The past and expected incomes of merged operators still working following consolidation are shown in Table 42. Merged operators earned an average of only $1,276 from merged units in 1955 and $1,595 in 1956. Merged operators who accepted non-farm jobs in Iowa received the lowest average farm income of all merged groups in both 1955 and 1956. Following consolidation merged operators who continued to work accepted non-farm jobs or moved to new farms. The group of merged operators who shifted to non-farm employment outside Iowa expected the largest average income of all groups in 1957. Merged operators working in non-farm jobs in Iowa expected an average income 27 percent lower than the amount expected by the merged operators who moved outside Iowa. The group of merged operators who moved to similar or smaller farm units expected the lowest average income in 1957 of all merged groups. The expected average income of all employed merged operators increased from $3,677 in 1957 to $4,212 in 1958. The individual groups of merged operators anticipated average incomes in 1958 from $389 to $659 above the amounts expected in 1957. By 1961 all merged operators expected to earn an average income of $5,041. Merged operators who moved to non-farm jobs outside Iowa expected to earn the largest average income of all
Table 42. Past farm incomes and future expected incomes of employed merged operators

<table>
<thead>
<tr>
<th>Past and expected incomes</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>All employed merged operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Past farm income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per operator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1955</td>
<td>$1,157</td>
<td>$1,125</td>
<td>$1,314</td>
<td>$1,477</td>
<td>$1,276</td>
</tr>
<tr>
<td>b. 1956</td>
<td>1,711</td>
<td>1,294</td>
<td>1,775</td>
<td>1,497</td>
<td>1,595</td>
</tr>
<tr>
<td>2. Expected income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per operator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1957</td>
<td>4,476</td>
<td>3,260</td>
<td>1,838</td>
<td>4,093</td>
<td>3,677</td>
</tr>
<tr>
<td>b. 1958</td>
<td>4,865</td>
<td>3,919</td>
<td>2,350</td>
<td>4,687</td>
<td>4,212</td>
</tr>
<tr>
<td>c. 1961</td>
<td>5,737</td>
<td>4,940</td>
<td>3,138</td>
<td>5,533</td>
<td>5,041</td>
</tr>
<tr>
<td>3. Income expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from merged unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in 1961</td>
<td>3,207</td>
<td>2,415</td>
<td>2,963</td>
<td>2,207</td>
<td>2,639</td>
</tr>
</tbody>
</table>
groups of merged operators in 1961. Merged operators who shifted to similar or smaller sized farm units expected the lowest average income in comparison with the other groups of merged operators. Excluding the group of merged operators who shifted to similar or smaller sized farms the remaining groups of merged operators expected average earnings in 1961 more than three times larger than the average group incomes received from merged farm units in 1956. In every year of future earnings merged operators who moved to non-farm jobs outside Iowa expected to earn the largest average income of all groups of merged operators. The expected average incomes of merged operators who moved to similar or smaller farms were from $1,422 to $2,599 lower than the expected incomes of the other groups of merged operators. It is interesting to note that merged operators who shifted to larger farm units ranked second highest among the groups of merged operators in the average incomes expected in 1957, 1958, and 1961.

Merged operators were also requested to estimate the earnings from the merged units in 1961 based on the assumption that they had continued to operate the merged farms. The comparisons of anticipated non-farm and new-farm incomes with expected earnings from the merged units in 1961 are shown in Table 42. Every group of merged operators expected to receive more income from non-farm jobs or new farms than if they
had remained on the merged farm units. Merged operators who shifted to similar or smaller sized farms expected to receive an average income in 1961 only $175 larger than if they had remained on the merged farm units. All other groups of merged operators expected average 1961 earnings from non-farm jobs or new farms more than $2,500 larger than the average incomes expected from the merged farm units in the same year.

Merged operators who accepted non-farm jobs outside Iowa moved an average distance of 1,128 miles from the merged units. The group of merged operators who shifted to non-farm jobs in Iowa moved an average distance of only 21 miles. All merged operators who transferred to new farms following consolidation moved an average distance of 14 miles from the merged units. Nearly 40 percent of the operators who moved to non-farm jobs outside Iowa settled in the west coast states of California, Washington, and Oregon. Other merged operators found non-farm employment in Missouri, New Mexico, Colorado, Arkansas, Minnesota and Nebraska. Only one merged operator moved east of the Mississippi River, and this merged operator found non-farm employment in Illinois.

Incomes of adding operators before and after consolidation

The average incomes adding operators received from base farm units in 1955 and 1956 are shown in Table 43. The table
Table 43. Past farm incomes and future expected incomes of adding operators

<table>
<thead>
<tr>
<th>Past and expected incomes</th>
<th>Owned base unit</th>
<th>Rented base unit</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Past farm income per operator:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1955</td>
<td>$3,021</td>
<td>$1,706</td>
<td>$2,294</td>
</tr>
<tr>
<td>b. 1956</td>
<td>2,665</td>
<td>1,740</td>
<td>2,134</td>
</tr>
<tr>
<td>2. Expected income per operator from consolidated unit:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1957</td>
<td>5,791</td>
<td>4,283</td>
<td>4,931</td>
</tr>
<tr>
<td>b. 1958</td>
<td>6,369</td>
<td>4,745</td>
<td>5,468</td>
</tr>
<tr>
<td>c. 1961</td>
<td>7,277</td>
<td>5,381</td>
<td>6,233</td>
</tr>
<tr>
<td>3. Expected income per operator from a non-farm job:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 1957</td>
<td>4,269</td>
<td>3,800</td>
<td>3,994</td>
</tr>
<tr>
<td>b. 1961</td>
<td>4,969</td>
<td>4,390</td>
<td>4,637</td>
</tr>
</tbody>
</table>

also shows expected average incomes from combined merged and base units following consolidation. Adding operators received an average income of $2,294 from base units in 1955 and $2,134 from the same units in 1956. In both years owned base unit operators received an average income larger than the amount received by rented base unit operators. However, both groups of adding operators exceeded the average incomes of all groups of merged operators in 1955 and 1956. Following consolidation adding operators expected to receive average incomes from the combined units of $4,931 in 1957, $5,468 in 1958, and $6,233 in 1961. The average incomes expected by adding operators were from 24 percent to 34 percent larger than the av-
Average incomes expected by all merged operators in the same years. Adding operators of owned base units expected the largest average incomes in 1957, 1958, and 1961 in comparison with all groups of merged and adding operators. Merged operators who moved to non-farm jobs outside Iowa expected higher average incomes than adding operators who rented base units in all three years. The expected average incomes of rented base unit operators were similar to the average incomes expected by merged operators who shifted to larger farms. As a result of the combining of merged and base units both groups of adding operators expected farm incomes in 1961 approximately three times larger than the average incomes received from the base units alone in 1956.

Adding operators were also asked to estimate incomes they might have received in 1957 and 1961, if they had shifted to non-farm employment. The estimated average incomes of adding operators from non-farm employment are shown in Table 43. Adding operators expected the combined merged and base units in 1957 would return an average income 23 percent greater than the estimated average income from non-farm employment. In 1961 adding operators estimated the combined units would return an average income 34 percent greater than non-farm job alternatives. Operators of rented base units estimated that average income from non-farm employment would be lower than the average non-farm income of operators of owned base units.
in both 1957 and 1961. Several of the adding operators commented on their lack of non-farm job skills. One adding operator stated, "If I had to take a job off the farm, all I could get would be a common laborer job digging ditches at $1.00 an hour." Both groups of adding operators estimated earnings from non-farm employment would be less than from the combined merged and base units in 1957 and 1961.

Estimated Income Requirements for Accepting Non-Farm Employment

Recent discussions of agricultural adjustment have suggested that the movement of farm people to non-farm employment would facilitate adjustment in farming (1, pp. 21 and 27). This section examines the mobility of farm operators in terms of non-farm income levels that would induce movement to non-farm employment. Both merged operators who continued to farm and adding operators who absorbed merged units are included in the discussion. The movement of some merged operators to non-farm jobs following consolidation indicated a willingness on their part to accept non-farm employment at the income levels they expected to earn in 1957. The questionnaire was designed to measure income levels that would induce movement to towns of varying sizes and distances from the survey area. In addition an attempt was made to examine the influence of moving expense compensation on the income requirements of the farm operators.
The estimated income requirements that would induce shifts to non-farm employment in different locations are shown in Table 44. All four groups of farm operators indicated that income requirements for shifting to non-farm employment would be least for a move to an Iowa town of 5,000 population. The estimated income requirements increased when the proposed shift involved living in an Iowa town of 50,000 or more population. When the proposed non-farm employment was located in large cities from 500 to 700 miles distant, farm operators required even larger incomes to make a shift to non-farm employment. With the exception of owned base unit operators all other groups of farm operators required the largest income to make a move to non-farm employment located in large cities more than 1,000 miles from the survey area. Owned base unit operators estimated income requirements would be greatest for movement to large cities 500 to 700 miles from the survey area. In each proposed move operators of owned base units required the most income to move of all groups of farm operators. Merged operators who shifted to similar or smaller farms following consolidation required the least income of all groups to make changes to non-farm employment.

Compensation for moving expenses was of little importance in influencing the incomes required by farm operators to make moves to non-farm employment. Less than 5 percent of the farm operators indicated moving expenses would make a differ-
ence in their income requirements. Farm operators who did indicate that moving expenses made a difference increased income requirements by less than $300 when the assumption was made that moving expenses would not be paid.

The average farm incomes expected by farm operators in 1957 are included in Table 44 to facilitate comparisons with income requirements for moving to non-farm employment. The average expected farm incomes listed in the table include only the incomes expected by farm operators who were willing to shift to non-farm employment. In every proposed move the average income requirements for shifting to non-farm employment were greater than the average income expected from farming in 1957. The average income requirements for moving to non-farm employment were from $555 to $4,900 larger than the average farm incomes expected by each group of farm operators.

Although the majority of all farm operators indicated they would shift to non-farm employment at some income level, several operators said they would not move to non-farm jobs for any income. One farmer who owned and operated over 1000 acres of land emphatically declared, "nothing would tempt me to move unless they broke me, and that would take a long, long time." The percentages of farm operators who would not shift to the proposed non-farm jobs are also shown in Table 44. Resistance to the proposed moves was least for a move to an Iowa
Table 44. Lowest annual income farm operators would accept, with and without moving expenses paid, to move to a non-farm job in different areas of Iowa and the United States

<table>
<thead>
<tr>
<th>Proposed move</th>
<th>Merged operators</th>
<th>Adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Same size farms</td>
<td>Larger farms</td>
</tr>
<tr>
<td></td>
<td>or smaller farms</td>
<td>units</td>
</tr>
<tr>
<td></td>
<td>Rented units base</td>
<td>base units</td>
</tr>
<tr>
<td>1. Lowest average income acceptable with moving expenses paid to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. move to another Iowa town of 5,000 population, more than 100 miles away</td>
<td>$4,238</td>
<td>$5,269</td>
</tr>
<tr>
<td>b. move to another Iowa town of 50,000 or more population</td>
<td>4,990</td>
<td>6,182</td>
</tr>
<tr>
<td>c. move to a city such as St. Louis, Minneapolis, or Chicago</td>
<td>5,883</td>
<td>7,336</td>
</tr>
<tr>
<td>d. move to a city such as Atlanta, San Francisco, or Pittsburgh</td>
<td>6,369</td>
<td>8,273</td>
</tr>
<tr>
<td>2. Lowest average income acceptable with moving expenses not paid to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. move to another Iowa town of 5,000 population, more than 100 miles away</td>
<td>4,275</td>
<td>5,269</td>
</tr>
<tr>
<td>b. move to another Iowa town of 50,000 or more population</td>
<td>5,053</td>
<td>6,182</td>
</tr>
<tr>
<td>c. move to a city such as St. Louis, Minneapolis, or Chicago</td>
<td>5,940</td>
<td>7,336</td>
</tr>
<tr>
<td>d. move to a city such as Atlanta, San Francisco, or Pittsburgh</td>
<td>6,383</td>
<td>8,273</td>
</tr>
<tr>
<td>3. Percent of operators that would not move regardless of income or moving expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. move to another Iowa town of 5,000 population, more than 100 miles away</td>
<td>0.0%</td>
<td>18.75%</td>
</tr>
</tbody>
</table>
Table 44. (Continued)

<table>
<thead>
<tr>
<th>Proposed move</th>
<th>Merged operators</th>
<th>Adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Same size farms</td>
<td>Larger farms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Percent of operators that would not move regardless of income or moving expenses (Continued)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. move to another Iowa town of 50,000 or more population</td>
<td>0.0%</td>
<td>31.25%</td>
</tr>
<tr>
<td>c. move to a city such as St. Louis, Minneapolis, or Chicago</td>
<td>12.5%</td>
<td>31.25%</td>
</tr>
<tr>
<td>d. move to a city such as Atlanta, San Francisco, or Pittsburgh</td>
<td>12.5%</td>
<td>31.25%</td>
</tr>
<tr>
<td>4. Expected farm income per operator in 1957</td>
<td>$1,838</td>
<td>$3,900</td>
</tr>
</tbody>
</table>

town of 5,000 population. The greatest resistance to non-farm employment shifts occurred in the proposed move to a city more than 1,000 miles from the survey area. A lower percentage of the merged operators who shifted to similar or smaller farms indicated they would not make any of the proposed moves than did any of the other groups. The group of owned base unit operators had the highest percentage of operators who would not move to non-farm jobs in cities more than 1,000 miles from the survey area.
KNOWLEDGE AND USE OF EMPLOYMENT SERVICES

The consolidation process resulted in a change of employment for many operators of merged units. Several questions were included in the questionnaire to determine merged operators' knowledge of government employment services. Similar questions were asked of adding operators for comparison purposes. The sources of employment assistance actually used by merged operators to obtain non-farm jobs are also discussed in this chapter.

Knowledge of Government Employment Services

Merged operators' knowledge of government employment services

Government employment offices or branch offices were located in each county included in the survey area. Table 45 shows that only 52.3 percent of all merged operators were aware that one of these offices existed in their county. The remaining merged operators did not know of the government employment office or replied incorrectly that none existed. Free information concerning job opportunities within the county, throughout the state, and in other states is available from each government employment office. In addition, government employment offices also supply free job counseling and aptitude testing. Nearly 55 percent of all merged operators were aware that government employment offices provide free job
Table 45. Percent of merged operators familiar with government employment services\textsuperscript{a}

<table>
<thead>
<tr>
<th>Government employment services</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>All merged operators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Govt. employment office or branch office in county of merged unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>52.4</td>
<td>61.9</td>
<td>50.0</td>
<td>38.85</td>
<td>55.6</td>
<td>52.3</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>14.3</td>
<td>19.0</td>
<td>12.5</td>
<td>5.55</td>
<td>11.1</td>
<td>12.8</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>33.3</td>
<td>19.0</td>
<td>37.5</td>
<td>55.60</td>
<td>33.3</td>
<td>34.9</td>
</tr>
<tr>
<td>2. Free information about jobs within the county</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>47.6</td>
<td>71.4</td>
<td>50.0</td>
<td>55.6</td>
<td>44.4</td>
<td>54.7</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>0.0</td>
<td>4.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.1</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>52.4</td>
<td>23.8</td>
<td>50.0</td>
<td>44.4</td>
<td>55.6</td>
<td>44.2</td>
</tr>
<tr>
<td>3. Free information about jobs throughout Iowa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>23.8</td>
<td>42.9</td>
<td>25.0</td>
<td>27.8</td>
<td>11.1</td>
<td>26.7</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>0.0</td>
<td>4.8</td>
<td>0.0</td>
<td>5.5</td>
<td>5.6</td>
<td>3.5</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>76.2</td>
<td>52.4</td>
<td>75.0</td>
<td>66.7</td>
<td>83.3</td>
<td>69.8</td>
</tr>
<tr>
<td>4. Free information about jobs throughout the United States</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>19.0</td>
<td>28.6</td>
<td>12.5</td>
<td>16.7</td>
<td>5.55</td>
<td>17.4</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>4.8</td>
<td>9.5</td>
<td>0.0</td>
<td>11.1</td>
<td>5.55</td>
<td>7.0</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>76.2</td>
<td>61.9</td>
<td>87.5</td>
<td>72.2</td>
<td>88.90</td>
<td>75.6</td>
</tr>
<tr>
<td>5. Free job counseling and job aptitude testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>38.1</td>
<td>28.6</td>
<td>12.5</td>
<td>11.1</td>
<td>5.55</td>
<td>20.9</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>4.8</td>
<td>19.0</td>
<td>0.0</td>
<td>5.6</td>
<td>5.55</td>
<td>8.1</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>57.1</td>
<td>52.4</td>
<td>87.5</td>
<td>83.3</td>
<td>88.90</td>
<td>70.9</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Information concerning deceased operators was not available.
information concerning jobs within the county. Smaller percentages of the merged operators knew that free information concerning jobs throughout Iowa and in other states is available from government employment offices. Only 20.9 percent of the merged operators replied correctly that government employment offices provide free job counseling and aptitude testing.

The group of merged operators who moved to non-farm jobs outside Iowa had the highest percentage of operators who replied correctly that government employment offices provide free job counseling and aptitude testing. With the exception of job counseling and aptitude testing a larger percentage of merged operators who shifted to non-farm jobs in Iowa answered correctly all questions concerning employment services than did other groups of merged operators. Merged operators who retired ranked above average in knowledge of the location of government employment offices. The retired group of merged operators had the lowest percentage of correct replies to questions concerning services of the employment offices.

More than half of the two groups of merged operators who shifted to non-farm jobs were aware that a government employment office existed in each county. However, less than one-fifth of these two groups of operators contacted a government employment office for job assistance. Nineteen percent of the
operators who moved to non-farm jobs outside Iowa made use of the free government employment services. Only 14.3 percent of the merged operators who shifted to non-farm jobs in Iowa contacted a government employment office for job assistance. Less than half of all merged operators who contacted a government employment office for job assistance finally accepted a job opportunity arranged through the employment office.

Adding operators' knowledge of government employment services

Table 46 shows that similar percentages of owned base unit operators and rented base unit operators were aware that a government employment office was located in each county. Larger percentages of rented base unit operators were familiar with the free government employment services in comparison with operators of owned base units. Nearly 65 percent of all adding operators were aware of the location of government employment offices. Only 52.3 percent of the merged operators were aware of government employment office locations. In addition, larger percentages of adding operators replied correctly to all questions concerning employment office services than did merged operators.

Sources of Employment Assistance Used by Merged Operators

Several different employment sources were utilized by merged operators to obtain non-farm jobs. The various sources
Table 46. Percent of adding operators familiar with government employment services

<table>
<thead>
<tr>
<th>Government employment services</th>
<th>Owned base unit</th>
<th>Rented base unit</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>In percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Government employment office or branch office in county of base unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>64.6</td>
<td>64.6</td>
<td>64.6</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>2.1</td>
<td>18.5</td>
<td>11.5</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>33.3</td>
<td>16.9</td>
<td>23.9</td>
</tr>
<tr>
<td>2. Free information about jobs within the county</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>50.0</td>
<td>66.2</td>
<td>59.3</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>0.0</td>
<td>4.6</td>
<td>2.7</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>50.0</td>
<td>29.2</td>
<td>38.1</td>
</tr>
<tr>
<td>3. Free information about jobs throughout Iowa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>25.0</td>
<td>41.5</td>
<td>34.5</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>0.0</td>
<td>6.2</td>
<td>3.5</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>75.0</td>
<td>52.3</td>
<td>62.0</td>
</tr>
<tr>
<td>4. Free information about jobs throughout United States</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>18.8</td>
<td>21.5</td>
<td>20.4</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>2.1</td>
<td>7.7</td>
<td>5.3</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>79.2</td>
<td>70.8</td>
<td>74.3</td>
</tr>
<tr>
<td>5. Free job counseling and job aptitude testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. replied correctly (yes)</td>
<td>25.0</td>
<td>32.3</td>
<td>29.2</td>
</tr>
<tr>
<td>b. replied incorrectly (no)</td>
<td>4.2</td>
<td>9.2</td>
<td>7.1</td>
</tr>
<tr>
<td>c. didn't know</td>
<td>70.8</td>
<td>58.5</td>
<td>63.7</td>
</tr>
</tbody>
</table>

and the percentage of merged operators that obtained jobs through each are summarized in Table 47. Friends and relatives provided job assistance to 44.2 percent of all merged operators who shifted to non-farm jobs. Relatives supplied the most frequent source of job assistance to merged operators who moved outside Iowa. Merged operators who remained in
Table 47. Sources of assistance used by merged operators to obtain non-farm employment

<table>
<thead>
<tr>
<th>Source</th>
<th>Non-farm jobs outside Iowa</th>
<th>Non-farm jobs in Iowa</th>
<th>All non-farm jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Newspapers</td>
<td>0.0</td>
<td>4.5</td>
<td>2.3</td>
</tr>
<tr>
<td>2. Government employment office</td>
<td>9.5</td>
<td>4.5</td>
<td>7.0</td>
</tr>
<tr>
<td>3. Company employment office</td>
<td>4.8</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>4. Assistance from relatives</td>
<td>28.6</td>
<td>13.6</td>
<td>20.9</td>
</tr>
<tr>
<td>5. Assistance from friends</td>
<td>19.0</td>
<td>27.3</td>
<td>23.3</td>
</tr>
<tr>
<td>6. Previous work with employer</td>
<td>9.5</td>
<td>9.1</td>
<td>9.3</td>
</tr>
<tr>
<td>7. Personal inquiry</td>
<td>14.3</td>
<td>18.2</td>
<td>16.3</td>
</tr>
<tr>
<td>8. Self employed</td>
<td>4.8</td>
<td>13.6</td>
<td>9.3</td>
</tr>
<tr>
<td>9. Other sources</td>
<td>9.5</td>
<td>4.5</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Iowa relied most frequently on friends for job assistance. Sixteen percent of all merged operators who shifted to non-farm employment said they found jobs on their own by personal inquiry. Only 7 percent of the merged operators accepted a non-farm job arranged by a government employment agency. Small percentages of merged operators found non-farm employment through newspapers and through company employment offices.
General Characteristics of Merged and Adding Operators

Age, education, and farm work experience provide some indication of the general backgrounds of merged and adding operators. These same characteristics also provide additional information concerning the employment qualifications of farm operators involved in consolidations.

Characteristics of merged operators

Operators who retired following consolidation were much older than the other merged operators. Individual retired operators varied in age from 59 to 75 years. Merged operators who were still employed following consolidation varied from 22 to 56 years of age. However, more than 40 percent of the merged operators who were still working after consolidation were in their thirties. With the exception of the retired group of operators only slight age differences existed among the remaining groups of merged operators. The average age of each group of merged operators is shown in Table 48. The median age of each group of merged operators was approximately the same as the average age of the operators in the group.

Table 48 also shows the percentage distribution of merged operators according to the amount of formal education completed. The group of merged operators who retired had the highest per-
Table 48. General characteristics of operators of merged units

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Non-farm outside Iowa</th>
<th>Non-farm within Iowa</th>
<th>Same size or smaller farm</th>
<th>Larger farm</th>
<th>Retired</th>
<th>All merged operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Average age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>46.0</td>
</tr>
<tr>
<td>2. Education distribution of operators:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. eighth grade or less</td>
<td>14.3%</td>
<td>23.8%</td>
<td>10.0%</td>
<td>44.4%</td>
<td>78.9%</td>
<td>36.0%</td>
</tr>
<tr>
<td>b. some high school</td>
<td>23.8%</td>
<td>4.8%</td>
<td>20.0%</td>
<td>22.2%</td>
<td>5.3%</td>
<td>14.6%</td>
</tr>
<tr>
<td>c. high school graduate</td>
<td>38.1%</td>
<td>61.9%</td>
<td>60.0%</td>
<td>33.3%</td>
<td>5.3%</td>
<td>38.2%</td>
</tr>
<tr>
<td>d. some college</td>
<td>19.0%</td>
<td>9.5%</td>
<td>10.0%</td>
<td>0.0%</td>
<td>10.5%</td>
<td>10.1%</td>
</tr>
<tr>
<td>e. college grad.</td>
<td>4.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>3. Average years of formal education</td>
<td>11.38</td>
<td>10.81</td>
<td>10.30</td>
<td>10.40</td>
<td>8.40</td>
<td>10.30</td>
</tr>
<tr>
<td>4. Farm work experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. average years as farm operator</td>
<td>10.4</td>
<td>12.9</td>
<td>13.2</td>
<td>16.9</td>
<td>37.6</td>
<td>18.4</td>
</tr>
<tr>
<td>b. average years worked with other farmers</td>
<td>3.5</td>
<td>2.9</td>
<td>3.1</td>
<td>3.5</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>c. average years all farm experience</td>
<td>16.9</td>
<td>16.4</td>
<td>16.1</td>
<td>20.0</td>
<td>41.1</td>
<td>22.5</td>
</tr>
</tbody>
</table>

\(^a\)Information concerning deceased operators was not available.
centage of operators, 78.9 percent, with an eighth grade education or less. Nearly one-fourth of the merged operators who moved to non-farm jobs outside Iowa had some college training. With the exception of the group of merged operators who moved outside Iowa less than 11 percent of the operators of each of the other merged groups had college training. The modal education level of the groups of merged operators who retired or moved to larger farms was an eighth grade education or less. The modal education level for the remaining groups of merged operators was that of high school graduate.

Retired operators were older than other merged operators, and they also had more farming experience. The group of merged operators who retired had an average of 37.6 years of experience as farm operators. All other merged groups had less than half of this amount of experience as farm operators. Excluding the retired operators merged operators who moved to larger farms had more experience as farm operators, on the average, than the other merged groups. Merged operators who moved to non-farm employment outside Iowa had the least amount of experience as farm operators in comparison with the other groups of merged operators.

**Characteristics of adding operators**

Adding operators who owned base units were older than the adding operators who rented base units. Seventy-three percent
of the operators of owned base units were over 40 years of age. Only 43 percent of the operators of rented base units were over 40 years old. The median age of each group of adding operators was approximately the same as the average group age shown in Table 49. Operators of owned base units were also older, on the average, than all groups of merged operators who were still employed following consolidation. The average age of the group of adding operators who rented base units was similar to the average ages of the individual groups of merged operators who were still working after consolidation.

Table 49. General characteristics of operators of adding units

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Owned base units</th>
<th>Rented base units</th>
<th>All adding operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Average age</td>
<td>46.0</td>
<td>39.1</td>
<td>42.0</td>
</tr>
<tr>
<td>2. Education distribution of operators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. eighth grade or less</td>
<td>33.3%</td>
<td>23.1%</td>
<td>27.4%</td>
</tr>
<tr>
<td>b. some high school</td>
<td>12.5%</td>
<td>16.9%</td>
<td>15.0%</td>
</tr>
<tr>
<td>c. high school graduate</td>
<td>39.6%</td>
<td>50.8%</td>
<td>46.0%</td>
</tr>
<tr>
<td>d. some college</td>
<td>10.4%</td>
<td>4.6%</td>
<td>7.1%</td>
</tr>
<tr>
<td>e. college graduate</td>
<td>4.2%</td>
<td>4.6%</td>
<td>4.4%</td>
</tr>
<tr>
<td>3. Average years of formal education</td>
<td>10.81</td>
<td>10.96</td>
<td>10.89</td>
</tr>
<tr>
<td>4. Farm work experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. average years as farm operator</td>
<td>19.9</td>
<td>15.4</td>
<td>17.3</td>
</tr>
<tr>
<td>b. average years worked with other farmers</td>
<td>3.9</td>
<td>2.0</td>
<td>2.8</td>
</tr>
<tr>
<td>c. average years all farm experience</td>
<td>23.8</td>
<td>17.4</td>
<td>20.1</td>
</tr>
</tbody>
</table>
Table 49 shows the percentage distribution of adding operators according to the amount of formal education completed. A higher percentage of rented base unit operators graduated from high school than did owned base unit operators. The group of operators who owned base units had a higher percentage of operators with an eighth grade education or less than did the group of operators who rented base units. A smaller percentage of both groups of adding operators had college training in comparison with the group of merged operators who moved to non-farm jobs outside Iowa.

The group of adding operators who owned base units had more experience as farm operators than all other groups of merged and adding operators except the group of merged operators who retired. Owned base unit operators had an average of 19.9 years of experience as farm operators. Rented base unit operators had an average of only 15.4 years of experience as farm operators. The group of rented base unit operators had more experience as farm operators, on the average, than the groups of merged operators who shifted to non-farm jobs or moved to similar or smaller farms.

Disposition of Farm Residences on Merged Units

Ninety-one farm residences were located on the ninety-nine merged units before consolidation. Disposition of the
farm residences on merged units after consolidation with adding units is shown in Table 50. Nearly 30 percent of the houses on merged units were to remain vacant following consolidation. An additional 33 percent of the merged farm houses were to be rented, but many of the houses were not rented at the time of the survey. Approximately 20 percent of the houses were to remain as residences of the merged owners. In one case a farm house was sold and moved from the merged unit. The remaining merged farm houses were to be used as residences by adding operators or by hired help. Operators of rented base units planned to leave a higher percentage of merged farm houses vacant than any of the other uses. The most frequent use of merged farm houses by owned base unit operators was for rental purposes.

Reasons for Consolidation

Reasons merged operators left absorbed units

The reasons given by merged operators for leaving the absorbed units are summarized in Table 51. More than twenty percent of the merged operators stated they left their merged units because farm income compared unfavorably with non-farm income opportunities in either the short-run or long-run. An additional 12.1 percent of the merged operators said they made shifts because the merged unit was too small or unproductive and additional land could not be obtained nearby. Although a
Table 50. Disposition of merged unit residences following consolidation with adding units

<table>
<thead>
<tr>
<th>Disposition of farm residence</th>
<th>Owned more than half of base unit</th>
<th>Rented more than half of base unit</th>
<th>All base units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Farm house to remain vacant</td>
<td>31.7%</td>
<td>28.0%</td>
<td>29.7%</td>
</tr>
<tr>
<td>2. Farm house to be rented</td>
<td>41.5%</td>
<td>26.0%</td>
<td>33.0%</td>
</tr>
<tr>
<td>3. Merged owner to remain in house</td>
<td>14.6%</td>
<td>24.0%</td>
<td>19.8%</td>
</tr>
<tr>
<td>4. House to be used by hired help</td>
<td>7.3%</td>
<td>8.0%</td>
<td>7.7%</td>
</tr>
<tr>
<td>5. House to be residence of adding operator</td>
<td>4.9%</td>
<td>12.0%</td>
<td>8.8%</td>
</tr>
<tr>
<td>6. House sold and moved</td>
<td>0.0%</td>
<td>2.0%</td>
<td>1.1%</td>
</tr>
<tr>
<td>7. Number of merged farm houses</td>
<td>41</td>
<td>50</td>
<td>91</td>
</tr>
</tbody>
</table>

A total of 20.2 percent of the merged operators retired, 12.1 percent of the merged operators indicated they retired because of age and 8.1 percent said retirement was caused by poor health. The miscellaneous reasons given by merged operators for leaving the absorbed units include the following: the farm owner wanted to farm the unit; the merged unit was placed in an estate; the owner placed land in the soil bank reducing the size of the farm; and, one operator said he moved because of the death of his son.

Merged operators were encouraged to elaborate on their
Table 51. Reasons given by operators for leaving merged units

<table>
<thead>
<tr>
<th>Reasons for moving</th>
<th>Percent of operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Non-farm jobs offered more immediate income</td>
<td>15.2</td>
</tr>
<tr>
<td>2. Farm was too small or improdutive and could not obtain additional land nearby</td>
<td>12.1</td>
</tr>
<tr>
<td>3. Drouth and low prices forced quitting</td>
<td>9.1</td>
</tr>
<tr>
<td>4. Long-run farm income prospects compared unfavorably with other non-farm oppor</td>
<td>5.0</td>
</tr>
<tr>
<td>tunities</td>
<td></td>
</tr>
<tr>
<td>5. Farm was for sale or sold</td>
<td>10.1</td>
</tr>
<tr>
<td>6. Landlord difficulties</td>
<td>6.1</td>
</tr>
<tr>
<td>7. Retired because of age</td>
<td>12.1</td>
</tr>
<tr>
<td>8. Health:</td>
<td></td>
</tr>
<tr>
<td>a. Forced to retire</td>
<td>8.1</td>
</tr>
<tr>
<td>b. Forced to take non-farm job</td>
<td>7.1</td>
</tr>
<tr>
<td>9. Operator deceased</td>
<td>5.1</td>
</tr>
<tr>
<td>10. Miscellaneous</td>
<td>10.1</td>
</tr>
</tbody>
</table>

reasons for making a change. One merged operator stated it this way, "Expenses and the cost of machinery have gone up, while farm prices have gone down. For the investment he puts out and the time he puts in, a farmer's earnings are small. There's no time and a half for over forty hours." This particular merged operator accepted non-farm employment in California. Another farm operator who moved to a non-farm job gave his reason simply as, "Benson and Ike." Typical of the
comments of several merged operators who shifted to larger farms is this statement, "I rented a larger farm so I could get better use of my machinery and equipment." The effect of government programs was given as a reason for moving by two merged operators. One operator stated his reason this way, "The landlord took some of the land I had rented and put it in the soil bank. It was just impossible to get enough land to make an efficient operation for the machinery."

Reasons operators of base units added land

The primary reasons given by operators of base units for adding land are shown in Table 52. Nearly 41 percent of all adding operators indicated their primary reason for adding land was to expand the size of their farm unit in order to increase income. The next most frequent reason given by the adding operators was that the extra land was needed to make more efficient use of machinery and equipment. Slightly more than 10 percent of the adding operators said additional land was needed in order to make more efficient use of either operator labor, family labor, or hired labor. The miscellaneous reasons given by operators of base units for adding land include the following: the additional land was acquired to provide an estate for the family; the merged operator moved from land owned by the adding operator; the merged operator was unsatisfactory on a merged unit owned by the adding operator;
Table 52. Reasons given by operators of base units for adding land

<table>
<thead>
<tr>
<th>Reasons for adding land</th>
<th>Percent of operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Needed additional land in order to increase income</td>
<td>40.9</td>
</tr>
<tr>
<td>2. Needed additional land to make more efficient use of machinery and equipment</td>
<td>13.9</td>
</tr>
<tr>
<td>3. Added land to accommodate an owner at his request</td>
<td>13.0</td>
</tr>
</tbody>
</table>
| 4. Needed added land to make more efficient use of labor  
  a. family labor | 5.2 |
  b. operator labor | 2.6 |
  c. hired labor | .9 |
| 5. Considered purchase or renting of this land too good a bargain to pass up  
  a. purchase | 5.2 |
  b. renting | 3.5 |
| 6. Needed more pasture or grain for livestock program | 3.5 |
| 7. The added land was inherited | 1.7 |
| 8. Miscellaneous reasons | 9.4 |

and, one operator indicated the house on the added land was needed to provide a home following his recent marriage.

Several of the adding operators also gave secondary reasons for acquiring merged units. When both primary and secondary reasons are combined, 55.7 percent of all adding operators indicated increased income was either a primary or secondary reason for expansion. Machinery efficiency was
given by 43.5 percent of the adding operators as either a primary or secondary reason for annexing merged units. Increased income and machinery efficiency were the most frequent reasons given by adding operators for expansion of the base units.
SUMMARY

The purpose of this study was to analyze the effect of farm consolidation on agricultural adjustment. The specific objectives of the study were: (1) to determine changes in resource use and combination brought about by farm consolidation; (2) to analyze the effect of farm consolidation on agricultural output; (3) to examine the effect of farm consolidation on the income expectations of operators whose farms were involved in consolidation; (4) to determine the income levels that would induce farm operators to accept non-farm employment; and (5) to examine farm operators' knowledge of government employment services and facilities.

A farm consolidation is defined as having occurred when a farm unit disappeared as an independent operation because of a merger with one or more other farm units. The study was limited to consolidations which resulted in total combined units of 70 acres or more following consolidation.

Four counties in southwest Iowa were selected as the survey area for this study. The four counties selected for the study include Fremont, Mills, Montgomery, and Page. The study includes the complete population of farm consolidations within the four-county survey area. All consolidations took place following the 1956 crop year and were in effect during the 1957 crop year.
The data used in this study was obtained by personal interview and mail questionnaire. Farm operators who lived within or near the survey area were interviewed personally. Information from farm operators who had moved considerable distances from the survey area was obtained by mail questionnaire.

A total of 214 farm units were involved in the consolidations analyzed in this study. Ninety-nine merged farm units were absorbed by 115 adding farm units. The status of the 99 merged operators after consolidation was as follows: (1) 23 merged operators had accepted non-farm jobs outside of Iowa; (2) 22 merged operators had shifted to non-farm employment within Iowa; (3) 10 merged operators had moved to farms of similar or smaller size; (4) 19 merged operators had moved to larger farms; (5) 20 merged operators had retired; and (6) 5 merged operators were deceased. Fifty of the adding operators owned more than half of the base farm unit, while the remaining 65 adding operators rented more than half of the base farm unit.

The average number of acres per farm in the survey area in 1956 was 207.7 acres. The average size of the merged units in the same year was 160.5 acres per farm. Base farm units averaged 252.5 acres per farm in 1956. After consolidation the combined units averaged 390.2 acres per farm. Seventeen
percent of the merged units were larger than the average farm size in the survey area, while 44.4 percent of the base units were larger than the survey area average. Following consolidation 91.3 percent of the combined units exceed the average farm size in the survey area in 1956.

Merged unit farm land was rated lower in productivity than the base unit farm land. Base unit operators classified 39.9 percent of base unit farm land as above average in productivity and 59.9 percent as average. The same base unit operators classified only 16.9 percent of the merged unit farm land as above average and 61.8 percent as average. Merged operators rated the productivity of merged unit farm land higher than did base unit operators. Twenty-seven percent of merged unit farm land was rated as above average by the merged operators.

Forty-four percent of all base units were located adjacent to the absorbed merged units. Non-adjacent merged units were an average distance of 5.6 miles from the absorbing base units. The locations of non-adjacent merged units varied from .5 of a mile to 30 miles from the absorbing base units.

Operators of base units used more labor and less custom work per unit than did merged operators. Operator labor supplied a larger percentage of the total labor on merged units in comparison with base units. Base units used a higher per-
centage of hired labor than did merged units. Following con-
solidation only 18.2 percent of the merged labor was replaced
by labor added to the existing labor available on the base
units. Consolidation of merged and base units resulted in a
decrease of 31 percent in the total amount of labor used on
the combined units following consolidation. The number of
acres of custom work hired declined by 53 percent following
consolidation.

Merged operators employed an average of $2,930 of machine
resources on merged units in 1956. The machine resources on
base units in 1956 had an average value of $7,344 per base
unit. By July of 1957 base unit operators had made immediate
changes in machine resources that represented a replacement of
38 percent of the total value of machine resources used on
merged units in 1956. Based only on the immediate machinery
changes, the total value of machine resources used on the con-
solidated units in July of 1957 was 15.8 percent lower than the
total value of machine resources used on merged and base units
before consolidation. However, base unit operators indicated
that they also planned to make future changes in machine re-
sources because of consolidation. The overall effect of im-
mediate and future machinery changes would replace 65.8 per-
cent of the total value of machine resources used on merged
units in 1956. If the immediate and future machine changes of
base unit operators are combined, the total value of machine
resources would decline by 8.6 percent following consolidation. Seventy-nine percent of the total value of immediate and planned machinery changes would result from added machinery, while 21 percent would result from replacement of existing equipment.

The average value of commercial fertilizer used on base units in 1956 was $208.32 per unit. In the same year the average value of commercial fertilizer used on merged units was $29.83 per unit. The value of commercial fertilizer used per merged unit increased to $192.87 the first crop year following consolidation. Adding operators also planned to increase commercial fertilizer use on the merged units to $235.79 per unit in future years. The long-run plans of adding operators called for future fertilizer use on the consolidated units 75 percent greater than the total value of commercial fertilizer used on merged and base units before consolidation.

The average value of total capital managed by merged operators in 1956 was $40,403. Adding operators had an average total capital managed of $80,422 in the same year. Following consolidation the average total capital managed by adding operators increased to $110,882 per adding operator. The total capital managed by one adding operator following consolidation was $743,025. Merged operators had an average net worth of $15,155 in 1956, while the average net worth of adding operators was $40,704 in the same year.
The management characteristics of merged and adding operators were measured in terms of the number of farm information sources and production practices used by the farm operators. Larger percentages of adding operators made use of the farm information sources than did merged operators. In addition, a larger percentage of all adding operators conducted soil tests than did all merged operators. Similar percentages of merged and adding operators sprayed for corn borers, seeded treated oats, and vaccinated hogs.

The consolidation of merged and base units resulted in a 10 percent reduction in machinery investment per rotated acre. However, the largest change in resource combination following consolidation occurred in the comparison of labor and land resources. The consolidated units used 32 percent fewer man hours of labor per rotated acre in comparison with merged and base units before consolidation. Since the reduction in labor was proportionally greater than the reduction in machinery investment, the machinery investment per man hour of labor increased following consolidation. Consolidated units used less machinery and labor per rotated acre in comparison with the amounts used on base units before consolidation. The consolidated units used less labor per rotated acre but more machinery per rotated acre in comparison with the merged units. Following consolidation the combined units used more machinery per man hour of labor in contrast to the amounts used on either
merged units or base units before consolidation.

The long run plans of adding operators indicated major shifts in crop acreage distributions on the merged units following consolidation. On the basis of the long run plans for the merged units less land would be planted to corn, but more land would be utilized for sorghum and soybeans. However, the net effect of these changes would result in a decrease in the total acres of row crops. In addition, less land on the merged units would be kept in permanent pasture following consolidation. The amount of merged land in rotation would be increased as a result of farm consolidation.

Because drouth and hail reduced crop yields in the survey area during 1956, the reduced yields were adjusted upward to provide a more accurate comparison of the effects of consolidation on crop production. Adding operators expected to achieve higher per acre yields from all crops in comparison with the adjusted yields obtained by the merged operators. The adding operators expected a long-run per acre corn yield 46.7 percent larger than the adjusted 1956 corn yield of merged operators. The expected per acre yields of the remaining crops varied from 13.5 percent to 40.2 percent larger than the adjusted yields obtained on the merged units in 1956.

The value of adjusted crop production on merged units in
1956 was $37.92 per acre. In contrast, the value of adjusted crop production on base units in 1956 was $43.81 per acre. Following consolidation the adding operators expected to increase the value of crop production on merged units to $53.57 per acre. Adding operators planned to increase the total value of crop production per merged unit by 43.8 percent following consolidation. Based on the expectations of adding operators the total value of crop production from the consolidated units would be 13.6 percent larger than the total value of adjusted crop production from merged and base units before consolidation.

Operators of base units exceeded the per unit livestock production of merged operators in every class of livestock. However, the greatest difference in livestock production between base unit operators and merged unit operators occurred in the number of feeder cattle fed per unit. The number of feeder cattle fed per base unit was nearly eight times larger than the number fed per merged unit. The total number of pigs fed per base unit, both raised and purchased, was less than twice the number fed per merged unit.

The value of livestock production on merged units in 1956 averaged $4,310 per unit. The per unit value of livestock production on base units in 1956 was $10,871. Following consolidation 69 percent of all adding operators planned to increase livestock production. Less than one percent of the
adding operators planned to decrease livestock production. It is somewhat doubtful if the additional livestock production of the adding operators who planned livestock increases would be sufficient to offset the previous livestock production of merged operators. Adding operators who planned livestock increases would have to expand livestock production by 56 percent above 1956 levels in order to offset the livestock production of merged operators. It seems more probable, at least on a short run basis, that increased livestock production by adding operators would not be sufficient to replace the livestock production of merged operators.

The average 1956 farm income of merged operators still employed following consolidation was $1,595. The employed merged operators anticipated an average income of $4,677 in 1957. The average anticipated income increased to $4,212 in 1959. By 1961 all employed merged operators expected to earn an average income of $5,051. The employed merged operators further estimated they would have earned an average income of only $2,639 in 1961 if they had remained on the merged unit. Adding operators received an average income of $2,134 from the base units in 1956. Following consolidation the adding operators anticipated average incomes from the combined units of $4,931 in 1957, $5,468 in 1958, and $6,233 in 1961. The adding operators estimated that non-farm employment alternatives would have returned average incomes of only $3,994 in 1957 and $4,637
in 1961.

The majority of merged and adding operators who continued to farm following consolidation indicated they would shift to non-farm employment at some income level. However, there was considerable resistance to the proposed non-farm employment shifts. The average income requirements for the proposed moves were from $555 to $4,900 larger than the average farm incomes expected by the farm operators in 1957. In addition, 29 percent of the farm operators said they would not move to large cities more than 1,000 miles from the survey area at any income level. Resistance to the proposed moves was least for a move to an Iowa town of 5,000 population. The greatest resistance to non-farm employment shifts occurred in the proposed move to a city more than 1,000 miles from the survey area. Compensation for moving expenses was of little importance in influencing the income levels required by farm operators to make moves to non-farm employment.

Nearly 65 percent of the adding operators were aware of the location of government employment offices. Only 52 percent of the merged operators were aware of government employment office locations. In addition, larger percentages of adding operators were familiar with the various government employment services in comparison with merged operators.

Relatives and friends were the most frequent sources of
assistance used by merged operators to obtain non-farm employment. Seventeen percent of the merged operators who shifted to non-farm employment contacted government employment offices for job assistance. However, only 7 percent of the merged operators accepted non-farm jobs arranged by government employment offices.

Merged operators averaged fewer years of formal education in comparison with the adding operators. Excluding merged operators who retired the remaining merged operators were also younger and had less farm experience in comparison with the adding operators.

Ninety-one farm residences were located on the ninety-nine merged units before consolidation. The most frequent planned use of the merged farm houses was for rental purposes. One farm house was sold and moved from the merged unit.

The most frequent reasons given by merged operators for leaving the merged units were as follows: (1) non-farm jobs offered more immediate income; (2) poor health forced retirement or non-farm employment; (3) the merged farm was too small or unproductive and additional land could not be obtained nearby; and (4) retirement was caused by age. The most frequent reasons given by adding operators for expanding farm size through consolidation were as follows: (1) additional land
was needed in order to increase income; (2) additional land was needed in order to make more efficient use of machinery and equipment; and (3) the added land was farmed at the request of the owner.
LITERATURE CITED


ACKNOWLEDGMENTS

The author wishes to thank Dr. Earl O. Heady for encouragement and guidance throughout the course of this study.

Appreciation is extended to Mr. Norman V. Strand for assistance in planning the survey.

The author is also indebted to Mr. John R. Hunter, County Extension Director of Page County, for suggestions concerning the identification of consolidations included in the survey.
Reproduction of Identification Cards Used for Merged and Adding Units

(Merged Unit)  
Consol No.__________________

1956 Operator: ____________________________
(Last name) (First name) (M.I.)

Present Address:__________________________________________

Town:________________________________ State:__________________

LOCATION OF MERGED FARM (see map)

Merged Farm Acres_____________________; Sec.______________

Tp._________________________________; Cty.________________

(Adding Unit)  
Consol No.__________________

1957 Operator: ____________________________
(Last name) (First name) (M.I.)

Present Address:__________________________________________

Town:________________________________ State:__________________

LOCATION OF BASE FARM (see map)

Base Farm Acres_____________________; Sec.______________

Tp._________________________________; Cty.________________
## Table 53. Average 1956 Iowa prices used in determining value of crop production\(^a\)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Average 1956 price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Corn</td>
<td>$1.31/bu.</td>
</tr>
<tr>
<td>2. Sorghum</td>
<td>1.06/bu.</td>
</tr>
<tr>
<td>3. Oats</td>
<td>.67/bu.</td>
</tr>
<tr>
<td>5. Wheat</td>
<td>1.99/bu.</td>
</tr>
<tr>
<td>6. Hay</td>
<td>18.59/ton</td>
</tr>
<tr>
<td>7. Rotation pasture(^b)</td>
<td>12.00/acre</td>
</tr>
<tr>
<td>8. Permanent pasture(^b)</td>
<td>5.00/acre</td>
</tr>
<tr>
<td>9. Land in government program</td>
<td>Average value of production per acre within group</td>
</tr>
</tbody>
</table>

\(^a\)Source (17).

\(^b\)Estimated value.
### Table 54. Production estimates for different classes of livestock and poultry

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Production estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hogs:</td>
<td></td>
</tr>
<tr>
<td>a. spring pigs raised</td>
<td>215 lbs./pig weaned</td>
</tr>
<tr>
<td>b. fall pigs raised</td>
<td>215 lbs./pig weaned</td>
</tr>
<tr>
<td>c. spring feeder pigs purchased</td>
<td>170 lbs./pig purchased</td>
</tr>
<tr>
<td>d. fall feeder pigs purchased</td>
<td>170 lbs./pig purchased</td>
</tr>
<tr>
<td>2. Beef calves raised:</td>
<td>400 lbs./calf</td>
</tr>
<tr>
<td>3. Dairy cattle:</td>
<td></td>
</tr>
<tr>
<td>a. butterfat</td>
<td>228 lbs./cow</td>
</tr>
<tr>
<td>b. veal</td>
<td>200 lbs./cow</td>
</tr>
<tr>
<td>4. Poultry:</td>
<td></td>
</tr>
<tr>
<td>a. eggs</td>
<td>15 doz./hen</td>
</tr>
<tr>
<td>b. broilers</td>
<td>3½ lbs./chick raised</td>
</tr>
<tr>
<td>5. Sheep:</td>
<td></td>
</tr>
<tr>
<td>a. lambs raised</td>
<td>100 lbs./lamb raised</td>
</tr>
<tr>
<td>b. feeder lambs purchased</td>
<td>50 lbs./lamb purchased</td>
</tr>
<tr>
<td>c. wool</td>
<td>8 lbs./sheep</td>
</tr>
</tbody>
</table>
APPENDIX D

Table 55. Average 1956 Iowa prices used in determining the value of livestock and poultry production\textsuperscript{a}

<table>
<thead>
<tr>
<th>Class of livestock and poultry</th>
<th>Average 1956 price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Market cattle</td>
<td>$18.10/cwt.</td>
</tr>
<tr>
<td>2. Beef calves</td>
<td>16.20/cwt.</td>
</tr>
<tr>
<td>9. Wool</td>
<td>.43/lb.</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Source (17).