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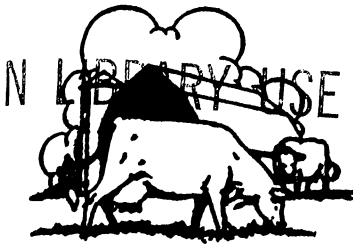
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MINNESOTA farm business NOTES



NO. 464

ST. PAUL CAMPUS, UNIVERSITY OF MINNESOTA

JULY 1964

MINNESOTA AGRIBUSINESS EMPLOYMENT

D. C. Dahl and D. F. Fienup

Pioneer farmers were highly self-sufficient. They provided their own feed, seed, fertilizer, power, and even fashioned their own farm machinery. They processed and stored most of what they produced for their own use, and sold any excess production in nearby towns directly to consumers.

Today most of these operations are performed by large nonfarm industries. In a sense, what pioneer farmers once did now requires the teamwork of three groups of businesses:

Input industries manufacture and distribute most of the items farmers use in production. They also provide such varied services as artificial insemination, custom combining, and farm advising.

Farming still performs the operations basic to plant and animal growth.

The **output industries** assemble, store, process, and distribute farm commodities and items made from them.

These three groups of businesses make up the "agribusiness" sector of our economy. Estimates of agribusiness employment and income for Minnesota were made for 1948 and 1954 and were expanded to include 1939 and 1958.¹

These studies show employment and income increases in the **nonfarm** parts of Minnesota agribusiness, but relative declines for the entire complex. These declines resulted from a heavy exodus of employment out of farming and a variable but downward trend in net farm income.

This issue of *Minnesota Farm Business Notes* reports on one aspect of a more intensive study of Minnesota agribusiness: agribusiness employment growth during the 1947-61 period.

Minnesota agribusiness has the state's

farming as its central component. Non-farm parts of Minnesota agribusiness include the input industries and output industries physically located in the state.

This article describes employment trends in these agribusiness components between 1947-61 and compares these changes with total state and national agribusiness employment growth. The "Outlook Corner" of this issue considers future prospects for agribusiness employment in Minnesota.

AGRIBUSINESS COMPONENTS

Total employment in Minnesota increased by 236,000 workers between 1947-61. This rate of increase was nearly equal to that recorded for the total U.S. working force in the same period. The increases came about in both economies despite sizable decreases in farm employment.

Minnesota Farm Employment

Farm employment in Minnesota made up **one-third** of all employment in the state in 1947 (see table 1). From 1947 to 1961 farm employment decreased by 137,000 workers. This decrease, coupled with an increase in nonfarm employment, reduced the farm share of state employment to **one-fourth** by 1954 and to near 18 percent in 1961.

These decreases in farm employment show that farming is now less important as a source of employment in Minnesota. These figures also suggest that most new job opportunities will lie outside of what we traditionally consider Minnesota agriculture.

What these figures do not show is the increasingly important role the state's farming plays as a **generator** of income and employment in related nonfarm industry. Cash receipts from farm marketings rose from \$1.3 to \$1.5 billion from 1947 to 1961; expenses

of farm operators increased from \$750 to \$1,165 million during this period.

An increase in real expenditures by farmers, provided productivity remains the same, will result in additional jobs in industries that manufacture and distribute farm supplies and provide services to farmers. Increases in production volume by Minnesota farmers similarly affect nonfarm processing and marketing business.

How much has employment in the nonfarm parts of agribusiness increased in response to greater volume of farm production and farm expenditures? Also, what are the relative rates of employment increase in the different industrial segments which comprise agribusiness?

Input Industry Employment

Total employment of Minnesota establishments engaged in the manufacture and distribution of farm inputs was about 35,000 workers in 1947 and 45,000 workers in 1961 (see table 2). In many cases these figures represent only **part** of the employment of these industries. These figures are "deflated" from original totals recorded because only a part of the business of some industries concerns farm-destined inputs.

The employment increase recorded in Minnesota agribusiness input industries was 28 percent between 1947-61. This increase compares with a near 20-percent increase for all industries in Minnesota.

Table 1. Minnesota farm and nonfarm employment, 1947, 1954, and 1961

Employment	1947	1954	1961
—thousands of workers—			
State	1,197	1,313	1,433
Nonfarm	798	982	1,171
Farm	399	331	262
Farm as percent of state employment	33.3	25.2	18.3

¹D. F. Fienup and D. C. Dahl, "Agribusiness in Minnesota," *Minnesota Farm Business Notes* No. 488, August 1959; and D. C. Dahl and D. F. Fienup, "Minnesota Agribusiness," *Minnesota Farm and Home Science* 17(3), May 1960.

Table 2. Minnesota agribusiness input industry employment (by major industry groups), 1947, 1954, and 1961

Industry group	1947	1954	1961
	—thousands of workers—		
Total input	35	37	45
Trade	10	10	13
Services	11	15	18
Manufacturing ..	14	12	14

However, the 20-percent increase in employment includes farming. This fact tends to obscure the strong employment increase in all **nonfarm** industries of the state. Total nonfarm employment in Minnesota increased by nearly 47 percent between 1947-61. Comparison of this increase to the 28 percent increase for the input industries shows that this group of businesses lagged behind in general nonfarm employment growth.

Classifying the input industry employment by major industry groups helps identify the input activities where slow and fast growth rates were experienced. The industries providing services to farmers recorded the strongest increase in employment during the 1947-61 period. These industries include custom combining, veterinary services, credit and financial institutions, and other businesses providing nonmaterial services to farming. These increases are in accord with increases in farm expenditures for such services during the 15-year period.

During the same period, the increase in employment recorded for retail and wholesale trade of inputs used in farm production was less than for all input industries and considerably less than for all nonfarm industries in the state. This slower rate of increase probably resulted from two opposing trends: (1) decreases in the number of firms that handled farm supplies, and (2) increases in expenditures by farmers for material farm inputs.

The manufacture of inputs used in farming certainly increased during the 1947-61 period. But employment in input manufacturing industries did not increase over the study period. In fact, this group of industries recorded its lowest annual employment in 1954—some 2,000 workers less than the 14,000 workers reported for 1947 and 1961.

Explanation of these changes must take into account at least three important developments or factors in the state's economy:

- A decrease in the number of state firms involved in input manufacturing.
- An increase in worker productivity due to automation.

● The tendency of this type of firm to locate near its source of raw materials rather than its market.

The foregoing discussion suggests that increased job opportunities may develop in the input industries of agribusiness, but that most of these will occur in the service-type category.

Output Industry Employment

Total employment in the output industries of Minnesota agribusiness rose from 147,000 to 170,000 workers between 1947-61 (see table 3).

These employment figures include the assembly, storage, processing, and wholesale and retail trading of farm food and fiber products.

Employment in all output industries of Minnesota rose by 16 percent between 1947-61. This increase compares to a 47-percent employment increase in all nonfarm industries of Minnesota during the same period. Explanation of this slower employment growth in the output industries requires consideration of its major components.

The trade group of output industries breaks into two parts: wholesale and retail. Wholesale trade of food and fiber products includes the assembly, warehousing, reselling, and sometimes minor manufacturing of farm products. Employment in output wholesaling increased at a much faster rate than did employment in any other output industry group. The increase from 28,000 to 45,000 workers in this group also was more rapid than for all nonfarm industries in the state.

The strong increase in agribusiness output wholesaling is probably due to an increased use and further development of the assembling and warehousing facilities located in Minnesota. This expansion is made possible by increases in output volume by Minnesota farmers and farmers of surrounding states.

Retail trade in Minnesota output industries increased from 43,000 to 52,000 employees between 1947-61. This increase is related more closely to the rise in the state's population and their incomes than to changes in farming.

Table 3. Minnesota agribusiness output employment (by major industry groups), 1947, 1954, and 1961

Industry group	1947	1954	1961
	—thousands of workers—		
Total output	147	147	170
Trade	70	74	97
Services	2	2	3
Manufacturing ..	75	71	70

From 1950 to 1960 Minnesota's population increased about 15 percent and per capita personal income rose significantly.

The service group make up a relatively small part of total employment for the output industries. Included in this group are various marketing services used by farmers, as well as contract trucking of farm products to market. The 700 worker increase in this group is commensurate with the greater volume of Minnesota farm output.

The processing (manufacturing) of food and fiber products in the state decreased by 4,000 workers between 1947-61, partly because of a drop in fiber manufacturing activity in the state. But the food processing industries themselves recorded a slight drop in employment over the period. The employment trends in food processing may be explained by three factors:

● The number of Minnesota food processing firms decreased during this period.

● Many food processors introduced laborsaving machinery into their processing operations in recent years.

● Inferring from the employment increases in wholesaling activity only, more Minnesota-produced farm products may be moving to other states for processing.

From the foregoing discussion, it may be concluded that job opportunities will develop in the output industry area of the state's agribusiness. The most important increases, and perhaps the most likely, will occur in the food wholesaling industries. Some employment will develop in food retailing and in output services, but trends suggest that a strong increase in food processing employment is unlikely.

TOTAL AGRIBUSINESS EMPLOYMENT

Total agribusiness employment decreased during the 1947-61 period—the sizable decline in farm employment was not offset by employment increases in nonfarm agribusiness (see table 4).

Total agribusiness employment in the state decreased by 104,000 workers between 1947-61. This decrease was the net result of a 137,000 worker decline in farming and a 33,000 worker increase in the nonfarm parts of agribusiness.

These figures reveal that the nonfarm parts of Minnesota agribusiness have provided, and will continue to provide, an increasing number of jobs for Minnesotans. Nevertheless, the size of the increases recorded clearly indi-

Table 4. Minnesota agribusiness employment by major component, 1947, 1954, and 1961

Employment component	1947	1954	1961
	—thousands of workers—		
Total state	1,197	1,313	1,433
Nonagribusiness	616	798	956
Agribusiness	581	515	477
Farm	399	331	262
Input	35	37	45
Output	147	147	170
Agribusiness as a percent of state employment	48.5	39.2	33.2

cate that a major share of people leaving farming will have to look for employment in nonagribusiness industries.

These figures further suggest that rural area development, in terms of providing new jobs to area residents, cannot depend solely upon agribusiness for industrial expansion. Nonagribusiness industry should be encouraged to locate in rural parts of the state.

The unique nature of Minnesota agribusiness is revealed by comparison with national agribusiness. Employment estimates of U.S. agribusiness were made for 1947 and 1954, but similar estimates have not been made since that time.

Minnesota-U.S. Agribusiness

Agribusiness employment made up 42 percent of national employment in 1947 but only 39 percent in 1954 (see table 5). The interesting feature of this percentage change is that Minnesota agribusiness employment dropped from 48 to 39 percent of total state employment during the same period. So, in 1954, agribusiness employment as a percent of total employment was the same in Minnesota as it was for the nation!

Explanation of this surprising equality and other implications may be drawn from a comparison of employment in the various components of agribusiness at state and national levels.

Table 5. Agribusiness employment totals and percentage shares, Minnesota and United States, 1947 and 1954

Employment	Minnesota		United States	
	1947	1954	1947	1954
— thousands of workers —				
Total employment	1,197	1,313	58,000	61,000
Nonagribusiness	616	798	33,500	37,000
Agribusiness	581	515	24,500	24,000
— percent of total employment —				
Agribusiness	48.5	39.2	42.2	39.3
Farming	33.3	25.2	17.2	13.1
Input	2.9	2.8	8.6	9.8
Output	12.3	11.2	16.3	16.4

Total agribusiness employment for the United States decreased from 24.5 to 24 million workers from 1947 to 1954. This decrease was the result of a 2 million worker decrease in farming that was partly offset by a 1.5 million worker increase in nonfarm parts of agribusiness. For the nation, farm employment decreased by about 20 percent.

In Minnesota, farm employment declined 17 percent between 1947-61—a reduction of 68,000 workers. Employment in nonfarm parts of Minnesota agribusiness, unlike national increases, rose only by 2,000 workers. Therefore, Minnesota agribusiness employment decreased at a much faster rate than was true nationally.

But even if nonfarm agribusiness had increased at a rate similar to the national one, total agribusiness employment in Minnesota would have dropped at a faster pace than the national rate. This is due to the difference in agribusiness composition at the state and national levels.

In 1947 farm employment comprised nearly 69 percent of Minnesota agribusiness employment but only 41 percent of national agribusiness employment. By 1954, farm employment made up 64 percent of Minnesota agribusiness employment but only 33 percent of national agribusiness employment. Thus, changes in farm employment in Minnesota, though similar to the national rate, have a greater effect on the state's agribusiness totals than is true at the national level.

From these different compositions of agribusiness at the state and national levels, we can also infer that by 1961 Minnesota agribusiness employment as a percent of state employment was less than was true nationally. This conclusion may be reached due to the underdevelopment of nonfarm Minnesota agribusiness relative to the nation.

Minnesota Agribusiness Specialization

Further insight into the nature of the state's agribusiness may be drawn from a comparative technique called employment "specialization." The national employment composition in a group of industries is used to prepare a mirror image of employment in the state's economy. The image employment is compared with the recorded state employment; degrees of specialization or development can then be noted.

Applied to agribusiness components for 1947 and 1954, the image employment of Minnesota agribusiness (if the state was like the nation) would be as shown in table 6.

Actual agribusiness employment in

Table 6. Minnesota agribusiness employment, image and actual, 1947 and 1954*

Agribusiness employment	1947		1954	
	Actual	Image	Actual	Image
— thousands of workers —				
Farm	399	206	331	172
Input	35	103	37	129
Output	147	206	147	215

* The "image" figures were developed by using the percent U.S. farm employment was of total U.S. employment. This percent applied to total state employment yielded the image employment for Minnesota agriculture. The nonfarm image employment figures were similarly developed.

Minnesota varied considerably from the national image. If the state economy was composed industrially like the nation, total agribusiness employment in Minnesota would have been 66,000 workers less than were actually employed in 1947 but would have been about the same as was recorded in 1954. The composition would have been considerably different in both years.

Minnesota farm employment compared to its national image shows that the state is "overspecialized" with regard to farming. Of course, this overspecialization is explained by the unique natural and human resources that comprise the state's economic structure.

Actual output employment comparisons with image employment reveal an "underspecialization" of the output industries of the state. Most of this underdevelopment apparently occurred in the distributive industries associated with population concentrations rather than in areas of food and fiber production.

The food product processing industries, as a group, are overdeveloped in the state's economy. This conclusion is reached by comparison of employment in the food and kindred products manufacturing industries of the state with its national image.

Because Minnesota is noted for its agricultural produce and has long been considered an exporter of farm products, much of the distributive network for these agricultural products logically lies outside the state.

It is the input industry employment comparison that reveals how lacking the state is in input industry employment as compared to the nation. Only about one-third of the employment image of national agribusiness was realized in 1947—and less in 1954.

This underspecialization is apparently explained by relatively less employment in the manufacture of inputs used in farm production. Most of this activity takes place in other states. Farm

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the outlook corner

D. C. Dahl and D. F. Fienup

Prospects for future agribusiness employment in the state will depend upon several factors. Farm employment trends will vary with: relative and absolute farm income levels, availability of job opportunities in nonfarm industries, and other mobility and sociological factors.

Employment trends in the nonfarm parts of Minnesota agribusiness will depend upon: general business conditions, the extent of automation introduced, and efforts of individuals and committees devoted to encouraging industry to locate in the state.

While these factors will influence the agribusiness employment picture for the next several years, most of them cannot be reliably predicted. Instead, it is possible to project the employment trends that did develop during 1947-61.

Total Minnesota employment increased at a rate of about 17,000 workers per year throughout the 1947-61 period. Continuation of this trend would result in 1.59 million employed persons by 1970 and 1.68 million by 1975. This rate of employment increase is close to that for the total U.S. economy covering the same period.

Minnesota Farm Employment

Employment in Minnesota farming decreased at a rate of about 9,000 workers per year for the entire 1947-61 period. But consideration of only the last 5 years of the period shows that the downward pace may have eased up to an annual 6,400 worker decline.

Using 1957-61 as a projection base, an annual decrease of 6,400 workers in Minnesota farming would result in

205,000 workers in 1970 and 172,000 in 1975 (see table). Therefore, about 13 percent of the state's labor force would be engaged in farming by 1970 and only 10 percent by 1975. These percentages compare to slightly more than 18 percent in 1961.

Input and Output Industries Employment

Agribusiness input industry employment in Minnesota increased at a rate of 800 workers per year during the 1947-61 period. In the latter 5 years of this period, a 600 worker per year increase was recorded.

Projecting the 600 worker rate to 1970 yields a 50,000 employee total for Minnesota input industries. Extended to 1975, the input industries would have 53,500 workers engaged in manufacturing and distributing farm supplies and providing farm services.

During the 1947-61 period output industry employment rose at a rate of

Projected Minnesota agribusiness employment, 1961, 1970, and 1975

Employment component	1961	1970	1975
—thousands of workers—			
Total state	1,433	1,595	1,680
Nonagribusiness	956	1,164	1,274
Agribusiness	477	431	406
Farm	261	205	172
Input	45	50	54
Output	171	176	180
—percent of state employment—			
Agribusiness	33.2	27.0	24.2
Farm	18.2	12.8	10.2
Input	3.1	3.1	3.2
Output	11.9	11.1	10.8

continued from page 3

machinery and motor vehicles are among the more important imports into Minnesota.

CONCLUSIONS

Minnesota agribusiness trends suggest that employment opportunities are unlikely to increase strongly in any part of the agribusiness sector of the state's economy except in food wholesaling and input services. Farming will continue to decline in employment.

Minnesota agribusiness is characterized by a major farm component, a rapidly developing farm-to-processor wholesaling complex, and a major processing industry group. Input services make up an important part of the farm supply or input industries. Aside from these exceptions, Minnesota agribusiness is not proportionately as large as its national counterpart. However, it will remain an important segment of the state's economy for many years.

1,800 workers per year. In the final 5 years of the period, the rate was only 860 workers per year.

Using the 1957-61 period as a projection base, the output industries of the state would increase their employment to 176,000 workers by 1970 and to 180,000 by 1975.

Total Agribusiness Employment

Total agribusiness employment in Minnesota will exhibit an absolute and relative downward trend in future years. According to projections presented here, the agribusiness component of Minnesota's economy will be a source of employment for 27.0 percent of the state's employed by 1970 and 24.2 percent by 1975. These shares compare with 33.2 percent in 1961.

MINNESOTA

farm business

NOTES

Prepared by the Department of Agricultural Economics and the Agricultural Extension Service.

Published by the University of Minnesota, Agricultural Extension Service, Institute of Agriculture, St. Paul, Minnesota 55101.

Agricultural Extension Service
Institute of Agriculture
University of Minnesota
St. Paul, Minnesota 55101

ROLAND ABRAHAM, Acting Director
Cooperative Agricultural Extension Work
Acts of May 8 and June 30, 1914

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