



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Agric - Econ Aspects

(Ed)
NEW ENGLAND

GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

OCT 16 1958

WITHDRAWN

AGRICULTURAL

ECONOMIC COUNCIL



PROCEEDINGS JUNE 1958

AT THE

UNIVERSITY OF MAINE

ORONO

MAINE

DEVELOPMENTS AND FUTURE OF NEW ENGLAND AGRICULTURE

Irving F. Fellows
University of Connecticut

Almost one year ago, John Davis spoke at this Council on a topic closely related to the present one. Many of you heard him outline, in a general setting, the future changes which he visualized for New England agriculture. His crystal ball is as clear as my own so I have summarized his discussion with slight alterations in the wording and the order.

He foresaw

1. larger farms, fewer farm families, and fewer farm workers;
2. a higher ratio of purchased farm supplies to total farm supplies, which in turn means a relatively more rigid cost structure;
3. greater technological know-how on the part of the farmer as a plant and animal expert, engineer, and labor supervisor;
4. more capital requirements per farm for long run resource commitments, intermediate needs, and short run operations;
5. greater managerial ability in terms of handling a larger farm plant, with more varied activities;
6. the adding of more convenience factors to food in order to satisfy consumer desires;
7. more extensive facilities for processing foods, including packaging, freezing, dehydrating, freezer storage, etc;
8. more rigid buying requirements on the part of the retailers as to continuity of supply, quality and uniformity of farm products;
9. increased competition for land for non-farm uses such as roads, suburban housing, industrial plants, airports, and recreation.

He warned that these changes are ... "transforming the food-fiber phase of our economy from agriculture to agribusiness..." and... "that should we be shortsighted enough to combat change that is inevitable, we shall merely be creating new problems and adding to human suffering"^{1/}. This warning sets the tone for the present paper. How will New England agriculture adjust to these basic forces of change?

One of the dramatic adjustments will be a decline in the number of and a reshaping of the family farm. This is a trend that has been underway in New England for nearly 100 years. In the last 20 years along, the number of commercial farms of all categories has fallen by 35 per cent. But this is a sign of strength rather than weakness for it shows that agricultural production is at last passing through the methods of handicraft manufacture into techniques of the industrial assembly line.

Comparisons to an assembly line may seem far fetched until one looks at a modern broiler farm where practically all materials are brought to the plant

^{1/} John Davis, "A Forward Look at Technology and Institutions Affecting New England Agriculture" Proceedings of the New England Agricultural Research Council, Vol. 25, June 1957.

(we even used the word) and are assembled in a time span of 10 weeks into the finished product. Growing a batch of 10,000 broilers requires about 10,500 baby chicks, which are purchased; 1,200 gallons of oil, 1,000 kilowatt hours of electricity, and other supplies, which are all imported; and 42 tons of feed concentrates meeting exacting specification as to energy, vitamins, minerals, and medication. This feed is delivered to the farm on a close schedule and is often blown to a central bin for distribution to each pen. One man can push a few buttons, watch over the assembly process, and produce a product worth \$6,000. To a lesser extent, the same trend is true on our dairy farms. Since the time, in my memory, when dairymen mixed "grain" for the cows by shoveling and reshoveling the ingredients on the barn floor, dairymen have purchased more and more goods and services--the inputs of milk production. First, commercially mixed concentrates; then milk hauling, cow replacements, equipment service, herd testing, bull semen, bedding, and many other inputs have been purchased for "assembly" by the dairymen. Last year, in Connecticut a formidable mental barrier, the forage block, was broken for many of our dairymen. They were forced by drought to buy forage and forage substitutes from midsummer throughout the winter months. They were surprised at the resulting production and learned three things--(1) high quality feed means more milk, (2) the quality and quantity of their forage had been lacking, and (3) the size of the herd need not be tailored to the amount of forage grown on the farm. Now, more of our dairymen will deliberately plan to buy more of their forage in their milk production business. The herd size will be adjusted to other limits--perhaps to the capabilities of the manager, perhaps to the market restrictions under which he must operate--but net income will generally be increased.

For those interested in efficiency as a measure of accomplishment, increased output in total and on a per unit basis has generally accompanied the decline in farm numbers. In Maine, for example, total production of potatoes has remained fairly constant over the last 10 years even though the number of commercial growers has been cut by nearly 50 per cent and there have been programs to restrict farm acreage. Between 1940 and 1957, the number of commercial dairy farms in Connecticut dropped by 50 per cent, yet the pounds of milk sold from the remaining farms actually increased by nearly 25 per cent. For the nation's agriculture, efficiency has improved so much that we must learn to live with high levels of output.

To restate, fewer farms and fewer farm families are indicative of an aggressive, informed and capable farm population. Brain-power has been substituted for brawn-power. With this change has come agricultural plenty. But how long can this reduction continue? What subtle changes will occur in the family farm?

A decline in the number of farms will continue, perhaps with increased tempo, for some time. On the basis of mathematics, the possibilities are surprising. The present New England milk output could be produced by just 5,000 dairy farms if each had a 100-cow herd. This is less than the 7,800 commercial dairy farms presently reported for Vermont alone, and about 1/5 of the total commercial dairy farms in New England. The same possibilities exist in other commodities. About 2,000 potato farms, each of 100 acres, would equal the output of the present commercial growers in Maine. Number reductions of this order are possibilities, but other changes will occur to alter this simple reduction procedure.

One has already been discussed. Relatively more of the productive inputs will be purchased by the farm operator. With this trend will come increased cost rigidities. The farm business will be even more vulnerable to the cost-price squeeze at least for the immediate future or until the full influence of potential developments can be felt. Smaller profit margins per unit will trigger steps toward more productive units per farm and bring about the upward surge in size of farms.

Almost in chain reaction, other adjustments must follow. Greater technical know-how in all production phases will be required of the farm operator. I will make only a few observations on this topic for the next speaker will discuss it in detail.

But, here, I wish to differentiate clearly between technology per se and the knowledge of technical relationships. It is this latter knowledge which is critical to the farm operator, for, with an understanding of the relevant production functions for a specific type of output comes the ability to predict and to control. Without this ability, management would not exist.

Technical knowledge cuts across all physical fields. One area concerns new equipment--the mechanical power which has replaced human labor. One of the amazing changes in our lifetime has been the tremendous increase in horsepower available per farm. Professor W. C. Wheeler, Head of the Department of Agricultural Engineering at our University, gave me the following information on this change.

	Average Horsepower per farm
1910	4
1920	6
1930	21
1940	31
1950	55
(1960)	(95) (Estimate)

Farming today uses 10 times the power available but a few years ago, and we expect this power component to be about 20 times as great by 1960. The challenge to our New England farmers is to choose and use this power wisely.

Another area deals with the feeding and control of disease in plants and animals and the remaking of them to fit a special purpose. These accomplishments are commonplace to those who are familiar with them, but they have had and will have a major impact upon farming. More assistance in using these technologies will come directly from the business firms who manufacture specific products. We will return to this point later.

An area where know-how must be at a high level will be in the management of hired labor. On the larger farm units which will evolve, most of the manual labor will be done by regular hired workers. The wise selection and use of this labor will be one of the strategic tasks of the operator. Wages must be competitive with alternatives for skilled workers and must include most of the fringe benefits now incorporated into the labor returns. A prime indicator of the managerial abilities of the future farmer will be the stability and efficiency of his labor force.

Finally, greater recognition of the market as one of the important parameters of his production process is essential to the New England farmer of the future. Inventions in all areas and changes in our institutions have led to an age of specialists in non-agricultural fields. These specialists tend to have an urban setting and require a huge flow of goods and services. About 85 per cent of our population is non-agricultural and receives its food and fiber needs from the 15 per cent on farms. This is a remarkable accomplishment, for in many areas of the world these ratios are nearly reversed. These non-farm consumers are shifting towards certain types of food and food services and they make their demands felt through purchases in the market. In my opinion, one of the great revolutions of our day has been the general raising of incomes to the bulk of working population. Where 20 years ago only 4 per cent of household spending units had an income between \$3000 and \$5000, now this per cent has increased to 22 per cent. Where 2 per cent earned between \$5000 to \$10,000, this percentage is now 40 per cent. Increases in wages and in the number of workers per family are an important part of this shift in incomes. In 1955, 30 per cent of the urban family wives worked. Increased incomes for all sources have resulted in important shifts in food consumption patterns. Between 1948 and 1955 expenditure for food increased 26 per cent. This increase was divided approximately equally between the following four forces: (1) larger families, (2) higher prices, (3) more food away from home, and (4) more expensive foods. These latter forces reflect foods of higher desirability, more built in services, etc.

With larger farm units, more purchased inputs, and highly paid labor, greater needs for capital in all categories will be required. No longer can we look for equity financing on the part of the operator. New sources of risk capital where returns will be related to earnings must be found. Beginnings have been made on this problem through the process of integration and a recognition on the part of agricultural lending agencies of the increased needs for credit for intermediate time periods. These steps may be sufficient for the necessary growth of our agriculture but they must induce the entry of considerable sums if the future growth is to be realized.

It is different to present fully the impact of these developments because they are all interlocking and interrelated. Perhaps by summarizing my estimates of changes in the family farm, the total effect may be exposed. We have already recognized fewer, larger farm units. Gradually, the firm and household, in the Lange sense, will be separated almost completely.^{2/} The farm operator will emerge as a business manager cognizant of many technical phenomena of production but relying heavily upon specialists in a particular field to provide the technical data. The operator must learn to use labor skillfully and to depend upon outside sources of capital. In the procurement of capital he may relinquish some of the highly technical decisions of production but most of the business management will remain in his hands.

To fully exploit his opportunities, he will learn to recognize the market as a significant part of his decision sphere. Close ties between supplier and seller will permit greater standardization of product, closer scheduling of on-farm and off-farm operations, and a minimum of output variation. As the number of producers declines and the central interests become more uniform, strategy can be employed to secure "greater stability in the food-fiber

^{2/} Oscar Lange, "What Is Economics," Review of Economic Studies, Vol. XIII, 1945-46, pp. 19-32.

sector of the economy. Stability to offset the cost-price squeeze resulting from rigid costs and fluctuating prices."^{3/}

Many with whom I discussed this topic were pessimistic about the future of New England agriculture. Personally, I cannot be if one challenge is accepted and met.

Have you heard of Megalopolis--the great future metropolitan area which will stretch in a crescent from Boston to Washington, D. C.^{4/} Even now, one need only fly this crescent some clear night to see almost a complete necklace of lights. This will be the largest, wealthiest market in the world. Practically every cropland acre of New England will be within 300 miles of this vast market. The challenge will be to service some of the demands of this populace. If New England farmers do not, others, 500, 1000, 2000 miles away will do so.

Basically, the issue will be decided not in the fields or stables of New England farms, but in the high schools and land-grant colleges of the area. The major problem is this -- through our agricultural curricula and extension education can we staff these new farms with wise executives who can see the farm business through the trees, the cows, the grasses. We have done a good job of training agricultural technicians and even more will be needed in the future. We have failed to train many agricultural business managers. Apparently it is easier or more interesting for the student or the farmer to learn that a cow has four stomachs than it is that these stomachs can use a variety of feed, and, for a given output, the least-cost combination will yield the greatest profit. Students enroll in courses on the management of farm crops but seldom study labor management and human relations. We teach the judging of farm livestock but most farm operators must learn by experience how to judge the profitability of an important adjustment in the farming program.

This was the challenge to which I referred earlier. The future of New England agriculture will be secure if farm managers become business managers. Each will possess a great deal of knowledge but this must be used with wisdom. In reference to the operation of the farm firm and its contacts with other segments of the economy, agricultural economics has much to say about the wisdom of such actions.

^{3/} Davis, op. cit.

^{4/} Newsletter - The Twentieth Century Fund, No. 32, 1958.