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## *Approach B*

### FINDING NEW USES FOR FARM PRODUCTS

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#### OBJECTIVE

**SPECIFIC OBJECTIVE:** To increase uses of farm products and thereby raise farm income:

**SUB-OBJECTIVES:** (1) To conduct a more intensive research program to find new uses for farm products already being produced; (2) to conduct a more intensive research program to find new uses for products not now commonly grown on farms, but which could be; and (3) to implement the above objectives by intensified educational programs through Extension and other channels.

#### DESCRIPTION OF PROGRAM

One way to increase farm income would be to have a continually expanding demand for farm products. Demand might be stimulated by increasing utilization of commonly produced farm goods through presently accepted channels, such as food, clothing, feed, etc. An alternative means would be to encourage research in finding new industrial uses for farm products. New uses could result from:

1. Using established farm products or by-products as a basic material for various manufactured products.
2. Making established farm products into new and different kinds of food and clothing or shelter.
3. Developing an entirely different farm product than is now being used to any great extent.

The finding of such uses would require a concentrated research program. The research could be financed by society in general (government) or it could be left largely in the hands of private research agencies. The problem seems of such magnitude that it should become

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\*The other members of the work group who reviewed the preliminary draft and assisted in the development of the final report were: Arthur Mauch (Chairman), W. D. Curtis, Harold G. Halcrow, Paul C. Johnson, Raymond Scott, Houston E. Ward, and Silas B. Weeks.

the responsibility of the Federal Government to finance and conduct part of the necessary research.

If it were deemed necessary for society to conduct the research, one of the first questions would be whether special research facilities should be established or if existing agencies (i.e., experiment stations) could adequately handle the program. Other questions of importance would be:

1. Should it be a "crash" program or a long-run project? Since much of the research would be "basic" in nature it would seem that the latter would be most satisfactory.

2. Which farm commodities should be studied first? Possibly research would not be concentrated on any commodity, but rather in such areas as "what farm product can be substituted for iron ore in making autos?" Some argument could be advanced for giving special emphasis to commodities presently in physical surplus.

The "Interim Report to the Congress from the Commission on Increased Industrial Use of Agricultural Products" has a rather extensive listing of possibilities for study.

Industries now are using many farm commodities in manufacturing their products (see Table 1). In 1954, \$3,475,000,000 worth of farm goods were being used for industrial purposes.

### EXISTING OR PAST PROGRAMS

Since World War I many people have expounded the virtues of finding new uses for farm products as a solution to the "surplus" farm problem.

Private corporations constantly are spending large sums of money on research. Some of this research undoubtedly is and has been designed to test the possibility of using farm commodities for more efficient production of nonfarm goods. No adequate record is available on this type of research, but results would indicate that success in this area at best has been limited.

In 1938 as part of the Agricultural Adjustment Act, four regional laboratories were established by the Department of Agriculture to "conduct research into and to develop new scientific, chemical and technical uses, and new extended markets and outlets for farm commodities and products and by-products thereof." These regional laboratories are located in New Orleans, Louisiana; Albany, California; Peoria, Illinois; and Wyndmoor, Pennsylvania.

TABLE 1. ESTIMATED QUANTITY AND WHOLESALE VALUE OF MAJOR DOMESTIC AGRICULTURAL PRODUCTS USED BY INDUSTRY IN 1954-55\*

Domestic Farm Products	Estimated Quantity Estimated Value	
	<i>Thousands</i>	<i>Thousands</i>
Oils and fats (animal and vegetable)	2,514,000 lbs.	\$300,896
Naval stores (turpentine and rosin)		26,100
Grains:		
Wheat (for industrial alcohol)	276 bu.	228
Wheat (as monosodium glutamate)	15,000 lbs.	22,500
Corn (for industrial alcohol)	1,078 bu.	1,450
Corn (as corn starch)	1,200,000 lbs.	84,000
Corn (as dextrin)	178,000 lbs.	17,020
Corn (as isolated protein-zein)	6,000 lbs.	2,280
Grain sorghum (industrial alcohol)	520 cwt.	1,010
Tobacco:		
Nicotine	1,350 lbs.	3,200
Stems and scraps (other uses)	200,000 lbs.	100
Dairy products:		
Casein	5,000 lbs.	1,750
Lactose	25,000 lbs.	2,250
Cotton products:		
Cotton	14,721 bales	2,382,000
Chemical grade linters	1,406 bales	11,400
Non-chemical grade linters	732 bales	13,600
Sugar cane and sugar beets:		
Molasses	85,000 gals.	12,000
Beet pulp	2,000 tons	26,000
Bagasse	800 tons	18,970
Wool and mohair products:		
Wool (greasy)	230,343 lbs.	126,109
Degras (wool grease)	8,500 lbs.	2,000
Mohair	11,660 lbs.	11,138
Meat industry:		
Cattle hides and skins	27,400	215,720
Calf and kid skins	13,300	81,795
Sheep and lamb skins	16,318	14,618
Fleshings and trimmings (from hides)	520,000 lbs.	1,560
Hair	54,000 lbs.	2,430
Animal glues (from bone and hide)	110,000 lbs.	20,000
Miscellaneous agricultural products:		
Poultry feather meal	100 tons	9,000
Poultry tankage and dried scraps	100 tons	7,000
Tannin	14	5,170
Soybeans isolated protein	50,000 lbs.	12,500
Lecithin	10,000 lbs.	1,300
Pectin (from cannery waste)	300 lbs.	500
Furfural (from corn cobs)	100,000 lbs.	12,000
Ramie	4,000 lbs.	1,200
Flax tow	20 tons	1,600
Nut shells	25 tons	2,000
Miscellaneous uses for corn cobs	60 tons	1,000
Miscellaneous uses for straw	700 tons	20,000
Total		\$3,475,394

\*Agricultural products defined as crude products obtained in first separation or processing step and which will be used in subsequent manufactured products.

The Commission on Increased Industrial Use of Agricultural Products concluded that these four laboratories have been very successful. Of the processes developed 125 are now in commercial use. Some 300 other processes now await industrial adoption or proper economic situations to make them commercially profitable. In nearly half of the time that the four laboratories have been in existence, they were obliged to divert their activities to national defense work. The Commission reported that lack of finances was a major weakness in the present set-up.

#### **EFFECT UPON SUPPLY AND DISTRIBUTION OF SUPPLY OF AGRICULTURAL PRODUCTS**

The short and long-run effect of finding new uses for farm products upon farm supply of farm commodities would seem to differ.

**SHORT RUN.** If new uses were found for a commodity now in physical surplus, prices would rise and net incomes would increase for producers who were in favored positions when the discovery was made.

Little short-run change would occur in capital used for producing commodities presently competing with the one for which new uses were found, especially if such uses were nonfarm. It could be argued that price and income position of those growing such competing commodities would rise in the short run since over-all demand would have increased.

Likewise, increase in production of total agricultural commodities would be limited in the short run. Most farmers likely would not foresee more profit and would not intensify use of certain capital items.

**LONG RUN.** In the long run, production would be changed as a result of finding new uses for an agricultural product. Almost certainly resources would be shifted to the production of the commodity for which new uses were found. The degree of shift would be determined by the scope of the new use and relative profitability resulting from the finding.

Land, capital, and management as well as labor would gradually be diverted to the commodity for which new uses were found. If we were to assume that uses for other commodities would not be decreased as a result of the finding, the demand for labor in agriculture would be greater, and the agricultural labor force would not decrease so rapidly.

**AGGREGATE EFFECT ON SUPPLIES.** Research might lead to better, more efficient ways of marketing existing farm products. Should this lead to a greater utilization for the commodity, total supply would be increased. For example, research that would make possible marketing of 100 percent of a potato crop instead of 80 percent, would increase market supplies of potatoes.

## EFFECT UPON DEMAND FOR AGRICULTURAL PRODUCTS

Potential maximum increases in use of farm products were studied by the Commission on Increased Industrial Use of Agricultural Products and estimated as follows:

	<i>Millions</i>
Corn	24 bu.
Cereal grains	280 bu.
Wheat	25 bu.
Flaxseed	22 bu.
Cotton	4 bales
Animal fats	10 lbs.

Valued at average 1947-49 farm prices for these commodities, reaching the maximum potential for these examples would mean an increase in utilization of about 1,300 million dollars, or around 3 percent of the value of the total utilization of all agricultural commodities in the United States in 1956. The above, of course, only includes those examples containing estimates of potentials; it does not include any estimate of benefits from research in the use of new crops.<sup>1</sup>

**FOOD PRODUCTS.** If a new food product were developed which would sell at approximately the same price as other similar foods, demand likely would shift back and forth between the new and old food items, and little increase would take place in consumption of total food or total calories or total resources to produce food. However, if definite new uses were found for a commodity of higher economic value, demand would shift toward the new commodity. This would result in an increase in the demand for resources in producing agricultural products.

Research is much more likely to lead to increased demand for a commodity of lower economic value. This would decrease demand for resources in producing agricultural commodities. Also, research aimed at finding new uses for farm products may lead to discovery of new uses for existing competing products.

Finding new foods is not likely to result in major changes in total demand for farm products.

**NONFOOD PRODUCTS.** History shows that as new processes develop for producing new products, agricultural commodities have not been used as raw material as much as nonagricultural commodities. In other words, the trend has shifted from the use of agricultural materials in the manufacture of many nonfarm products to the use of nonfarm materials. For example, cotton has been replaced by synthetics in the production of certain kinds of clothing. Doubtless, use of nonfarm products for raw materials has been more economical in many instances.

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<sup>1</sup>Hoobler, S. Q., "Opportunities and Limitations for Expanding Domestic Demand for Agricultural Products," Federal Extension Service, AEP-88, pp. 10-11.

For example, corn, which is a possible raw material in the production of industrial alcohol for motor fuel, would have to be supplied at very low cost or free to the processor to make alcohol a competitive substitute for this purpose.

Another problem is how to dispose of the by-products resulting from the use of a particular farm commodity or a particular part of a farm commodity. Frequently, an industrial use would require only one small part of a crop or livestock commodity.

Still another problem to overcome is fluctuations in supply and quality of agricultural commodities from year to year due to weather and other natural hazards. Fluctuating supplies of raw materials would discourage use by some industries.

However, as with food commodities, if nonfood commodities manufactured from farm products were found to be practical and economically feasible, they would, of course, increase the total demand for farm products.

The conclusion is that many obstacles, including cost of production, variation in production, concentration of supplies, and use of by-products will need to be overcome, if demand for farm commodities is to be increased substantially through finding of these new uses.

#### **EFFECT UPON INCOME AND DISTRIBUTION OF INCOME**

**SHORT RUN.** Income advantage would go to farmers producing the commodity at the time the use was found, or to farmers who could rather quickly produce it. Perhaps the spread between high-income and low-income farms would become even greater than at present. This presumes that farmers who are now well equipped for farming will most quickly take advantage of the new situation.

**LONG RUN.** Land, labor, capital, and management would shift into the production of the commodity for which a new use was found. As a result, farmers would compete in the market for benefits accruing from finding a new use. Perhaps an early result would be that the labor resource would move in the direction of the commodity for which the new use was found. Society as a whole (including agriculture) would benefit from these improvements.

#### **SUMMARY**

The specific objective of finding new uses for farm products is a worthy one, not only because of the possible short-run benefits to some

farmers, but also because of the benefits to all society, including farmers.

Such research is conducted mainly by industrial concerns and government sponsored agencies. Presumably farmers as a group would benefit most if society assumed some obligation for the research, especially basic research in the area of finding new uses for farm products.

In the past, society has attempted such research, and industry is constantly trying to find newer and better ways of utilizing farm products. Society has already benefited greatly from the findings of the four area research laboratories of the Department of Agriculture. Among the contributions are practical ways of producing penicillin quickly and helping to establish the frozen concentrate fruit juice industry.

In evaluating results of research to find new uses for farm products, total resource requirements for producing farm products presumably would increase unless the new use or new commodity (e.g., oleomargarine for butter) replaces a commodity requiring more resources to produce.

The title "Finding New Uses for Farm Commodities" suggests that demand for farm commodities could be increased through this means. How much total agricultural demand would be increased is uncertain. Research could very likely lead to creation of a substitute commodity of lower economic value. Should this occur, the demand for total resources in producing farm commodities would decrease. If the new use were industrial, over-all demand for the product would be much more likely to increase.

The incomes of people who can quickly take advantage of a new use would increase. Net incomes to farmers as a group would increase if: (1) this new use actually increases demand for over-all farm products and (2) if the new product does not require fewer resources to produce. If fewer resources are required in farming, average prices would fall.

The past experience of industry in shifting from use of agricultural products toward use of more nonagricultural raw materials in much of their production is a big challenge to any group undertaking research in this area. Frequently high costs of using agricultural products as industrial raw material makes such use prohibitive. Other disadvantages include variations and lack of concentration of supplies. However, if these obstacles could be overcome, a concentrated and continual effort to find new industrial uses for farm commodities might increase agricultural incomes and surely would benefit society as a whole.



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