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EXPANDING THE DEMAND FOR FARM FOOD PRODUCTS IN THE UNITED STATES

John M. Wetmore, Martin E. Abel, and Elmer W. Learn



This report is based on an interregional research project entitled "An Economic Analysis of Demand Expansion Programs and Policies in the United States." The project was first discussed and formulated in the technical committee of the North Central Regional Price Policy Project, NCM 11. The project was activated in 1955 under the above title as a North Central Regional Project, NCM 16. Because of its nationwide scope and interest the project was reconstituted in 1956 as a subproject of an interregional price policy project, IRM 1, "National Policies for Agricultural Prices and Incomes."

The research work of the project was centered at the University of Minnesota. The project was initiated under the leadership of Willard W. Cochrane. John M. Wetmore and Martin E. Abel supervised the first and second phases, respectively, of the project.

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The members of the Interregional Committee on Agricultural Policy, whose names appear below, provided many helpful suggestions and criticisms throughout the study.

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Expanding The Demand For Farm Food Products In The United States

MARTIN E. ABEL, JOHN M. WETMORE, AND ELMER W. LEARN¹

COMMODITY SURPLUSES, DECLINING PRICES, AND LOW INCOMES have dominated the agricultural scene in the last decade. This situation has led to many policy proposals and recommendations. A leading proposal is "demand expansion"—that is, increasing food consumption in the United States. The potentials of this approach are examined in this bulletin.

The concept of "demand expansion" used in this analysis consists of three features:

1. An increase in food consumption in the United States above some given level, which
2. Results from intentional action by society to realize some food consumption goal (e.g., improved nutrition), and which
3. Involves an increased employment of farm resources.

The idea of increasing the demand for agricultural products by lifting limitations on food consumption (e.g., increasing consumers' incomes) became a well defined set of ideas only in recent years. Inadequate knowledge of the economic factors involved and legislative apathy were partly responsible for this late development.

The demand expansion story started in the 1930's, but the background of the 1920's helps in understanding future activities. The 1920's opened with a decline in farm prices and they remained at relatively low levels throughout the decade. Agitation related to this problem was primarily concerned with the marketing system. The main proposal

at this time was the McNary-Haugen two price plan which would have set domestic prices at high levels and allowed export market prices to fall to world levels. Twice this proposal was passed by Congress, but received Presidential vetoes.

At the suggestion of President Herbert Hoover, Congress created the Federal Farm Board to bring about "orderly marketing" of agricultural commodities. It was to increase and stabilize prices through purchase and storage operations and to find new markets for farm products. But the Farm Board began operations in 1929 and had to buy on a declining market. Thus, large stocks of commodities were accumulated at a cost higher than the market prices that prevailed in later years.

Congress faced two emergencies at the end of 1930 and the beginning of 1931: (1) the accumulation of large stocks of grain by the Federal Farm Board, and (2) agitation for help for the needy. Not only did the unemployed in the cities need relief, but farmers were hurt by falling prices and incomes and, in many areas, suffered the additional burden of crop failure.

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From 1930 to 1932, Congress passed legislation enabling release of Federal Farm commodities (wheat and cotton) for distribution by relief agencies to needy families. This was a convenient outlet for Farm Board surpluses. No clear concept of demand expansion existed and the techniques used were imperfect. But, increased consumption of food resulted.

The Agricultural Adjustment Act of 1933, a broad program for farm relief, provided some money for market expansion and removal of surplus agricultural products. To find means for disposing of these commodities the Agricultural Adjustment Administration turned to the Federal Emergency Relief Administration. A program was set up to help local relief agencies meet their needs. Later, special appropriations by Congress provided additional funds for purchase and distribution of surplus products. Section 32 of the Potato Control Act of 1935 provided a permanent appropriation of 30 percent of the tariff revenues for surplus disposal and other purposes.

During this period a few people recognized nutrition as an important part of a national food policy. People were becoming increasingly concerned about underconsumption and starvation and, furthermore, the "new" science of nutrition was making important discoveries concerning nutritional needs and proper diets.

Distribution of surpluses for relief purposes was extremely important, especially from the standpoint of quick disposal of excess supplies. However, relief needs were considered secondary to the objective of assisting producers. Purchases were not made to meet relief needs, but primarily to strengthen markets and bolster grower prices.

The Federal School Lunch Program, which now contains all three elements of demand expansion, was established in 1935. School lunch programs were carried on previously, but Section 32 appropriations brought a permanent source of funds for purchasing surplus

foods. The program became a prominent channel of surplus disposal.

Educators were very receptive to the program. It was not only a means for improving diets of schoolchildren, but also an educational device to teach them good eating habits. In addition, educators found that improved diets resulted in increased class participation, better health and school attendance, and improved grades. But, one problem was the "surplus disposal" feature of the program. Many administrators felt that this source of food was unreliable. Moreover, the distribution of surplus foods often resulted in waste or undesirable repetition in the diets.

In 1940, federally supported school milk programs began to provide free milk or "penny milk" to needy children in large cities. Children or welfare agencies made a small payment. Milk processors and handlers accepted a reduced margin. The differences between the cost of the milk and what children paid was made up by a government indemnity.

Another program, the Direct Distribution Program, provided for surplus food distribution to public institutions and relief families. Relief and social workers maintained that the distribution methods resulted in feasts, famines, and sometimes waste. In addition, many people with low incomes did not receive relief aid and, therefore, could not participate. Furthermore, the food industry objected to direct food distribution because it bypassed regular channels of trade. Most food handlers had excess capacity and were reluctant to see any food handled through other channels.

The Food Stamp Plan of 1939 emerged as one of the administrative achievements of this period. The plan operated mainly for relief families. A high proportion of people in cities favored it. Even in the country, where the plan was less understood, a majority approved the plan. Retailers also strongly supported it. The Stamp Plan was de-

signed to accomplish four things: (1) The farmer sold surplus products through (2) the grocer, who increased his business, to (3) low income families, whose health improved by eating these foods; and (4) the Nation gained by partially solving an acute economic problem and lifting health standards where they were lowest.

World War II changed the overall problem from one of food surpluses to one of food shortages. Food distribution programs, except the School Lunch Program, ended for "the duration." However, although the war brought increased employment and incomes, it did not eliminate malnourishment and low incomes. For people living on low fixed incomes and pensions, the wartime inflation actually reduced levels of living. These people still needed something similar to the Food Stamp Plan.

Several proposals were made during the middle 1940's to provide food for low income families. F. V. Waugh and W. W. Cochrane independently developed consumption plans similar to what became known later as the Food Allotment Plan. The Food Allotment Plan featured the exchange of 40 percent of a family's income for an amount of food stamps that would buy an adequate diet in terms of nutritional adequacy and food variety. The plan applied to all low income families and was based on dietary needs, instead of being limited to relief families and surplus foods. Families who spent more than 40 percent of their incomes on food would have been able to purchase more and better food at less cost. For families spending less than 40 percent (mainly higher income families) the plan would have had no advantage.

Proposed legislation in 1944 caused a great deal of controversy unrelated to the Food Allotment Plan because of a section that proposed repeal of price controls. The legislation was never enacted. However, many bills that have kept alive the Food Allotment Plan idea have been introduced since.

During the war, thinking and planning continued along the lines of demand expansion. The U. S. Department of Agriculture, looking forward to the postwar period, issued several publications emphasizing the importance of the employment level on the demand for agricultural products, farm prices, and farm incomes. It was indicated that if allowances were made for improved technology, agricultural production might generally outrun demand even under full employment. Therefore, although a government program to supplement the diets of low income people would help increase demand, production might still outrun demand. With a higher quality diet, however, there would be a "substantially" larger outlet for food production.

In the early postwar period the world was short of food. Prices for agricultural products were high and rising, and farm incomes were at record levels. The expected problem of surpluses had turned into a problem of shortages. Little action was undertaken for demand expansion because there were no surpluses and the high levels of employment and income reduced the number of low income families.

The decline in farm prices and accumulation of surpluses in 1949 renewed interest in surplus disposal, but the Korean War brought this to a quick end. After the Korean War, farm prices and incomes started a decline which continued into 1957. This, together with mounting stocks of farm products in government storage, revived interest in legislation for expanding the markets for farm products. But, with relatively high levels of income and employment, little attention was given to domestic demand expansion. Even with full employment, however, many people have nutritionally inadequate diets. The reasons for this are: (1) bad eating habits and ignorance as to what constitutes a nutritionally adequate diet, and (2) insufficient income.

Recently, greater attention has been given to domestic demand expansion.

Congress passed several bills aimed at increasing the domestic demand for farm food products. Establishment of

the pilot Food Stamp Program by Executive action in early 1961 is one move to implement such programs.



Approaches To Demand Expansion

INCOME APPROACH

Income is one of the most important determinants of food consumption behavior. As income increases food expenditures increase. This represents a rise in the consumption of food poundage and of higher resource-using foods (e.g., animal products rather than cereals), hence higher priced foods. As income increases, however, the **proportion** of income spent for food decreases. The question is whether lifting the income restriction by subsidizing low income groups will result in a sufficient increase in food consumption, both in quantity terms and in terms of resources employed, to alleviate the surplus problem.

The changes in total food consumption that could result from subsidizing low income families' food needs are presented in figure 1. The analysis involves the 1955 level of food consumption and population. If the levels of food consumption of all persons with annual incomes below \$250 are raised to the level of persons with \$250 income, total food consumption would increase by 1.0 percent and about 15 million people would be involved. If the income level chosen is \$500, food consumption would increase by 2.4 percent and 31 million people would participate; if \$750, 6.7 percent with 62 million people; and if \$1,000, 7.3 percent with 85 million people. However, this latter figure would involve about one-half of the total U. S. population. If substantial increases are to be effected,

a large number of people would have to be involved.

The changes in food consumption are potentials. They represent what would result if all eligible persons participate and if they fully adjust their level of consumption to the assumed level. These potentials overestimate the changes in consumption obtainable under any specific program. Not all eligible persons would participate and, all those that did, would not use the program fully. In order to determine possible costs after allowing for such factors, estimates of consumption changes and program costs were made for a specific income program—a Food Allotment Program.

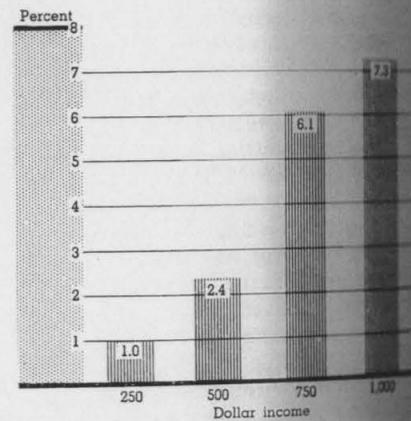


Fig. 1. Percentage change in total U. S. food consumption when subsidizing all families with income per person under a certain level, 1955

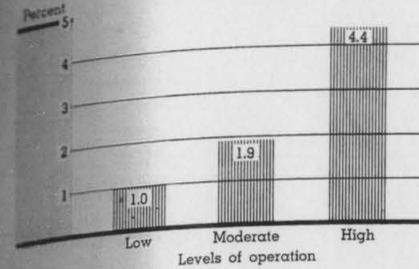


Fig. 2. Percentage change in total U. S. food consumption at various levels of operation of the Food Allotment Program with 75 percent participation

A Food Allotment Program

This program would operate for the benefit of low income consumers. Consumers participate by exchanging money for food coupons. The food coupons, however, represent a larger dollar value of food purchasing power than the amount paid for them. Thus, participants are able to buy more and better food.

The amount that participants would pay for the coupons would represent estimated normal food expenditures for families in their income class (estimated food expenditures before program operation). Low income consumers would pay less for the coupons than higher income consumers. An increase in food consumption by participants is insured when they have to pay the equivalent of normal food expenditures for the coupons. If participants were merely paid the difference between normal food expenditures and the value of the allotment, they could substitute the food subsidy for normal food expenditures and use the money thus freed for nonfood items.

The coupons would be good for the purchase of any food. Retail food stores would accept them as money and redeem them for their cash value at banks. State and local welfare agencies would assist in program administration. They would certify eligibility and issue the food coupons. Moreover, the pro-

gram would help relieve these agencies of their **food** relief burden, releasing funds for other relief purposes.

The changes in total food consumption for three levels of Food Allotment Program operation are presented in figure 2. At the high level 36.3 percent of the Nation's population would be eligible to participate, 19.8 percent at the moderate level, and 14.0 percent at the low level. Not all eligible persons, however, would participate. A reasonable rate of participation would be 75 percent. Therefore, at the high, moderate, and low levels of operation, 27.2, 15.0, and 10.5 percent of the Nation's population would participate, respectively. Food consumption would increase by only 4.4, 1.9, and 1.0 percent, respectively. The number of people involved at the high, moderate, and low levels of operation would be 43, 24, and 17 million.

The total operating costs of the program—value of the subsidy and administration—are presented in figure 3. At the high, moderate, and low level of operation, costs would be \$3,051, \$1,455, and \$552 million, respectively. Thus, the cost of attaining a moderate increase in food consumption through the Food Allotment Program involves large

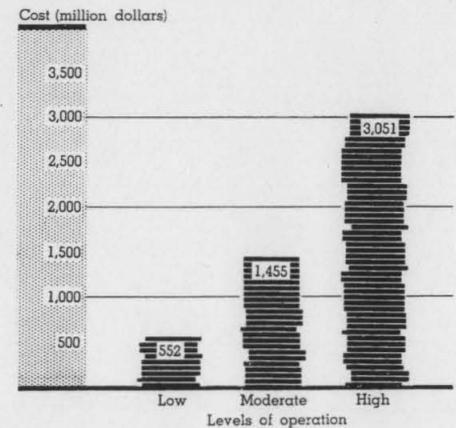


Fig. 3. Cost of the Food Allotment Program at various levels of operation with 75 percent participation

expenditures and a substantial part of the Nation's population.

PRICE APPROACH

Many people feel that the surplus problem is essentially a price problem. If prices of farm products were lowered sufficiently consumption would increase. Furthermore, the Federal government no longer would have to acquire surplus agricultural commodities in price-supporting operations. This would end the surplus problem.

Lowering prices is not a method of increasing the demand for agricultural products in the technical sense. However, there are two reasons for including this approach. First, some people maintain that food consumption is responsive enough to price to increase farm incomes after a fall in price. Second, to the farmer it makes little difference whether more farm products are sold because of increased consumer demand or because the government subsidizes retail food prices while maintaining farm prices at some specified level. In either case the effect on the farmer is the same—an increase in the quantity demanded at a given farm price.

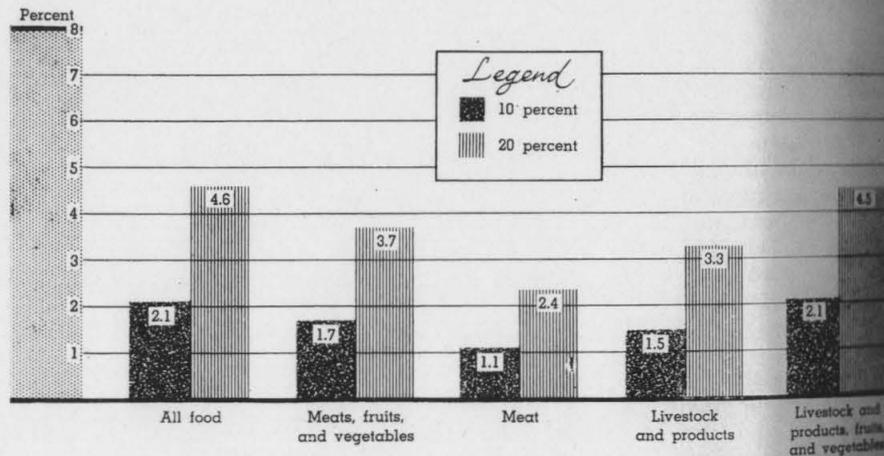


Fig. 4. Estimated percentage change in total food consumption associated with price declines of 10 and 20 percent for all food and selected food groups

The idea of subsidizing rather than supporting farm prices has attracted much attention in the postwar period. It is felt that, with the same amount of government expenditures as under the present price-support program, more food could be purchased at lower prices while farm incomes are protected. Further, this approach would eliminate the discrimination against nonstorable commodities and some of the rigidities imposed on resource allocation by production controls.

Estimated changes in total food consumption that would result from price declines of 10 and 20 percent for all food and selected food groups are presented in figure 4. Declines in the price of all foods result in the highest increase in total food consumption. In general, sizeable price declines are required to achieve moderate increases. For example, a 20-percent decline in retail prices of all foods results in only a 4.6-percent increase in consumption.

An Indemnity Price Program

A specific program to achieve the desired food price declines at retail is the Indemnity Price Program. It would operate at the wholesale level of food

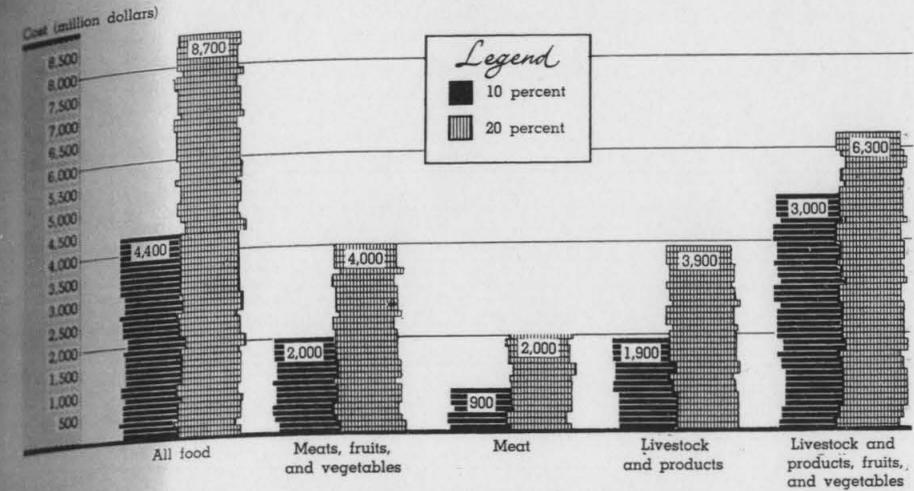


Fig. 5. Cost of the Indemnity Price Program with price declines of 10 and 20 percent for all food and selected food groups

distribution. Wholesalers would be required to reduce the prices of foods they sell by an amount dependent on the size of the marketing margin between the wholesale and retail level for each commodity. For example, if the wholesale price is 50 cents per unit and the retail price is \$1 per unit, the wholesale price would have to be reduced to 40 cents to achieve a retail price of 90 cents. In this example, the wholesale price must be reduced by 20 percent to achieve a 10-percent decline in retail price. Wholesalers would receive an indemnity payment for their loss of revenue. The value of the indemnity payment equals the volume of sales of the product times the amount by which price has been reduced.

Operation of the program would be administratively complex. For example, differences in commodity grades, varying degrees of processing, and the general problem of deciding what is the wholesale level for each commodity must be considered. These may not be easy problems to solve.

Unlike the income approach, the potential changes in food consumption under various price declines would

equal the actual changes obtained. Price declines apply to all consumers and, therefore, there would be no non-participation. Anyone that purchased food would benefit. Thus, the potentials presented in figure 4 also apply to the Indemnity Price Program.

The cost of achieving these increases in food consumption are presented in figure 5. Costs range from \$8,700 million for a 20-percent decline in the price of all foods to \$900 million for a 10-percent decline in the price of meats. The larger the price decline, the greater the cost of operation; the more commodities whose prices are subsidized, the higher the cost.

NUTRITION APPROACH

Under the income or price approaches, nutritional shortages would probably persist for a sizeable portion of the population. A family with a high income may not have a good or adequate diet with regard to the essential nutrients. For some nutrients (calcium is a notable example), the percentage of high income families with shortages is nearly as high as in low income groups.

Those who stress nutritional adequacy for everyone as a goal for society are inclined to believe that this approach is better than the income or price approaches. They argue that this approach is more inclusive because all income groups have families with some nutritional shortages. Moreover, nutritional shortages are a question of inadequate education as well as inadequate purchasing power. Therefore, the price and income approaches will result in only modest diet improvements. With the nutrition approach, however, it is believed that the surplus problem will be alleviated and the health of the population improved.

An important problem in determining food consumption potentials under the nutrition approach lies in selecting the combination of food groups that satisfy the defined nutritional requirements. Many different foods and combinations of food could be used. For example, an adequate diet may be constructed out of five low cost food items—wheat flour, lard, cheese, cabbage, and carrots. But few people would be satisfied with it. Or, it could be constructed out of hundreds of items including the most expensive cuts of meat and out-of-season fruits and vegetables. But few people could afford it. Diet plans must satisfy nutritional requirements, be acceptable to consumers in terms of their established tastes and preferences, and be economical.

The USDA prepares diet plans at three levels of cost: low, moderate, and liberal. The plans are for nutritionally adequate diets at cost levels consistent with food expenditures and with the kinds of food normally eaten by low, middle, and moderately high income classes.

Estimates of potential changes in total U. S. food consumption under the nutrition approach are presented in figure 6. If **everyone** ate the type and quantities of food specified in the low cost diet plan, total food consumption would **decline** by 21.8 percent. This decline represents a major shift by most

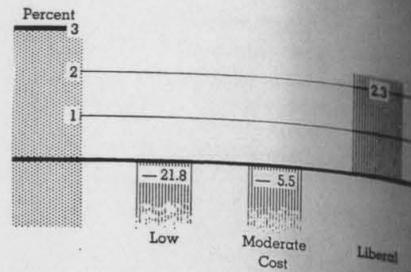


Fig. 6. Percentage change in total U. S. food consumption resulting from nutritionally adequate diets at selected cost levels

consumers from livestock products to grain products, potatoes, and dry beans and peas. Most consumers would not adopt this diet plan in the name of good nutrition.

Under the moderate cost plan total food consumption would **decline** by 5.5 percent. This decline would result primarily from an adjustment of excess calories rather than a downgrading of the diet to meet nutritional standards. The increase in food consumption under the liberal cost diet plan is 2.3 percent. This reflects a shift to higher-resource-using foods. The increase is small when considering that everyone would have a fairly expensive diet.

Nutrition Programs

The nutrition approach to demand expansion, in terms of programs, is less specific than the price or income approach. In either the income or price approach there is only one major constraint to increased food consumption— income or food prices. However, in the nutrition approach there are several constraints besides income or purchasing power. They are: (1) the lack of desire among consumers to have a nutritionally adequate diet, (2) the lack of knowledge about the extent of nutritional shortages, and (3) the variety of tastes and preference patterns for food. It is very difficult, if not impossible, to conceive a single nutrition program that would include all, or even a

major part, of the many dimensions of good nutrition.

The nutrition approach can be divided into two parts—educational and institutional. The educational approach involves research and consumer education on food and nutrition. Continued research is needed to better determine the role that nutrients play in human growth and development, the quantities needed by individuals, and the foods from which they can be obtained. Nutrition is a relatively young discipline and nutritionists have, by no means, uncovered all the unknowns.

Consumer education efforts should be directed at two groups. First, some individuals desire a nutritionally adequate diet but do not know what to eat. Second, some people are not aware of the importance of good nutrition, so the desire for good nutrition must be created. However, this education does not necessarily lead to increased food consumption. People can eat nutritionally adequate diets without increasing their food expenditures. Because this report is concerned with demand expansion programs, nutrition education programs are not examined.

The institutional approach involves service programs to insure nutritional adequacy in consumer diets. Included are the School Lunch Program and feeding programs in other public institutions and industrial plants. The establishment of quality standards and en-

richment of foods and feeding programs are institutional measures directed at improving human nutrition. The two institutional nutrition programs examined are the School Lunch Program and the Special Milk Program.

The nutrition objectives of the School Lunch Program are twofold: (1) to provide children with meals in school that establish some minimum nutrient standard in their diets, and (2) to make children aware of the importance of good nutrition so that as adults they will attempt to obtain adequate nutrient levels for themselves and their children. If all schoolchildren not now participating in the School Lunch Program participated, total food consumption would be increased by about 0.6 percent at a cost of \$89 million. However, this **does not** represent a **net increase**. Many of the new participants would merely substitute lunch eaten in school for lunch formerly eaten elsewhere.

Under the Special Milk Program, schoolchildren daily receive free, or at nominal cost, fresh milk in their schools. The nutritive importance of milk, particularly for children, is widely recognized. If all schoolchildren not now participating in the Special Milk Program participated, total milk consumption would be increased by about 1 billion pounds at a cost of about \$92 million.



Farm Resource Use

How far would demand expansion proposals go toward eliminating the current surplus problem? Meaningful answers may be found by comparing estimates of the total surplus resources in agriculture with demand expansion

potentials expressed in terms of farm resource use. Therefore, food consumption changes must be expressed in terms of farm resources (the amounts of farm land, labor, and capital) needed to produce the additional food.

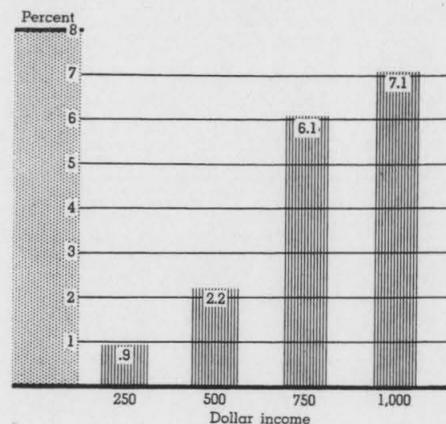


Fig. 7. Percentage change in total farm resource use when subsidizing for food all families with incomes per person under a certain level

Surplus resources in agriculture are those employed in production of food and fiber in excess of domestic and foreign needs at current prices. In other words, they are used to produce commodities that are added to government stocks and/or are removed from market channels by other special government programs.

If demand expansion proposals are to successfully absorb all the excess resources in U. S. agriculture, domestic food consumption expressed in farm resource terms must increase by at least 8 percent. Thus, in the following discussion, increases in resource use under demand expansion (farm resources reflected in increased domestic food consumption) are compared against the surplus relieving goal of 8 percent.

POSSIBILITIES OF REDUCING THE SURPLUS

Through the Income Approach

The estimates of food potentials, where the income restriction is eased, yield hope for the complete elimination of surpluses only at the higher levels of subsidy. Changes in farm resource

use required by each consumption potential as per capita incomes are raised are presented in figure 7. These changes parallel closely the changes in the quantity of all food purchased. Significant increases in farm resource requirements do not occur until per capita incomes are raised to \$750 or \$1,000.

At the \$1,000 level, total food consumption would increase by 7.3 percent and farm resource use by 7.1 percent. When viewed against the 8.0 percent estimate, this would almost solve the problem. But, a policy designed to operate at this high level probably is not politically feasible. Such an operation would involve food consumption subsidies for half the people in the United States.

However, a partial solution of the surplus problem is available through this approach. Furthermore, the adoption of a policy to increase food consumption for low income families may be partially justified on welfare considerations because nutrition among participants is also improved.

Changes in resource use for several levels of operation of the Food Allotment Program are presented in figure 8.

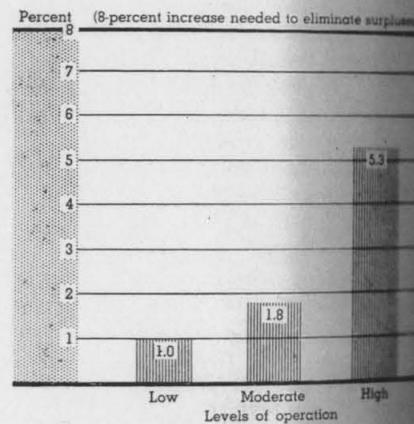


Fig. 8. Percentage change in farm resource use for the Food Allotment Program under various levels of operation with 75 percent participation

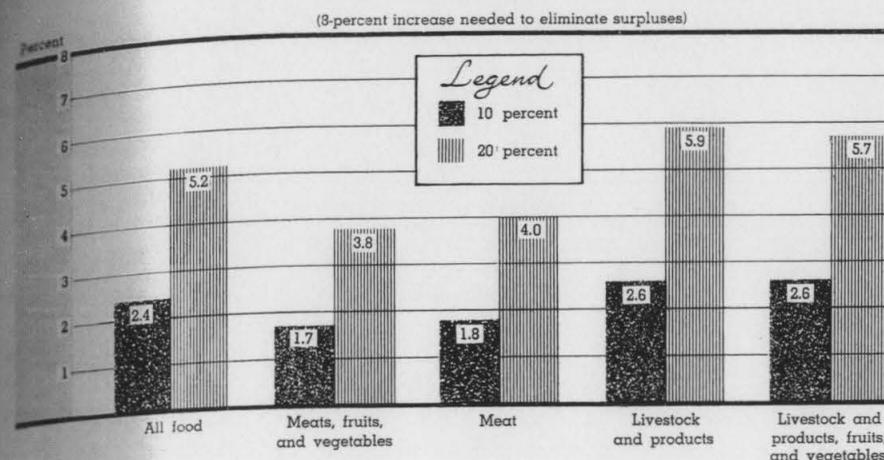


Fig. 9. Percentage change in farm resource use with price declines of 10 and 20 percent for all food and selected food groups

Even at the high level of operation, resource use increases by only 5.3 percent—short of the increase required to eliminate surpluses.

Through the Price Approach

The estimates of food consumption potentials when retail food prices are reduced suggest relatively large reductions in surpluses through this approach.

Changes in resource use required by each consumption potential as prices are lowered by 10 and 20 percent are presented in figure 9. The largest increase in farm resource use, 5.9 percent, occurs when the retail prices of all livestock and livestock products are reduced 20 percent. The adjustments in consumption brought about by this reduction entail large shifts in farm resources out of food grains and nonfood products into the production of livestock products. Further, the costs of implementing a program such as the Indemnity Price Program to achieve such price reduction at retail, while maintaining farm prices, is perhaps as great as for the highest level of subsidy under the income approach.

Through the Nutrition Approach

Changes in resource use required as actual food consumption patterns are adjusted to the recommended diet plans are presented in figure 10. A 21.6-percent decrease in resource use results from the realization of the low cost diet plan. However, a large number of

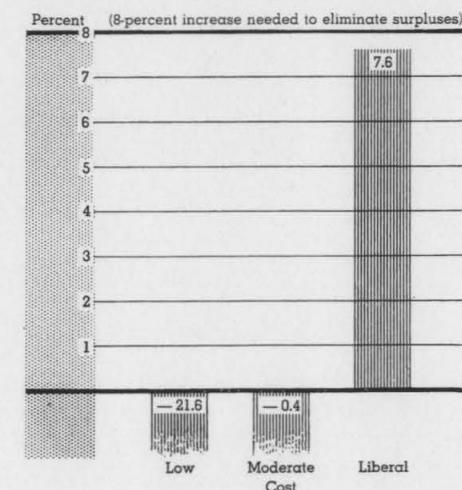


Fig. 10. Percentage change in farm resource use resulting from nutritionally adequate diets at selected cost levels

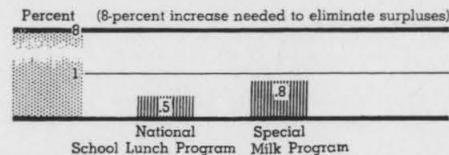
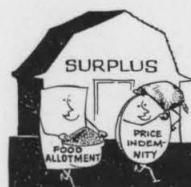


Fig. 11. Percentage change in farm resource use for the National School Lunch and Special Milk Programs

consumers now eating more livestock and products, fruits, and vegetables than dictated by the plan would not make the downward adjustment required. Thus, the change in total resource use is not very meaningful. The net consumption adjustment to the moderate cost diet plan yields a 0.4-percent decline in resource use. This



Comparison of Program Costs

The costs of obtaining a given increase in farm resource use are important. None of the proposed programs will completely eliminate surplus resources in agriculture, but they may serve in complimentary roles with other programs. Nevertheless, it must be determined which programs are most efficient; that is, which result in the largest increases in farm resource use per dollar of program expenditure.

The costs of achieving a 1-percent increase in resource use under different levels of operation and price reductions for the Food Allotment and the Indemnity Price Program are presented in tables 1 and 2. The Food Allotment Program operating at the high and low levels and a price reduction of 10 and 20 percent for meat compare favorably on a cost basis—about \$500 million per

Table 1. Efficiency of the Food Allotment Program in increasing total farm resource use, United States, 1955

Level of Program operation	Total Program cost	Percent change in total resource use	Average cost per
			1-percent change in total resource use
	million dollars	percent	million dollars
High	2,964	5.3	559
Moderate	1,414	1.8	786
Low	537	1.0	537

1-percent increase in total resource use. Most other price declines would cost over \$1 billion per 1-percent increase in resource use.

decline results primarily from the reduction in total calories. A liberal cost diet plan would increase resource use 7.6 percent—almost sufficient to utilize surplus resources. The consumption adjustments at this level, however, would probably be unacceptable. It means achieving the goal of nutritional adequacy at a high level of cost; it means programming to achieve nutritional adequacy by substituting costly diets for cheaper but equally adequate diets.

Changes in resource use that result from expanded operation of the School Lunch and Special Milk Programs are very small—0.5 and 0.8 percent, respectively (see figure 11). Moreover, these do not represent net increases in resource use because the food consumption potentials are not net increases.



Acceptable Levels of Operation

It is difficult to determine the maximum level of expenditures on demand expansion programs that would be acceptable to Congress. After considering the modest effect demand expansion programs can have on increasing food consumption, it is the author's judgment that this level is about \$1 billion. This figure includes the \$175 million currently allotted to the National School Lunch and Special Milk Programs and the \$200 million annual expenditure on the Direct Distribution Program, as well as expenditures on

new or expansion of existing programs. However, many of the functions of the Direct Distribution Program might be absorbed by new programs and the funds reallocated to the new programs.

If all schools not now participating in the National School Lunch and Special Milk Programs were included, the increased Federal contributions would be \$60 million to the National School Lunch Program and \$33 million to the Special Milk Program. A total expenditure of \$268 million would cover virtually all the Nation's schoolchildren of precollege age.

Operation of the Food Allotment Program at the low level would cost about \$550 million. About 10 percent of the total U.S. population would be involved. At the moderate level, total program costs would be approximately \$1,500 million and involve about 15 percent of the total population. However, with a maximum of \$1 billion for demand expansion expenditures, the moderate level is not feasible.

The Indemnity Price Program is the least desirable for achieving the objectives of demand expansion. Of all the food price declines examined, only a 10-percent reduction in the price of meat would not exceed the maximum expenditure level assumed. It would be slightly over \$900 million.

Expansion of the National School Lunch and Special Milk Programs combined with operation of the Food Allotment Program at the low level gives a maximum possible increase in total farm resource use of 2.3 percent; 1.3 percent would come from the former program and 1.0 percent from the latter. The maximum total cost of achieving this increase is slightly under \$650 million. When the current level of expen-

Table 2. Efficiency of price declines for all food and various food groups in increasing total farm resource use under the Indemnity Price Program.

Price decline	Total Program cost	Percent change in total resource use	Cost per
			percent change in total resource use
	million dollars	percent	million dollars
Of 10 percent for:			
All food	4,362	2.4	1,818
Meat, fruits, and vegetables	1,954	1.7	1,149
Meat	939	1.8	522
All livestock and products	1,950	2.6	750
Livestock and products, fruits, and vegetables	3,011	2.6	1,158
Of 20 percent for:			
All food	8,735	5.2	1,680
Meat, fruits, and vegetables	3,998	3.8	1,052
Meat	1,974	4.0	494
All livestock and products	3,906	5.9	662
Livestock and products, fruits, and vegetables	6,323	5.7	1,109

ditures on the National School Lunch and Special Milk Programs are included, the total cost of demand expansion efforts is about \$825 million. The combination of expanded operation of the two nutrition programs and a 10-percent decline in the price of meats

(the least expensive price reduction proposed) gives an increase in total resource use of 3.1 percent at a cost of about \$1,000 million. When current expenditures on the two nutrition programs are included, total costs are about \$1,175 million.

Summary

Demand expansion programs could partially eliminate surplus agricultural production and improve human nutrition. However, total food consumption is highly unresponsive to changes in price and income. Large variations are needed to achieve a small change in total food consumption. Reasonable levels of expenditure on proposals to: (1) subsidize food consumption of low income groups, (2) lower food prices, or (3) provide better nutrition could reduce annual agricultural surpluses by approximately one-fourth or possibly one-third.

Proposals for subsidizing food consumption of low income groups would increase total food consumption and attack nutritional shortages. Estimates regarding a specific income subsidy program—a Food Allotment Program—indicate that even at low levels of operation it would cost about \$550 million to get a 1-percent increase in food consumption.

Lowering retail food prices without reducing farm incomes is an even less effective approach to elimination of surpluses. Even if all retail food prices declined 20 percent, consumption would increase only 4.6 percent. And, such price programs are administratively complex and expensive. Moreover, such

a program contains no direct attack on nutritional shortages.

Proposals emphasizing good nutrition for everyone could result in decreases in total food consumption. However, such results are very improbable. Two current programs for better nutrition, the National School Lunch and Special Milk Programs, could be expanded. They directly attack the problem of nutritional shortages and, moreover, operate with the group that can benefit most—the Nation's elementary and secondary schoolchildren. However, expansion of these programs would not greatly increase total food consumption.

The people of the United States, in general, are well fed. Improving consumer diets through increasing food consumption will not result in even moderate increases in total food consumption. However, welfare considerations may be of equal or greater importance than elimination of surpluses. Demand expansion proposals simultaneously attack both problem areas. Therefore, the extent to which demand expansion efforts can reduce the agricultural surplus mainly depends on how seriously the public views the problem of nutritional shortages and the amount it is willing to spend to remedy this problem.

A complete discussion of the research procedures and results summarized in this bulletin is contained in: *Policies for Expanding the Demand for Farm Food Products in the United States: Part I. History and Potentials and Part II. Programs and Results*, Univ. of Minn. Tech. Bul. 231 and 238, respectively.

Alternative Dairy Chore Systems in Loose Housing

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in cooperation with

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