# Appraising Longer-Run Demand Prospects for Farm Products

*By Rex F. Daly*

In analyzing long-term growth in demand, we have no economic forecasting techniques that are highly accurate, or to which usual probability error limits can be applied. Long-run appraisals are not presented as unconditional predictions of the future; they are at best projections made in a framework of assumptions. Such appraisals must be concerned not only with current relationships but with possible changes in these relationships over time. The influence of prices and incomes on consumption probably varies over time with changes in real income, popular changes in "taste," technological developments, and nutritional findings as they are reflected in changes in modes of living.

Methodology used in making longer-run appraisals must be partly historical insofar as past relationships and trends in economic, social, and political conditions provide a basis for appraising the future. Stability of growth rates and the general consistency of consumer behavior patterns supplemented by many very good empirical analyses of economic relationships provide much of the basis for an appraisal of prospective growth in demand for farm products.

## MAJOR ASSUMPTIONS

With this general perspective, let us specify some of the major assumptions frequently employed in analyzing the longer-run demand for farm products.

1. Population will continue to grow, rising to possibly 210 to 220 million people by 1975.

2. The labor force will reflect recent rapid population growth which will rise fairly rapidly during the sixties and early seventies. A high level of employment is assumed with a continued decline in the number of hours worked per week.

3. Productivity of the labor force will increase much as in the past reflecting continued technological development and use of more capital per worker.

4. Prices in general are assumed at 1953 levels both for agriculture and for the economy as a whole.

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5. A trend toward world peace is assumed with the proportion of the nation's output devoted to national defense becoming smaller though still relatively large for peacetime.

6. The drive to improve levels of consumption and living in general will continue.

### POPULATION GROWTH TO CONTINUE

Expansion in demand for farm products depends primarily on population growth and the effect of consumer income and "taste" changes on consumption. With rising incomes, population growth provides not only a major impetus to demand but is the primary determinant of growth in the labor force. The population of the United States in mid-1955 was estimated at more than 165 million people, some 30 percent more than in 1935, two decades earlier. Census Bureau projections for 1975 range from about 207 million to more than 228 million. The mid-point of this range, nearly 218 million, is about 32 percent above the figure for 1955. High birth rates in recent years are expected to result in a substantial rise in births from 1965 to 1975 if current fertility rates hold. By 1975 the number of women 20 to 34 years of age may total 45 percent above 1955. Thus, a fairly rapid population growth appears highly probable for the next two decades (Figure 1).
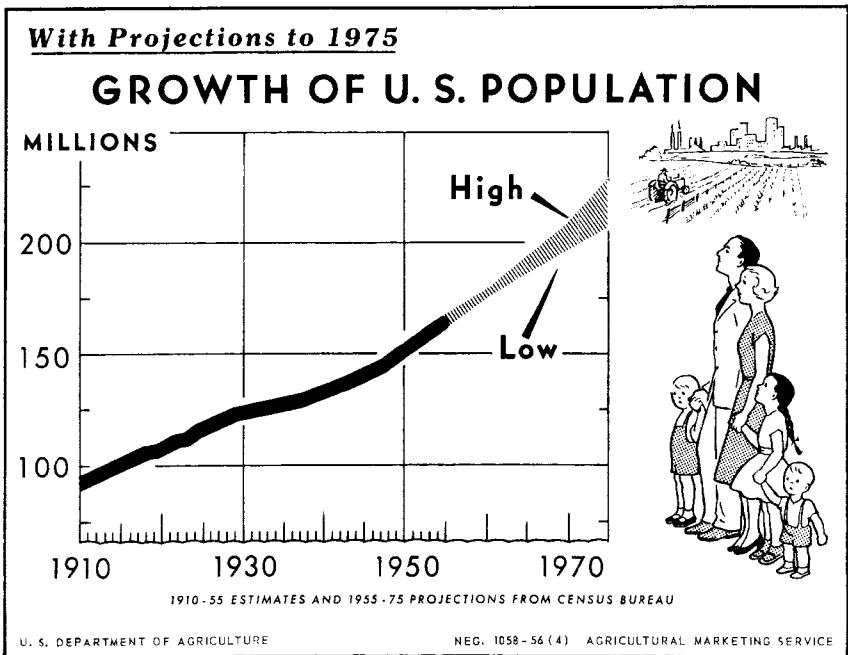


*With Projections to 1975*

# GROWTH OF U. S. POPULATION

MILLIONS

High

Low

200

150

100

1910    1930    1950    1970

1910-55 ESTIMATES AND 1955-75 PROJECTIONS FROM CENSUS BUREAU

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FIGURE 1

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Most detailed projections in this report are based on a population of 210 million in 1975. However, some projected aggregates were adjusted to reflect a population of 220 million. These two levels represent a gain of around 30 to 35 percent from 1953, the base year for most of these projections. A population of about 179 million projected for 1960 is about a tenth above 1953.

## AN ECONOMY TWICE AS LARGE BY 1975

The size of the nation's economy by 1975 may be about double that of the base year 1953, if employment levels are well maintained. Growth in the economy will depend on expansion in demand as well as on expansion of output. In an economy as productive and vigorous as the United States, the population upsurge provides a major impetus to economic growth. Recent trends in productivity and prospective growth in the labor force indicate that a doubling in the potential output of the economy in the next quarter century is highly possible for an expanding peacetime economy. The gross national product, adjusted for price level change, a little more than doubled in the approximate quarter century from 1929 to 1953.

A labor force of around 72 million workers by 1960 and between 90 and 95 million by 1975 is indicated on the basis of population growth and trends in labor force participation rates by sex and major age groups. The labor force in 1955 totaled 68.9 million including armed forces. The increase projected to 1975 represents a growth rate of around 1.4 percent per year, somewhat more rapid than the rise since 1929. These trends reflect not only recent high birth rates but also the tendency for more schooling in the lower age groups, earlier retirement in the older age groups, and a pronounced increase in the number of women who work. In a growing peacetime economy the long-run downtrend in the length of the work week is likely to continue, reflecting expanding productivity and the desire for more leisure time. Although employment was assumed at a high level in these projections, this does not rule out the probability of fluctuations in economic activity in coming years. However, depressions as severe as that of the 1930's are not considered likely.

Output per man-hour for all workers including those in government, the armed forces, and civilian services is projected to trend upward at a rate of about 2.5 percent per year. With fewer hours worked, the output per man would rise less rapidly, possibly at an annual rate of less than 2 percent. Rising productivity reflects the ability, training, and general efficiency of labor, as well as the amount

and efficiency of capital and other resources used in production. Although the projected rise is consistent with long-run trends, it may be conservative in view of the rapid growth in capital, recent developments in automation, and possible new sources of power (Figure 2).

## PROJECTED TRENDS IN ECONOMIC GROWTH

% OF 1929

- Gross national product
- Output per man-hour
- Employment
- Hours worked per week

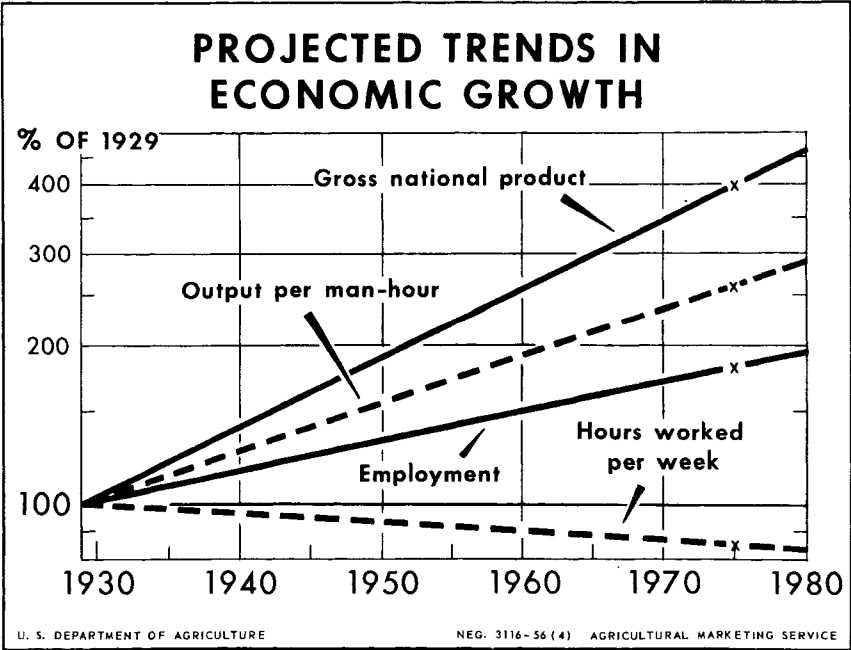| 400 | 300 | 200 | 100 |
| 1930 | 1940 | 1950 | 1960 | 1970 | 1980 |

FIGURE 2

Output of goods and services, under employment and productivity assumptions projected above, would rise at the rate of about 3 to 3.5 percent a year. An annual growth rate of 3.5 percent would nearly double output in two decades. In terms of 1953 prices, the gross national product for 1975, in this framework, would rise to around 725 to 750 billion dollars. The output could easily exceed projected levels, especially for 1960, if demand increases continue to exert pressure on the economy as in recent years. But somewhat higher levels of output and real income would not materially change total demand for farm products.

A doubling of the total output of the economy with the associated gain in employment would lead to an increase in per capita real income of around 60 percent from 1953 to 1975; the projected rise for 1960 is 10 to 15 percent. Such an increase would expand the demand for all goods and services, including food, clothing, tobacco, and other products made from farm commodities.

Rising incomes are likely to result in a relatively small expansion in per capita demand for all farm products. Much of the shift among commodities will be offsetting, but rising incomes will "upgrade the diet." Changes in consumption will also reflect variations in relative prices. The effect of trends in popular consumption habits, nutritional findings, and other developments may be in part independent of price and income changes.

Although foreign demand for farm products is small compared with total demand, the foreign market will continue to be important for such commodities as wheat, rice, cotton, tobacco, and oils.

## Price Effects on Consumption

Consumption of farm products as a whole varies little in response to either price or income changes. Analyses of food consumption per capita relative to retail food prices and per capita income suggest a price elasticity of demand of around -0.25; a 10 percent increase in price would tend to reduce per capita use by about 2.5 percent. Although empirical measurements vary, most of them show per capita use to be inflexible (very inelastic) in response to changes in price.

Moreover, consumption may become somewhat less responsive to price changes as the economy grows.

## Rising Incomes and Consumption

The response of consumption to changes in income — the income elasticity of demand — is positive but also small for farm products as a whole. And for some commodities, consumption tends to decline as incomes rise. In a growing economy these manifestations of consumer behavior are important factors influencing future trends in consumption of farm products.

## Retail Expenditures and the Farm Share

Domestic demand for farm products depends primarily on retail purchase of such products as food, clothing, tobacco, and other products of the farm. But expenditures at retail are for much more than farm products as such. They include all the processing, transportation, marketing, and other services of getting farm products into the hands of the ultimate consumer. Of retail expenditures for all farm products, the farm share may be only around a third; a somewhat larger share of retail expenditures for food (currently about 40 percent) goes to the farmer.

During recent years consumer outlays for food at retail stores and restaurants have increased about in proportion to income. That is, a 10 percent increase in income was associated with about a 10 percent increase in expenditures for food, an income elasticity of 1.0. But expenditures for "eating out" or for highly processed food such as "TV dinners" involve many services. Though these outlays are highly responsive to income changes, they may have little effect on demand for farm products at the farm level.

The above elasticities are based on current dollar data; the same relationships based on "real constant dollar" expenditures and incomes are much smaller. The flexibility of retail expenditures for food relative to income (both in real constant dollar terms) is estimated in a recent analysis at about 0.4. A similar relationship for the margin which includes marketing and processing services shows an income elasticity of over 0.7. And at the farm level, the income elasticity of deflated farm value (an approximation of quantity) is only 0.15. A weighted average of the margin and farm share elasticities approximates the above income elasticity of expenditures (in real terms) at the retail level. Demand for services of getting farm products to final users appears to be about five times as responsive to income as is the demand for farm products. A report on the 1948 food consumption survey made by USDA confirms to some extent the above elasticities. It shows an income elasticity of total expenditures for food of 0.39, while the elasticity of expenditures for food away from home is estimated at 0.9.[1] These expenditure data, based on a survey of expenditure patterns at a given time, also do not reflect price variations.

**Volume per Capita Changes Little but More Resources Used**

Consumer purchase studies, based on a cross-section survey of family expenditures relative to income indicate that quantities of food consumed per person change little as incomes rise. Actual pounds of food consumed per capita has remained fairly constant over the years and, if anything, has tended slightly downward as physical activity was reduced and more people became weight conscious. An estimate of retail weight in pounds expressed in an index shows recent consumption slightly below the 1925-29 average and the 1910-14 average. Since domestic food use generally represents about 75 to 80 percent of farm production, we should not expect substantial changes in the per capita volume of farm products used (Figure 3).

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[1] Faith Clark, et al. "Food Consumption of Urban Families in the United States," Agriculture Information Bulletin No. 132, U. S. Department of Agriculture, October 1954, p. 39.
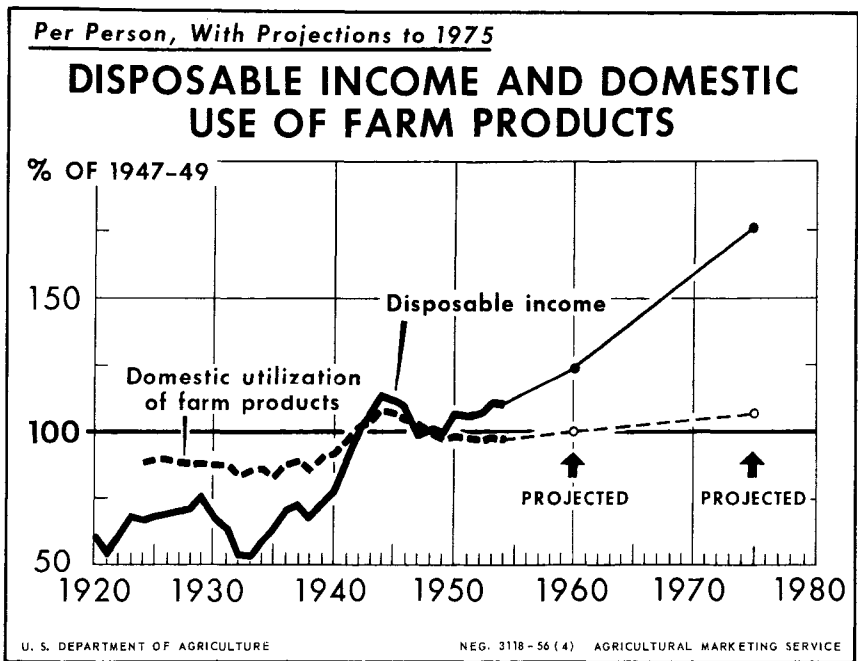
Per Person, With Projections to 1975

## DISPOSABLE INCOME AND DOMESTIC USE OF FARM PRODUCTS

% OF 1947-49

Disposable income

Domestic utilization of farm products

PROJECTED     PROJECTED

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FIGURE 3

Despite the "narrow capacity of the human stomach," however, an upgrading of the diet requires more resources. Thus, the more widely used Agricultural Marketing Service retail price weighted index in 1951-55 averaged about 16 percent above the 1910-14 average. This rise reflects the shift to such high unit-cost commodities as livestock products and fruits and vegetables and away from lower-cost cereals and potatoes.

### Income Elasticity at Farm Level

Most statistical analyses which use the Agricultural Marketing Service price weighted consumption index, indicate an income elasticity of 0.25. That is, a 10 percent increase in real income per capita is associated with a rise of about 2.5 percent in per capita consumption of food. But if this is a reasonable estimate based on the AMS per capita consumption index, then the elasticity is too large as a measure of the income effect at the farm level. Most of the items included in the AMS index reflect some processing: Meat is in terms of carcass weight and poultry is dressed, most of the dairy products and the oils are processed, many of the fruits and vegetables are canned or frozen, and cereals and sugar are in processed form.

Projected requirements in this study were expressed at the farm level, and a special index of supply and utilization was constructed, using prices received by farmers as weights. Requirements were worked back to the farm level by expressing, for example, meats in live weight of animals and fruits, vegetables, and cereals on a farm weight equivalent basis. This index would reflect the shift to highei unit value foods at the farm level but would not reflect the shift to frozen and processed food, for example. A comparison of the two per capita consumption indexes for major groups of farm products suggests a tendency for the AMS retail price weighted consumption indexes to increase more, relative to income, than the increase at the farm level. Differences appeared largest for grains and fruits which require considerable marketing and processing services. Projected requirements in the special farm price weighted index implied an income elasticity of about 0.15 for all farm products — somewhat less than 0.2 for livestock products and less than 0.1 for crops. The same detailed projections summarized in the regular AMS food consumption index implied an income elasticity a little above 0.2. This compares with around 0.25 reported in statistical analyses of time series data.

**Income Elasticity Over Time**

Another problem in longer-run appraisals is changes in relationships among variables as the economy grows. For example, do elasticities vary as average incomes rise in an advanced growing economy like the United States? We may be dismissing this problem too lightly. I know of no convincing theoretical or empirical proof that elasticities decline over time. Yet surveys of family budget expenditures by income level at a given time, some long-run trends, and some empirical analyses (Henry Schultz, for example) suggest a tendency for elasticities to decline at the higher income levels or as incomes rise over time. It does appear reasonable to expect that, as families move from lower to higher income levels, their consumption patterns reflect some of the behavior observed for higher income families. In making individual commodity projections in this study, elasticities used reflected to some extent the lower elasticities at the higher income levels.

The observed tendency for consumers to allocate a declining share of income to food and farm products in general does not necessarily imply a decline in income elasticity. Even if income elasticity is constant, proportionately less income would be spent for foods as "Engel's Law" specifies. In fact, the 1948 survey of expenditures for food indicates a fairly constant elasticity throughout the income range,

not only in total but also for most major commodities. If relative changes in expenditures for food are equal to relative changes in income (an income elasticity of 1.0), there is no change in the ratio of expenditures to income. But an income elasticity of expenditures of less than 1.0 will result in a declining share of income spent for food. The inelastic nature of the demand for farm products and the much greater elasticity of demand for many nonfarm products are the major economic forces leading to a "declining role" for agriculture in a growing economy.

## INCOME AND PRICE EFFECT ON INDIVIDUAL COMMODITIES

Although rising income may contribute to a relatively small increase in per capita use of farm products, it will influence the kinds of individual products consumers want. Big changes in relative prices also influence per capita use of individual commodities. Two important examples are citrus fruits and poultry products, prices of which have declined substantially more in recent decades than have prices of all farm products. And per capita demand for these products has increased materially in recent decades. However, in the case of potatoes, both relative prices and consumption have declined in recent decades; price elasticity of demand for potatoes is considered to be very inelastic.

### Income Elasticities

Consumption of most commodities rises in response to increases in income, but consumption of some declines. If we assume an overall elasticity of something less than 0.2 for farm products, the response of consumption to rising income was well above average for beef; chicken; tomatoes; most leafy, green, and yellow vegetables; citrus and many other fresh fruits; and frozen fruits and vegetables. Thus, the demand for these commodities is benefited most by economic growth. Commodities somewhat less responsive to income included, for example, pork, eggs, most dairy products, and many canned fruits and vegetables. Most analyses show that consumption of fats and oils changes very little in response to income. And, for such commodities as potatoes, flour and cereals, and dried beans and peas, consumption tends to decline as incomes rise. Thus, demand for.many of these commodities will decline as the economy grows over time unless population growth is rapid or unless foreign markets or other outlets are expanded.

Exact measurement of these tendencies — elasticities — is difficult especially where taste changes, nutritional developments, and factors

other than price and income strongly influence trends in consumption. Some empirical approximations of those elasticities based on consumer-purchase surveys, time series analyses, and judgment are presented in Table 1.

TABLE 1. INCOME ELASTICITIES ASSUMED AS A BASIS FOR PROJECTING PER CAPITA CONSUMPTION OF MAJOR FARM PRODUCTS[1]

| Major Crops | Income Elasticity | Major Livestock Products | Income Elasticity |
|---|---|---|---|
| Vegetables (farm weight equivalent) | | Meat | 0.25 |
| | | Beef | .40 |
| Tomatoes | 0.40 | Veal | [3] |
| Leafy, green, and yellow[2] | .25 | Lamb | [3] |
| Other vegetables[4] | .20 | Pork | .20 |
| All vegetables | .25 | Poultry products | |
| Melons and cantaloups[5] | —.40 | Chicken and turkey | .30 |
| Potatoes and sweet potatoes | —.25 | Eggs | .15 |
| Fruits | | Dairy products | |
| Apples | 0 | Total milk equivalent | .10 |
| Citrus | .65 | Fluid milk and cream | .12 |
| Other[7] | .13 | Fats and oils | .06 |
| All fruit | .32 | | |
| Other food crops | | | |
| Wheat and flour | —.20 | | |
| Dry beans and peas | —.20 | | |
| Sugar | —.07 | | |

[1] These elasticities were assumed on the basis of statistical evidence,. trend influences, and judgments relating to other factors. Thus, some elasticities are implied by projected consumption.

[2] This group includes cabbage, a major vegetable, which in the 1948 consumer purchase survey showed a negative income elasticity of about —0.2 and possibly some trend in per capita consumption.

[3] Per capita use of veal and lamb was determined by output of the dairy and sheep industry which was dependent on other factors.

[4] The "other group" contains onions, a major vegetable, and the 1948 study shows a negative elasticity of nearly —0.3.

[5] A gradual downtrend in consumption was assumed; the implied elasticity was not based on a statistical analysis.

[6] Apples may show some positive income effect but a slight downtrend in consumption.

[7] May depend largely on composition and proportion used as fresh, canned, or frozen.

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CONSUMPTION TRENDS

Many factors other than changes in prices and incomes influence trends in per capita consumption. The above-mentioned popular consumption habits, and nutritional findings, as well as fads will continue to influence trends in consumption. In addition, some products are supplied jointly (lamb and veal, for example), and per capita use of these commodities will depend to a considerable extent on demand for dairy products and wool. Supplies of chicken are partly a function of the demand for eggs. Supplies of some oils depend partly on the demand for meat, cotton, or possibly soybean meal. Technological developments which permit the production and marketing of frozen food surely have influenced the upsurge in consumption of many fruits and vegetables (Figure 4).
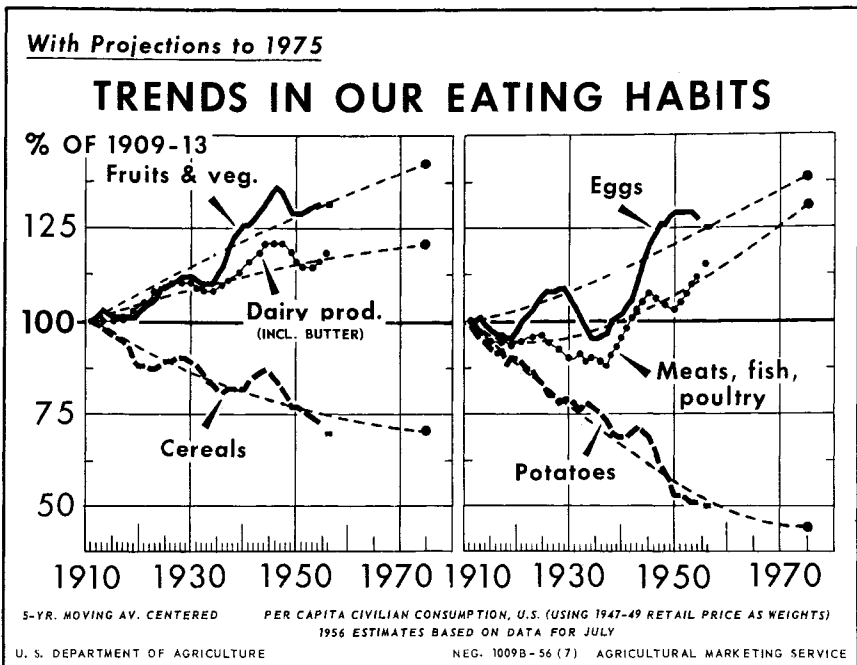


FIGURE 4

Per capita consumption of meat is projected to rise to 173 pounds by 1975. This gain of about 20 pounds from 1953 reflects the rise in real income as well as an adjustment in cattle prices of about 12 percent from the relatively low 1953 level and hog prices about a fifth below the relatively high 1953 levels. Trends for dairy and poultry products and fats and oils are shown in Table 2.

A major part of the demand for crops is derived directly from

TABLE 2. PER CAPITA CONSUMPTION OF MAJOR FARM PRODUCTS, SELECTED PERIODS 1925 TO 1955 AND PROJECTIONS FOR 1960 AND 1975

| Commodity | 1925-29 | 1953 | 1955 | Projections 1960 | Projections 1975 |
|---|---|---|---|---|---|
| | Pounds | Pounds | Pounds | Pounds | Pounds |
| Meat (carcass weight) | 133.3 | 153.7 | 161.2 | 156.0 | 173.0 |
| Poultry (eviscerated weight) | n.a. | 27.1 | 25.9 | 28.5 | 32.2 |
| Eggs (number) | 330 | 374 | 366 | 380 | 403 |
| Milk, total (fat solid basis) | 798 | 682 | 700 | 698 | 720 |
| Fats and oils, food (fat content) | n.a. | 43.5 | 45.0 | 44.7 | 45.5 |
| Fruits (farm weight equivalent) | 180.3 | 198.5 | 199.1 | 215.0 | 237.0 |
| Vegetables (farm weight equivalent) | 149.6 | 207.3 | 207.1 | 214.0 | 240.0 |
| Potatoes | 144.0 | 102.0 | 101.0 | 98.0 | 85.0 |
| Wheat (grain equivalent) | 254.0 | 179.0 | 172.0 | 175.0 | 160.0 |
| Sugar, cane and beet | 101.0 | 96.5 | 96.3 | 95.0 | 93.0 |

the demand for livestock products as reflected in use of feed. In most years about 40 to 50 percent of total crop production is used for feed; food use may range from 25 to 30 percent; the remainder, in order of importance, goes into nonfood use, exports, and seed.

Feed supplies come primarily from the four major feed grains (corn, oats, barley, and grain sorghums) and from hay and pasture. But some wheat, rye, and several other crops are used for feed. Mill by-product feeds, oilseed cake and meal, and proteins also provide an important part of feed concentrate supplies.

For feeds that are essentially a by-product, supplies are determined largely by projected demand for major uses; cottonseed meal production, for example, will depend on output of cotton; mill feeds on quantities of grains milled. Supplies of by-product feeds and projected total demand for feed based on livestock production fix the requirements for major feed grains.

Per capita use of crops for food reflects pretty largely the estimated income effect on consumption, that is, increases for citrus, tomatoes, and most other fruits and vegetables and declines in per capita use for potatoes and grain products.

## Nonfood Uses

Nonfood use of such commodities as cotton, wool, tobacco, some oils, and grains for industrial uses probably total, in most years, around 12 to 14 percent of farm production. Combined per capita use of these products is projected to rise somewhat less than a tenth from 1953 to 1975 (Table 3).

TABLE 3. PER CAPITA NONFOOD USE OF MAJOR FARM PRODUCTS, SELECTED PERIODS 1925 TO 1955 AND PROJECTIONS FOR 1960 AND 1975

| Commodity | 1925-29 | 1953 | 1955 | Projections 1960 | Projections 1975 |
|---|---|---|---|---|---|
| | Pounds | Pounds | Pounds | Pounds | Pounds |
| Nonfood fats and oils | n.a. | 21.2 | 20.1 | 21.0 | 20.5 |
| Cotton | 27.7 | 27.9 | 26.5 | 30.0 | 32.0 |
| Wool, apparel | 2.1 | 2.2 | 1.7 | 1.8 | 1.8 |
| Tobacco[1] | 9.0 | 12.9 | 12.2 | 13.8 | 15.4 |

[1] Unstemmed processing weight per person 15 years and over including armed forces overseas.

### FOREIGN DEMAND

Foreign markets probably will continue to take relatively large quantities of our production of cotton, grains, tobacco, and fats and oils. The volume of agricultural exports projected for 1975 is about a sixth above the relatively small exports in 1952-53 and somewhat below the large volume exported during the 1955-56 fiscal year, when large export programs were in effect.

### PROJECTED REQUIREMENTS FOR 1975

Population growth, domestic use per person, and foreign demand determine total requirements for farm products. In this study, appraisals were made in some detail for two levels of consumption. The lower projection of requirements is based on approximately current rates of consumption. This assumes a situation in which the economy fails to grow as rapidly as expected, with conditions unfavorable enough to hold per capita consumption at about current (1955) levels. Exports were assumed at 1953 rates for the lower level of requirements. On this basis, total utilization for 1975 would be nearly a third above 1953 with the increase for livestock products slightly in excess of that for crops.

Higher requirements projected in this study are based on per capita consumption of farm products by 1975 nearly a tenth above

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1953, reflecting an increase in real per capita income of about 60 percent and trends in popular consumption habits. A population of 210 million by 1975, about 30 percent above 1953, would increase total requirements by about 40 percent. If we assume recent higher population projections for 1975, a population of 220 million may be more reasonable. This would add proportionately about 5 percent to projected requirements. Utilization projected for 1975 as shown in Figure 5 is based on the higher projected consumption rates with the population for 1975 ranging from 210 to 220 million.
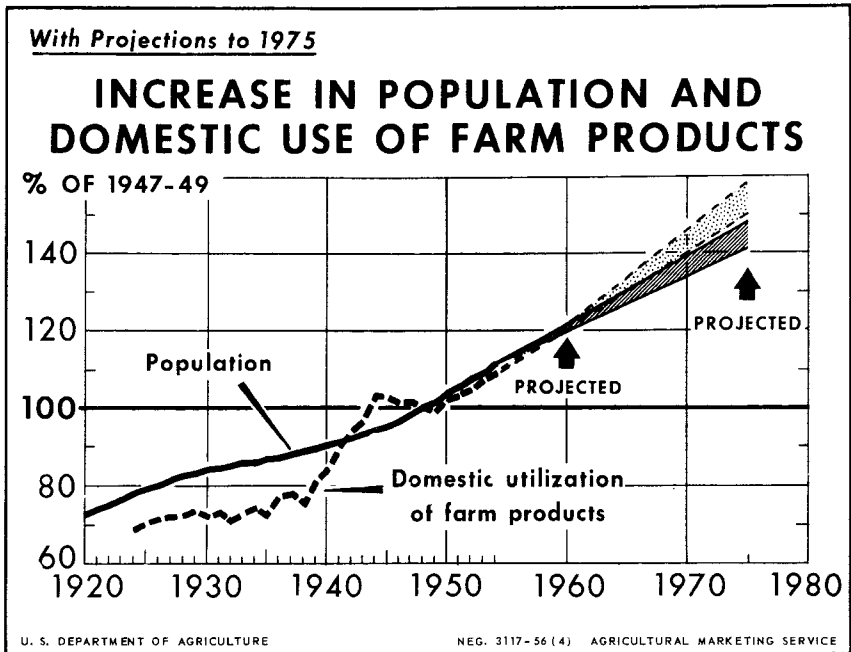


With Projections to 1975

## INCREASE IN POPULATION AND DOMESTIC USE OF FARM PRODUCTS

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FIGURE 5

**Livestock Products**

Projected requirements for meat animals based on 1955 consumption rates increase by about 30 percent from 1953 to 1975 and by nearly 45 percent under the higher projected per capita consumption rates.

Assuming little change in average weight of animals and about average death loss and calf crop, projected requirements for the higher consumption rates point to around 125 million head of cattle on farms by 1975. There were 94 million head on January 1, 1953. With a continued rise in milk output per cow, the required increase in number of cows milked may be small. The pig crop under the

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higher consumption rate would increase to around 130 million head from about 78 million in 1953. Chickens raised would increase under the higher consumption rates by more than a sixth, broilers by possibly 80 percent, and turkeys by around 50 percent from 1953 levels to meet expanded requirements in 1975. These projections assume a population of 210 million in 1975.

**Crops**

Use of crops is projected under the higher consumption rates to rise by about 36 percent from 1953 to 1975. If approximately current consumption rates are assumed, projected use of crops increases by about 30 percent from 1953 to 1975. Variation in requirements for individual crops and groups of crops, however, is considerable. Projected requirements for food grains and potatoes in general would change little from 1953. But the assumption of current rates of consumption increases requirements for these crops from 1953 to 1975 by more than if the lower projected consumption rates are used as a basis for calculating total requirements. Projected requirements by 1975 are up substantially for vegetables, citrus fruits, feed concentrates, cotton, and tobacco. The gains, however, assuming current consumption rates, reflect primarily the growth in population and are smaller than requirements based on the higher projected consumption rates.

Under the higher consumption rates, requirements for feed concentrates and hay are up about 40 percent from 1953 to 1975. This expansion may call for an increase of 40 to 45 percent for the major feed grains—corn, oats, barley, and sorghum grains. It should be pointed out, in this connection, that feed requirements assume feeding rates per livestock production unit around 1951-53 levels. Extensive new efficiencies in feeding may result in some decline in concentrates fed per livestock production unit and, thus, moderate the projected rise in feed requirements.

**Output Required to Meet Projected Demand**

Projected total requirements for domestic use and export would not require corresponding increases in output. Production rates in recent years have exceeded use and have resulted in substantial accumulations in stocks of wheat, rice, cotton, and feed grains. Total net stock build-up in 1953 was equal to about 6 percent of net farm output; the build-up of crop inventories was equal to about 8 percent of crop output. Although the rate of inventory accumulation

was slower in 1954 and 1955 than in 1953, production continued to exceed utilization.

With production running in excess of utilization, a projected increase of about 40 percent in requirements for domestic use and export, from 1953 to 1975, may require a rise of less than a third in total output of farm products. For livestock products the increase would exceed 40 percent, whereas a gain of about 25 percent is indicated for crop output. The lower level of requirements probably would require an increase of less than a fourth in total farm output; this would imply a rise of nearly a third for livestock products and possibly a fifth for crops.

### INTERMEDIATE PERIOD: REQUIREMENTS, SURPLUS STOCKS, AND OUTPUT

Some of the most pressing problems facing agriculture today revolve around the outlook for the next few years. The extent to which demand for farm products expands in coming years will be an important factor influencing programs that are designed to limit production and reduce excessive stocks of some farm products.

Requirements for farm products are expected to rise moderately in coming years due mostly to growth in population. Expansion in economic activity and a continued high level of employment will increase per capita demand for some farm products, but for farm products as a whole changes in per capita use will likely be relatively small.

### Total Requirements to Rise Moderately

Population growth of about 10 percent, a small rise in per capita use, and exports about the same as in 1952-53 would increase projected utilization of farm products by around 12 percent from 1953 to 1960. Requirements may increase by less than a tenth from 1955 to 1960. Although a wide variation is indicated for specific commodities, projected increases for both livestock products and crops approximate 12 percent. The increase for pork is much greater than for beef due to relatively small supplies of pork and large supplies of beef in the base year 1953. Among the crops, sizable increases are indicated for citrus fruits, some other fresh fruits, many fresh vegetables, tobacco, and cotton. Utilization of food grains and potatoes may change little.

Current trends suggest cattle numbers are at or near the top of their cycle. Projected requirements for 1960 suggest upward of 100 million head of cattle; there were 97.5 million head on January 1,

1956. Thus, supplies per person by 1960 may be smaller than the relatively large supplies in 1955. A total pig crop of around 105 million head is projected for 1960 compared with 95 million head in 1955. A moderate rise in requirements for dairy products is indicated. Projected requirements for poultry products, in total, increase more than an eighth from 1953 to 1960.

## Output Requirements and Surplus Stocks

An appraisal of output needed to meet projected utilization of farm products by 1960 requires some assumptions relative to accumulated stocks as well as probable production cycles. It is questionable whether a further increase in output will be needed to balance the projected increase in requirements for 1960. In 1953 output exceeded utilization by about 6 percent. By 1955 the net stock build-up approximated 2 to 3 percent of farm output, and this year production and use may be about in balance. Large surplus disposal programs, including stepped up export programs, have helped to reduce stock accumulations in recent years. During the past year the CCC has moved out more than 2.5 billion dollars worth of surplus farm products. Exports also picked up with government export programs financing more than a third of total exports. Such programs financed approximately 40 percent of agricultural exports in the first half of 1956.

Ignoring stocks for the moment, it is easy to see that, with output in 1953 about 6 percent above utilization, an increase in requirements of around 12 percent would be matched by a gain of about 6 percent in output. Farm production in 1955, up 3.5 percent from 1953, probably was within 2 or 3 percent of that required to meet projected utilization for 1960. The 1955 crops of wheat, major feed grains, potatoes, and cotton were about the same as the output that would be required for 1960. In addition to current high production rates for major crops, the carryover stocks are large for wheat, rice, feed grains, and cotton. Stocks of wheat and cotton exceed one year's production, and feed grain stocks equal almost a third of feed grain output in 1955.

If we assume that about half of the present corn and wheat stocks and about two-thirds of the cotton stocks are surplus, then "surplus stocks" in 1955 apparently were equal to more than a tenth of farm output. In addition, supplies of a number of farm products which moved into consumption were large enough to result in relatively low prices which is evidence of another kind of "surplus" as far as producers are concerned.

Corrective measures, involving both production adjustment and surplus disposal, are well under way aimed at cutting down burdensome stocks.

Some reduction in feed grain production is in prospect for this year, but estimated requirements for feed point to some further build-up in stocks.

Record supplies of wheat for 1956-57 and probable disappearance of wheat indicate that the carryover of 1,030 million bushels on July 1 will not increase further in the coming year. But if the soil bank program goal to cut 12 to 15 million acres out of the 55 million-acre allotment for the 1957 crop is realized, and if exports can be held around the 340 million bushels estimated for 1955-56, there could be a sizable reduction (possibly around 200 to 300 million bushels) in wheat stocks during the 1957-58 marketing year.

The 1956 rice crop is estimated at about 15 percent smaller than the 1955 crop. With prospective increases in use and exports, carryover stocks will be materially reduced.

The 1956 cotton crop is estimated at 13 million bales, more than a million smaller than last year. But with a 14 million bale carryover, supplies for the 1956-57 marketing year will be record large. Current prospects for an approximate doubling of exports in 1956-57 would increase total disappearance by as much as a fourth above 1955-56 and may result in some decline in cotton stocks.

The 1956 flue-cured tobacco crop was estimated on August 1 to be 13 percent smaller than last year's crop. But with a larger carryover, the supply for 1956-57 is about the same as for 1955-56. Domestic use of this major cigarette tobacco in 1955-56 was down slightly from a year earlier despite a small gain in cigarette output. Sales for foreign currency contributed substantially to a 29 percent increase in exports.

The supply situation for some of the above commodities suggests that the remainder of the 1950 decade may be primarily concerned with reductions in the level of farm output. The effectiveness of the soil bank program will largely determine the time when agricultural production would need to rise again to meet growing population and expanding consumer demand.