FCS 42

FEBRUARY 1971

# FARM COST Situation



ECONOMIC RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

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The Farm Cost Situation is published annually [redacted]

# FARM COST SITUATION

## SUMMARY

Farm production expenses are expected to increase around $1.5 billion in 1971--somewhat less than last year. Much of this increase will be for purchased feed--which alone accounts for a fourth of current expenses--due to higher prices for a feed volume similar to 1970's. Continuing price rises are expected for most other inputs. One bright spot is the expected decline in money interest rates. Also, prices of feeder livestock may be lower.

Farm production expenses continued to rise in 1970, but both the dollar gain and the rate of increase were less than in the previous year. Expenses totaled $40.4 billion, up 5 percent from 1969, which had shown a rise of 6.8 percent.

Expenses last year increased faster than gross farm income, lowering realized net farm income from 1969's $16.2 billion to $15.8 billion.

Increased outlays for purchased feed and livestock and interest on debt caused much of the increase in expenditures. Prices increased on each of these, in addition to the greater volume of goods and services used. Price increases were recorded on nearly all input categories, and the sharpest increases were for interest rates on new loans.

Over the 1960-70 period, total current operating expenditures of farmers increased from $19.0 billion to $27.4 billion. There has been much greater volatility in prices of inputs of farm origin than prices of inputs of nonfarm origin. Supply fluctuations in farm origin inputs result in large year-to-year changes in prices and total expenditures. Input of nonfarm origin show more stability, but the primary price movement is up. Fertilizer prices were a notable exception. They were stable or declining during most of the period.

During the early 1960's, gains in farm input prices played a smaller role in increased total expenditures than increases in volume of goods and services used. However, price increases played a more dominant role in the increased expenditures during the latter part of the decade.

## HIGHLIGHTS

Feed. Both feed grains and high-protein feeds had contraseasonal price rises late in 1970--feed grains because of the short supply and high-protein feeds because of sharply increased demand. Grain prices are expected to remain near current levels during the first half of 1971--and well above rates in the like 1970 period. Prices later in 1971 will be largely determined by feed grain production prospects. The higher prices in 1971 will lead to increased total expenditures on feed since the total amount of grain fed to livestock is expected to remain nearly the same as in 1970.

Feeder and Replacement Livestock. Relatively large supplies of meat and poultry in recent months, lower finished livestock prices, and rising feed costs have reduced the demand and decreased the costs of most feeder and replacement livestock. Sharp price declines have been recorded on feeder pigs. Modest declines have occurred on most other animals and poultry for feeder and replacement purposes. However, dairy cow replacements continue to cost more, following a trend begun in 1964. Continuing large supplies of hogs will mean little change in feeder pig prices. Feeder cattle prices moved somewhat lower in late 1970 and likely will average lower than a year earlier in the first half of 1971.

Seed. Seed expenditures are expected to rise in 1971 with the major increase due to higher seed corn prices. Primary attention is focused on the supply of hybrid seed corn. Concern over another outbreak of Southern corn leaf blight has led to much uncertainty about which crops to plant in 1971. Farmers who do not want to risk planting blight susceptible corn may create additional demands for seed for alternative field crops, although the special January report on planting intentions did not indicate much substitution of other crops for corn. Supplies of seed for most crops other than corn seem adequate.

Hired Farm Labor. The average composite wage rate of farmworkers employed on a time basis continues to rise. It was $1.33 per hour in 1969, then $1.42 in 1970. However, that increase was smaller than the 12-cent rise of 1969 because unemployment increased, mechanization of farm practices continued, and there were no increases in the minimum wage in 1970 under the Fair Labor Standards Act. Wage rates are expected to rise again in 1971 if inflation continues, competition for skilled workers increases, and further unionization of farmworkers occurs. In addition, Federal and State regulations affecting some farmworkers have built-in wage rate increases.

Fertilizer. Prices for most fertilizers stabilized early in 1970, after several years of decline, then edged up the rest of the year. Cost-push inflation plus a level of output for potash established by the Saskatchewan Potash Conservation Board were major factors in the general price advance. Fertilizer price levels may continue higher through 1971. Wage rates will be up, rail freight rates have been boosted four times in 2 years, and truck rates are higher. The fertilizer manufacturing-marketing complex finds it increasingly difficult to absorb these increasing costs. However, fertilizer supplies are still large and competitive forces may erode prices somewhat later in the planting season.

Pesticides. Agricultural use of pesticides, particularly herbicides, rose in 1970. Total expenditures continued upward, mostly because more specialized and higher priced herbicide products were used. The expected increases in acreages of soybeans, sorghum grain and small grain should result in additional use of herbicides in 1971.

Petroleum Fuel and Oils. Prices of petroleum products increased slightly in 1970 and additional increases are expected in 1971. Total farm expenditures for petroleum fuel and oils have been increasing rather modestly in recent years. Greater increases may occur from nontraditional uses of fuels such as in heating livestock buildings.

Insurance. Total expenditures for insurance related to farm production are expected to rise about a tenth in 1971. This continues the upward trend of the past several years. Property and liability insurance on buildings, contents, equipment, motor vehicles, and livestock will account for a major share of the increase. Farmers are buying a greater amount and variety of coverage to protect higher values and to protect against more risks such as personal liability. Premium rates, particularly on automobile insurance, are also rising. Social security taxes paid for hired workers will rise about 11 percent in 1971 because of increased total wages and higher tax rates.

Interest Charges on Non-real Estate Debt. Total interest charges on short- and intermediate-term farm loans totaled a record $2 billion in 1970. Higher interest rates on new loans coupled with a substantial increase in the amount of credit used pushed total interest charges 18 percent above 1969. Interest rates on new non-real estate farm loans in 1970 ranged mostly from 8 to 9.5 percent. A slight easing occurred in some areas late in 1970. Interest rates are expected to be 1/2 to 1 percentage point lower in 1971, and lenders indicate money for loans will be more available.

Interest Charges on Real Estate Debt. Interest charges on farm mortgage debt in 1970 amounted to $1.7 billion, 7 percent above 1969. Interest rates on new loans ranged around 9 percent. However, fewer new loans were made than in recent years. Demand for loans secured by farm real estate is expected to increase in 1971. Easing of the tight money situation will make more money available for farm loans, and rates may be lower by 1/2 to 1 percentage point. These developments are expected to encourage many farmers with heavy short-term loans to refinance into loans with longer repayment terms.

Farm Real Estate. In 1970, tightness of money markets, high interest rates, and a pessimistic outlook toward economic conditions dampened rises in land prices. The national average market price of farm real estate reached $195 per acre, 3 percent above 1969. This was the smallest rate of increase since 1960. The number of persons looking for farms and the number of farms offered for sale remained about the same as in 1969, but the number of transfers declined. Sellers remained the main source of financing and 46 percent of all credit financed transfers were financed with installment land contracts.

Property Taxes. Taxes on farm real estate and personal property totaled $2.8 billion in 1969. Of this, State and local real estate levies came to $2.3 billion, 11 percent over 1968; a further rise of about 9 percent was estimated for 1970. Taxes levied on farmers' personal property in 1969 were estimated to be $445 million. As the demand for community services increases, farm property taxes will continue to rise unless substitute revenue sources are found.

Farm Power and Machinery. Farm machinery prices are likely to show larger increases in 1971 than the 6 percent rise in 1970. Sales of large equipment held up well in 1970 and are likely to continue strong, as large machines are a major factor in holding down production costs by replacing labor. In 1970, the wholesale price index for farm machinery was up 13 percent over 1967, compared with a 29-percent increase over the same period for farm wage rates.

Enterprise Input Cost. Farmers in general are raising their yield expectations per acre of crops as they learn about and adopt new production technology. Leading farmers, in particular, often combine the inputs to attain these higher yields at moderate per acre costs.

Planning budgets for 1971 illustrate two different ways leading farmers are making changes in pesticide use: East-central Illinois farmers are planning to shift from broadcast application of herbicides on one-half the acreage of corn and soybeans as in 1970, to banding the entire acreage. Leading cotton farmers in the Yazoo-Mississippi Delta are planning to partially substitute mechanical cultivation for herbicides on cotton.

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## INTRODUCTION

Total farm production expenses of U.S. farmers continued to rise in 1970, with the $2.0 billion increase the total topped $40 billion for the first time (table 1). Expenses increased faster than gross farm income, and realized net farm income declined from 1969's $16.2 billion to $15.8 billion in 1970.

When examining farm production expenses, whether for all of U.S. agriculture or for an individual farm, it is often useful to separate current expenses from other production expenses. Current expenditures are for inputs which are essentially annual purchases and used up in the course of a year. Many of these expenditures must be incurred if any production is to take place, but some substitution is possible between inputs or in the amounts of each input used. The bulk of this report will focus on current expense inputs.

Table 1.--Gross farm income, production expenses and net income, United States, 1967 to 1970 1/

| Item | 1967 | 1968 | 1969 | 1970 2/ |
|---|---|---|---|---|
| | --------Billion dollars---------- | | | |
| Cash receipts from farm marketings | 42.7 | 44.2 | 47.2 | 48.7 |
| Nonmoney income and Government payments | 6.3 | 6.8 | 7.4 | 7.5 |
| Realized gross farm income | 49.0 | 51.0 | 54.6 | 56.2 |
| Farm production expenses | 34.8 | 36.0 | 38.4 | 40.4 |
| Farmers' realized net income | 14.2 | 15.0 | 16.2 | 15.8 |
| Net change in farm inventories | .7 | .1 | .3 | .5 |
| Farmers total net income | 14.9 | 15.1 | 16.5 | 16.3 |

1/ Farm Income Situation, FIS 216 and 217, Economic Research Service.
2/ Preliminary.

Most other inputs can be categorized as investment, recurring or unavoidable expenses. Some of the most difficult management decisions relate to investments and their effect on production costs. Purchase of an investment item can often be deferred one or more years. But once the investment is made, it represents a large expenditure in that year, and also leads to recurring expenditures in later years if a part of the cost is financed through debt. In addition, if property ownership exists, expenditures such as farm real estate taxes cannot be avoided. And tax rates and bases change over time.

Total expenditures for most individual categories of current expense farm inputs have increased greatly since 1960 (table 2). But the rates of change have varied. Sharpest increases have occurred for expenditures on pesticides and interest charges, which more than doubled between 1960 and 1969. On the other hand, only small increases in total expenditures occurred for such items as hired labor and building repairs and maintenance.

The relative importance of most current expense inputs has changed only slightly. Notable changes are the increased importance of interest charges on non-real estate debt and of purchased livestock, and the decreased importance of wages for hired labor. Inputs of farm origin continue to account for over 40 percent of all current expenses. Of course, this percentage varies greatly by type of farm.

Relative changes in total expenditures for many inputs since 1960 indicate increased use of the inputs, as well as price increases, for most input categories (figs. 1 and 2). A notable exception to greater use of the input is hired labor, where rapidly declining hours worked are more than offset by wage rate increases. However, in recent years price increases have contributed more to increases in total expenditures for most inputs than quantity changes.

Inputs of farm origin also exhibit greater volatility of prices than inputs of nonfarm origin. Prices of inputs of farm origin exhibited several swings during 1960-70, while prices of inputs of nonfarm origin generally trended upward fairly regularly. Fertilizer is a major exception to increased prices, of course, and interest rates are expected to work back down some from their present levels.

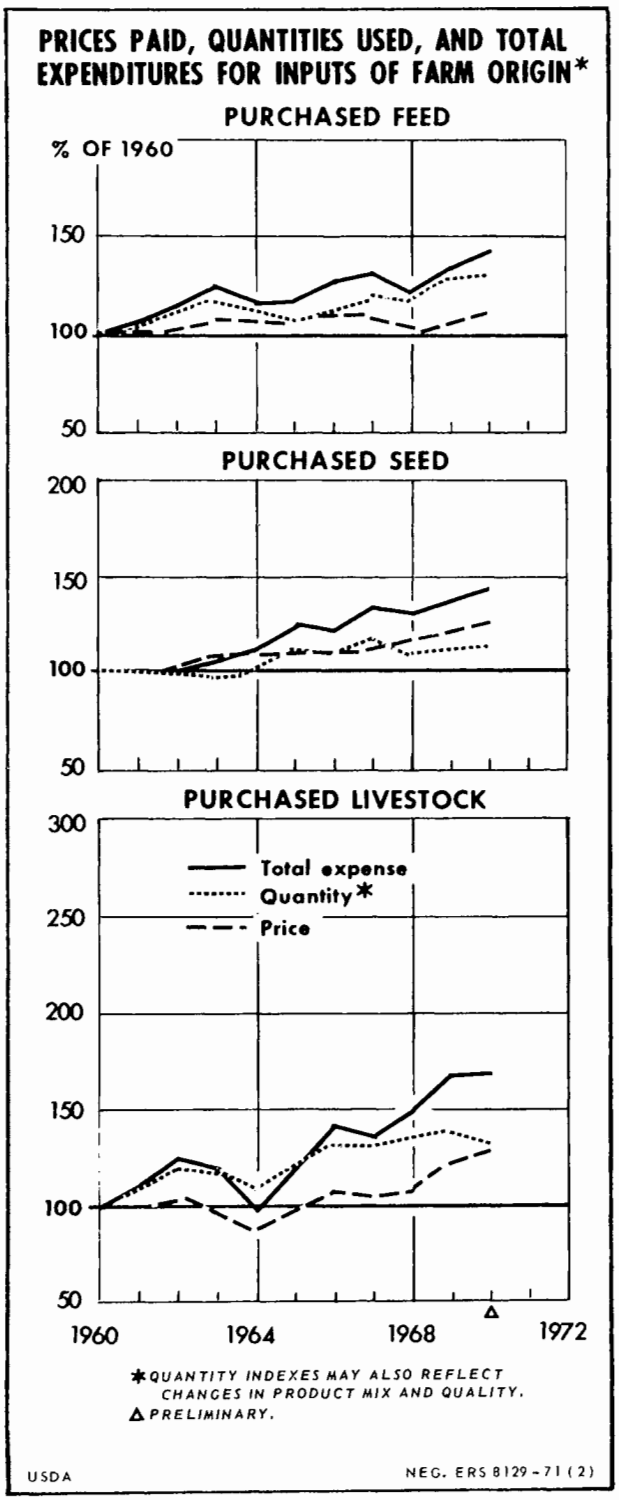


Figure 1

Changes in total expenditures for any item depend on changes in price per unit and in the quantity of the item used. To present the overall trends in prices, quantities and total expense by input categories over the last few years, index numbers of each have been calculated and plotted on these graphs. The data on total expense are from USDA estimates as in tables 1 and 2. Price data are from SRS and ERS price indexes. These were used to derive the quantity indexes using the formula:

$$\text{Quantity index} = \frac{\text{Total expense index}}{\text{Price index}}$$

To the extent the base weights used for the price indexes do not reflect input mix changes over time, the quantity indexes will be incorrect. However, these charts demonstrate the relative impact of changes in prices and quantities to changes in total expenditures for each input. In addition, they provide an approximation of the difference in rates of change of these items for the various inputs.

Several of these price indexes require additional explanation. For example, the price indexes for interest rates reflect the average rate of debt outstanding. Since most non-real estate debt is on an annual basis, this index reflects recent sharp increases in short-term rates. But on real estate debt, the majority of debt outstanding is on loans made in prior years, so the average moves up less rapidly. The interest rates used for the index reflect the annual rate for outstanding debt. On property taxes, the price index reflects the tax rates per $100 value. Thus, these are per unit costs, similar to the prices of the other inputs.

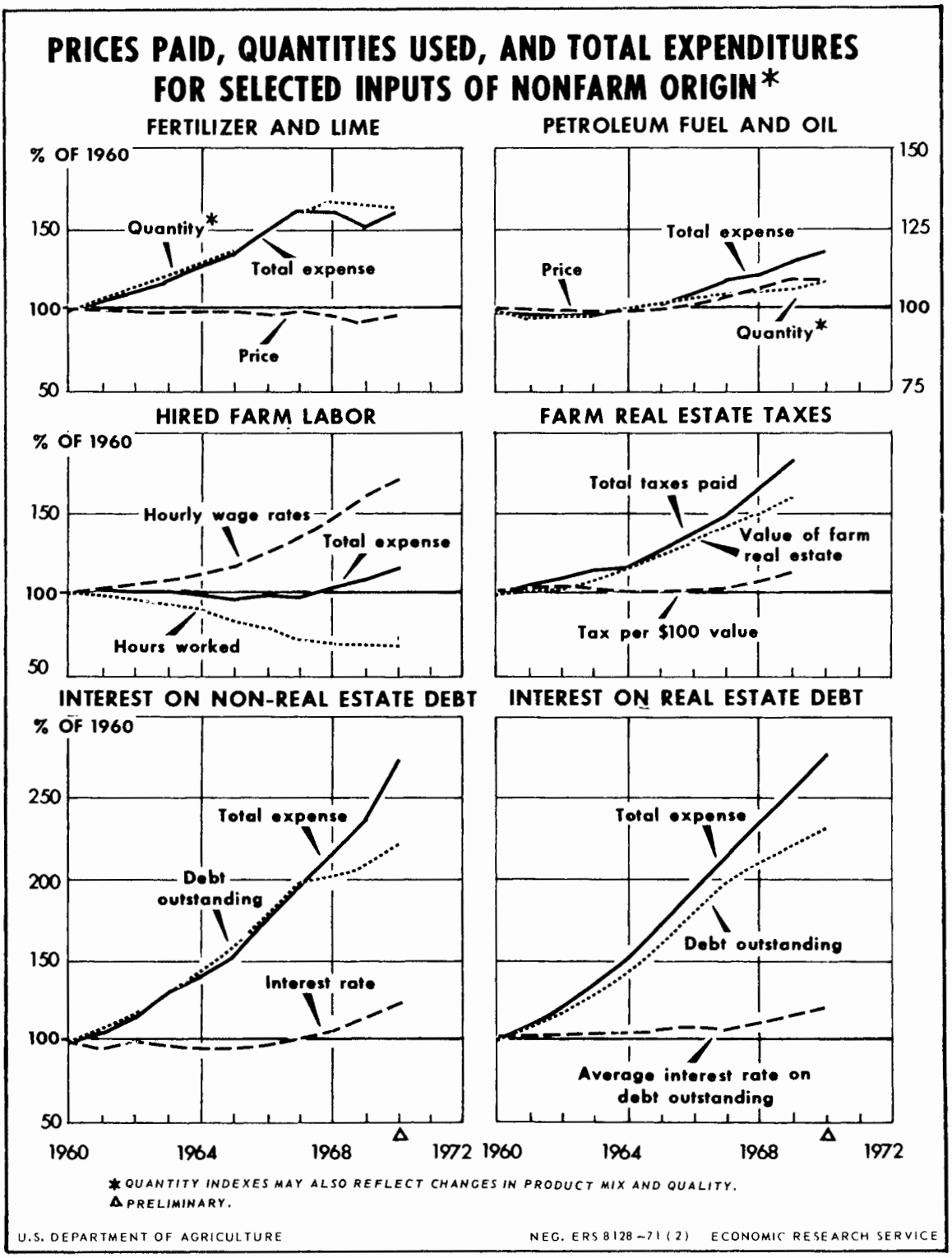
PRICES PAID, QUANTITIES USED, AND TOTAL EXPENDITURES FOR SELECTED INPUTS OF NONFARM ORIGIN*
FERTILIZER AND LIME
% OF 1960
150
100
50
Quantity*
Total expense
Price
PETROLEUM FUEL AND OIL
150
125
100
75
Total expense
Price
Quantity*
HIRED FARM LABOR
% OF 1960
150
100
50
Hourly wage rates
Total expense
Hours worked
FARM REAL ESTATE TAXES
Total taxes paid
Value of farm real estate
Tax per $100 value
INTEREST ON NON-REAL ESTATE DEBT
% OF 1960
250
200
150
100
50
Total expense
Debt outstanding
Interest rate
1960
1964
1968
1972
INTEREST ON REAL ESTATE DEBT
Total expense
Debt outstanding
Average interest rate on debt outstanding
1960
1964
1968
1972
* QUANTITY INDEXES MAY ALSO REFLECT CHANGES IN PRODUCT MIX AND QUALITY.
Δ PRELIMINARY.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 8128-71 (2) ECONOMIC RESEARCH SERVICE

Figure 2

Table 2.--Farm production expenses, United States, 1960, 1965, 1968, and 1969 1/

| Item | Expenses | | | | | Percentage of current expenses | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1960 | 1965 | 1968 | 1969 | 1970 2/ | 1960 | 1965 | 1968 | 1969 |
| | Million dollars | | | | | Percent | | | |
| Current expense | | | | | | | | | |
| Feed purchased | 4,923 | 5,749 | 5,994 | 6,634 | | 25.9 | 26.6 | 24.5 | 25.4 |
| Livestock purchased | 2,502 | 2,913 | 3,676 | 4,174 | | 13.2 | 13.5 | 15.0 | 16.0 |
| Seed purchased | 510 | 637 | 668 | 697 | | 2.7 | 3.0 | 2.7 | 2.7 |
| Inputs of farm origin | 7,935 | 9,299 | 10,338 | 11,505 | 12,058 | 41.8 | 43.1 | 42.2 | 44.1 |
| Hired labor, total wages | 2,923 | 2,849 | 3,045 | 3,192 | | 15.4 | 13.2 | 12.4 | 12.2 |
| Fertilizer and lime | 1,315 | 1,754 | 2,125 | 2,013 | | 6.9 | 8.1 | 8.7 | 7.7 |
| Pesticides | 288 | 528 | 675 | 729 | | 1.5 | 2.5 | 2.8 | 2.8 |
| Petroleum fuel and oil | 1,486 | 1,538 | 1,645 | 1,713 | | 7.8 | 7.1 | 6.7 | 6.5 |
| Other operating costs and repairs for motor vehicles and machinery | 1,777 | 1,880 | 2,306 | 2,383 | | 9.5 | 8.7 | 9.4 | 9.1 |
| Buildings repairs and maintenance | 703 | 655 | 693 | 732 | | 3.7 | 3.0 | 2.8 | 2.8 |
| Insurance 3/ | 187 | 181 | 213 | 205 | | 1.0 | .8 | .9 | .8 |
| Interest on non-real estate debt | 725 | 1,099 | 1,562 | 1,715 | | 3.8 | 5.1 | 6.4 | 6.6 |
| Other | 1,629 | 1,820 | 1,892 | 1,927 | | 8.6 | 8.4 | 7.7 | 7.4 |
| Inputs of nonfarm origin | 11,033 | 12,304 | 14,156 | 14,609 | 15,390 | 58.2 | 56.9 | 57.8 | 55.9 |
| Total current | 18,968 | 21,603 | 24,494 | 26,114 | 27,448 | 100.0 | 100.0 | 100.0 | 100.0 |
| Recurring or unavoidable expense | | | | | | | | | |
| Taxes on farm property | 1,502 | 1,953 | 2,526 | 2,753 | | | | | |
| Interest on farm mortgage debts | 628 | 1,077 | 1,477 | 1,602 | | | | | |

1/ Farm Income Situation, FIS 216, Economic Research Service, USDA, July 1970, plus unpublished estimates for pesticides and insurance. These figures do not include (1) depreciation and other consumption of farm capital and (2) net rent to nonfarm landlords. In 1969 these amounted to $6,672 million and $1,303 million, respectively.

2/ Preliminary

3/ Includes net premiums (premium minus payments for losses) for crop, fire, and wind insurance.

## CURRENT EXPENSE INPUTS

### Purchased Feed

| | |
|---|---|
| Expenditures for farm use, 1969 | $6.6 billion |
| Rate of change, 1969-70 | +7.5 percent |
| Average rate of change, 1965-69 | +3.9 percent |
| Percentage of all current expenses, 1969 | 25.4 percent |

Farmers' expenditures for purchased feed increased in 1970. A larger volume of feed was fed and there were sharply rising prices for feed grains after late summer.

Grain prices are expected to remain high during the first half of 1971, while prices in the latter half will be largely determined by the prospects for the 1971 production of feed grains. Another small corn crop as in 1970 would send prices higher in 1971, but prices should stabilize and might decline later in the year if a crop similar to 1969's production or larger appears likely. Of course, other factors such as livestock numbers and rate of feeding will affect these prices, but the corn crop is the key. Since the amount of feed fed to livestock is expected to remain nearly the same in 1971 as in 1970, higher grain prices will mean greater expenditures for feed in 1971.

The 1970/71 feed grain supply totals 207.4 million tons, 8 percent less than last year (table 3). Much of the reduction was due to reduced corn and sorghum grain yields resulting from dry weather and corn blight. Although the supply is near the 1964-68 average, it is short in terms of total requirements which reached a record high in 1969/70. This requirement is based on current forecasts of livestock and poultry numbers for the feeding year.1/ Total disappearance of feed grains is expected to exceed supply by 14.4 million tons.

Cutbacks in some livestock production may occur this year if feed-livestock price ratios do not improve. These cutbacks can occur both in numbers and in rates of feeding per grain-consuming animal unit (table 3).

Reduced feed supplies have led to sharply higher prices (table 4). For instance, mid-month average prices for corn and sorghum grain this past January were 27 and 9 percent, respectively, above a year earlier. And gross returns per dollar of feed cost were lower in January 1971 than a year earlier for feeding enterprises (table 5). The sharpest declines were for hogs, down more than 50 percent, and eggs, down over one-third, for which declines in prices received accompanied the increased feed costs. For the balance of the marketing year, continued upward pressure on feed prices is in sight, but livestock prices may show some improvement as the year progresses.

---

1/ The feeding year is defined as Oct. 1 to Sept. 30 of the following year.

Table 3.--Supply and utilization of feed concentrates, and livestock feed, United States, 1962-70 1/

| Feeding year beginning Oct. 1 | Supply | | | | Utilization | | Stocks of feed grains, end of year 4/ | Number of grain-consuming animal units 5/ | Per grain-consuming animal unit | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stocks of feed grains beginning of year | Production of feed grains 2/ | Other feed concentrates 3/ | Total supply | Food industry, seed, and exports | Concentrates fed to livestock 2/ | | | Production of feed grains | Supply of concentrates | Concentrates fed |
| | Million tons | | | | | | | Million | Tons | | |
| 1962 | 72.2 | 141.7 | 31.4 | 245.3 | 30.6 | 150.4 | 64.4 | 109.0 | 1.30 | 2.25 | 1.38 |
| 1963 | 64.4 | 153.8 | 32.2 | 250.4 | 33.2 | 148.3 | 69.3 | 108.3 | 1.42 | 2.31 | 1.37 |
| 1964 | 69.3 | 134.2 | 34.1 | 237.6 | 36.5 | 145.3 | 54.8 | 105.9 | 1.27 | 2.24 | 1.37 |
| 1965 | 54.8 | 157.4 | 35.0 | 247.2 | 44.2 | 161.0 | 42.1 | 106.3 | 1.48 | 2.33 | 1.51 |
| 1966 | 42.1 | 157.6 | 35.4 | 235.1 | 37.2 | 160.7 | 37.1 | 111.5 | 1.41 | 2.11 | 1.44 |
| 1967 | 37.1 | 176.0 | 36.0 | 249.1 | 38.7 | 161.8 | 48.3 | 111.5 | 1.58 | 2.23 | 1.45 |
| 1968 | 48.3 | 168.9 | 38.7 | 255.9 | 34.4 | 172.2 | 50.2 | 113.8 | 1.48 | 2.25 | 1.51 |
| 1969 6/ | 50.2 | 174.6 | 42.1 | 266.9 | 38.2 | 181.2 | 48.4 | 117.3 | 1.49 | 2.28 | 1.54 |
| 1970 7/ | 48.4 | 159.0 | 43.2 | 250.6 | 36.5 | 180.0 | 34.0 | 120.0 | 1.32 | 2.09 | 1.50 |

1/ Grain and Feed Statistics, U.S. Department of Agriculture, Economic Research Service.
2/ Includes corn for grain. Omits seeds and corn for silage and other forage purposes.
3/ Includes byproduct feeds, imported grains, and domestic wheat and rye fed.
4/ Stocks do not necessarily equal supply less feed and other utilization because of a difference in the crop year for different feed grains.
5/ Revised. Based on feeding rates and relationships existing during the feeding years 1959-61 between milk cows and other kinds of livestock and poultry. For more detailed explanation see USDA-ERS Supplement for 1970 to Statis. Bul. No. 446, Dec. 1970.
6/ Preliminary.
7/ Preliminary estimates based on indications in January 1971.

Table 4.--Average prices of selected feeds, United States, Jan. 15, 1969-71

| Item | Unit | 1969 | 1970 | 1971 1/ | Change from 1970 to 1971 |
|---|---|---|---|---|---|
| | | ------Dollars----- | | | Percent |
| Prices received by farmers: | | | | | |
| Corn | Bushel | 1.08 | 1.12 | 1.42 | 27 |
| Oats | do. | .62 | .59 | .68 | 15 |
| Barley | do. | .90 | .88 | 1.00 | 14 |
| Sorghum grain | Cwt. | 1.74 | 1.92 | 2.10 | 9 |
| Hay, baled | Ton | 23.50 | 25.00 | 25.40 | 2 |
| Prices paid by farmers: | | | | | |
| Mixed dairy feed, 16 percent protein | Cwt. | 3.60 | 3.70 | 4.05 | 9 |
| Laying feed | do. | 4.00 | 4.10 | 4.40 | 7 |
| Broiler grower feed | do. | 4.54 | 4.65 | 4.95 | 6 |
| Turkey grower feed | do. | 4.35 | 4.65 | 4.90 | 5 |
| Cottonseed meal, 41 percent protein | do. | 5.04 | 5.31 | 5.56 | 5 |
| Soybean meal, 44 percent protein | do. | 5.24 | 5.73 | 5.74 | 0 |
| Bran | do. | 3.59 | 3.73 | 4.08 | 9 |
| Middlings | do. | 3.69 | 3.81 | 4.20 | 10 |
| Average value of concentrate ration fed to cows: 2/ | | | | | |
| Fed to milk cows, in milk-selling areas | Cwt. | 3.11 | 3.23 | 3.54 | 10 |

1/ Preliminary.
2/ Value of corn, oats, oilmeal, millfeed, commercial mixed feed, and so on, which make up 100 pounds of "grain" ration.

Source: Statistical Reporting Service, USDA.

## Feeder and Replacement Livestock

| | |
|---|---|
| Expenditures on purchased livestock, 1969 2/ | $4.2 billion |
| Rate of change, 1969-70 | +0.6 percent |
| Average rate of change, 1965-69 | +9.2 percent |
| Percentage of all current expenses, 1969 | 16.0 percent |

Prices paid for most types of feeder and replacement livestock declined during most of 1970. In December the index of prices paid for all livestock averaged 14 percent lower than the peak reached in March and 6 percent lower than in December 1969 (table 6). The sharpest reductions were for feeder pigs, whose prices declined 57 percent from March to December. Feeder cattle and calves prices declined about 14 percent from their 1970 high. Lamb, baby chick, and turkey poult prices were all below year-earlier prices. But prices of milk cows continued their nearly month-to-month rise that began in December 1964.

2/ Excludes intrastate shipments of feeder cattle.

Table 5.--Gross returns from livestock enterprises per $1 of feed costs, United States, based on Jan. 15 prices, 1969-71 1/

| Livestock enterprise or product | Gross return per $1 of feed cost | | | Percentage change from 1970 to 1971 |
|---|---|---|---|---|
| | 1969 | 1970 | 1971 | |
| | Dollars | | | Percent |
| Eggs | 1.79 | 2.16 | 1.36 | -37 |
| Broilers | 1.30 | 1.28 | 1.05 | -18 |
| Turkeys | 1.04 | 1.19 | .99 | -17 |
| Milk | 2.46 | 2.44 | 2.39 | -2 |
| Hogs | 2.03 | 3.08 | 1.29 | -58 |
| Sheep raising | 1.49 | 1.51 | 1.19 | -21 |
| Beef raising | 2.29 | 2.41 | 2.18 | -10 |

1/ The following quantities of feed were used to calculate the cost of feed:
Eggs (per doz.).....6 lbs. laying feed, "complete feed"
Broilers (per lb.).....2.5 lbs. broiler grower feed
Turkeys (per lb.).....4.5 lbs. turkey grower, "complete feed"
Milk (per cwt.).....31 lbs. concentrates and 110 lbs. hay
Hogs (per cwt.).....7.5 bu. corn and 20 lbs. soybean meal
Sheep raising (per cwt.) 2 bu. corn and 1,500 lbs. hay
Beef raising (per cwt.) 3 bu. corn and 600 lbs. hay

Table 6.--Feeder and replacement livestock and poultry: Prices paid by farmers, United States, low and high months for 1970 with comparisons

| Commodity and unit | December 1968 | December 1969 | 1970 | | | | December |
|---|---|---|---|---|---|---|---|
| | | | Low month | | High month | | |
| | | | Month | Price | Month | Price | |
| | Dols. | Dols. | | Dols. | | Dols. | Dols. |
| Cattle and calves, per hundredweight | 26.40 | 29.70 | Dec. | 28.20 | Mar. | 32.80 | 28.20 |
| Lambs, per hundredweight | 24.60 | 28.50 | Dec. | 23.40 | Jan. 1/ | 28.80 | 23.40 |
| Feeder pigs, per hundredweight | 30.00 | 44.50 | Dec. | 24.50 | Mar. 1/ | 57.00 | 24.50 |
| Baby chicks, per hundred | 11.50 | 11.70 | Nov. | 11.10 | Apr. | 12.50 | 11.20 |
| Turkey poults, per hundred | 52.70 | 53.10 | Dec. | 52.90 | Apr. | 57.10 | 52.90 |
| Milk cows, per head | 283.00 | 309.00 | Jan. | 315.00 | Dec. | 342.00 | 342.00 |
| All livestock, index (1967=100) | 106 | 119 | Dec. | 112 | Mar. | 130 | 112 |

1/ Also February 1970.

Prices of feeder cattle have remained steady since midsummer, despite sharply higher feed prices. In October, prices of all weights and classes of feeder steers at Kansas City were slightly higher than in July (fig. 3). In the meantime, prices of fed cattle declined, and feeding margins were being squeezed from break-even or small positive margins early in 1970 to negative price margins of around $3 per hundredweight in the last third of the year.

The supply of cattle available for feeding in 1971 is a little larger than it was at the beginning of 1970 (table 7). However, the number that will be fed can vary appreciably depending on how many are held for replacement and herd expansion or sold for slaughter directly from pasture. The beef cow herd has been expanding since 1967, thus heifers have been withheld for herd expansion in addition to those for replacement. Any reduction in the rate of herd expansion will make more cattle available for feeding.

With higher prices for feed, lower prices for fed cattle, and a slightly larger supply of feeders, feeder cattle may cost less in the first half of 1971 than a year earlier.

Prices of feeder pigs dropped sharply from $57 per hundredweight in February and March 1970 to $24.50 in December. Because the cost of a feeder pig is a relatively small part of the total cost of producing a market hog, hog feeders normally operate with a negative price margin (fig. 4). However, the sharp drop in prices of barrows and gilts from $28.25 per hundredweight in February to $15.69 in November sharply reduced the price farmers were willing to pay for feeder pigs. A price reduction of this magnitude reduces the value of a 220-pound market hog by more than $27. But a reduction from $57.00 to $24.50 per hundredweight on a 40-pound feeder pig reduces the production cost by only $13. Thus, feeder pigs are still relatively expensive compared with prices of market hogs. Continuing large supplies of hogs, and high feed prices, will likely hold feeder pig prices near present levels.

Table 7.--Cattle and calves on farms January 1, 1970-71 1/

| Year | Dairy cows | Beef cows | Bulls 1 year + | Potential replacements 2/ | All other cattle and calves 3/ | Total |
|---|---|---|---|---|---|---|
| | Million | | | | | |
| 1970 | 12.6 | 36.4 | 2.2 | 10.2 | 50.8 | 112.3 |
| 1971 | 12.4 | 37.6 | 2.3 | 10.4 | 51.8 | 114.6 |

1/ Livestock and Poultry Inventory, January 1, Statistical Reporting Service, USDA. May not add to totals due to rounding.
2/ Includes dairy and beef heifers 500 pounds and over.
3/ Includes heifer calves for replacements.

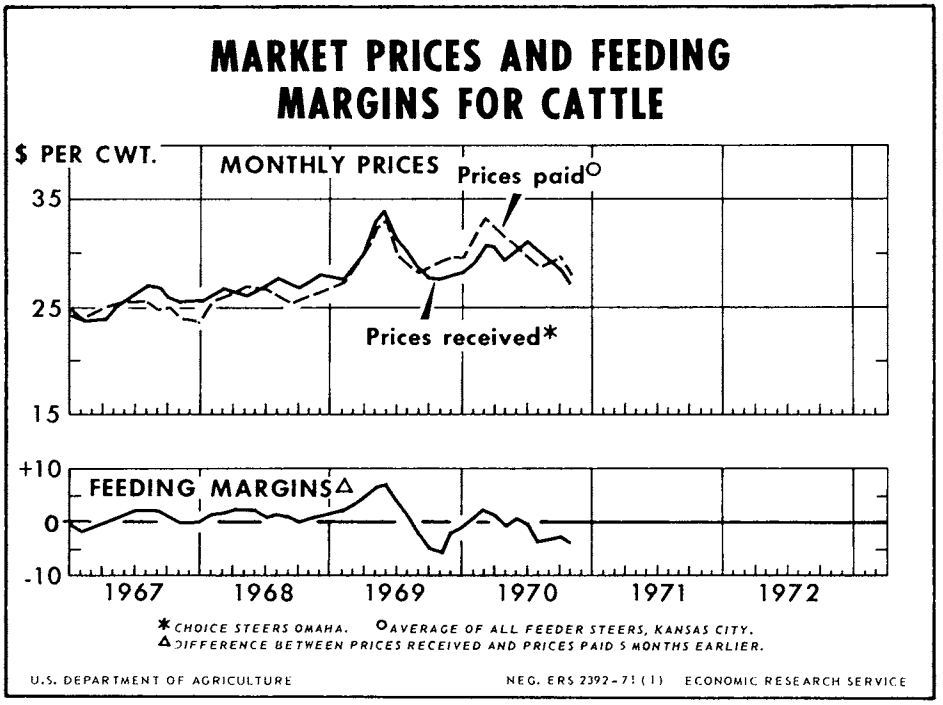


Figure 3

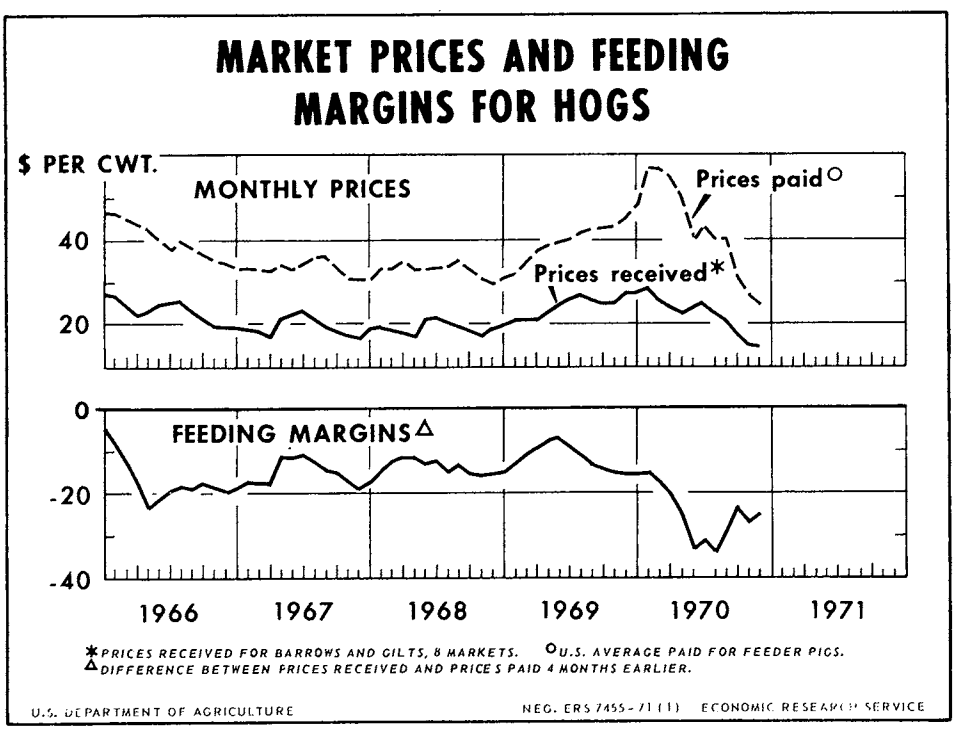


Figure 4

## Seed

| | |
|---|---|
| Expenditures for farm use, 1969 | $0.7 billion |
| Rate of change, 1969-70 | +4.4 percent |
| Average rate of change, 1965-69 | +2.4 percent |
| Percentage of all current expenses, 1969 | 2.7 percent |

Seed expenditures are expected to increase again this year, with the major increase due to higher seed corn prices. Supplies of most seeds are adequate to meet 1971's demands, but uncertainty still surrounds many aspects of the seed corn situation.

While the total supply of hybrid seed corn appears sufficient to seed an acreage equivalent to last year, seed quality and the acreage farmers will choose to plant are still in doubt. This unusual situation is related to Southern corn leaf blight which caused substantial corn losses in the South and Midwest in 1970. And the majority of seed corn available for 1971 is not resistant to this blight (table 8).

The seed corn with the greatest resistance to Southern corn leaf blight is the N-cytoplasm seed. Blends of N and T cytoplasm seed are tolerant to blight, although some harvesting and storage problems may arise if blight occurs. The supply of these types is sufficient to plant only around 60 percent of 1970's acreage. When the T-cytoplasm seed is included, there is enough seed to plant an acreage equal to or greater than last year's.

The January 1971 planting intentions report indicates a 6-percent increase in corn acreage. Following the outbreak of corn blight in 1970, many farmers, particularly those in areas where blight was a problem, are reluctant to plant the T-hybrids. However, to plant the acreage indicated by the intentions report will require the use of a substantial amount of the T-hybrids. Seed supplies for the most likely alternatives--soybeans, oats, and barley--are more flexible since they are not dependent on hybrids. Seed stocks of the best alternative in dry areas--hybrid sorghum grain--are adequate for some expansion of acres.

Seed corn prices have risen over last year. In addition, most seed companies are using a variable price plan for the different types of seed, with N-cytoplasm costliest and T-cytoplasm the cheapest. Due to lower germination rates on some T-cytoplasm seed, seeding rates may need to be higher for blends and T-cytoplasm seed, again raising per acre costs.

Most hybrid seed corn for 1972 will be all N-cytoplasm and will, therefore, be blight resistant. However, the higher labor cost due to the necessity for hand-detasseling on all seed production will no doubt lead to even higher seed prices for farmers in 1972.

Supplies of most other seed stocks seem adequate for 1971. Initial supplies (1970 production plus carryover stocks) of field seeds are generally above last year's levels except for a few crops--Kentucky blue grass, white clover, and red fescue (table 9). Vegetable seed production was down about 24 percent from 1969. However, higher carryover stocks should offset the impact of production declines in most cases.

Table 8.--1970 corn acreage and acres that can be planted from reported seed corn supply for 1971 1/

| Maturity zone | Corn acreage, 1970 | | 1971 planted acre equivalents for seed by method of hybridization 2/ | | | | |
|---|---|---|---|---|---|---|---|
| | Planted acreage | Proportion of national production | N-cytoplasm | Blends | Sub-total | T-cytoplasm | Total |
| | 1,000 acres | Percent | 1,000 acres | | | | |
| Deep South (Georgia, Alabama, Louisiana, Mississippi, Florida, Texas) | 3,947 | 6 | 2,018 | 465 | 2,483 | 509 | 2,992 |
| Mid South (Missouri, Kentucky, Tennessee, Virginia, North Carolina, South Carolina) | 7,704 | 11 | 2,505 | 4,700 | 7,205 | 1,734 | 8,939 |
| Eastern (Pennsylvania, New York, New England) | 2,447 | 4 | 382 | 1,404 | 1,786 | 827 | 2,613 |
| Corn Belt (Illinois, Indiana, Ohio, Iowa, Nebraska, Kansas, South Dakota) | 40,247 | 60 | 8,343 | 15,479 | 23,822 | 17,457 | 41,279 |
| Northern States (Michigan, Minnesota, Wisconsin, North Dakota) | 10,399 | 15 | 2,364 | 3,161 | 5,525 | 5,809 | 11,334 |
| Subtotal | 64,744 | 96 | 15,612 | 25,209 | 40,821 | 3/26,336 | 3/67,157 |
| Other (States not listed above) | 2,427 | 4 | 4/ | 4/ | 4/ | 4/ | 4/ |
| Total | 67,171 | 100 | 4/ | 4/ | 4/ | 4/ | 4/ |

1/ Based on stocks reported by companies who normally handle 80 percent of total seed corn production.

2/ Acres which would exhaust the available supply of N-cytoplasm and blend seed with seeding rate of 10 pounds per acre in the Deep and Mid South, 14 pounds in Eastern, 13 pounds in the Corn Belt, and 12 pounds in the Northern States. Estimates only for companies representing 80 percent of total seed production. No allowance made for carryover stock which normally is about 20 percent, but is expected to be lower in 1971 due to the short supply of blight resistant seed.

3/ It is assumed that the seed corn from the companies who normally handle the other 20 percent of seed corn production would be largely T-cytoplasm and primarily for the Corn Belt. If this additional 20 percent of seed is available for 1971 and no allowance is made for carryover stock this unreported seed could plant another 15,000,000 acres.

4/ Not available.

Source: Crop Production, 1970 Annual Summary, Statis. Rpt. Serv., and Seed Corn Supply, Feb. 5, 1971, Statis. Rpt. Serv.

Table 9.--Initial supplies of selected field seeds, 1971 1/

| Crop | Initial supply | Change from previous year |
|---|---|---|
| | 1,000 pounds | Percent |
| Red clover | 64,462 | +8 |
| Sweet clover | 21,684 | +29 |
| White clover | 2,841 | -19 |
| Ladino clover | 5,953 | -2 |
| Crimson clover | 13,259 | +35 |
| Alfalfa | 155,744 | +10 |
| Lespedeza: | | |
| Korean | 24,987 | 2/ |
| Striate, Kobe | 16,065 | 2/ |
| Other 3/ | 4,095 | 2/ |
| Kentucky blue grass: | | |
| Marion | 5,036 | -19 |
| Other | 44,110 | -4 |
| Fescue: | | |
| Chewings | 9,961 | +1 |
| Red | 13,684 | -7 |
| Tall | 85,681 | +20 |
| Bent grass | 7,658 | +1 |
| Hairy vetch | 13,518 | +7 |
| Timothy | 41,034 | --- |

1/ 1969 carryover stocks plus 1970 production.
2/ Data not available.
3/ Includes sericea; striate, common; and Tennessee 76.

Enactment of the Plant Variety Protection law last year provides incentives for plant breeders to develop improved varieties, but may lead to higher prices for seeds of new varieties of soybeans, cotton, small grains, some vegetables and other crops produced from seed. This law protects for 17 years the rights of those who develop new varieties through a patent-type certificate issued by USDA.

This law does not apply to any existing variety nor does it restrict traditional sales of small amounts of seed between farmers.

## Hired Farm Labor

Expenditures for hired farm labor, 1969..... $3.2 billion
Rate of change, 1969-70..... +7.5 percent
Average rate of change, 1965-69..... +2.9 percent
Percentage of all current expenses, 1969..... 12.2 percent

Continued increases in wage rates for farmworkers occurred in 1970, with further increases expected in 1971. The 1970 average composite wage rate of farmworkers employed on a time basis was $1.42 per hour, a gain of 9 cents per hour from the 1969 average rate (table 10).3/ This increase trailed the 12-cent gain of the previous year.

Factors which contributed to the smaller rise in wage rates in 1970 as compared with 1969 are: (1) increased unemployment in the economy--the seasonally adjusted 1970 rate of unemployment was 4.7 percent or greater for every month beginning in April and has been 5 percent or more during 7 of these months, a year earlier the rate averaged 3.5 percent for the entire year; (2) greater mechanization of some farm production practices, reducing the demand for farmworkers; and (3) the minimum wage rate under the Fair Labor Standards Act did not increase further in 1970.

Wage rates of farmworkers continue to rise as farm employers compete for workers with nonfarm businesses where hourly earnings are higher. Production workers in manufacturing earned an average of $3.36 per hour in 1970--an increase of 17 cents over 1969. Because of increased unemployment in 1970 the effect of the competition between farm and nonfarm employers was lessened. Still, skilled farmworkers are in short supply, particularly in some areas, and many of these workers have nonfarm employment alternatives, meaning their wages must also rise if they are to remain in the farm work force.

The number of farmworkers declined in 1970 by 110,000 (table 11). But the reduction in number of hired workers was only 10,000, the smallest in recent years. Man-hours of farm labor used, including both family and hired labor, declined by 147 million hours and output per man-hour again increased. In part, the small reduction in use of hired labor in 1970 was due to a more adequate supply of farm labor than in 1969.

Two examples illustrate the more adequate supply of farm labor. California farm labor offices (California is one of the largest users of farm labor, particularly seasonal labor) reported an ample supply of labor for the harvesting of fruit, nut, and vegetable crops in 1970 as compared with a short supply in 1969. In burley tobacco, another labor intensive crop, growers reported an ample supply of labor for harvest work in 1970, as compared with a short supply in 1969.

Labor shortages were evident, however, for certain farm production activities in some States, leading to the authorization for employment of 18,639 foreign nationals. They were authorized for the harvest of apples and potatoes in the New England States, the harvest of apples in Virginia and West Virginia, and harvest of sugarcane and citrus in Florida. Foreign nationals can be brought into the United States under provisions of PL 82-414 when there is evidence that sufficient domestic labor is not available for specified work needs. The number authorized for 1970 was about the same as for 1969. However, fewer workers were authorized for the potato harvest in Maine and it was reported that not all of these were used.

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3/ This is a weighted average of all rates on a per hour basis. The composite rate does not include piece rate workers. Perquisites are not included.

Table 10.--Farm wage rates, United States, selected years, 1960-70 1/

| Period | Per month | | Per week, without board or room | Per day, without board or room 2/ | Per hour | | Composite rate per hour 2/3/ |
|---|---|---|---|---|---|---|---|
| | With house | With board and room | | | With house | Without room or board | |
| | Dollars | | | | | | |
| 1960 | 192 | 149 | 45.75 | 6.60 | 0.88 | 0.97 | 0.82 |
| 1965 | 223 | 170 | 51.50 | 7.60 | 1.03 | 1.14 | .95 |
| 1966 | 243 | 185 | 55.75 | 8.20 | 1.10 | 1.23 | 1.03 |
| 1967 | 262 | 200 | 60.50 | 9.00 | 1.18 | 1.33 | 1.12 |
| 1968 | 283 | 216 | 66.50 | 9.90 | 1.28 | 1.44 | 1.21 |
| 1969 | 307 | 234 | 72.75 | 10.90 | 1.42 | 1.58 | 1.33 |
| January | 294 | 230 | 68.50 | 10.60 | 1.28 | 1.57 | 1.38 |
| April | 296 | 228 | 70.00 | 10.30 | 1.34 | 1.59 | 1.21 |
| July | 319 | 232 | 75.75 | 10.80 | 1.45 | 1.58 | 1.29 |
| October | 304 | 235 | 72.75 | 11.40 | 1.54 | 1.51 | 1.37 |
| 1970 4/ | 328 | 251 | 78.00 | 11.70 | 1.50 | 1.64 | 1.42 |
| January | 318 | 251 | 75.50 | 11.60 | 1.38 | 1.67 | 1.50 |
| April | 319 | 245 | 76.50 | 11.30 | 1.40 | 1.66 | 1.29 |
| July | 340 | 329 | 81.75 | 11.60 | 1.52 | 1.66 | 1.38 |
| October | 325 | 250 | 76.50 | 12.20 | 1.65 | 1.61 | 1.46 |

1/ Data from Statistical Reporting Service, USDA. Annual data are weighted averages of the preceding five quarters.

2/ Other rates with house or board and room are omitted but are included in computing composite rates.

3/ Hourly equivalent of all types of rates, except piece rates, and excluding perquisites.

4/ Preliminary.

Although farmworkers, in total, have fewer regulations governing wage rates than most types of workers, many are included under specified regulations. The broadest of these is the Fair Labor Standards Act requiring employers who use 500 man-days of agricultural labor in any calendar quarter during the preceding year to pay at least $1.30 per hour. However, since the national average rate was $1.42 an hour in 1970 and the legal minimum rate was not increased in 1970, FLSA regulations were not generally effective wage rate determinants in 1970. But other less far-reaching regulations did have an effect on farm wage rates in 1970.

For example, in States where employers request the use of foreign nationals, "adverse effect wage rates" are determined by the Department of Labor. These wage rates are required so that use of foreign workers will not "adversely affect" the wages of domestic workers. These are not minimum rates in the usual sense, but are minimum rates that must be offered and paid to domestic and foreign workers by any employer requesting certification of foreign workers. In August 1970, increased adverse effect wage rates became effective in 10 States using foreign

Table 11.--Labor used on farms, wage rates, and related data, United States, 1960-1970 1/

| Year | Farm employment | | | Man-hours of farm work | Farm output index | | Average hourly wage rates | |
|---|---|---|---|---|---|---|---|---|
| | Total 2/ | Family 2/ | Hired | | Total 3/ | Per man-hour | Farm-workers 4/ | Industrial workers 5/ |
| | ------Thousands------ | | | Millions | ---(1967=100)--- | | ------Dollars------ | |
| 1960.... | 7,057 | 5,172 | 1,885 | 9,795 | 90 | 67 | 0.82 | 2.26 |
| 1965.... | 5,610 | 4,128 | 1,482 | 7,775 | 97 | 91 | .95 | 2.61 |
| 1966.... | 5,214 | 3,854 | 1,360 | 7,381 | 96 | 94 | 1.03 | 2.71 |
| 1967.... | 4,903 | 3,650 | 1,253 | 7,269 | 100 | 100 | 1.12 | 2.83 |
| 1968.... | 4,749 | 3,536 | 1,213 | 7,005 | 102 | 106 | 1.21 | 3.01 |
| 1969.... | 4,590 | 3,416 | 1,174 | 6,851 | 103 | 110 | 1.33 | 3.19 |
| 1970 6/. | 4,486 | 3,319 | 1,167 | 6,704 | 103 | 112 | 1.42 | 3.36 |

1/ Data on farm employment and farm wage rates are from the Statistical Reporting Service, USDA.

2/ Includes farm operators and members of their families.

3/ Net calendar-year production for eventual human use.

4/ Composite or hourly equivalent of all types of rates--except piece rates--excluding perquisites.

5/ Average hourly earnings of production workers in manufacturing. From the Bureau of Labor Statistics, U.S. Department of Labor.

6/ Preliminary. Estimates on farm output and man-hours based on December 1970 Crop Production report and other releases of the Statistical Reporting Service, USDA.

workers. Such rates ranged from $1.65 per hour in West Virginia to $1.92 per hour in Vermont, and were 10 to 16 cents per hour higher than in 1969. Because the adverse effect wage rate is generally higher than the average rate per hour without room or board, the adverse effect wage rates tend to increase the actual wages paid domestic workers.

Another factor is the Sugar Act, which requires that "fair and reasonable" minimum wages be paid workers employed in producing sugarcane and sugarbeets. Criteria used in setting rates include changes in the cost of living, productivity of the workers, and the producer's ability to pay. This resulted in increases for both hourly and piece work wage rates in 1970. On sugarbeets the hourly rate increased by 10 cents per hour to $1.75. In Louisiana the time rate for sugarcane workers rose from $1.30 to $1.50 per hour. Minimum piece work rates were increased by amounts ranging from 50 cents to $1.25 per acre for operations such as thinning, hoeing, hoe-trimming, and weeding.

A third area is the increasing unionization of farmworkers, largely in California. In 1970, several growers of California fruits and vegetables, particularly the large producers of table grapes and lettuce, signed contracts with the United Farm Workers Organizing Committee or the Teamsters Union. Wage rates were increased in many instances. An

even greater significance of the union contracts has to do with the environment in which farmworkers and farm employers operate. The union contracts, though varying in specific details, generally provide for specified wage increases each year during the duration of the contract, employer contributions to a worker health fund, use of the hiring hall for employing workers, seniority rights of workers, and restrictions on farmers' usage of certain pesticides.

Unionization of farmworkers will likely increase in 1971. No Federal legislation presently exists to set guidelines by which farmworkers can hold elections for choosing which union, if any, they desire to represent them. A proposal is being submitted to Congress to include farmworkers under the National Labor Relations Act.

Farm wage rates will again increase, in all likelihood, in 1971. Fiscal and monetary policies to stimulate the economy will likely result in lower levels of unemployment, and inflation will remain a problem. This will exert an upward pull on farm wage rates. Minimum wage rates of farmworkers covered by State minimum wage laws were raised in 3 of the 11 States where such laws affect farmworkers--Michigan, New York, and Massachusetts--in late 1970 or early 1971. Farmworkers covered by union contracts and many of the additional workers that are unionized in 1971 will receive higher wages.

Legislation governing both unemployment insurance and workmen's compensation were considered by Congress in 1970 but neither passed. It is expected that both will again receive attention in 1971. A proposal is under consideration by the Labor Department for a Federal unemployment insurance law. The basis for the proposal is a study being conducted in the Northeastern States, Florida, and Texas of the potential costs and benefits of unemployment insurance.

Farm employment will likely decline again in 1971 as mechanization of farm production activities continues. If fiscal and monetary policies are effective in buoying the economy, mechanization will likely proceed at a more rapid pace than in 1970, reducing the total man-hour requirements for farming.

## Fertilizer

| | |
|---|---|
| Expenditures for farm use, 1969..... | $1.9 billion |
| Rate of change, 1969-70..... | +4.4 percent |
| Average rate of change, 1965-69..... | +3.7 percent |
| Percentage of current expenses, 1969..... | 7.1 percent |

Fertilizer prices bottomed out in the last half of 1969, firmed in the spring of 1970, then moved upward through the rest of the year (table 12). Almost certainly, farmers will pay more for the fertilizer they use in 1971.

Competitive forces in the producing sector have been reduced. In the 3 years ended December 1970, plants capable of turning out some 3.5 million tons of ammonia per year were closed down or put on standby. Despite these closings, the net anhydrous ammonia supply has increased each year as giant new plants have been completed. Nevertheless, the number of producing firms has declined pointing to less competition in the marketplace.

Table 12.--Average prices per ton paid by farmers for selected fertilizers, United States, April 15 prices, 1957-59 average and 1966-70

| Period | Anhydrous ammonia | Superphosphate | | Ammonium phosphate 16-20-0 | Potash 60 percent $K_2O$ | Mixed fertilizer 6-24-24 |
|---|---|---|---|---|---|---|
| | | 46 percent $P_2O_5$ | 20 percent $P_2O_5$ | | | |
| | Dollars | | | | | |
| Average 1957-59 | 149.00 | 82.20 | 37.00 | 89.60 | 1/56.80 | 91.10 |
| 1966 | 119.00 | 80.90 | 41.40 | 81.10 | 1/59.90 | 85.10 |
| 1967 | 113.00 | 84.10 | 42.10 | 80.70 | 1/58.50 | 85.70 |
| 1968 | 91.40 | 78.40 | 43.20 | 78.40 | 49.10 | 81.80 |
| 1969 | 75.60 | 74.00 | 43.80 | 77.70 | 47.80 | 73.20 |
| 1970: | | | | | | |
| Apr. 15 | 75.00 | 75.10 | 45.40 | 76.90 | 50.90 | 75.00 |
| Sept. 15 | 76.80 | 76.20 | 46.90 | 76.50 | 54.00 | 76.70 |

1/ Based on equivalent price for 55 percent $K_2O$ reported by SRS.

Source: Agricultural Prices, Pr 1 (9-70), Statistical Reporting Service, USDA, September 30, 1970, and earlier issues.

Synthetic ammonia is the basic source of about nine-tenths of all fertilizer nitrogen, so forces that affect the cost of producing ammonia have an effect on all nitrogen fertilizers. Natural gas is, with minor exceptions, the feedstock for domestically produced ammonia. Typically, the cost of natural gas as a raw material, plus its use as fuel, accounted for three-fifths of the manufacturing cost of each ton of ammonia produced in a modern plant. And the price of gas is going up. Recent estimates indicate natural gas prices may increase as much as 30 percent by 1975. If passed on to the consumers, this may push prices of nitrogenous fertilizers higher by 10 percent or more. Furthermore, spot shortages will occur where home heating demand rises enough to cause cutbacks in industrial uses.

Despite softness in the world market for phosphate rock and extremely low sulfur prices, the farm price for phosphatic fertilizers is firm and rising. In addition to its other costs, producers, particularly sulfuric acid producers', are faced with the growing expense of controlling pollution. A major producer of sulfuric acid reports that pollution controls push manufacturers' costs higher by $2 per ton. This is equivalent to a 7-percent increase from the $27 per ton price of acid quoted late in 1970.

With the limitations on output imposed by the Saskatchewan Potash Conservation Board, potash output and price levels have stablized. Potash prices have experienced a considerable rise, f.o.b. the producing plant. And an additional advance of about 5 percent can be expected at the height of the spring shipping season. However, this kind of price hike is often used by producers to encourage wholesalers to take delivery of their requirements in advance of the heavy-use period so that adequate supplies will be available for farmers at planting.

Costs common to all segments of the fertilizer industry are up. Rail freight rates have undergone general increases 4 times in the past 2 years. Motor freight rates are higher. Labor costs generally are rising. All such advances become increasingly difficult to absorb. These pressures will likely move fertilizer prices higher.

## Pesticides

| | |
|---|---|
| Expenditures for farm use, 1969 | $0.7 billion |
| Rate of change, 1969-70 | +4.0 percent |
| Average rate of change, 1965-69 | +8.6 percent |
| Percentage of all current expenses, 1969 | 2.8 percent |

The trend toward higher expenditures for pesticides for use on farms will continue in 1971. Increasing use of specialized products will push the overall cost per acre of pesticides upward.

During 1965-69 the average price per pound of fungicide material at the manufacturers' level remained about steady at 45 to 50 cents a pound, the average for insecticides went up from about 50 to 60 cents a pound, and the average for herbicides rose from $1.10 to $1.60 a pound. This is related to increased proportions of the newer, higher priced items. Manufacturers' production reports show substantial reductions in the production of some of the older, low-priced, broad-spectrum products such as DDT and other organochlorine insecticides in recent years. Use of these products is likely to continue to drop off in favor of more costly products.

Prices at the wholesale level remained relatively unchanged in 1970. Of 24 chemicals commonly used by farmers, the prices for 21 were the same as in 1969, and prices for 3 were up. Copper sulfate prices (both pentahydrate and tribasic) were up 11 percent and DDT prices up 22 percent.

Pesticide use will likely continue to increase in 1971, but at a slower pace. As in recent years, the greatest rate of increase will be in the use of herbicides (weedkillers). Insecticide usage will increase moderately, and fungicides will again show the slowest growth. However, advances in pesticide use may be more modest because of concern over environmental pollution and because many farmers are already near maximum levels of use for some major crops.

Conservationists, health authorities, and others continue to be concerned about the adverse effects of pesticides. Efforts to restrict the use of certain pesticides will undoubtedly continue.

A restriction in the use of certain pesticides such as the organochlorines will usually add to the cost of pest control, if farmers continue to rely on chemical pest control. Farmers are probably using the less expensive pesticides, or combinations of pesticides, to obtain effective control now.

Farmers have an opportunity to reduce their pesticide costs and at the same time contribute less to environmental pollution. Pest control may follow either of two management approaches. One approach is to apply pesticides on a regular schedule. The other relies on fewer applications made "as needed." Less pesticides are generally

used when applied only "as needed." However, this practice requires more managerial skill.

Sales of certain pesticides this year may be affected by changes in the acreages planted to several important crops. For example, farmers in the special planting intentions survey indicated increased corn acreage for this year. Farmers also reported intentions to plant more acres of soybeans, sorghum, wheat, and barley. Increased plantings of wheat and barley are expected in the spring wheat country. Soybeans might be substituted for corn in the South and Corn Belt. Sorghum acres are expected to increase in the major sorghum growing areas. These shifts may lead to use of different pesticides, but the total effect of these shifts would probably lead to increased pesticide expenditures.

## Petroleum Fuel and Oils

| | |
|---|---|
| Expenditures for farm use, 1969 | $1.7 billion |
| Rate of change, 1969-70 | +2.0 percent |
| Average rate of change, 1965-69 | +2.7 percent |
| Percentage of all current expenses, 1969 | 6.6 percent |

Total expenditures on petroleum products increased 2 percent in 1970, somewhat less than recent annual rates of increase. Likewise, prices of petroleum products have risen less rapidly than prices of most other inputs. The average farm price for bulk delivered regular gasoline, including State and Federal taxes, rose from 27.0 cents per gallon in 1964 to 30.2 cents in 1970 (September 15 date). During this time, prices for diesel fuel rose from 16.2 cents to 18.1 cents per gallon. The net price to farmers is less because farmers are allowed a 4 cents a gallon Federal tax credit on gasoline and 2 cents a gallon credit on diesel fuel.

According to a recent study, total U.S. demand for petroleum products for all uses is expected to reach 8 billion barrels by 1979, up more than 50 percent over 1969 levels.4/ This is about the same as recent growth rates of 5 to 6 percent a year. Demand for kerosene and L.P. gas is expected to rise more rapidly than for other petroleum products. These estimates place 1970 kerosene demand at 4 or 5 times the 1969 usage and L.P. gas at about twice the 1969 usage.

Petroleum requirements of farmers are likely to continue to increase, but slower than overall U.S. demand, as energy requirements for heating and for operating equipment increase. Farm motor vehicle petroleum requirements probably will continue to increase modestly as farmers continue to acquire larger tractors and trucks. Continued shifts toward L.P. gas and diesel fuel from gasoline are likely to occur. Increasing fuel demands for heating livestock shelters, such as those used in modern poultry and hog production, will also require more heating fuels. However, changing cultural practices such as reduced tillage may somewhat offset these gains.

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4/ National Petroleum News, Fact Book Issue, McGraw-Hill, New York, N.Y., May 1970.

## Insurance

Expenditures for farm use, 1969..... $0.9 billion
Rate of change, 1969-70..... +10.5 percent
Average rate of change, 1965-69... +10.6 percent

Expenditures for insurance related to farm production, or to farm property used in production, reached $914 million in 1970, 5 percent higher than in 1969 (table 13). These expenditures are total outlays for premiums and social security taxes paid. The aggregate net cost of insurance is substantially less because of indemnities and other benefit payments received by farmers. About 58 percent of this cost in 1970 was for property and liability insurance. Total expenditures in 1971 are expected to increase about 9 percent to a total of $992 million.

Automobile and truck insurance premiums have risen the most in recent years and are projected to rise another 12 percent in 1971 to $336 million. More accidents and higher claims for repair and medical costs are the cause. Because of this nationwide problem, proposals in several States would modify automobile insurance from a liability to a "no-fault" basis and require the individual's own policy to cover damage to his person or property.

Insurance costs on service buildings, equipment, livestock, and personal property will also continue upward. Premium rates are rising and farmers are buying larger amounts of insurance because of higher property values. Although protection is mainly against fire and wind losses, increasing amounts of other coverage, such as personal liability, are also being purchased. Package policies which combine several types of coverage are becoming more popular.

Table 13.--Expenditures for insurance by farmers, United States, 1970-71 1/

| Type of insurance | 1970 2/ | 1971 3/ |
|---|---|---|
| | Million dollars | |
| Property and liability 4/ | 528 | 587 |
| Crop 5/ | 171 | 169 |
| Workmen's compensation | 62 | 66 |
| Social security | 153 | 170 |
| Total | 914 | 992 |

1/ Estimated annual cost of insurance premiums and social security taxes. Not adjusted for indemnities or other payments to insured.

2/ Preliminary.

3/ Estimated.

4/ Fire, wind, personal liability, and other coverage related to buildings and contents, machinery, livestock, and automobiles. About 50 percent and 60 percent of total insurance premiums on buildings and motor vehicles, respectively, are assumed to be production expenditures.

5/ Federal crop insurance and crop-hail insurance.

Premiums for insurance on growing crops have been stable during recent years and probably will be about $169 million in 1971, little different from 1970. Some increase in all-risk protection may occur in sections of the Corn Belt because of grower uncertainty concerning the extent of corn blight this year. In wheat and cotton areas expenditures for crop insurance may decline slightly.

The cost of workmen's compensation is projected to increase about 6 percent in 1971 primarily because of larger farm payrolls. Higher rates also are occurring in some States because of increased benefits required by legislation. Expenditures for workmen's compensation remain relatively small in most areas, particularly where farms usually employ only one or two hired workers.

Social security taxes paid by farm operators on wages of their hired workers are estimated at $170 million for 1971, about 11 percent more than in 1970. This increase is based on higher wage payments and on a rise in the tax rate from 4.8 to 5.2 percent at the beginning of 1971.

## Interest Charges on Non-real Estate Debt

| | |
|---|---|
| Expenditures for farm use, 1969 | $1.7 billion |
| Rate of change, 1969-70 | +17.7 percent |
| Average rate of change, 1965-69 | +13.0 percent |
| Percentage of all current expenses, 1969 | 6.6 percent |

Interest charges on short- and intermediate-term farm debt in 1970 rose at the fastest rate in recent history. Estimates place the cost at over $2 billion, nearly 18 percent above 1969 (table 14). And the charges in 1969 were 15 percent greater than for 1968.

The increasing expenditures for interest on debts are due to both higher interest rates and an increasing amount of non-real estate credit used. Rates on short- and intermediate-term loans to farmers increased at least 1 percentage point in most areas in 1969. Some parts of the country registered interest rate increases of 2 percentage points or more. The higher rates of late 1969 carried through most of 1970.

While the increase in interest rates varied by type of lending institution, all were affected. Interest rates charged by production credit associations in 1970 and early 1971 were substantially higher than in 1969 and other recent years.

| Interest rate charged 1/ | Production credit associations charging specified rates-- | | | | |
|---|---|---|---|---|---|
| | 1969 | | 1970 | | |
| | January | July | January | July | October |
| | Percent | | | | |
| 8 percent or less | 99 | 82 | 12 | 8 | 9 |
| 8-1/8 to 8-7/8 percent | 1 | 17 | 35 | 23 | 33 |
| 9 to 9-7/8 percent | 0 | 1 | 47 | 55 | 50 |
| 10 percent and over | 0 | 0 | 6 | 14 | 8 |

1/ Rates shown exclude loan fees, which in 1969 averaged 0.46 percent.

Table 14.--Annual interest charges on non-real estate farm debt, United States, selected years, 1960-71 1/

| Year | Total | Commercial banks | Production credit associations 2/ | Farmers Home Administration | Merchants, dealers, and miscellaneous creditors |
|---|---|---|---|---|---|
| | Million dollars | | | | |
| 1960 | 708 | 300 | 120 | 20 | 268 |
| 1965 | 1,057 | 434 | 179 | 36 | 408 |
| 1966 | 1,190 | 484 | 214 | 38 | 454 |
| 1967 | 1,358 | 548 | 265 | 40 | 505 |
| 1968 | 1,502 | 614 | 300 | 42 | 546 |
| 1969 3/ | 1,722 | 690 | 354 | 47 | 631 |
| 1970 4/ | 2,026 | 774 | 475 | 51 | 726 |
| 1971 5/ | 2,113 | --- | --- | --- | --- |

1/ Includes service fees. Excludes interest charges on Commodity Credit Corporation price support loans and interest charges on debt for family living purposes.

2/ In addition to production credit associations, includes Federal intermediate credit bank loans to, and discounts for, livestock loan companies and agricultural credit corporations.

3/ Revised.

4/ Preliminary.

5/ Estimated.

Interest rates charged by commercial banks during 1970 were also up from previous levels (fig. 5). Banks extend over one-third of all short- and intermediate-term loans to farmers and about two-thirds of such loans extended by institutional leaders.

Data on credit extended farmers by merchants, dealers, individuals, and other miscellaneous lenders are incomplete. However, such lenders probably hold about 40 percent of all farm non-real estate debt. Interest rates charged by these lenders are probably at least as high as bank and PCA rates and perhaps higher.

Farmers can expect somewhat lower interest rates on operating loans in 1971. Interest rates in the "wholesale" money markets and large city banks dropped sharply in late 1970 and early 1971. For example, new 9-month consolidated Federal intermediate credit bank debentures (the source of a large part of PCA loan funds) had a face rate of 8.05 percent as late as July 1, 1970. Those dated October 1, 1970, had a rate of 7.10 percent, while those dated February 1, 1971, were at 4.55 percent. In similar movements the Federal Reserve System dropped the discount rate for its member banks which had been at 6 percent since April 1969, to 5-3/4 percent on November 12, 1970. Further drops were made to 5-1/2 percent on December 3, 1970, to 5-1/4 percent on January 7, 1971, and to 5 percent on January 18, 1971.

It will take several months for the softening of wholesale rates to substantially affect rates charged farmers. Rates should drop by

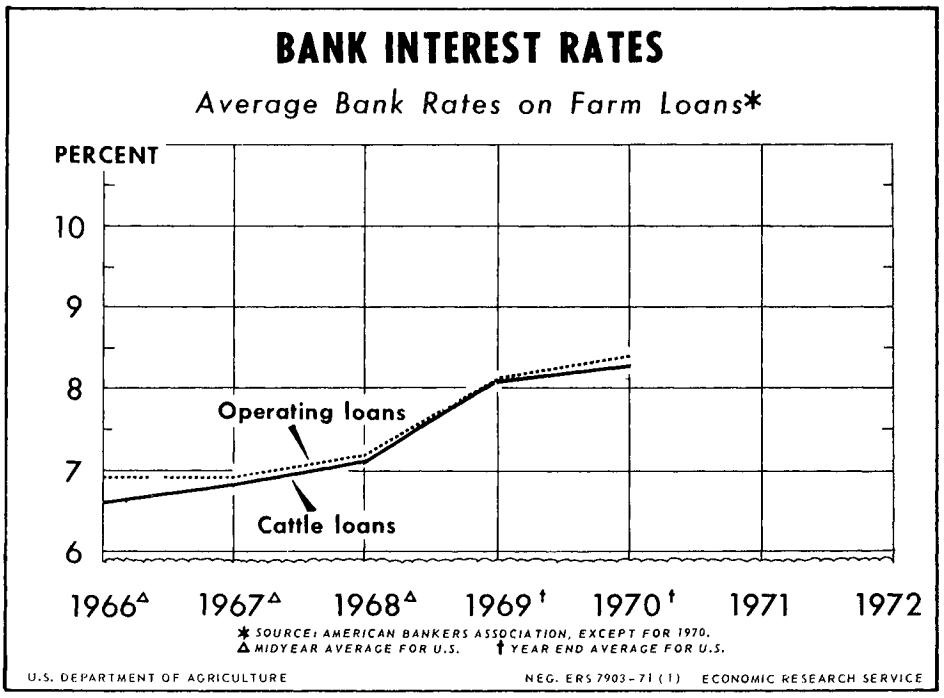


Figure 5

as much as 1 percentage point in many areas by mid-1971, but the drop in effective rates to farmers will not be enough to lower them to the pre-1968 levels.

As a result of the lower interest rates, the total cost of short- and intermediate-term credit to farmers in 1971 should not increase nearly as rapidly as in the last 2 years.

## INVESTMENT, RECURRING, AND UNAVOIDABLE EXPENSES

### Interest Charges on Real Estate Debt

| | |
|---|---|
| Expenditures for farm use, 1969..... | $1.6 billion |
| Rate of change, 1969-70..... | +7.4 percent |
| Average rate of change, 1965-69.... | +10.4 percent |

Interest charges on money borrowed on farm mortgage debt continue to increase and totaled $1.7 billion in 1970, an increase of 7.4 percent over 1969. But the rate of increase has declined yearly since 1966. A further increase to $1.8 billion for interest charges is estimated for 1971.

| Year | Interest charges (mil. dols.) | Year | Interest charges (mil. dols.) |
|---|---|---|---|
| 1960 | 627 | 1968 | 1,475 |
| 1965 | 1,075 | 1969 | 1/1,597 |
| 1966 | 1,204 | 1970 | 2/1,715 |
| 1967 | 1,341 | 1971 | 3/1,795 |

1/ Revised. 2/ Preliminary. 3/ Estimated.

About half the increase in interest charges in 1970 was due to the unusually high rates paid on new loans, and half due to an increase in volume of loans outstanding. While interest rates on new farm real estate loans increased substantially in 1970, the average rate on outstanding loans changed only slightly. The number and amount of new farm real estate loans made in 1970 were relatively low compared to recent years. Advance payments on outstanding loans were less than in 1969 or other recent years, resulting in higher interest charges for 1970.

New loan interest rates charged by life insurance companies and Federal land banks in the first half of 1970 were substantially higher than in the first half of 1969. Rates held at those relatively high levels until some softening occurred in the final quarter (table 15).

Interest rates charged by banks in 1970 were not quite as high as those of life insurance companies or the Federal land banks. However, commercial banks were not overly interested in making long-term real estate loans. Demand for farm real estate credit was noticeably less in 1970 than other recent years. Potential borrowers were reluctant to use long-term financing at the high rates of interest. Although evidence indicates loans were available, there were considerably fewer takers than a year earlier. In the first 3 quarters of 1970, life insurance company volume of new farm mortgage loans fell 52 percent below the like period of 1969. The number of loans made by banks dropped 20 percent for the same period.

Table 15.--Average rates on farm mortgage loans of Federal land banks and life insurance companies, by quarters, 1969 and 1970

| Lender | 1969 quarter | | | | 1970 quarter | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| | Percent | | | | | | | |
| Life insurance companies 1/ | 7.7 | 8.2 | 8.7 | 9.3 | 9.0 | 9.5 | 9.4 | 9.2 |
| Federal land banks 2/ | 7.5 | 7.5 | 8.5 | 8.5 | 9.0 | 8.5 | 9.0 | 8.5 |

1/ Average for quarter.
2/ Most common rate at end of quarter.

Interest rates on long-term farm real estate loans have been about the same or higher than rates on most short-term farm loans since late 1969. This unusual situation prompted some farm operators to borrow short-term at the relatively cheaper rates, anticipating refinancing into long-term loans when interest rates dropped.

Indications are that money for farm mortgage loans will be more available in 1971 than in 1970. Interest rates will be lower--by perhaps 1/2 to 1 percentage point--by midsummer.

## Farm Real Estate

Farm real estate market activity showed evidence of softening during 1970, despite record highs in both total and per acre values of farmland. For the year ended November 1970, the total value of farmland was estimated at $210.7 billion--up 1.6 percent from a year earlier. The national average market price of farmland reached $195 per acre, up 3 percent. The percentage increases in both total and per acre value between 1969 and 1970 were the smallest since 1960. Tightness of the money market, high interest rates, and a pessimistic outlook toward economic conditions dampened rises in land prices last year.

The 3-percent rise in price per acre was characterized by strong offsetting trends among States. For instance, 6 States reported per acre increases of more than 10 percent; 15 showed gains of more than 5 but less than 10 percent; 22 recorded increases between 1 and 5 percent; and 5 declined from 1 to 5 percent.

The sharpest declines occurred in Kansas and California, where average dollar values were off by 5 and 3 percent, respectively (fig. 6). Real estate reporters in both areas said tight credit conditions were a partial explanation for the lower values. In California, general uncertainty over the labor picture also may be a factor in the downward trend in values. Average dollar values were also down in the central Corn Belt.

Meanwhile, a strong and active market continued in the North and Southeast, largely due to steady growth in the demand for farmland for nonfarm use. These two regions can be expected to show moderate to strong gains throughout 1971.

Basic supply and demand indicators showed little change in 1970 from a year earlier. According to opinions taken from the October survey of real estate markets, the number of persons looking for farms and the number of farms offered for sale remained about the same as a year earlier. Reporters also expressed the belief that credit availability was unchanged from a year ago, and farmers were foregoing long-term capital expenditures. Instead, they were increasingly using short-term credit which was cheaper and more readily available. These individuals decided to defer long-term capital investment until interest rates fell.

Voluntary transfers of farm real estate in 1970 were estimated at about 28 per thousand farms compared with 31 per thousand in 1969. Slight declines occurred in all regions. Allowing for a continuing decline in the number of farms, the total value of transfers declined 9 percent from March 1969 to March 1970.

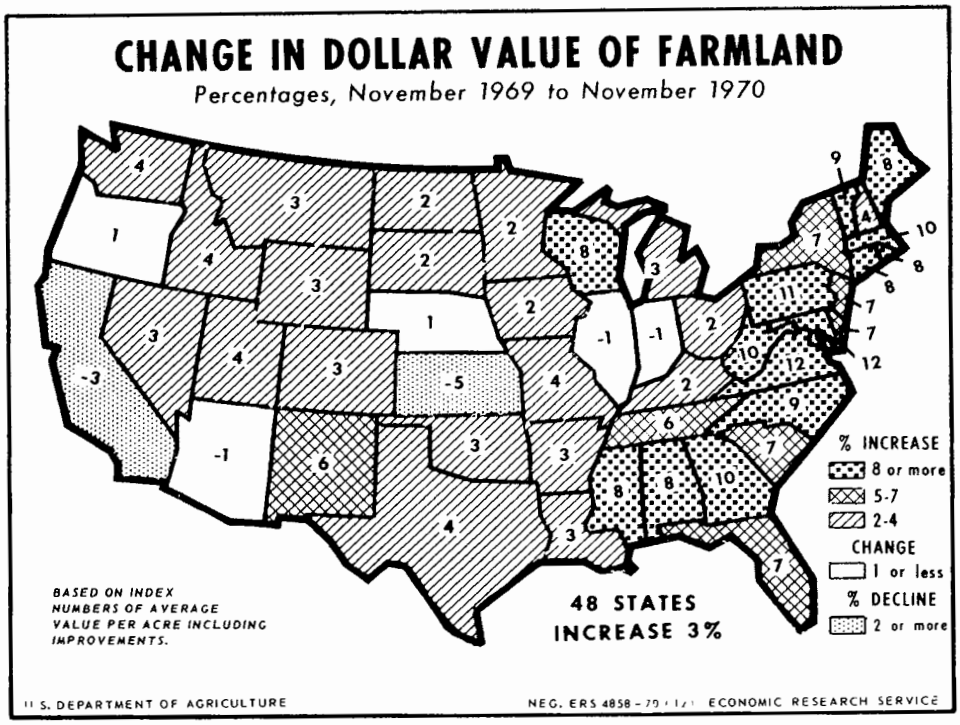


Figure 6

Sellers were again the main source of financing in 1970, providing funds for 53 percent of all credit transfers. Installment land contracts were used to finance 46 percent of these credit transfers. This compares with 37 percent a year earlier. Between 1966 and 1970, transfers financed through land contracts increased an average of 14.5 percent annually. Since 1967, insurance companies have cut their lending appreciably while other commercial agencies have just maintained their share. Thus, buyers of farmland have had to rely more on financing through the seller in order to gain ownership of farm property.

In response to increased renting, both cash and share cropland rental rates have risen, but not as rapidly as the market value of farm real estate. In 1969, rental rates paid for whole farms averaged about 5.5 percent of the farmland market value, ranging from 4.2 percent in the Pacific and Northeast regions to 9.1 percent in North Dakota. In terms of dollar values, State average rates ranged from $4.25 per acre in South Dakota to $38.95 per acre in Illinois.

The outlook for 1971 is a continuation of stable to declining prices. Easing of the money market and lower interest rates may stimulate demand for some long-term capital expenditures. But commercial funds will remain at a lower level than in 1967 and earlier, resulting in a large number of transfers continuing to be handled with seller financing.

## Farm Property Taxes

| | |
|---|---|
| Expenditures for farm property taxes, 1969..... | $2.8 billion |
| Rate of change, 1969-70..... | +8.8 percent |
| Average rate of change, 1965-69..... | +9.2 percent |

Farm real estate and personal property tax levies totaled $2.8 billion in 1969. The 1970 total increased over 8 percent to $3.0 billion.

The major portion of this bill was for State and local taxes on farm real estate. These levies were estimated at $2.3 billion in 1969, or $228 million above 1968. This was the 27th consecutive increase and the second year in a row of a greater than 11 percent increase. A further rise of about 9 percent is estimated for 1970.

Increases in taxes on farm real estate were recorded in all but 2 States (Arizona and Oregon) during 1969. Eight States showed increases of over 15.0 percent. The greatest single increase was in Delaware with a 52.0-percent rise. The other States with large increases were Tennessee (22.2 percent), Iowa (19.5 percent), New York (18.4 percent), South Carolina (16.1 percent), California (16.0 percent), Nebraska (15.9 percent), and Missouri (15.1 percent). Fourteen other States had increases of over 10 percent.

The 1969 levies on farm real estate averaged $2.27 per acre as compared with $2.05 in 1968 and $1.22 in 1960. In 20 States, the average tax per acre was more than $3, in 17 States it was between $1 and $3, and in 13 States it was less than $1. New Jersey continued to have the highest tax per acre--$18.87--while New Mexico continued to have the lowest--18 cents. These variations reflect differences in the value of farmland, differences in the value of buildings and improvements, differences in the role of the property tax in the State-local tax systems, and differences in the level of public services provided by the State and local governments.

The effective rate of farm real estate taxes was $1.12 per $100 of full value in 1969, up 5.7 percent from the previous year. This increase, together with the 4 percent increase of 1968, represents a significant change in this measure. From 1961 to 1967, the effective tax rate had remained relatively constant, ranging between 99 cents and $1.02. Although total taxes increased markedly during this period, values of farm real estate moved upward at about the same rate. During the past 2 years the demand for tax funds exceeded real estate appreciation.

Preliminary estimates show that taxes levied by State and local governments on farm personal property totaled about $445 million in 1969. The personal property tax increased at a rate slightly in excess of 5 percent. A major reason for the less rapid increase of the tax on personal property than the tax on real estate is the growing list of States that exempt part or all of farm personal property.

Revenue needs of State and local governments have been growing steadily due to the increased demands for local services and the rising costs of labor and materials. Total State and local property tax collections have been increasing at a rate of more than 13 percent per year for the past 3 years. This tax remains the source of more

than 40 percent of all State and local revenue. Unless new sources of revenue for local governments are found--either from other forms of taxation, additional user charges, or more intergovernmental sharing of revenue--it is likely that property taxes and thus farm real estate taxes will continue to increase.

## Farm Power and Machinery

From December 1969 to December 1970, prices paid by farmers for farm machinery and motor vehicles (tractors, trucks, and automobiles) rose 6 percent. For 1971, further increases appear certain. Results of wage negotiations in the farm equipment industry and in the steel industry will exert pressure on these prices.

In 1970, the wholesale price index for farm machinery and equipment was 13 percent above 1967 (table 16). This compares with a rise of 16 percent for construction machinery. During this time, total gross farm income increased about 14 percent.

Farm wage rates in 1970 were 29 percent above 1967. Large machines are a big factor in the substitution of power and machinery for labor. And farmers have been buying high-capacity machines at an increasing rate during recent years (table 17). Since the size of tractors fairly well reflects size of implements to be used with them, sales of large tractors are indicative of the trend toward big equipment. Some differences in these trends among regions are evident. In the Northeast, Appalachian, and Southeast, relatively small percentages of tractor sales were of the 100 horsepower or larger size. Farms are much smaller than average in these regions and wage rates are lower in the Southern region. The sudden increase in percentage of large tractor purchases in all regions from 1968 to 1969 was notable.

Man-hours of labor used for farmwork declined over 30 percent from 1960 to 1970. During this time, the inventory value of machinery and equipment increased over 50 percent. Investment in machinery and equipment increased from $1.95 per hour of labor input in 1960 to $4.34 in 1970. Tractor horsepower per farmworker more than doubled to 45 in that decade and is likely to be about 60 in 1975.

Small size equipment and used equipment have an important place with present farm structure. In addition, many alternatives for lowering per acre machinery costs are available to farmers, such as:

(1) Custom hire
(2) Rent or lease
(3) Cooperative ownership
(4) Do custom work for others
(5) Buy used equipment.

With good management, these alternatives or combinations will aid many farmers in minimizing machinery costs.

Aggregate demand for farm machinery at a relatively high level seems assured. Continuing increases in farm size combined with further mechanization in fruits, vegetables, and tobacco will contribute to a strong demand for larger, more specialized equipment. Changing practices

Table 16.--Factors related to costs of farm power and equipment, 48 States, selected years, 1960-70

| Year | Wholesale price index of farm machinery and equipment 1/ | Gross capital expenditures for motor vehicles and other farm machinery 2/ | Inventory value of machinery and motor vehicles used in farming 3/ | Investment in farm machinery and equipment per man-hour of labor input 4/ | Tractor horsepower per farmworker 4/ |
|---|---|---|---|---|---|
| | (1957-59=100) | Billion dollars | Billion dollars | Dollars | Number |
| 1960... | 105 | 2.7 | 19.1 | 1.95 | 22 |
| 1961... | 107 | 2.9 | 18.6 | 1.98 | 23 |
| 1962... | 109 | 3.1 | 18.8 | 2.09 | 24 |
| 1963... | 111 | 3.6 | 19.1 | 2.20 | 25 |
| 1964... | 113 | 3.7 | 19.9 | 2.43 | 28 |
| 1965... | 115 | 4.2 | 21.2 | 2.73 | 32 |
| 1966... | 118 | 4.7 | 22.5 | 3.05 | 36 |
| 1967... | 122 | 5.2 | 24.3 | 3.34 | 40 |
| 1968... | 127 | 4.8 | 26.3 | 3.75 | 43 |
| 1969... | 133 | 4.8 | 28.1 | 4.10 | 44 |
| 1970... | 138 | --- | 29.1 | 4.34 | 45 |

1/ Bureau of Labor Statistics, U.S. Department of Labor.
2/ Farm Income Situation, FIS-216, Economic Research Service, USDA, July 1970.
3/ Balance Sheet of the Farming Sector, 1970, U.S. Dept. Agr., Agr. Inform Bul. No. 350, Jan. 1971, table 19.
4/ Man-hours, tractor horsepower, and farmworkers, from Changes in Farm Production and Efficiency, U.S. Dept. Agr. Statis. Bul. No. 233, Rev. June 1970.

Table 17.--Sales of wheel tractors 100 horsepower and over for farm use as a percentage of sales of all wheel tractors, by farm production regions, United States, 1964-70

| Year | Region | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | North-east | Lake States | Corn Belt | Northern Plains | Appalachian | South-east | Delta States | Southern Plains | Moun-tain | Pacific | United States |
| | Percent of total sales | | | | | | | | | | |
| 1964 | 1/ | 1 | 1 | 8 | 1/ | 1/ | 2 | 3 | 10 | 2 | 2 |
| 1965 | 1/ | 1 | 1 | 6 | 1/ | 1 | 3 | 4 | 9 | 3 | 2 |
| 1966 | 1 | 4 | 5 | 10 | 1 | 1 | 8 | 8 | 16 | 5 | 6 |
| 1967 | 2 | 6 | 7 | 14 | 2 | 2 | 14 | 10 | 18 | 8 | 8 |
| 1968 | 3 | 7 | 9 | 15 | 2 | 4 | 18 | 12 | 18 | 9 | 9 |
| 1969 | 7 | 15 | 19 | 27 | 5 | 9 | 32 | 21 | 27 | 14 | 17 |
| 1970 2/ | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 18 |

1/ Less than 0.5 percent.
2/ For 1970, regional distributions by horsepower are not available. Sales are for first 10 months.

Source: Reports of the Farm and Industrial Equipment Institute.

such as reduced tillage will require new types of specialized equipment. Safety and antipollution regulations will increase the demand for cabs, roll bars, and specialized equipment for waste disposal.

## DIRECT INPUT COSTS FOR SELECTED CROP ENTERPRISES

Changes in prices, technology, and expected yield may lead farmers to alter their traditional farming enterprises. Long-term adjustments involve investment decisions, such as acquiring more land, or moving to a different complement of equipment. But in the short run, adjustments involve planning for a different yield level for a crop, or switching to another crop which can be handled with the operator's present technology, and which is compatible to the area. Such adjustments do not change overhead costs, and savings or added costs come about through differences in direct costs. Likewise, an operator with unused equipment capacity must consider direct cost budgets like these in determining additional expense if he has an opportunity to rent additional cropland.

Budgets for six major crop enterprises are presented to illustrate the direct costs that leading farmers consider in planning for the current year. These budgets illustrate changes in yield expectations, in quantities and prices of inputs, and in technology that have occurred on many efficiently operated farms in these areas. The data include only direct costs. They do not include a charge for land or overhead expenses; hence, in no way can they be considered as the full costs of production. Neither are they average costs.

### Corn

The planning budget for corn in central Illinois assumes a continuation of the same goals and practices as in 1970, despite the uncertainties of the corn blight (table 18). Thus, potential reductions in cost that may arise from reducing or eliminating an input can be estimated from the budget.

The increased per acre cost in 1971 is due to price increases for various inputs. Expenditures for seed are estimated for a seed supply consisting of 20 percent N-cytoplasm, 40 percent blend, and 40 percent T-cytoplasm seed.

Changes in cultural practices allowed a reduction in pesticides cost per acre, despite per unit cost increases on the materials. The assumed changes for 1971 involve going from broadcast application of herbicides on one-half of the corn acreage to banding the entire acreage. This shift in practice is anticipated because: (1) a response from treatment is evident so it is desired on the total acreage, (2) banding reduces per acre costs, (3) too much herbicide may damage weak seed corn, and (4) banding is more likely to permit a switch to soybeans if early corn failure occurs.

### Soybeans

With expected yield, production practices and technology remaining nearly constant between 1970 and 1971, increases for direct cost of soybean production reflect increased input prices (table 19). The only reduction occurs for pesticides as operators are assumed to switch

Table 18.--Direct input per acre expected to be used by leading farmers in producing corn, east-central Illinois, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | --------Dollars-------- | | |
| Labor 2/ | Hour | 5.5 | 3.0 | 3.0 | 6.05 | 7.50 | 8.25 |
| Power and machinery services 3/ | -- | --- | --- | --- | 4.40 | 5.90 | 6.15 |
| Seed | Pound | 12 | 14 | 14 | 2.45 | 6.10 | 7.50 |
| Fertilizer: | | | | | | | |
| Nitrogen | do. | 112 | 150 | 150 | 9.85 | 7.40 | 7.70 |
| $P_2O_5$ | do. | 37 | 46 | 46 | 3.35 | 3.85 | 3.85 |
| $K_2O$ | do. | 24 | 30 | 30 | 1.15 | 1.15 | 1.30 |
| Pesticides | -- | --- | --- | --- | 1.00 | 5.90 | 5.60 |
| Corn drying 4/ | -- | --- | --- | --- | 2.50 | 3.45 | 3.45 |
| Other | -- | --- | --- | --- | 1.50 | 1.75 | 1.75 |
| Total | | | | | 32.25 | 43.00 | 45.55 |

1/ Estimated for a large well-managed cash-grain farm having excellent soil. The expected yields were 100 bushels per acre in 1961 and 130 bushels per acre in 1970 and 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Estimated on a basis of 4-row power and equipment in 1961; 6-row in 1970 and 1971. Includes fuel, lubricants, and repairs only.

4/ Assumes 100 percent of corn is dried.

Table 19.--Direct inputs per acre expected to be used by leading farmers in producing soybeans, east-central Illinois, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | --------Dollars-------- | | |
| Labor 2/ | Hour | 4.5 | 2.5 | 2.5 | 4.95 | 6.25 | 6.90 |
| Power and machinery services 3/ | -- | --- | --- | --- | 3.65 | 4.80 | 5.00 |
| Seed | Pound | 60 | 78 | 78 | 2.40 | 5.20 | 6.50 |
| Fertilizer: | | | | | | | |
| $P_2O_5$ | do. | 28 | 35 | 35 | 2.55 | 2.90 | 2.90 |
| $K_2O$ | do. | 36 | 45 | 45 | 1.70 | 1.70 | 1.90 |
| Pesticides | -- | --- | --- | --- | 0.00 | 3.75 | 3.55 |
| Other | -- | --- | --- | --- | 1.50 | 1.75 | 1.75 |
| Total | | | | | 16.75 | 26.35 | 28.50 |

1/ Estimated for a large well-managed cash-grain farm having excellent soil. The expected yields were 35 bushels per acre in 1961 and 45 bushels per acre in 1970 and 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Estimated on basis of 4-row power and equipment in 1961; 6-row in 1970 and 1971. Includes fuel, lubricants, and repairs only.

from broadcast application of herbicides on half of their acreage to banding on the entire acreage.

Cotton

Many of the leading cotton farmers in the Yazoo-Mississippi Delta have switched from 4 to 6-row equipment, thus increasing their machinery investment in 1971 (table 20). This will reduce costs of power and machinery services. And there probably will be reductions in pesticide and chemical expenditures. These savings will more than offset increases, indicating total direct costs will decline in 1971. Major cost increases are expected for labor and ginning. A need to add pollution control equipment is expected to increase ginning costs, while increased wage rates, guaranteed weekly wages rather than hourly wages, and more mechanical cultivation all contribute to the higher labor costs. Pesticide expenditures should be less since these larger farmers are moving to lower priced, broad-spectrum herbicides and using more mechanical cultivation for weed control. Custom application of insecticides is increasing, as more farmers use airplanes for application. Farmers who are still using 4-row equipment would have slightly higher direct costs in 1971.

Wheat

Only modest changes are expected in direct costs in 1971 for the production of wheat in south-central Kansas (table 21). Increased yield expectations since 1961 have led to increased use of fertilizer, but the change to different nutrient carriers with lower unit prices has helped to offset the larger quantities used.

Sorghum Grain

Price changes for various inputs account for the slight increase in direct costs expected for producing sorghum grain in south-central Kansas in 1971 (table 22). Yield expectations remain at 55 bushels for the crop on excellent soils without irrigation. About 50 percent of the nitrogen now used in the area is in the form of anhydrous ammonia compared with only 8 percent back in 1961. Herbicide treatment is done on a larger portion of the acres today than in 1961, and the use of chemicals such as atrazine, in addition to 2,4-D, has contributed to the higher pesticide cost.

Rice

Price increases for labor, machinery operating costs, and seed account for the higher expected direct costs on rice for Arkansas producers in 1971 (table 23). Yield expectations remain at 5,700 pounds per acre on these large, well-managed farms.

Table 20.--Direct inputs per acre expected to be used by leading farmers in producing cotton, Yazoo-Mississippi Delta, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | ---------Dollars-------- | | |
| Labor 2/ | Hour | 82.0 | 13.5 | 14.0 | 46.80 | 17.40 | 21.00 |
| Power and machinery services 3/ | -- | --- | --- | --- | 25.00 | 32.00 | 24.38 |
| Seed | Pound | 40 | 18 | 18 | 3.60 | 2.35 | 3.30 |
| Fertilizer: | | | | | | | |
| Nitrogen | do. | 100 | 90 | 90 | 6.80 | 5.75 | 4.74 |
| Pesticides and chemicals | -- | --- | --- | --- | 13.50 | 29.50 | 22.89 |
| Custom application of pesticides | -- | --- | --- | --- | 4.00 | 3.40 | 4.20 |
| Ginning | -- | --- | --- | --- | 20.25 | 26.50 | 30.00 |
| Total | | | | | 119.95 | 116.90 | 110.51 |

1/ Estimated for a large well-managed farm with excellent soil. The expected yields were 700 pounds in 1961, 750 pounds in 1970, and 750 pounds in 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Estimated on the basis of 4-row power and equipment in 1961 and 1970; 6-row in 1971. Includes fuel, lubricant and repairs only.

Table 21.--Direct inputs per acre expected to be used by leading farmers in producing wheat, south-central Kansas, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | ---------Dollars-------- | | |
| Labor 2/ | Hour | 2.0 | 2.0 | 2.0 | 2.24 | 3.00 | 3.30 |
| Power and machinery services 3/ | -- | --- | --- | --- | 2.35 | 3.09 | 3.21 |
| Seed | Bushel | 1.0 | 1.0 | 1.0 | 2.20 | 1.65 | 1.85 |
| Fertilizer: | | | | | | | |
| Nitrogen | Pound | 50 | 65 | 65 | 6.03 | 5.16 | 5.26 |
| $P_2O_5$ | do. | 25 | 35 | 35 | 2.25 | 2.98 | 2.87 |
| Total | | | | | 15.07 | 15.88 | 16.49 |

1/ Estimated for a large well-managed farm having excellent soil. The expected yields are 28 bushels per acre in 1961 and 35 bushels per acre in 1970 and 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Estimated on basis of 3-plow tractor in 1961; 4-plow tractor in 1970 and 1971; 3- and 4-bottom plows, 12-foot disk, 13-foot drill, and 14-foot self-propelled combine. Includes fuel, lubricants and repairs only.

Table 22.--Direct inputs per acre expected to be used by leading farmers in producing sorghum grain, south-central Kansas, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | ---------Dollars--------- | | |
| Labor 2/ | Hour | 2.2 | 2.2 | 2.2 | 2.51 | 3.56 | 3.74 |
| Power and machinery services 3/ | -- | --- | --- | --- | 2.50 | 3.29 | 3.43 |
| Seed | Pound | 4 | 4 | 4 | .72 | .84 | 1.00 |
| Fertilizer: | | | | | | | |
| Nitrogen | do. | 55 | 55 | 77 | 6.73 | 5.75 | 5.91 |
| $P_2O_5$ | do. | 20 | 28 | 28 | 1.70 | 2.30 | 2.35 |
| Pesticides | -- | --- | --- | --- | .12 | 1.40 | 1.46 |
| Drying 4/ | -- | --- | --- | --- | .72 | 1.19 | 1.19 |
| Total | | | | | 15.00 | 18.33 | 19.08 |

1/ Estimated for a large well-managed farm having excellent soil. The expected yields are 40 bushels per acre in 1961 and 55 bushels per acre in 1970 and 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Estimated on basis of 3-plow tractor in 1961; 4-plow tractor in 1971; 3- and 4-bottom plow, 12-foot disk, 13-foot drill, and 14-foot self-propelled combine. Includes fuel, lubricants, and repairs only.

4/ Assumes that 30 percent of the grain is custom dried.

Table 23.--Direct inputs per acre expected to be used by leading farmers in producing rice, Grand Prairie, Arkansas, 1961, 1970, 1971 1/

| Input or cost | Quantity per acre | | | | Cost per acre | | |
|---|---|---|---|---|---|---|---|
| | Unit | 1961 | 1970 | 1971 | 1961 | 1970 | 1971 |
| | | | | | ---------Dollars-------- | | |
| Labor 2/ | Hour | 12.0 | 11.0 | 11.0 | 13.30 | 21.50 | 23.00 |
| Power and machinery services 3/ | -- | --- | --- | --- | 9.40 | 12.00 | 13.00 |
| Seed | Pound | 110 | 135 | 135 | 9.80 | 10.05 | 10.50 |
| Fertilizer: | | | | | | | |
| Nitrogen | do. | 90 | 105 | 105 | 11.70 | 7.90 | 8.00 |
| $K_2O$ | do. | 60 | 60 | 60 | 3.00 | 3.00 | 3.00 |
| Pesticides | -- | --- | --- | --- | 5.00 | 7.00 | 7.00 |
| Custom application: | | | | | | | |
| Nitrogen | -- | --- | --- | --- | 1.55 | 2.32 | 2.32 |
| Pesticides | -- | --- | --- | --- | 1.60 | 2.40 | 2.40 |
| Irrigation | -- | --- | --- | --- | 8.30 | 9.00 | 9.00 |
| Drying 4/ | Cwt. | 46 | 57 | 57 | 15.90 | 18.80 | 18.80 |
| Total | | | | | 79.55 | 93.97 | 97.02 |

1/ Estimated for a large well-managed farm with excellent soil. The expected yields were 4,600 pounds per acre in 1961, and 5,700 pounds in 1970 and 1971.

2/ Direct labor only. Does not include general or overhead labor not directly attributable to the crop.

3/ Applicable mainly to 85 to 115 hp. tractors with associated attachments (16 to 22 ft. cutting disks, field cultivators, etc.) 14 to 16 ft. combines, and tractor-trailer trucks for hauling grain to elevators. Includes fuel, lubricants, and repairs only.

4/ Assumes that 100 percent of the grain is dried.

FCS-42 -- The Farm Cost Situation



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