

FARM AND RANCH BULLETIN

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MACHINERY COST CONSIDERATIONS

Farmers needing to invest in additional machinery should consider whether they have enough acreage (or capital) to justify individual ownership. Among the possible alternatives open to them are joint ownership arrangements, exchange work with other farmers, rental machinery, and hired custom operators. The choice has to be in terms of costs of investing (or not investing) relative to the return on the investment.

The following is a procedure for determining the annual costs of purchasing an item of machinery — for instance, a 16-foot self-propelled combine that costs \$14,000 and will have a \$2,000 trade-in value after a useful life of eight years.

First, estimate the annual fixed costs of the additional machinery. These costs will continue, regardless of how much the combine is used:

Average depreciation

$$\frac{\$14,000 - \$2,000}{8 \text{ years}} \dots\dots\dots \$1,500$$

Interest on average investment

$$\frac{\$14,000 + \$2,000}{2} \times 8.5 \text{ percent} \dots\dots\dots 680$$

Other fixed costs (taxes, insurance, and shelter) \dots\dots\dots 150

Total annual fixed costs \dots\dots\dots \$2,330

Next, estimate the hourly costs of operating the machinery:

Fuel, oil, and grease \dots\dots\dots \$0.72

Average repairs \dots\dots\dots 2.80

Operator's labor \dots\dots\dots 2.00

Total hourly operating costs \dots\dots\dots \$5.52

Then, estimate operating costs per acre. If the combine can cover four acres an hour, for example, operating costs will run \$1.38 an acre.

The next step is the comparison of ownership costs with costs of other alternatives. Many farmers, considering the advantages and disadvantages of custom service, choose to hire a custom operator. The advantages can be significant, since —

- Costs of owning machinery are eliminated, freeing capital for other uses.
- Farmers can plant small acreages of crops they would not otherwise have the specialized machinery to handle.
- More than one machine can be put in the field when timely completion is important.
- Skilled labor is usually acquired along with the machine.
- Machinery costs can be adjusted every year to changes in weather, yield, and market conditions.

These advantages of custom service can be sharply reduced, however, by possible disadvantages that must also be considered.

- Service may not be available when needed, especially with custom operators who prefer large jobs and postpone work on small ones.
- Hired machinery may bring noxious weed seeds into the field from other farms.
- Careless, irresponsible operators may not do the amount of work expected or work to the standard agreed on.

- For large farms, average annual costs may be higher than the costs of ownership.
- A farmer may not be able to profitably use the labor released by hiring custom work.

Evaluation of the advantages and disadvantages of using custom service must, then, also include consideration of the farm size, capital resources, and availability of family labor.

In considering the advantages and disadvantages of hiring and buying machinery, a farmer can use the following guide in estimating his break-even point in units per year:

$$\frac{\text{Total annual fixed costs}}{\text{Custom rate minus unit operating costs}}$$

In the case of the farmer considering the purchase of a \$14,000 combine with an annual fixed cost of \$2,330, assume that he can hire custom service for \$5 an acre.

$$\frac{\$2,330}{(\$5 - \$1.38)} \text{ or } 644 \text{ acres}$$

According to this calculation, a combine owner must harvest 644 acres to justify owning the machine.

Although ownership costs will vary with locations, sizes of farms, crop yields, and operator skills, the procedure for estimating fixed and operating costs will be the same for most types of farm machinery. The figures actually used in the calculation should come from local farm records.

Livestock Numbers on Farms

There were more cattle and calves, chickens, and turkeys on farms and ranches on January 1, 1970, than ever before; but there were fewer hogs and pigs and sheep and lambs. The U.S. Department of Agriculture's Livestock and Poultry Inventory, an annual study, shows that while the number of dairy cows was at a record low on January 1, the number of cattle and calves on farms had climbed to an all-time high of 112.3 million head — 2 percent more than at the beginning of 1969.

The number of cattle in Texas, the nation's leading cattle state, was up 582,000 head — 5 percent more than a year earlier. By contrast, Iowa, the second-ranking cattle state, had only a

1-percent increase in cattle numbers. Arizona, with an 8-percent increase, had the greatest percentage gain.

The number of dairy cattle at least two years old had dropped to 13.9 million head — the lowest level since 1886. The number of heifers one to two years old had dropped to 3.5 million and the number of heifer calves to 3.9 million, both reaching the lowest level since records in those categories were started in 1930. These changes represented 2-percent declines in all three categories.

Declines in dairy cattle numbers were more than offset, however, by increases in beef cattle. The total number of beef cattle was up 3 percent over a year before to a record high of 91.1 million head. The number of cows two years and older was up 3 percent to 37.4 million head, heifers one to two years old were up 4 percent to 9.7 million head, and calves were up 4 percent to 29.1 million head. Steers one year and older numbered 13 million and bulls one year and older numbered 2 million — both gains of 2 percent.

Sheep and lambs on farms and ranches were down 4 percent to 20.4 million head, the lowest level since records were started in 1867. Hogs and pigs were down 6 percent to 56.7 million head. Chickens (excluding commercial broilers) were up 3 percent, however, to 431.5 million, and turkeys were up 1 percent to 6.7 million.

The value of all livestock and poultry on farms rose 16 percent last year to a record high of \$23.5 billion. The value of meat animals (cattle, hogs, and sheep) totaled \$22.9 billion, compared with \$19.7 billion a year before.

Alternate Crops on Diverted Acreage

Castor beans have been added to the list of nonsurplus crops that can be grown on acreage diverted from the production of wheat or feed grain. That brings the number of alternate crops approved by the USDA to eight. Other crops are guar, sesame, plantago ovato, mustard seed, crambe, sunflower, and safflower.

Safflower and sunflower can be planted only on additional acreage diversions eligible for government payment. The other six crops can be grown on any acreage diverted from wheat or feed grain production whether the diverted acreage is nor-

mally required for participation in the program or whether additional acreage is diverted for payment. This is a change from previous crop years.

Planting of these nonsurplus crops will result in a per-acre reduction in the additional diversion payment rate established for a particular farm, the reduction amounting to a designated percentage of the payment rate. As in 1969, the diversion payment rate will be reduced 100 percent when either safflower or sunflower is planted. The reduction will be 50 percent when any of the other six crops are planted.

Farm Mortgage Debt

Preliminary estimates by the Economic Research Service show that the nation started 1970 with a farm-mortgage debt of \$28.7 billion — an increase of 5.7 percent over the \$27.1 billion at the start of 1969. This increase compares with a 6.5-percent rise during 1968 and a 9.4-percent rise during 1967. Despite recurring declines in the rate of rise, however, total farm-mortgage debt has increased every year for the last two decades.

Interest rates on new farm-mortgage loans have followed the general uptrend in all interest rates. Rates on new farm-mortgage loan commitments by life-insurance companies averaged 8.72 percent in the third quarter of 1969. Eleven Federal land banks were charging up to 8.5 percent on December 1, and one FLB was charging 8 percent. By contrast, eight FLB's were making loans at 7 percent on January 1, 1969, and one charged as little as 6 percent. A year earlier, only three FLB's were charging as much as 6.75 percent. The average interest rate on all farm-mortgage loans outstanding on January 1, 1969, was 5.7 percent.

Farm Numbers Decline

The number of American farms continues to decline, but the total acreage of farmland holds about firm. According to USDA estimates, 2,895,210 farms will be operated this year. That will be 2.6 percent less than last year, 27 percent less than in 1960, and the smallest number in a century. Estimated at 2,044,077 in 1870, the number of farms moved on an uptrend until 1935, when the number peaked at 6,812,350. With the continuing disappearance of small, mar-

ginal-income farms, the number has declined every year since.

Number of Farms

Area	1968	1969	1970p
Arizona	6,100	6,000	5,900
Louisiana	56,000	54,000	52,000
New Mexico	14,000	13,800	13,600
Oklahoma	92,000	91,000	90,000
Texas	195,000	191,000	187,000
Total	363,100	355,800	348,500
United States	3,054,310	2,970,910	2,895,210

p — Preliminary.

SOURCE: U.S. Department of Agriculture.

But according to the same estimates, 1.12 billion acres will be farmed this year — only 0.4 percent less than last year and 5 percent less than in 1960. The average farm size will have reached a record high — 387 acres. Farms averaged 378 acres last year and 297 acres in 1960.

Average Size of Farms

(In acres)

Area	1968	1969	1970p
Arizona	7,131	7,233	7,339
Louisiana	214	224	235
New Mexico	3,471	3,500	3,544
Oklahoma	404	409	413
Texas	744	759	775
United States	369	378	387

p — Preliminary.

SOURCE: U.S. Department of Agriculture.

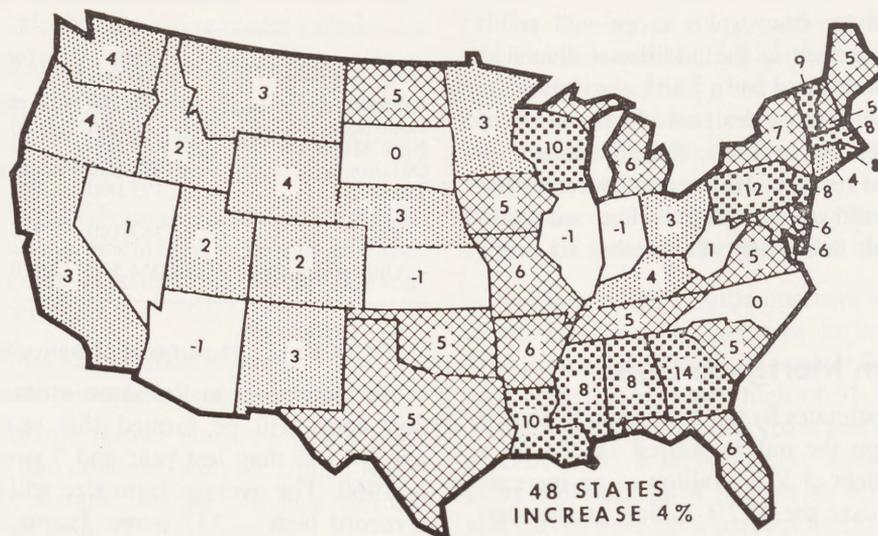
Similar trends are at work in states of the Eleventh Federal Reserve District. Preliminary estimates of the total number of farms in the five southwestern states indicate a decline of 2.1 percent from a year earlier. Average farm size is expected to continue upward in all five states.

Farm Real Estate

Activity in the farm real-estate market may be mixed this year. With continued tightness expected in the institutional farm credit markets, the Economic Research Service foresees more sellers financing sales through mortgages or land contracts.

Supply and demand indicators — number of people looking for farms, number of farms on the

CHANGE IN DOLLAR VALUE OF FARMLAND
Percent Change,
November 1969 From November 1968



market, and number of farm sales — point to slower activity. According to the ERS, demand for land to enlarge farms will continue to be expressed more through rentals than through purchases.

The average per-acre value of farmland rose only 4 percent in the year ended November 1, 1969. This was the slowest rate of increase since 1963. The slowdown resulted from mixed price changes that varied from state to state. Reflected in national figures were 1-percent declines in Arizona, Illinois, Indiana, and Kansas and a 14-percent rise in Georgia.

Because of the generally tight money situation, sellers increased their share of real-estate credit from 54 percent of the loan volume in 1968 to 60 percent in 1969. Commercial banks maintained their relative position of 11 percent both years. There was a significant change in the share of funds insurance companies provided, however. Their share dropped from 17 percent to 8 percent. Federal land banks, on the other hand, increased their share from 9 percent to 11 percent.

The total volume of land transferred was about 22.7 million acres, valued at \$6.2 billion. The total debt incurred for real-estate purchases amounted to \$3.5 billion.

Freeze Branding

N. W. Hooven, Beltsville, Maryland, says freeze brands are as good after three years as after six weeks if the brands are applied properly. Mr. Hooven, an animal identification specialist with the Agricultural Research Service, is studying the effects of breed, age, anatomical location, season, time exposure, and refrigerants on branding to establish methods for their effective use. His studies indicate that irons chilled by dry ice and alcohol make better brands than irons chilled by liquid nitrogen. But experiments are being conducted to reduce adverse effects of liquid nitrogen.

The ARS introduced freeze branding three years ago. The brand is easily seen, even from a distance, and causes far less damage to hides than hot-iron brands, which cause not only local damage but also extensive lateral damage. Branding damage costs the hide and leather industry about \$50 million a year. Excessive freezing will also damage hides. The long exposure to low temperature necessary to make visible marks on light-colored animals often results in "bald" brands. Mr. Hooven believes freeze branding will become the best method of permanently identifying livestock. All cattle at Beltsville are freeze branded before they are three months old.

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