



July 1972

STUDY OF SIZE ECONOMIES FAVORS LARGE EQUIPMENT

Farmers striving to lower production costs and improve income should consider full utilization of larger equipment, according to the findings of a recent study at Texas A&M University. With labor becoming more expensive all the time, substitution of capital for labor becomes increasingly important for efficient farm production. Farmers with units too small to realize economies of size may find themselves at an increasing disadvantage in today's commercial agriculture.

A study of size economies on farms in the Blackland area of Texas, the A&M project compares the potential efficiencies of selected farms with various

combinations of four-row and six-row equipment. Efficiency was measured in terms of total cost per dollar of gross farm sales.

Cost-income ratios

Results indicate that average unit costs of production decrease rapidly for all sizes of farms as operations approach full employment of the regular labor force and full utilization of the field equipment. On the smallest of five farm sizes analyzed—a one-man unit with four-row equipment—the lowest possible cost-income ratio was about 91

LEAST-COST ORGANIZATION FOR FIVE FARM SIZES, TEXAS BLACKLAND AREA

Item	With four-row equipment		With six-row equipment		
	One-man farm	Two-man farm	One-man farm	Two-man farm	Three-man farm
Acres					
Total land	479	958	688	1,376	2,064
Cropland	319	639	459	918	1,376
Pastureland	160	319	229	459	688
Dollars					
Land investment, at \$300 an acre	143,700	287,400	206,400	412,800	619,200
Total initial investment in land, equipment, and livestock	187,508	379,693	273,967	530,134	801,762
Gross income	44,000	80,000	56,000	110,000	164,000
Total cost	39,937	67,618	48,688	90,675	141,783
Cost per dollar of gross income	.908	.845	.869	.824	.864
Returns to management	4,063	12,382	7,312	19,325	22,217
Returns to operator's labor, management, and capital	19,671	39,511	27,727	55,611	74,682

NOTE: Based on average prices, late 1960's
SOURCE: Texas A&M University

cents. For each dollar of sales, 91 cents went for costs. This farm consisted of 479 acres with a total investment of about \$187,500. Net returns after allowing for all costs except a management fee were slightly more than \$4,000. In order to just break even, this operation would require nearly 200 acres.

The lowest cost-income ratio among the five farm sizes analyzed was 82 cents, achieved on a two-man farm using six-row equipment. This farm unit consisted of 1,376 acres with a gross income of \$110,000 and net returns of \$19,325. Total initial investment was about \$530,000.

Criteria of study

All sizes of farms studied had the same main enterprises—cotton, grain sorghum, and cows for feeder calf production. Farm acreage was assumed

to be two-thirds cultivated and a third in permanent improved pasture. Cotton was limited to a third of the cultivated acreage. Where labor was in excess and acreage limited, it was found that income could be improved by adding a small hog enterprise. But because income from the hog enterprise was more expensive than that from crops, the study recommends expansion of acreage as a better way to increase farm income. These findings are based on the average market prices of crops and livestock in the late 1960's. Farm organization may shift, of course, as relative prices change.

Selection of farm sizes and organization of enterprises for the study were made on the basis of efficiency defined in terms of least-cost production. The study indicates that full utilization of larger equipment can increase potential farm income and efficiency because it allows more acreage to be worked with no increase in the labor force. Operators of small crop farms who want to compete in modern commercial agriculture are likely to find increasing pressure to adjust to larger and more efficient units.

FEED USE OF WHEAT IN THE UNITED STATES

(Million bushels)

Item	Year beginning July			
	1960	1965	1970	1971 ¹
Wheat fed on farms where grown	24.9	41.7	62.3	n.a.
Total wheat fed	42.3	153.9	208.7	240.0
As percent of total production	3.1%	11.7%	15.2%	14.6%
As percent of total feed concentrates ²9%	3.2%	4.0%	3.2%

1. Projected

2. Based on October-September feed year

n.a.—Not available

SOURCE: U.S. Department of Agriculture

WHEAT FINDS INCREASED USE AS FEED

Wheat is of unquestioned importance as a food grain, and in recent years it has become important as a feed grain as well. The restructuring of wheat price-support loan rates in 1964 made wheat more competitive with traditional feed grains. Abundant supplies and more cattle feeding in the major wheat-producing areas have also proved significant in the utilization of wheat as feed.

About 15 percent of all wheat produced in the past three years was used as feed, compared with about 3 percent in the early 1960's. Wheat accounted for 4 percent of all grain fed in 1970 and more than 3 percent in 1971. In the early 1960's, it accounted for about 1 percent or less.

Most important areas

The most important wheat feeding area is the region producing hard red winter wheat—the southern Great Plains, which includes parts of New Mexico, Oklahoma, and Texas. The feeding of wheat on the producing farm has expanded rapidly here, rising from 8 million bushels in 1965-66 to 19 million in 1970-71. Accounting for nearly half of all wheat fed in recent years, this area has abundant supplies of wheat, more competitive prices, and a growing cattle feeding industry. Experts believe that the southern Great Plains states have the greatest potential for significant growth in wheat feeding, provided wheat remains competitive with locally grown grain sorghum and imported corn.

The second most important wheat feeding area is the eastern soft wheat region, which includes the Middle Atlantic and southeastern states. There is little wheat feeding either in the northern Great Plains, where hard red spring and durum wheats are grown, or in the western states that produce white wheat, although the latter region shows a strong potential for increased wheat feeding.

Value and competitiveness

The nutritive value of wheat is comparable, and in some cases superior, to that of the more common feed grains. Its nutritional content is affected by class, variety, processing, and feeding conditions, making it difficult to assign specific feeding values. In general, however, it is most effective when fed in mixtures and is acceptable in the feeding of hogs, dairy cattle, beef cattle, sheep, and layer hens.

Even when prices are competitive, many livestock feeders are reluctant to use wheat, mainly because of their lack of experience in feeding wheat and consequent difficulty in determining when the price

is competitive. Competitiveness can only be determined if the stockman has a good knowledge of feeding values and the acceptability of wheat by different classes of livestock under various feeding conditions. Furthermore, wheat is not available in very regular supply from privately held stocks. Although the supply of wheat has been plentiful in recent years, most stocks are usually stored under Government loans. Thus, wheat for feeding purposes is frequently difficult to obtain through the usual marketing channels.

Future growth in feed use of wheat will depend largely on the adequacy of wheat supplies at prices that make it competitive with other feed grains. If price relationships continue favorable and current farm programs are maintained, a further moderate uptrend in wheat feeding is likely.

BEEF INDUSTRY YIELDS MORE THAN MEAT

A growing consumer demand for beef has greatly boosted the U.S. cattle industry in recent years. But domestic demand for other products incident to the production of beef is not keeping pace.

The supply of hides rose from 27.6 million in 1960 to 36.5 million in 1970. But domestic use of these hides for shoe production declined from about 70 percent in the early 1960's to about 50 percent in 1970. Tallow output also soared from 2.3 billion pounds in 1950 to 5.4 billion in 1971. Here again, domestic demand has fallen far short of supply.

Domestic shoe production declined from 642 million pairs in 1968 to 559 million in 1970. Through August 1971, shoe production was down 5 percent from the first eight months of 1970. Imports were largely responsible for this decline. They accounted for about 30 percent of the U.S. shoe market in 1970, compared with 12 percent in 1965. More than three-fourths of these 1970 imports came from Italy

and Spain, where lower wage rates impart a distinct price advantage. Man-made substitutes for leather are also cutting into the domestic market for hides.

Little change has been noted in the proportion of hides used in gloves, garments, and other leather products in the past decade. But exports increased from only 24 percent of all U.S. cattle hides in the early 1960's to over 42 percent in 1970. About 64 percent of the 1970 hide exports went to Japan, Mexico, and the Soviet Union.

Tallow has found increased domestic use in livestock feeds. In 1953, feed use accounted for 71 million pounds, compared with 1.4 billion pounds in 1971—still only a little more than a fourth of the total U.S. supply. The soap industry greatly decreased its use of tallow with the advent of chemical detergents, using only about 6 million pounds in 1970. But research is being conducted on a modified tallow soap to replace phosphate detergents, which tend to pollute water. The new product would

be biodegradable, would leave little residue, and would be efficient in both bath and laundry.

Tallow is also used in lubricants and oils, paints, varnishes, printing inks, and various industrial processes. But export is the fastest growing outlet. United States tallow exports grew from 509 million pounds in 1950 to 2.6 billion pounds in 1970—nearly half U.S. production that year. Tallow is one of the lowest priced fats and oils in the world today, a fact that contributes to its demand in foreign countries.

AGRICULTURE BRIEFS

- Per capita consumption of meat this year is likely to be about the same as last year, although there may be some shifts. Beef consumption will probably be 4 to 5 pounds a person more than 1971's 113 pounds. Veal consumption is likely to continue to slip. In 1971, it fell from 2.9 pounds a person to 2.7 pounds. Per capita pork consumption rose from 66 pounds to nearly 73 pounds in 1971, but it will probably drop 4 to 6 pounds this year because of the downturn in production.

- Livestock producers started this marketing season with a supply of 239 million tons of feed grains—a record high. An increase in feeding is expected to push use 5 to 6 percent above the 154 million tons used in the 1970-71 season. With exports about equal to last season's 21 million tons, total disappearance will probably rise to 184 million tons. That would leave an end-of-June carryover of about 55 million tons, 22 million more than a year earlier and the largest since 1964.

- Credit to farmers this year is expected to rise about 7 percent over last year's record amount. Farm operating credit will probably be close to \$64 billion, and with real estate debt around \$31 billion, credit should total about \$95 billion.

Prepared by Carl G. Anderson, Jr.

TEXAS GAINS MOST IN CASH RECEIPTS FROM FARM MARKETINGS

(Thousand dollars)

Area	January-March		Percent increase
	1972	1971	
Arizona	\$170,900	\$151,400	13%
Louisiana	124,000	113,500	9
New Mexico	71,400	62,400	14
Oklahoma	241,700	213,300	13
Texas	895,500	682,100	31
Five states	1,503,500	1,222,700	23
United States	\$12,262,700	\$10,988,000	12%

SOURCE: U.S. Department of Agriculture