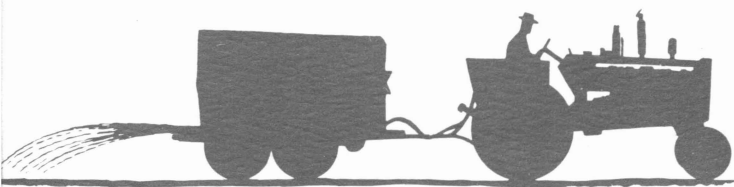


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# How Fertilizers Contribute to Lower Food Costs



TEXAS A&M UNIVERSITY  
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# HOW FERTILIZERS CONTRIBUTE TO LOWER FOOD COSTS

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The steady rise in use of agricultural chemicals, including fertilizers, and the adoption of improved cultural practices in Texas contributes to substantial increases in marketable agricultural products. Improved production efficiency helps commercial producers to prevent per-unit production cost increases which would otherwise be passed on to the consumer.

Low production costs contribute to low retail prices for food and other agricultural products. Consumers directly benefit from low prices; the agricultural sector of the Texas economy also benefits by remaining competitive with products of other regions.

Agricultural production changes in Texas and the nation during the past 20 years are important to the average consumer.

## Effects of Efficiency on Production Costs

Measured by the ratio of output to inputs, production efficiency increased dramatically in Texas during the past 2 decades. Increased volumes of production per unit of fixed input generally mean lower per-unit costs, as shown in Figure 1. Efficient production means that raw products can profitably be sold at lower per-unit prices. Because net farm profits are determined by total market values and costs of production per unit of land (usually an acre or farm) rather than by the price received per pound or bushel, volume and cost of production directly influence profits. Examining farmers' price-per-pound for livestock, value per animal or price per bushel of grain does not indicate whether a sale has returned a profit to a producer.

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\*Extension economist—management and Extension soil chemist, respectively; Texas A&M University.

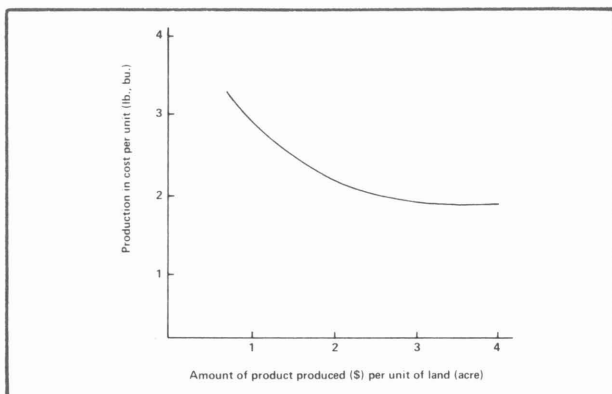


Figure 1. The cost per unit of marketable product declines as total production increases.

A major portion of profits from agricultural production during the past decade must be attributed to increased efficiency. More mechanization, heavier equipment, new varieties, new hybrids and increased use of agricultural chemicals and fertilizers contribute to greater production on less land with fewer workers.

Changes in distribution of the Texas work force during the past two decades show a declining proportion of workers engaged in agricultural production in relation to industrial production, as illustrated in Figure 2. This situation provides a larger work force for industrialization while maintaining an abundant food and fiber supply for a growing population.

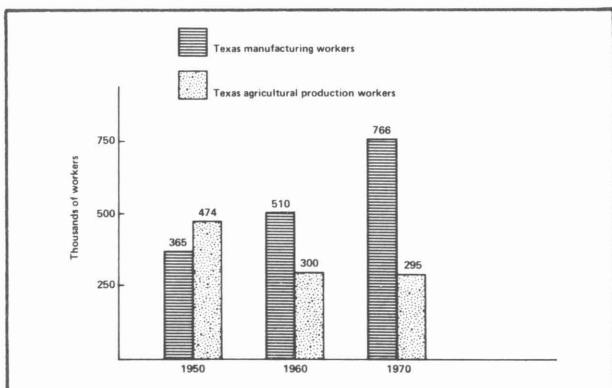


Figure 2. Agricultural production is supported by a decreasing number of workers and increasing output per worker.

The total agricultural and non-agricultural output per worker presented in Figure 3 shows a greater increase in output per farm worker than per industrial worker. Use of fertilizers and other improved practices contribute to efficient production.

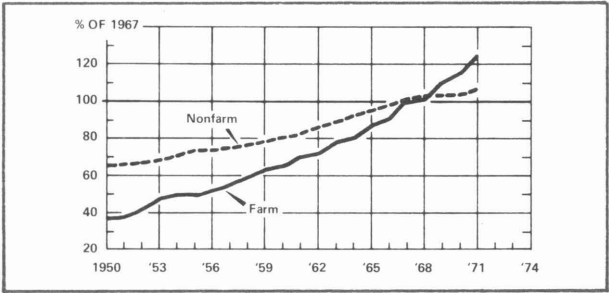


Figure 3. Output per agricultural worker increases more rapidly than nonfarm worker output.

### Fertilizer Contributions to Low Food Costs

Interest in fertilization to improve soil productivity increased during the past 20 years, mainly because costs of plant nutrients in fertilizers remained relatively constant while other production costs rose. Producers must maximize wise fertilizer use to take advantage of this relationship, which is illustrated in Figure 4 for 1950 to 1972. Soil tests and soil fertility research data have been accumulated for assistance in keeping fertilization programs consistent with soil and crop requirements, maximum conservation and minimum pollution.

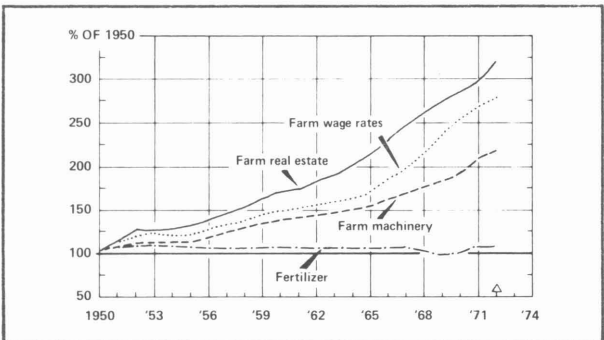


Figure 4. The relative cost of plant nutrients remains nearly constant while most other production costs increase dramatically.

Substituting relatively low cost fertilizers and improved technology for more expensive land and labor caused food costs to decrease from 22 to 17 percent of disposable consumer income from 1950 to 1972, as illustrated in Figure 5. During this same period, farm family income gained but was still only about three-fourths of the nonfarm family income in 1970.

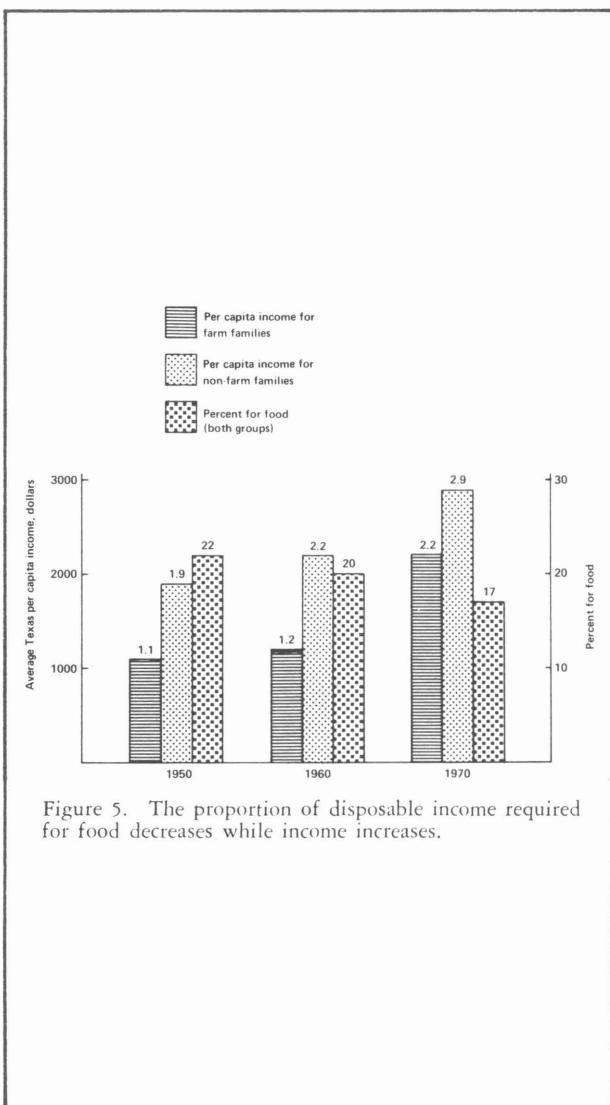


Figure 5. The proportion of disposable income required for food decreases while income increases.

Part of fertilizer's contribution to efficient agricultural production is transferred as a saving to consumers, and part is returned to agriculture.

## Influences of Land-Use Pattern Changes

Use of land for agricultural production is influenced by urban pressures on the land market, available markets for agricultural products, new technological developments and government conservation and production control programs. Use of primary agricultural land in Texas in 5-year averages from 1950 to 1970 is presented in Figure 6.

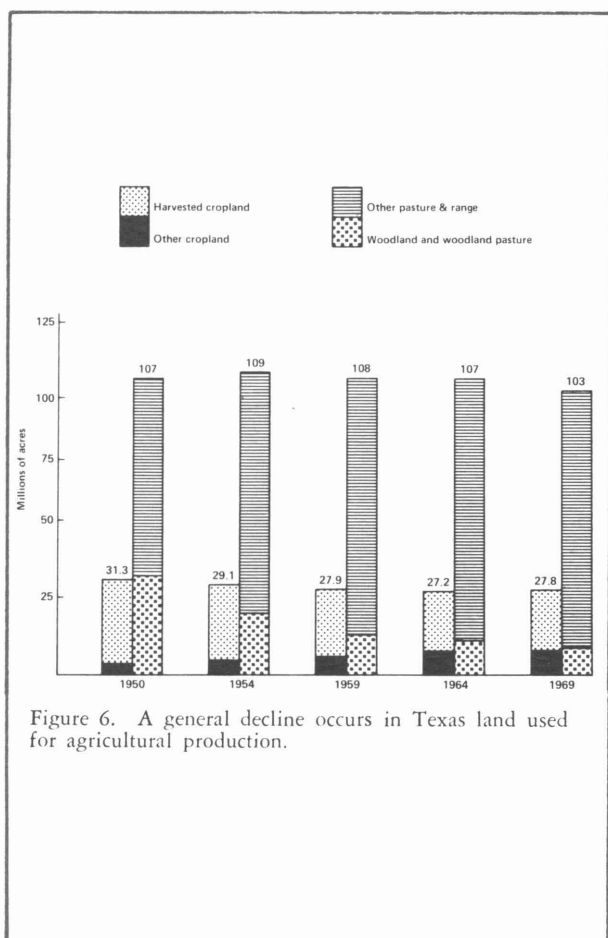


Figure 6. A general decline occurs in Texas land used for agricultural production.

Some major changes during this period are the following.

- More emphasis was placed on improved pastures, forages and livestock.
- The amount of agricultural land was reduced.

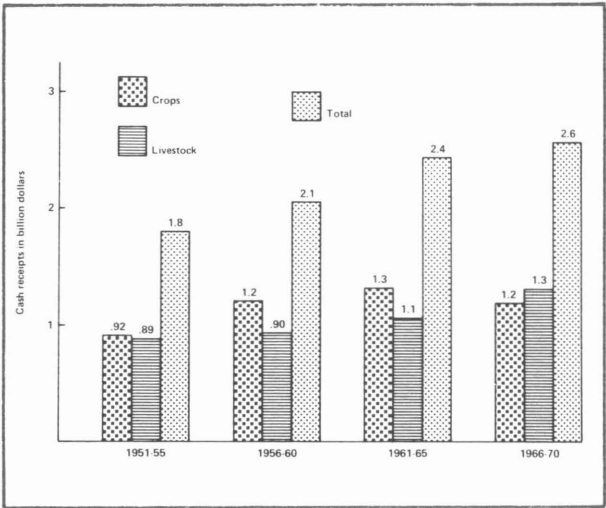


Figure 7. While acres used for crops and improved forages decreased, the value of production increased.

Production of more grain and forage crops supports greater livestock numbers and contributes to increased farm income, as illustrated in Figure 7. Within Texas, regional land use changes affect fertilizer usage. For example, increased numbers of beef cattle in eastern Texas results from more pasture fertilization; infertile soils of this region require regular treatment to support increased livestock numbers. On the other hand, the feedlot development in the High Plains region increases the market for grains and affects fertilizer usage. As shown in Figure 8, a steady increase in use of major plant nutrients in Texas occurred during the past two decades.

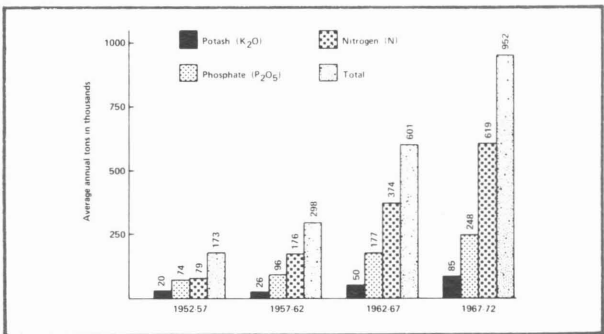


Figure 8. Use of plant nutrients in Texas steadily increased during the past 20 years.

## Future Potential and Expectations

Agricultural production in Texas has not yet reached its full potential. Many unpredictable factors will control future production and determine how rapidly the gap is closed between current and potential production. Based on past history, continued upward movement toward the potential will be necessary to keep food and fiber costs at levels acceptable to consumers.

Generation of new technology and its adoption by producers is one important factor affecting agriculture. The amount of effort devoted to research declined in recent years. Part of this decline was caused by a feeling that agricultural production had sufficient capabilities to meet future requirements. Only the future can determine how agricultural production and consumer food costs will be affected. Without new technology to establish new and higher production potentials, however, the cost of raw agriculture products would no doubt increase.

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