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Agriculture's Productivity: Past, Present, and Future

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AGRICULTURE'S PRODUCTIVITY: PAST, PRESENT AND FUTURE

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Agriculture's Productivity: Past, Present and Future is one of a series of pamphlets intended to provide Indiana's citizens with information about the agricultural food production, processing and marketing system which supplies our huge variety of safe and nutritious food on a daily basis.

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The remarkable increases in productivity of American farmers during the past 160 years is a story worth sharing.

Historians have divided agricultural development into four periods represented by the major forces causing change in farming practices. These periods are characterized as follows:

Age of	Number of persons supplied products by one farm worker				
	1820	1860	1920	1945	1980
hand power	4.1	4.5			
horsepower		4.5	8.3		
mechanical power			8.3	14.6	
science power				14.6	77.5

During the 100-year span from 1820-1920, when hand power and horsepower were used to do farm work, the number of U.S. farm workers increased steadily. Farm output also expanded and, by 1920, we had doubled the number of persons that a farm worker could support. With the adoption of tractors and mechanical power, the number of people working on farms started to decline. In the 25 years from 1920 to 1945, the number of persons supported by a farm worker almost doubled again.

After World War II, science and new technology began to make their contributions. Improved seeds and livestock, fertilization, better nutrition, and pesticides—all helped to revolutionize farming. The numbers supported by a farm worker doubled by 1962; doubled again by 1976 and are still increasing!

These numbers, of course, are only a partial explanation of agricultural efficiency. They illustrate that less and less manpower is used in agricultural production. But how about the other inputs? Have we reduced manpower, but increased the use of land, tractors, fertilizer and other inputs enough to more than offset the savings in labor?

When all of the inputs are measured in relation to the output of crops and livestock, the record is still one of growing efficiency. Here are the annual rates of increased output when all of the production inputs are considered:

Age of	% yearly
hand power up to 1860 (est.)	.4
horsepower (1860-1920)	.5
mechanical power (1920-1945)	1.2
science power (1945-1980)	1.6

Attaining this amazing record has not been without problems. In recent years, the importance of the *nonpurchased* inputs of family labor and family-owned land and buildings has declined, and the use of materials that must be purchased from off-farm sources has increased sharply. The nonpurchased inputs have fallen almost 50 percent since World War II; the purchased inputs have more than doubled. This means that more and more of the farmers' costs are determined by businesses outside the farm gate. The net income of farmers is more vulnerable to the behavior of the general economy.

There is another especially disturbing point. The rate of productivity increases in the 1970s was substantially below that of the 1950s and 1960s. Is the efficiency push of science power slowing down? What will give agricultural efficiency a new push in the future? This is a critical question for farmers. It is equally important for all Americans because it affects what they will eat and what it will cost them.