
Chapter 1

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Continuing, rapid advances in biotechnology and information technology promise to revolutionize agricultural production and to alter dramatically the structure of the U.S. agricultural sector. In the next 15 years, 1.5 of the estimated 1.8 percent annual growth in production needed to balance world agricultural supply and demand must come from increases in agricultural yields—yields that will be possible largely through the development and adoption of emerging technologies. While it seems clear that these technologies must be used if this Nation is to compete in the international marketplace, it is also clear that the potential impacts of adopting these technologies have important policy implications for Congress as it begins debate on the reauthorization of the 1981 farm bill,

One impact will be technology's role, under the current policy environment, in creating a surplus of certain commodities in the immediate future. Overall, the agricultural community is expected to experience unpredictable fluctuations in the balance of agricultural supply and demand. For certain commodities, however—notably, dairy products—a substantial potential for further U.S. surpluses exists. The adoption of new technologies coupled with current farm policy will exacerbate that problem. The implication for policy makers is the need for a farm program that more easily allows for adjustments in periods of shortages and surpluses rather than remaining fixed.

Another impact of technology will be its continuing role in changing the structure of the agricultural sector from a system dominated by the moderate-size farm to one dominated by large and very large industrialized farms.¹ Technology has provided the technical means for structural change: mechanization has made it possible for farmers to operate larger farms,

and disease control has made it possible to use large-scale confinement feeding. Public policy has provided further incentives, such as price supports and tax incentives, for farmers to expand operations.

The technologies a farmer now needs to remain competitive are costly and complex. Farmers who lack the capital and expertise to adopt new technology early enough to maintain a competitive edge must seek supplementary off-farm income, find some special niche for their products, or give up farming altogether. This last alternative has become a familiar picture for the moderate-size farm, which is fast disappearing from the agricultural scene. As it drops from the middle of the farm spectrum, it leaves small and part-time farms (whose owners earn their primary income elsewhere) clustered at one end and the large farms (whose owners can take advantage of economies of scale) clustered at the other,

This trend has several implications for public policy. First, if a decision is made to slow the decline of the moderate-size farm, policymakers must provide ways for: 1) making new technologies more available to these farms, and 2) providing training in the use of these technologies. Targeting income support to the operators of such farms would also be an effective policy component, although even this measure may not help dairy farmers in some regions.

Second, despite the apparent advantages of operators of very large farms, such operators may need a loan safety net to help them weather price instabilities and the rigors of the world marketplace. Unlike most of their moderate-size counterparts, such farms can survive without income supports.

Third, agricultural policy may have to include ways to help particular groups and regions make the transition to different endeavors. For example, programs to retrain agricultural workers for jobs in other sectors of the economy may be necessary, or farm operators in

¹For purposes of this study we have defined a moderate-size farm as having gross sales of \$100,000 to \$199,000; a large farm, \$200,000 to \$499,000; and a very large farm, \$500,000 and over.

a region may need help changing to alternative kinds of farming. The Lake States region, for instance, shows some comparative advantages for switching from dairy production to corn.

Finally, and perhaps most significantly, farm programs must be considered in the context of these strong technological, economic, and institutional forces. Farm programs can merely speed up or slow down these forces of change—they cannot reverse the trends.

While the forces influencing change in the agricultural structure have been identified, they have not primarily been studied in the overall context of farm policy decisions. This report attempts to do just that. It focuses on the following sections of the 1981 farm bill: Title I—

Dairy, Title III—Wheat, Title IV—Feed Grains, Title V—Cotton, Title VI—Rice, Title VIII—Soybeans, Title X—Grain Reserves, Title XI—Payment Limitations, Title XIV—Research and Extension, and Title XVI—Credit, Rural Development, and Family Farms.

Chapters 2 and 3 of this report provide background information on technology and structural change and on the procedures followed in the conduct of this study. The remainder of the chapters present the results of OTA'S analysis. The long-run impacts of technology, public policy, and structural changes on rural communities, the natural resource base, and the environment will be addressed in detail in the later full report from this study.