

Supply Response Under the 1996 Farm Act and Implications for the U.S. Field Crops Sector

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Introduction

Supply response for crops has historically been heavily influenced by the effects of agricultural commodity programs. Structural relations estimated under the previous policy environment, however, may no longer hold under the Federal Agriculture Improvement and Reform Act of 1996 (1996 Act), because most of the restrictions imposed on producers' planting decisions are now removed.¹ With elimination of target-price-based deficiency payments, government payments have become a less important factor in producers' planting decisions. When market prices are above commodity loan rates, supply response is based largely on market incentives.² A central question resulting from this policy change is how responsive plantings are to movement in market prices under the 1996 Act compared with previous legislation.³

Ideally, if a long enough time series were available, structural supply response relationships could be re-estimated to provide a satisfactory answer to this ques-

tion. However, because the 1996 Act was implemented fairly recently, historical data are not yet sufficient to re-estimate the structural relations. Yet, policymakers and market participants want to know how producers will respond to market forces under the 1996 Act and how the act will affect U.S. agriculture. Thus, the change in farm programs calls for a new, innovative approach to estimating U.S. supply response.

Greater supply response, which is manifested through enhanced planting flexibility under the 1996 Act, has a host of important implications for U.S. field crops. How will the 1996 Act alter national aggregate acreage planted to major field crops and crop acreage composition? Will the removal of acreage bases and planting restrictions trigger a shift away from continuous corn operations toward a corn-soybean rotation? Will the 1996 Act dampen or facilitate the long-term trend in the expansion of corn and soybean acreage in the Central and Northern Plains region, where over half of U.S. wheat acreage is located? Will the 1996 Act drastically alter regional production patterns for major field crops? What will be the price impacts of any acreage shifts? Will the effects of changes in the farm program on crop acreage differ in a comparison of high-price and low-price market conditions?

The purposes of this report are two-fold: (1) to estimate producers' supply response under the 1996 Act for major field crops and by production region; and (2) to measure the effect of the 1996 Act on aggregate acreage planted to major field crops, acreage planted to individual crops, regional production adjustments, and farm prices. This study recognizes the difference in producers' supply response between the 1996 Act and previous legislation and incorporates new acreage price

¹The conservation compliance requirement, which was in effect under the Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Act), still remains under the 1996 Act.

²Marketing loan benefits augment market returns when commodity prices are low, as occurred recently. In these circumstances, Government payments can still influence planting decisions.

³Earlier studies on supply response are plentiful, but those comparing free market and restrictive acreage programs are relatively few (for example, Lee and Helmberger). According to the Lee and Helmberger study, corn acreage response was found to be more responsive to own price in years of acreage control programs, 1961-73 and 1978-79, than in other years when a free market was in effect, 1948-49, 1951-53, 1959-60, 1974-77, and 1980. In contrast, soybean acreage response was found to be less responsive to its own price in years when there were feed grain programs than in a free market.

elasticities into estimates of the impact of the 1996 Act on the U.S. field crops sector. The general approach taken here is to gain an indepth understanding of producers' planting decisions during 1991-95, when producers were granted limited planting flexibility under the 1990 Act, and then to infer their likely acreage response to market incentives under the 1996 Act.

The supply response information presented in this report can be useful in analyzing U.S. agricultural policy and farm commodity programs, as well as in commodity market analysis. An indepth analysis of 1991-95 planting decisions is conducted for program-crop normal flex acreage (NFA), the 15 percent of base

acreage under the 1990 Act where producers were permitted to grow any approved crops without loss of base, but received no deficiency payments. This analysis is used to infer producers' acreage response to market incentives under the 1996 Act, with estimates of own- and cross-price elasticities for major field crops derived at the national level and in specific production regions. Then, using these new elasticity estimates, the effects of supply response aspects of the 1996 Act for field crops are presented, based on a comparison of simulations of a U.S. agricultural sector model. Finally, uses of the new supply response elasticities are illustrated in short-term, acreage-forecasting applications.