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Economic Analysis of Base Acre and Payment Yield Designations Under the 2002 U.S. Farm Act

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The 2002 Farm Act provided farmland owners the opportunity to update commodity program base acres and payment yields, which are used to calculate selected program benefits, namely, direct and counter-cyclical payments. Farmland owners had five options from which to select for designating base acres. Four options involved designating 1996 Farm Act production flexibility contract (PFC) acreage as base acres, allowing for the addition of oilseed acres, as applicable. The other option permitted farmland owners to designate base acres using actual plantings for all program commodities in 1998-2001. Analysis suggests that farmland owners viewed the update decision in economic terms: program participants selected the option that resulted in the greatest expected flow of program payments.

Acreage bases were originally determined in the early 1980s and continued through the mid-1990s as part of the annual acreage reduction and deficiency payment programs. Base acres were slow to change as they were determined annually using recent years' land use on the farm. The 1996 Farm Act eliminated annual base acres used for calculating program payments, replacing them with multiyear PFC acreage. The 2002 Farm Act returned "base acres" to agricultural program terminology but as a multiyear designation used to determine program payments that do not depend on current production.

What Is the Issue?

An examination of the underlying economic rationale for base acre and payment yield designation decisions made under the 2002 Farm Act helps address the issue of whether direct and counter-cyclical payments are linked to current production decisions. Base acres are a major determinant of farm program benefits (or proceeds) from direct and counter-cyclical payments. Was the updating decision influenced by management of revenue risk associated with current production choices or alternatively by efforts to maximize direct and counter-cyclical program payments independent of current production decisions?

What Did the Project Find?

Results suggest, in general, that farmland owners made base designation decisions to maximize direct and counter-cyclical payments. Findings do not support an alternative hypothesis that participants sought to align base acres and program yields (and thus payments) to current plantings and production. In many cases, farmland owners elected crop base acres that differed substantially from current plantings. Further, the lack of a strong link between program acres (base or PFC) and year-specific plantings is consistent with the proposition that direct and counter-cyclical

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cal payments are largely perceived as cash transfers that are separate from commodity production decisions and output levels.

Program signup results indicate that a majority of farmland owners elected not to update program base acres to 1998-2001 plantings. Many farmland owners opted to keep PFC acreage as base acres and augment them with oilseed acreage when advantageous. Less than 20 percent of farmland owners updated their base acres, representing 39 percent of base acres. This higher share of acres relative to owners indicates that, in general, farmland owners who updated base had larger-than-average-sized farm operations.

The base designation decision was viewed primarily in economic terms related to program payments. Case study analysis of decisions by farmland owners in South Dakota, in upland cotton area, and in the Heartland region supports the idea that farmland owners generally chose the option that provided the highest direct and counter-cyclical payments. If updating base acres for all crops to 1998-2001 plantings provided a greater flow of payments, farmland owners opted to update. Base was not updated if it did not prove to be economically advantageous.

In general, farmland owners replaced low-payment base acres with high-payment acres whenever possible. They kept or expanded base acres with high payments, such as rice, cotton, and corn, and reduced bases acres for commodities with relatively low payments, such as wheat, sorghum, and barley. Base acres for oats, the commodity with the lowest per acre payments, were reduced the most.

A comparison of expected payment flows associated with each covered commodity shows that optimal rankings of the value of base acre payments by program commodity are nearly identical with or without counter-cyclical payments (at maximum expected levels). Rice base typically pays more than cotton base; cotton base pays more than corn base; corn base payments exceed those for sorghum and wheat, etc. Consequently, if one maximizes direct payments, one nearly always maximizes direct plus expected counter-cyclical payments.

Producers of cotton and corn who expanded production of these commodities in 1998-2001 relative to PFC acres tended to update base acres to these higher paying commodities. Conversely, farmland owners with cotton and corn PFC acres who reduced plantings of those crops generally elected to keep their PFC acreage as base acres to retain the more valuable base acres.

How Was the Project Conducted?

ERS used a statistical modeling approach to analyze county-level results of farmland owners' base designation decisions. The model was applied to three case studies. Case studies focused on decisions in three counties in South Dakota, to illustrate county- and farm-level economic incentives of the base designation choice; the decision to update base for a single commodity—cotton; and updating decisions for the Heartland region, where corn and soybeans dominate.

The economic value of each base designation option was calculated for each commodity and location. The spatial nature of the decision was illustrated by mapping the results of the base designation decision relative to plantings. (Maps are available at www.ers.usda.gov/data/baseacres/. This ERS data product allows you to download and map county-level farm program and planted acreage data.) The payment maximization hypothesis was tested using statistical analyses for selected commodities and regions.