

Eliminating Fruit and Vegetable Planting Restrictions: Market Considerations

Edwin Young and Barry Krissoff ¹

Planting restrictions for fruit and vegetables have become a focal point of policy discussions in recent years, largely because of a case brought by Brazil to the World Trade Organization (WTO) against U.S. cotton programs. A WTO appellate body ruled that, because of planting restrictions on fruit and vegetables, U.S. fixed direct payments for cotton partly depend on current plantings and thus can not be considered “minimally trade distorting” under terms of the Agreement on Agriculture. This legal ruling draws into question whether the United States can continue to claim that direct payments for any program commodity are a “green-box” support, exempt from WTO obligations, without eliminating the restrictions. These planting restrictions were established in 1990 in response to grower concerns about potential market impacts if base acreage became available for fruit and vegetable production.

Given the magnitude of base program crop acreage and the small size of acreage for fruit and vegetables, specialty growers are naturally concerned about the price-depressing market effects of potential shifts of production due to increased planting flexibility. Fruit and vegetable producers are also concerned that new entrants would be collecting Federal subsidies on land planted to fruit and vegetables. Since existing specialty crop growers (without program crop base) would receive no direct/counter-cyclical benefits, this is perceived as unfair and inequitable. Part of this concern is that current payment recipients based on their program crop history would be able to use government payments to “cross-subsidize” new specialty crop acreage.

This paper explores incentives to expand fruit and vegetable production along with the associated market impacts. To accomplish this task, we look at the incentives program crop producers have to switch to production of fruit and vegetables. The questions we address: Are government payments at the margin sufficient to induce substitution of acres into fruits and vegetables; are the base acres suitable for growing fruit and vegetables; and are there market opportunities to sell fruit and vegetables. We also review attempts by others to look at the value of base acres and examine their estimates of the costs of the compensation necessary to offset the value of direct and counter-cyclical payments to the industry in exchange for removal of the planting restrictions.

Direct and counter-cyclical payments

The 2002 Farm Act provides income support to U.S. agriculture through various programs for 2002-07, including direct and countercyclical payments (Westcott, Young, and Price). Congressional discussions on the 2007 Farm Bill suggest that direct and countercyclical payments are likely to continue although the payment rates and rules may be altered. As of September 2007 it is not clear that the planting restrictions will be eliminated. The Farm,

¹ Edwin Young is a senior economist and Barry Krissoff is Deputy Director for Research and Program Management, Market and Trade Economics Division, Economic Research Service, USDA. The views expressed in this article reflect the views of the authors and do not necessarily reflect the views of the U.S. Department of Agriculture.

Nutrition, and Bioenergy Act of 2007 (H.R. 2419) passed by the House of Representatives in July did not remove the planting restrictions. As of October, 2007 since the Senate had not debated the farm bill, it is not clear if they will address the planting restrictions. Direct and countercyclical payments are determined using base acreage, program payment yields, and payment rates. Base acreage reflects historical use of the land for eligible crops, and program payment yields are historically determined commodity yields. Payment rates are established in the legislation. Base acreage designations under the 2002 Act were made in 2002/03. In addition to granting eligibility to the seven crops (corn, grain sorghum, barley, oats, wheat, rice, and upland cotton) for which Production Flexibility Contract payments were made under the 1996 Farm Act, the 2002 Act also permitted farmland owners to include peanuts and oilseeds in base acreage. Although base acreage designations remain fixed for the 2002 Act, producers must enroll in the direct and countercyclical payment program annually to be eligible for those payments. Producers have considerable planting flexibility on base acreage, except for restrictions on:

- Wild rice.
- Fruit (including nuts).
- Vegetables, other than lentils, mung beans, and dry peas. Dry peas include Austrian, wrinkled seed, green, yellow, and umatilla. Peas grown for the fresh, canning, or frozen market are not dry peas.

Planting for harvest of fruit and vegetables is prohibited on base acreage, except in the following situations:

- Harvesting double-cropped (producing two or more crops for harvest on the same acreage in the same crop year) fruit and vegetables on base acreage is permitted, without loss of payments, in any region that has a history of double-cropping covered crops with the otherwise prohibited crops. An individual farm need not have a double-cropping history, only the region.
- Harvesting of any fruit and vegetables on base acreage is permitted, with an acre-for-acre loss of direct and countercyclical payments for each acre planted to the otherwise prohibited crop, if the Secretary of Agriculture determines that the farm had a history of planting those crops.
- Harvesting of any fruit and vegetables on base acreage is permitted, with an acre-for-acre loss of direct and countercyclical payments for each acre planted to the otherwise prohibited crop, if the Secretary of Agriculture determines that the individual producer had an established planting history of the specific crop.

A farm would have a history if it planted fruit and vegetables on base acreage in any year from 1991 to 2001, excluding 1996 and 1997.² A farm with a history can plant all base acreage to fruit and vegetables on base acreage. A producer would have a history if he/she planted fruit and vegetables on other farms during the same period. A producer with history can only plant the specific crop in which there is a history, and the producer is limited to the (average) number of historical acres for which the producer has a history. A farm or producer with a history is not

² Farms that planted oilseeds and fruit and vegetables during 1996-2001 could establish a planting history in many cases when designating base in 2002-03 if oilseeds were planted on existing contract acreage.

considered to be in violation of the contract if fruit and vegetables are planted to base acreage, but direct and countercyclical payments would be reduced acre-for-acre for base acreage planted to fruit and vegetables.

The value of direct and counter-cyclical payments varies by commodity (figures 1 and 2) and by location (figure 3). The legislated payment rates are commodity dependent. Counter-cyclical payments depend on year specific commodity prices. In addition, the program yields reflect historic production levels associated with the specific base acreage.

In crop years 2004 and 2005 direct payments averaged around \$5.2 billion per year (\$19.50 per base acre) while counter-cyclical payments averaged about \$4.5 billion (or about \$16.80 per base acre). In 2004-2005 the per acre value of direct payments ranged from over \$150 per base acre in several counties in Arizona, where cotton is produced, to under \$1 per base acre in other parts of the country. While direct payments will remain roughly the same from year to year assuming no change in legislation, counter-cyclical payments are projected to be lower in future years in response to higher projected commodity prices. Significant expansion of ethanol production is leading to higher corn prices. Higher corn prices are leading to shifts in cropland use, which is supporting prices for other commodities. In addition strong international demand for wheat and rice are expected to strengthen prices. Thus, USDA projects that counter-cyclical payments will only be paid for cotton and peanuts. Payments are projected to average \$958 million per year (or \$3.56 per base acre) in crop years 2008 through 2012.

Farm-level Supply Response to Planting Flexibility

To understand how planting restrictions may affect government payments and fruit and vegetable supply consider the following example (figure 4). Suppose a farm has 1000 acres of cropland, which includes 400 acres on non-base, 200 acres of soybean base with an expected direct and counter-cyclical payment of \$15 per acre, and 400 acres of corn base with an expected direct and counter-cyclical payment of \$35 per acre.³ Assume that the expected net market returns from vegetable (or fruit) production is \$150 per acre and that expected net market returns from producing a program crop is \$140 per acre.

Profit maximizing producers would plant their non-base acres to vegetables or “unrestricted crops” (such as alfalfa) when expected net returns exceed expected net market returns for program crops (ignoring factors such as risk and crop rotations). Profit maximizing producers would plant their base acres to a program crop or to an unrestricted crop. If the farmer elects to plant a vegetable, expected net returns equal revenue minus cost minus payment reductions (if any). The size of the payment reduction depends on a number of factors—the type of base, payment yields, and planting history.

If a farm has a history of planting fruit and vegetables on program acres and net returns for vegetables exceed \$155 per acre (net returns for any program crop plus direct and counter-cyclical payments for soybeans) the producer would switch soybean base acreage to vegetables. If net returns for vegetables exceed \$175 per acre the producer would switch program acreage to

³ This is a general example. Other program commodities and fruit and vegetables for corn, soybeans, vegetables, and alfalfa.

vegetables and give up their direct and counter-cyclical payments. If the producer had originally divided their non-base acres between restricted crops (fruit and vegetables) and unrestricted crops, the producer could plant all non-base acres to vegetables and move the alfalfa production onto the base acres with no loss of payments.

Whether or not the farm has a history of planting fruit and vegetables on program acreage affects supply response. If the farm has a history of planting vegetables on base acreage, the penalty for planting fruit and vegetables is an acre-for-acre loss in payments. Thus the penalty for planting fruit and vegetables on base acres would be \$15 per acre for the first two hundred acres planted. This producer could continue to plant soybeans or alfalfa on the corn base with no loss of corn payments. Any additional vegetable plantings would have a \$35 per acre loss of payments.

For a farm with no production history, the expected profit for planting more than 400 acres to vegetables would need to exceed \$17,000 represented by area “abcdef.” The penalty would be the same if one additional acre or 600 additional acres were planted to vegetables. Alternatively, the producer could acquire (leasing or purchase) some program acres and reconstitute their farm to have a planting history (Johnson, et al).

If planting restrictions were lifted, there would be no penalty associated with planting more than 400 acres of vegetables. The producer would continue to receive the direct and counter-cyclical payments associated with the soybean and corn base acres regardless of what is planted. As a consequence, a producer with history may opt to grow vegetables as long as the expected net return on vegetables exceeds \$140, rather than \$155 on the 200 acres and \$175 on the remaining 400 acres. Keep in mind though, if the expected net return on vegetables exceeds \$175, then the producer would have forgone direct and countercyclical payments regardless of the planting restriction.

A concern identified by some fruit and vegetable producers is that the direct and counter-cyclical payments could be used to purchase equipment or land to facilitate the switch to fruit and vegetable production. It can also be argued that it is “not fair” that some growers would receive payments for land planted to fruit and vegetables while others would not.

Barriers to expanding into fruit and vegetable production

A producer who is considering a shift or move into producing fruit and vegetables also needs to consider the potential demand (or revenue) and cost factors, particularly the specialized costs for the selected commodity. For new growers, demand and cost factors can be prohibitive (Thornsbury, Martinez, and Schweikhardt, and Johnson, et al).

Producers who are expanding fruit and vegetable production need to consider potential product demand, the need to locate, develop, and secure markets, and the prevalence of contracting in the sector. Market competition is intense for many fruit and vegetable growers. Most vegetables destined for processing are grown under contractual arrangements between growers and processors, and longrun demand is stagnant or declining, offering little chance for industry acreage expansion. Contracting is especially prevalent in the production of processing vegetables (e.g., tomatoes, sweet corn, green beans, and green peas), as processors require assurances of a

crop's volume and specific characteristics, such as variety, size, color, and timing of delivery to the factory.

While returns per acre can be substantial, the costs and financial risks of producing many fruit and vegetables (especially fresh-market crops) are high, creating significant barriers to switching land from program crops to fruit and vegetables. A number of products are labor intensive or require specialized harvesting equipment. Irrigation needs, high herbicide and pesticide costs, and specialized production and marketing expertise also impede the switch to those crops. Fruit production has its own limitations. It takes several years following planting for trees and vines to produce commercially marketable crops. During these nonproductive years, growers who plant on base acreage incur costs associated with maintaining the new crops as well as forgoing direct and counter-cyclical payments.

Confluence of fruit and vegetable, and program crop production

The myriad of commercial fruit and vegetable production is concentrated due to agronomic and climatic constraints. Approximately 12 million acres of cropland are used to produce fruit and vegetable crops that are subject to the planting restrictions. This fruit and vegetable production is concentrated in a number of regions throughout the U.S (figure 5). Vegetables are produced throughout the United States, with the largest overall acreage (excluding that for potatoes and dry beans) in California, Minnesota, and Florida. The upper Midwest (Michigan, Minnesota, and Wisconsin) and the Northwest (Washington and Oregon) report the largest vegetable acreage for processing, while California, Florida, and Texas harvest the largest share of fresh vegetable and melon acreage. The eastern seaboard States (from Georgia to New York) also report substantial vegetable acreage. With continuous strong output of cool-season crops, such as lettuce, broccoli, and celery, California remains the major producer of fresh vegetables even during the winter. Florida, however, is the top producer of warm-season crops (e.g., tomatoes, peppers, snap beans). Potato production is concentrated in the Northwest (Idaho, Washington, and Oregon), but Colorado, North Dakota, California, Wisconsin, and Maine are also key suppliers. North Dakota, the top dry pea and lentil producer, is also the largest producer of dry beans (almost one-third of national output in 2004-06), followed by Michigan, Nebraska, Minnesota, and Idaho.

California, Oregon, Washington, Florida, Texas, Michigan, and New York lead in fruit orchard acreage. California alone accounts for nearly one-half of the Nation's fruit acreage, Florida almost one-fourth, and Washington close to one-tenth. California's mild climate gives it an advantage over other fruit-producing States. California is the Nation's largest producer of grapes, strawberries, peaches, nectarines, avocados, and kiwifruit. It also leads in production of fresh-market oranges and tree nuts, including virtually all almonds, pistachios, and walnuts. Washington is the largest apple producer for both fresh use and processing. Washington is also a leading producer of grapes (mostly for wine and juice), pears, and sweet cherries. Midwestern and Northeastern States are key producers of processed fruit products, such as canned tart cherries and apple sauce, while Florida, the primary citrus producer, leads in production of oranges for juice, grapefruit, and tangerines.

Conversely program crops are produced over a wider area with some production in every state. Farm Service Agency data indicate that there are approximately 266 million base acres eligible

for direct and counter-cyclical payments (figure 6). Corn and soybeans predominates in the Midwestern states. Wheat production is heaviest in the plains states and in the Pacific Northwest. Rice production occurs in the Delta states and in parts of California. Cotton and peanut production is located in the Southeastern States stretching from Georgia to Texas. Cotton is also produced in parts of California and Arizona.

Base acreage constitutes a particularly large share of cropland in the Corn Belt, Northern Plains, Mississippi Delta, and parts of the Southeastern States. Base acreage is significant in California, the top U.S. fruit- and vegetable-producing State, but accounts for a much smaller share of available cropland than in other regions. Florida, the second leading U.S. fruit- and vegetable-producing State, has very little cropland designated as base acreage.

Both program crops and fruit and vegetables are produced in many regions. Base acreage constraints may be limiting fruit and vegetable production in eastern North Dakota, a region where dry beans and potatoes are grown. Land constraints may also limit acreage shifts or expansion in southern Minnesota, central Wisconsin, northern Illinois, western Michigan, and western New York, where a variety of processing fruit and vegetables are grown. In California and Florida, fruit and vegetables already account for a large share of cropland. While fruit and vegetable acreage is high in the eastern coastal plain, southern Idaho, and central Washington, many counties in these regions have additional non-base land available for crop production.

Additionally, many fruit and vegetables producers grow program crops. With their experience growing these crops, these producers would be prime candidates for expanding production of fruit and vegetables if the acreage constraints were eliminated. Many farms currently produce or have a history of producing fruit and vegetables on base acreage. Farmers who participate in the direct and counter-cyclical payment programs must annually report or “certify” the use of land on their farms with FSA. A close look at such data helps gauge the overlap between production of program crops and production of fruit and vegetables.

Based on State-level summaries of acreage reports and program enrollment data for 2003, farms that certified acreage planted about 2 percent of their cropland, or over 6.5 million acres, to fruit and vegetables. Thus, farms that certify acreage with FSA account for about half of land devoted to fruit and vegetables (figure 7). These farms contain about 80 percent of land planted to vegetables, dry beans, and potatoes. Farms with certified acreage account for less than a quarter of the land devoted to production of fruit, nuts, and berries. Farmers may be less likely to plant fruit trees and vines on base acreage than they are to plant vegetables and melons because trees and vines require several years to mature, thus delaying harvest.

Market impacts likely to be small

Market effects of eliminating planting restrictions are likely to be limited and confined to specific regions and commodities (Thornsbury, Martinez, and Schweikhardt, and Johnson, et al.). Supply shifts would be more likely in regions where the land and climate are suitable for vegetable production and non-base acreage is in limited supply. Acreage in these regions would not necessarily shift significantly because current restrictions are not always binding for producers. Many producers have a history of planting fruit and vegetables on base acres or have

access to sufficient non-base acres available to expand production. Because some fruit and vegetables are expensive to produce, program crop farmers are more likely to switch to less capital-intensive crops, such as dry beans, or to processing vegetables, than to fresh fruit or vegetables. However, analysis of market effects is complicated because of a lack of comprehensive and consistent data, a large number of commodities, and limited estimates of relevant economic parameters.

Commodity program payments frequently are not a constraint when electing to switch from program commodities to fruit and vegetables. The per-acre value and production cost of fruit and vegetables are generally much higher than for program crops. For fresh-market sweet corn (a vegetable), average gross revenue per planted acre during 2003-05 was about \$2,200. For comparison, the per acre value of production plus marketing loan benefits and direct and countercyclical payments for feed corn (a program crop) in 2003 was less than \$340 per acre (figure 8).

Producer impacts

While overall market impacts are likely to be small, impacts could be significant for individual producers, commodities, and regions. Producers with base acreage are the most likely to benefit because they may be able to realize additional revenue from harvesting fruit and vegetables. Under current program rules, these producers could expand production by forgoing direct and counter-cyclical payments for the current year, if expected net returns to producing the fruit and vegetables exceed expected net returns from producing the program crop, including program payments. If planting restrictions were eliminated, these producers would continue to receive direct and countercyclical payments.

Informa Economics in a study commissioned by a consortium of fresh fruit and vegetable producer groups identified cross-subsidization impacts of removing planting restriction on producers for the fresh market. It is important to note that most fruit and vegetable producer groups have not sought any type of direct payment. Rather Informa used this estimated impact as partial justification for other support to the industry (research, market development, purchases for school lunches, etc.). With a lifting of the restrictions cross-subsidization impacts occur, since existing specialty crop growers (without program crop base) would receive no direct/counter-cyclical (DCP) benefits, while current DCP recipients would be able to use government payments to “cross-subsidize” new specialty crop acreage. Informa estimates the costs of \$806 million to fresh-market, specialty crop producers due to cross-subsidization. This study has several shortcomings. First, insufficient information is presented to justify their estimated cross-subsidization impact. Second, they provide no insights into the economic incentives that create the incentive to expand fruit and vegetable plantings.⁴

One approach would be to estimate the level of payments needed to offset direct and counter-cyclical payments. In developing this estimate, **we are not proposing this type of payment.** If we used an average direct payment of \$19.50 per base acre for the 12 million acres of fruit and

⁴ Informa also estimated market impacts of \$3.1 billion are attributed to shifts in program crop acreage to specialty crop production that lead to lower prices and revenues for existing specialty crop growers. This estimate is based on an assumption that fruit and vegetable acreage would expand by 10 percent.

vegetables, payments of \$234 million would be required. Providing a similar payment to offset counter-cyclical payments in 2004 and 2005 of \$16.80 per base acre would require payments of \$202 million. If the payment is based on projected prices, the counter-cyclical payment component would decline to \$42.7 million.

This average approach, however, does not reflect the opportunity cost of the land use in areas where fruit and vegetable production predominates. Local agronomic and climatic conditions help determine the substitutability of particular fruit and vegetables for program crops. Thus an alternative estimate of the financial advantage that current owners of base acres have might be average payments in the state or county where fruit and vegetable production occurs. This would increase payments to fruit and vegetable producers in regions where high-payment rice and cotton base is located while lowering payments in regions where barley, oats, and wheat base predominate.

To better understand this substitutability, we examined county-level data for both fruit and vegetables and program payments. Comparing the location of fruit and vegetable production (figure 5) with county-average direct and counter-cyclical payments (figure 3) illustrates that fruit and vegetable production is concentrated in regions with higher payment base acres. In order to estimate payments based on regional direct and counter-cyclical payments, we merge Census of Agriculture data on harvested acreage of vegetables, potatoes, dry edible beans, wild rice, and fruit, nuts and melons with administrative data on base acres and county-level direct and counter-cyclical payments from USDA's Farm Service Agency.⁵

Estimated payment equivalents are considerably higher when weighted by fruit and vegetable production compared to national average payments per base acre (figure 9). If a county-level equivalent payment were made to historic fruit and vegetable acreage, payments would average \$53.75 per acre or \$641 million per year. While a payment of almost \$54 per acre would be significant for producers of dry beans or even sweet corn in the upper Midwest, county-level payments in this region are much lower (figure 3). Average direct payments increase to \$27.11 per fruit and vegetable acre compared to \$19.70 per base acre for all program crops. Counter-cyclical payments averaged \$25.64 per fruit and vegetable acre compared to \$10.45 per base acre. The higher per acre Counter-cyclical payments reflect the concentration of fruit, nut, and vegetable production in regions where high-payment-rate cotton, rice, and peanuts are the predominant program crops.

Making a payment to fruit and vegetable acreage based on county-average direct and counter-cyclical payments results in over 60 percent of payments going to counties with current payments greater than \$75 per acre or with no no base acres (figure 10). Since there is a limited amount of base acreage in these counties (less than 7 percent of base), it is unlikely that significant quantities of this high-payment base acreage would be diverted to fruit and vegetable production in these counties.

⁵ Data on base acres are available from ERS' Farm Program Acres data base. FSA provided a special run on county-level direct and counter-cyclical payments for crop years 2004 and 2005. Payment data was not available for some counties with small amounts of base acreage. These counties contain about 10,000 base acres. Several of these counties have significant acreage devoted to fruit and vegetable production.

Additional considerations

Compensating current fruit and vegetable producers with an equivalent payment could overcompensate for any financial advantage that a landowner with base acreage might have relative to current fruit and vegetable producers for several reasons.

First, almost 80 percent of current fruit and vegetable production is on farms that currently receive some payments for base acres. Many of these producers could easily expand production under current rules if they believe that expansion would be profitable and they have elected not to do so. Johnson, et al. report that in 2003 and 2004, about 14,400 to 15,000 program farms planted fruit and vegetables on just over 600,000 base acres nationwide. About 99 percent of these farms had a history of planting fruit and vegetables on base acreage, so they lost direct and countercyclical payments (\$22 per acre) associated with the affected acreage. Almost one-third of the acreage with payment reductions was in California, and about one-fifth was in North Dakota and Minnesota combined. These foregone payments are significantly lower than the county-level averages discussed above. When deciding among alternative cropping decisions, as discussed relative to figure 4, farmers tend to give up less profitable commodities in exchange for commodities with higher expected net returns.

A second concern is that if compensation were based on county-level average payments the majority of the payments would go to farms located in counties with limited amounts of base acreage available for expansion. In number counties where fruit and vegetables are produced there is very little base acreage. Over nine percent of fruit and vegetable acreage is located in counties with no base acres or where payment amounts are negligible.

In addition, if market impacts are expected to be small because the number of new entrants is low, then any concerns associated with payments these producers receive is also small. The value of direct and counter-cyclical payments is low relative to expected market returns from fruit and vegetable production.

Fourth, other commodities in addition to fruit and vegetables also do not receive direct and counter-cyclical payments. Commodities such as alfalfa also compete for land with program commodities and have done so since 1996 without compensating payments. Extending payments to these commodities would be very expensive. There are about 130 million acres of cropland that is not base acreage and is not planted to fruit and vegetables.

Finally, an alternative solution would be to eliminate direct and counter-cyclical payments for program crops. While this option has not been suggested relative to the fruit and vegetable planting restrictions, it has been suggested as a reform option for current commodity programs (Morgan and Cohen).

Conclusions and implications

Given the magnitude of base acreage and the small size of acreage for fruit and vegetables, removing base acreage planting restrictions for fruit and vegetables could lead to price-

depressing market effects from potential shifts of production due to increased planting flexibility. Market effects of eliminating planting restrictions are likely to be limited and confined to specific regions and commodities. In many cases, barriers other than program rules, such as the need for specialized equipment, expertise, agronomic constraints, or labor for harvesting, dissuade producers from growing fruit or vegetables. Startup costs for new and sometimes existing growers of fruit and vegetables can be substantial. Higher production costs and greater risk are two reasons that producers may choose not to plant additional acreage to fruit and vegetables.

Fruit and vegetable producers are also concerned that new entrants would be collecting Federal subsidies on land planted to fruit and vegetables. This paper explores approaches to estimating the costs to compensate fruit and vegetable producers to offset direct and counter-cyclical payments received by current program participants. If a county-level equivalent payment were made to historic fruit and vegetable acreage, payments would total \$641 million per year. Making a payment to fruit and vegetable acreage based on county-average direct and counter-cyclical payments results in over 60 percent of all payments going to counties with current farm program payments greater than \$75 per acre or with no base acres.

Attempting to apply such estimates warrants additional considerations. Compensating current fruit and vegetable producers with an equivalent payment could overcompensate because many current fruit and vegetable producers currently receive some payments for base acres and they could easily expand production under current rules if they believe that expansion would be profitable. If compensation were based on county-level average payments the majority of the payments would go to farms located in counties with limited amounts of base acreage available for expansion. In addition, if market impacts are expected to be small because the number of new entrants is low, then any concerns associated with payments these producers receive is also small.

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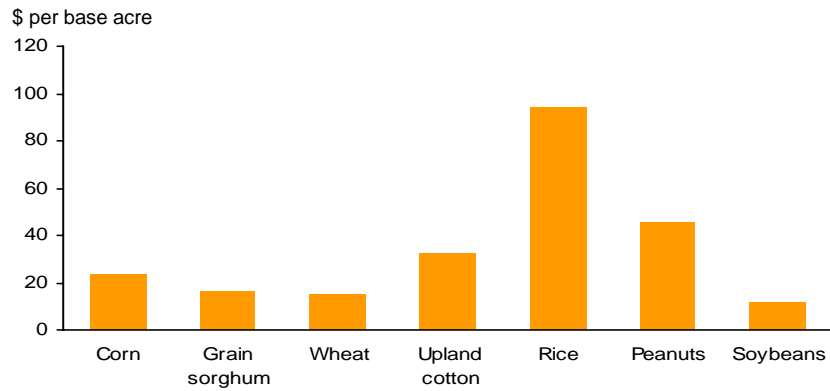
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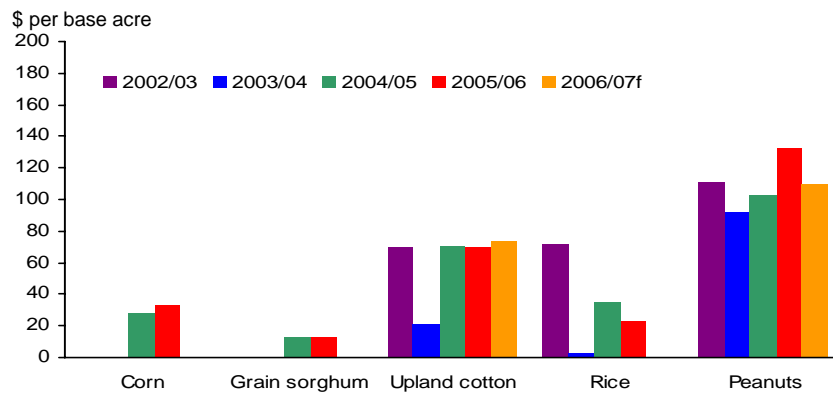
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Figure 1. Direct payments for crop year 2006/07



Sources: Compiled by USDA, Economic Research Service, from USDA, Farm Service Agency and USDA, National Agricultural Statistics Service data.

Figure 2. Counter-cyclical payments by crop year



f=forecast

Note: Neither wheat nor soybeans has received counter-cyclical payments.

Sources: Compiled by USDA, Economic Research Service from USDA, Farm Service Agency and USDA, National Agricultural Statistics Service data.

Figure 3. Average direct and counter-cyclical payments per county, 2004-05

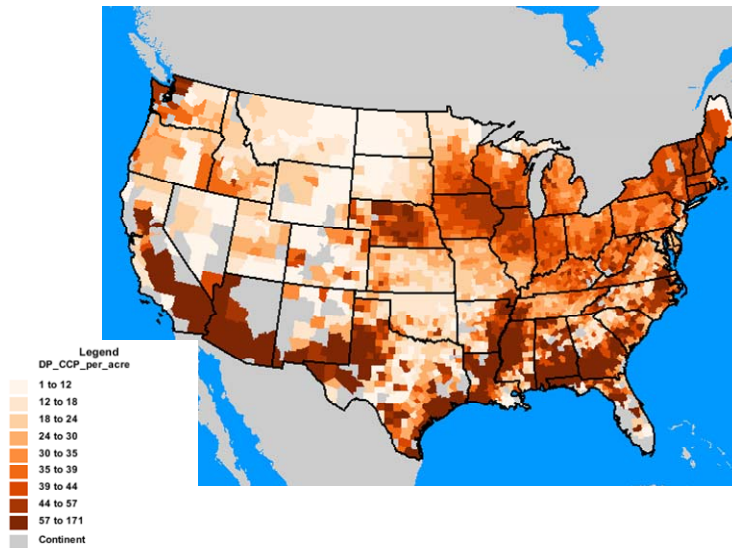


Figure 4. Farm-level vegetable supply function

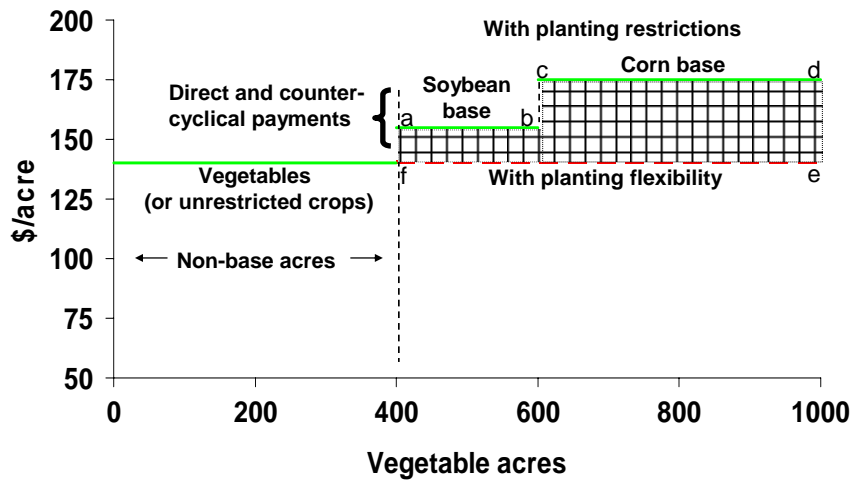


Figure 5. Location of fruit and vegetable production

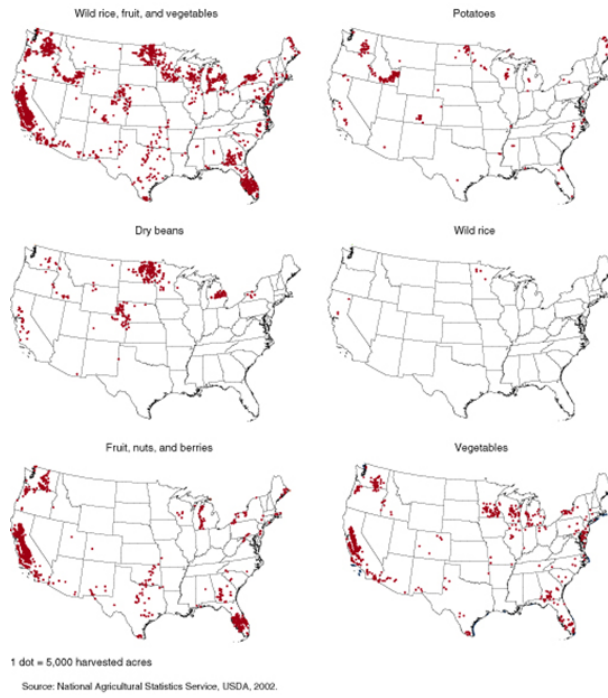


Figure 6: Base acres

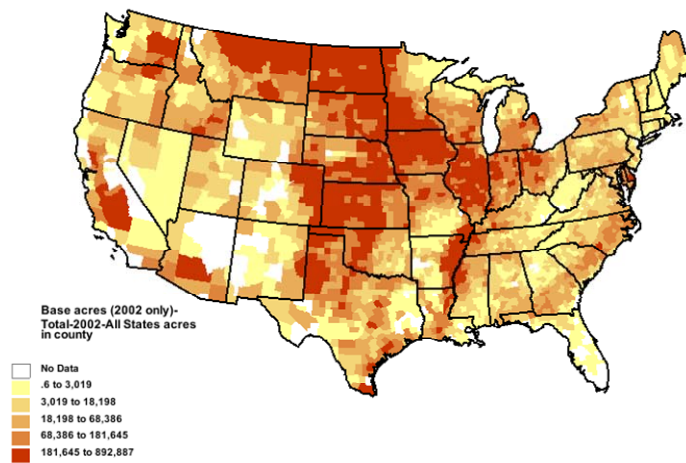
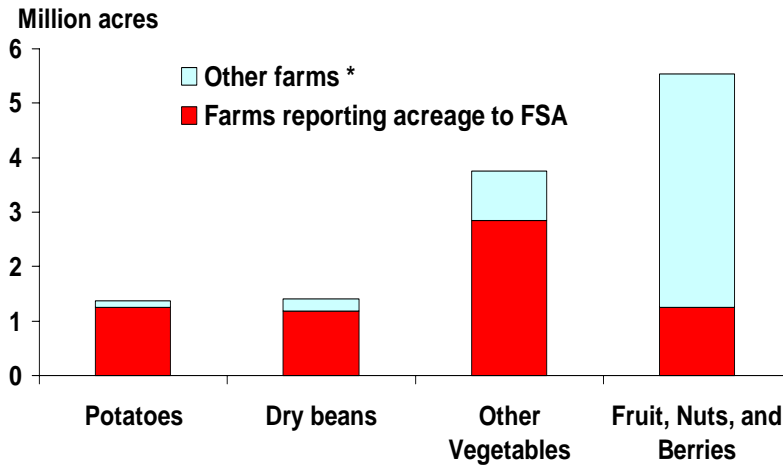
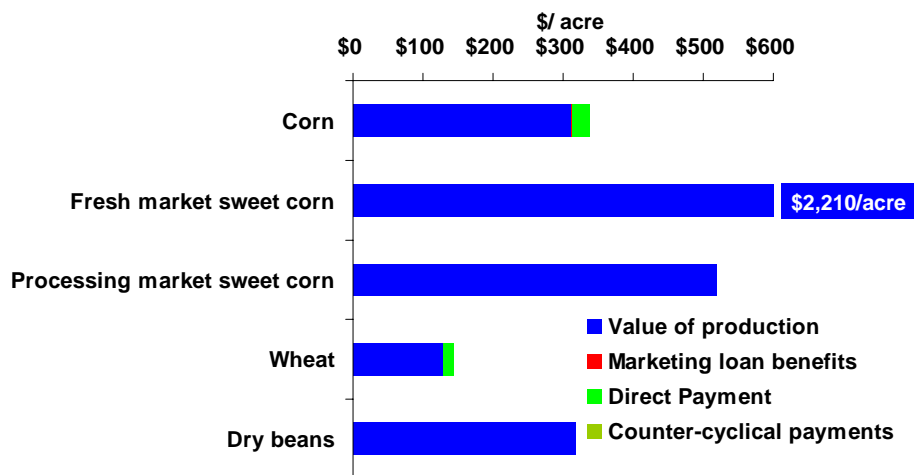


Figure 7. Program participants account for large share of fruit and vegetable plantings



* Calculated as residual: acres in Ag Census minus acres reported to FSA.

Figure 8. Value per acre higher for vegetables than for competing program crops, 2003



1/ Assumes national average payment yields for direct payments.

Source: Compiled by USDA's Economic Research Service from the Farm Service Agency and National Agricultural Statistics Service.

Figure 9. Estimated per-acre payment equivalents for fruit and vegetables

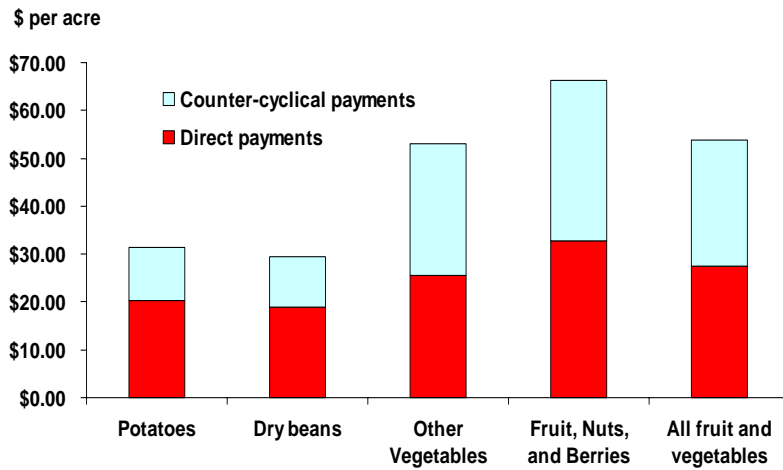


Figure 10. Estimated distribution of payments and acres by average payment category

