An Analysis of the Planting Transferability Pilot Program's First Year, 2009

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Summary: The Food, Conservation, and Energy Act of 2008 (the 2008 Farm Act) authorizes the Planting Transferability Pilot Program (PTPP), which allows program crop producers in seven Upper Midwestern States (Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin) to plant selected vegetables destined for processing on base acres without forfeiting government payments on their remaining base acres. Processing vegetables eligible for PTPP include cucumbers, green peas, lima beans, pumpkins, snap beans, sweet corn, and tomatoes. Eligible PTPP acreage is capped at various levels in each participating state, but cannot exceed 75,000 acres in total.

Farm-level data obtained from the U.S. Department of Agriculture's (USDA's) Farm Service Agency (FSA) for 2009 indicate that 10,215 acres were planted under PTPP, about 14 percent of the total allowable acres by statute and a small share of total processing vegetable acreage. One hundred and fifty-five farms participated, with Illinois, Indiana, and Minnesota accounting for approximately 85 percent of the farms and acres.

Why was participation a relatively low 14 percent? Stagnant market demand and producers' flexibility to expand processing vegetable production without PTPP are major reasons. For growers to expand acreage, processors must offer attractive contract prices. Growers and processors, though, are very well aware that long-run demand for processing vegetables is stagnant or declining, and that net returns to other crops are often more attractive. Even if markets were more favorable, availability of non-base acres and a producer's prior vegetable planting history on base acres often provide sufficient acreage for expanded plantings.

More specifically, farm program rules permit fruit and vegetable acreage on non-base acres without a loss of Direct and Counter-cylical Payment Program (DCP) or Average Crop Revenue Election (ACRE) benefits. Prior to PTPP, fruit and vegetables can be grown on base acreage if the farm has a history of planting fruit and vegetables. In these cases, payments are reduced acre-for-acre for each acre of fruit and vegetables planted. PTPP places farms with no history of planting fruit and vegetables on the same footing as those with a planting history for the select processing vegetables. Without PTPP, participating farms with no planting history would receive a far greater penalty. This study finds that farms with no history account for most of the planting of new acres to processing vegetables and are the major beneficiaries of PTPP.

Using a simulation model representing the national market, we find that PTPP entices a very modest increase in processing vegetable production and a very modest decline in processing vegetable prices. The quantity of processing vegetables supplied increases between 0.1 and 0.6 percent, and prices decline by 0.3 to 2.8 percent. We do not find that PTPP has an impact on fresh fruit and vegetable markets.

The analysis was prepared by Barry Krissoff, Gary Lucier, Mesbah Motamed, Edwin Young, and Chengxia You, and USDA's Economic Research Service. We appreciate the input from our colleagues at Farm Service Agency and their sharing of data. Particular thanks go to Sandy Bryant, Daniel Ford, Joy Harwood, Tom Hockert, Brently Orr, and James Woodley.

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Introduction

The 2008 Farm Act requires the Secretary of Agriculture to evaluate periodically the effect of the 2008 Farm Act's PTPP, which relaxes the planting restrictions placed on vegetables destined for processing faced by participants in certain FSA programs. We present an overview of the market for processing vegetables, and, using farm-level data from FSA, evaluate PTPP's effect on the supply and price of processing vegetables.

PTPP emerged in response to claims by Midwestern vegetable processors that access to vegetables used for producing pickles, tomato paste, and canned beans, among other foods, has been constrained by traditional FSA planting rules. These statutory fruit and vegetable planting restrictions date back to 1990, and were put in place to address concerns expressed by the produce sector that payments to farms with base acres planted to fruits and vegetables could lead to a significant decline in prices, which would be unfair to a sector that received relatively modest government support. In response to the argument that these rules have been limiting, PTPP permits farmers in seven Upper Midwestern States (Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin) to reduce base acres and plant vegetables for processing on those acres without forgoing government payments on any of their remaining base acres[1] (USDA, Farm Service Agency) and then have those base acres restored at the end of the fiscal year. These vegetables include cucumbers, green peas, lima beans, pumpkins, snap beans, sweet corn, and tomatoes; eligible PTPP acreage is capped at various levels by participating state, and cannot exceed 75,000 acres in total (Table 1).

In this analysis, we use FSA data that permits tracking of farm-level production and farm program participation.[2] PTPP participation data for 2009, along with historical FSA data describing farm-level vegetable planted acres and base acres, enable us to evaluate the impacts of PTPP on planting decisions within the seven Upper Midwestern States. Analyzing the 2009 data also offers insights to legislators and others about the likely response of existing and potentially new growers to further relaxation of planting restrictions and the impact on vegetable processors.

[1] "Base acres" reflect planting history on an FSA farm associated with certain crops (wheat, feed grains, upland cotton, rice, oilseeds, pulse crops, or peanuts) and do not necessarily reflect current crop plantings. They are used to calculate program payments under certain programs, including the Direct and Counter-cyclical Payment programs.

[2] Studies prior to PTPP that examined the impact of eliminating planting restrictions relied on highly aggregated State-level data and pointed to varying outcomes. See Althoff and Gray (2004), Johnson et al. (2006), Thornsbury et al. (2007), and Informa Economics (2007).

Production and Marketing of Processing Vegetables

Nationwide, the value of processing vegetable production measured at the farm level peaked in 2009, exceeding $2 billion (Table 2). This increase reflects higher 2009 contract prices and yields relative to earlier years in the decade. While yields and prices have trended upward, harvested acres slid from approximately 1.5 million acres in the 1990s to 1.2 to 1.3 million acres in the 2000s. By 2008, harvested acreage had fallen to under 1.2 million acres—and under 900,000 acres if tomato acreage is excluded. Tomatoes are the only processing vegetable for which harvested acreage increased between 2000 and 2009 (Figure 1).

Consumer demand for processing vegetables has experienced a similar stagnation. On a national per capita level, consumption across a variety of processing vegetables has remained flat or declined over the past 20 years (see Figure 2[3]). Any increased demand associated with U.S. population growth was likely met by rising yields and imports, as evidenced by the falling acreage planted to these vegetables.

The seven Upper Midwestern States eligible for participation in the pilot program have witnessed sizeable declines in processing vegetable production, which accounts for a majority of the vegetables produced in these States. According to National Agricultural Statistical Service (NASS) data, farmers in the seven Midwestern States planted 532,700 acres to processing vegetables in 2009, a 30-percent decline from the peak in the 1990s. Green pea, sweet corn, and tomato acreage each fell by over 30 percent, while cucumber acreage increased 22 percent (the added acreage was planted in Michigan). Nationwide, acres in processing vegetable production fell by 18 percent. Clearly, both vegetable growers and processors would benefit from renewed consumer interest in vegetables for processing.

A portion of this declining output is a reflection of rising incomes and changing consumer tastes and preferences over recent decades. As incomes have risen and diets have changed, consumers have been replacing canned vegetables with their fresh-market (and to a lesser extent frozen) counterparts. As the number of fresh items available in supermarkets has increased, consumers have been broadening their vegetable consumption to include such items as bok choy, chayote, and jicama. Year-round availability (courtesy of imports) has also spurred increased consumption of traditional vegetables such as asparagus, with most of the benefits accruing to exporting nations such as Mexico and Peru.

NASS data comprehensively account for acreage planted in the seven Midwestern States (Table 3). However, NASS state-level data for each Midwestern State for specific vegetables for processing are not available. In contrast, FSA acreage data cover solely farms that participate in government programs and thus describe a subset of all acreage planted;[4] data are available for all the pilot program's vegetables in the seven Upper

[3] Yearly time series data covering pumpkins for processing are unavailable.

[4] There is an inconsistency between NASS and FSA data for Indiana cucumber acreage. The number of acres harvested in the FSA dataset exceeds that in the NASS dataset.

Midwestern States (Table 4). FSA data confirm the importance of these states relative to the national picture, particularly for green peas, snap beans, and sweet corn, each comprising over 50 percent of U.S.-harvested acres for those crops. The Upper Midwest's area in tomatoes, however, pales in comparison to California, which grew 94 percent of the U.S. total.

Who is Affected by Planting Flexibility?

Under the 2008 Farm Act, participants in the Direct and Counter-cyclical Payment program (DCP) and Average Crop Revenue Election (ACRE) program can plant whatever they like on their base acres except for fruit, vegetables, and wild rice without other considerations coming into play.[5] More specifically, DCP and ACRE payments are partially or fully forfeited when fruit and vegetables are planted on base acres. PTPP, however, opens the door for market conditions to play a more prominent role in farmers' crop selection and acreage decisions. To show how PTPP works, Table 5 summarizes the options facing a PTPP participant compared to a producer prior to 2009.

Both before and after PTPP, farms can expand fruit and vegetable acreage on non-base acres without a loss of DCP/ACRE payments. Farm program rules permit fruit and vegetables to be grown on base acreage if the farm has a history of planting fruit and vegetables.[6] PTPP confers the same privileges to participants as those realized by DCP/ACRE farms with a history of planting fruit and vegetables: namely, reduced base acres for PTPP participants compared to a one-for-one reduction in payments for farms with a history of planting fruit and vegetables for each base acre of processing vegetables planted. Without PTPP, farms with no planting history would receive a far greater penalty. The Appendix presents a detailed discussion of the set of factors that can affect payments.

Conceptually, PTPP could lead to expansion in the supply of processing vegetables but, in practice, any supply response is likely to be small. First, many fruit and vegetable farms already have planting history and are thus unaffected by the current restrictions. Second, PTPP permits only up to 75,000 base acres to be reduced and planted to processing vegetables for the entire Upper Midwestern area, or only a maximum of 14.1 percent of processing vegetable plantings in the seven States.

Perhaps more importantly, various factors—demand-side constraints limiting growth, agronomic constraints, availability of labor, and startup costs for specialized equipment—may dissuade growers from entering or expanding vegetable production. Most vegetables destined for processing are grown under contract, and farmers participating in PTPP must demonstrate that they have a contract for marketing the product prior to enrollment (USDA, Farm Service Agency). Processors are very well aware that long-run demand in the U.S. is stagnant or declining, and that, before they

[5] Lentils, mung beans, and dry peas are excluded from this restriction.

[6] Farms or producers can have fruit and vegetable history. For simplicity, we focus only on the farm history in the text. See the appendix for an explanation of establishing history for farms and producers.

contract with new producers for acreage, or for expanded acreage with existing producers, they must locate, develop, and secure market outlets—which can be difficult.

An operator may enter into a new contract with a processor because he or she perceives that doing so will increase his or her net returns—and PTPP provides the flexibility to do so—particularly for those without a history of planting vegetables for processing. Some growers may perceive that they could accrue higher net returns because of the comparative advantage of their land (particularly if it is sandy, well-drained soil) and if they already own irrigation equipment (USDA, Farm Service Agency, October 2010). Alternatively, some growers may want to diversify their crops so as to reduce exposure to risk or may want to grow vegetables as part of a crop rotation to mitigate the likelihood of pests and diseases (USDA, Farm Service Agency, October 2010).

PTPP participation in 2009 was relatively low. FSA data indicate that 10,215 base acres were reduced and planted under PTPP, 13.6 percent of the total allowable acres by statute. Whether additional acres under the pilot program will be reduced and planted in subsequent years is an open question. The economic question that needs to be addressed is: Would a relaxation of planting restrictions for processing vegetables at the national level, such as through PTPP, increase processing vegetable production and influence processing vegetable prices?

Evaluating the Planting Transferability Pilot Program for 2009

Farmers could choose to participate in PTPP in 2009 and/or 2010, which is a short period for analysis and the development of insights. At the time of this writing, farm-level land use and base acre data for 2009 are available from FSA. Thus, we can evaluate the allocation of acres for the farms participating in the pilot program for 2009 and can analyze the major variables that influence growers' decisions to participate in PTPP—vegetable acres harvested, planting history, and availability of non-base acres (which proxy for the constraints PTPP aims to relax).

Tables 6, 7, and 8 present a breakdown of farms and acres enrolled in PTPP. One hundred and fifty-five farms participated in PTPP in 2009, with Illinois, Indiana, and Minnesota accounting for approximately 85 percent of the farms and acres (Table 6). Acreage in fruit and vegetables accounted for one-third of all participants' planted area (11,868 acres), most of which were vegetables covered by PTPP (9,534 acres) (Table 7). Among PTPP enrollees, little or no acreage appears to be planted in fresh fruit and vegetables.[7]

[7] Note that FSA's reported acreage planted under PTPP (10,215 acres from Table 1) differs from the farm-level aggregation of FSA data (9,534 acres from Table 6). This is likely related to the fact that 25 farms enrolled in PTPP did not report planting any of the processing vegetables in the farm-level dataset. However, the data indicate that these same farms planted 2,248 acres of *fresh-market* vegetables. Some or all of these acres are likely to be processing vegetables.

Table 8 shows the distribution of acres across the different PTPP crops, as well as the share of these acres relative to area planted in the seven Midwestern States and the United States. In the case of tomatoes, for example, PTPP acreage accounts for about 9 percent of the seven Midwestern States' total (relative to FSA farm acreage), while all the other processing vegetables hover around 2 percent or less. At the national level, the effect is even smaller. Green peas and other processing vegetables grown under PTPP account for about 1 percent, and less than 1 percent, respectively, of the U.S. total. In a subsequent section, we present a market simulation to examine the possible price effects of the pilot program.

As discussed earlier, a farm's planting history can affect the decision to plant processing vegetables. Table 9 shows how PTPP participation varied with farms' planting history.[8] In examining the planted acreage data for these farms, we find that farms with history did not expand their processing vegetable acres from 2008 to 2009. In fact, despite having enrolled in PTPP, these farms actually reduced their acreage in the seven processing vegetables. However, farms without history, the group we might expect to enroll most eagerly in PTPP, planted an additional 6,263 acres to the eligible processing vegetables. Clearly, the bulk of the response to PTPP is occurring among precisely the group of farmers who otherwise lack the acreage to plant restricted vegetables without incurring a significant penalty.

Quantifying the Market Effects of the Pilot Program

To quantify the effect of the pilot program on markets for processing vegetables, we develop a model that simulates the impact of PTPP while holding all other market changes for 2009 constant. The model calibrates linear supply and demand curves for processing vegetables, given 2008 quantities and prices, and simulates a shift in the supply curve to represent the pilot program. By assuming yields and other market conditions remained constant, the change in acreage implies an outward shift in the supply curve by 6,767 acres. This value is taken from Table 9, which reflects the 1-year net change in acreage across all farms participating in PTPP.

Little empirical literature exists on the responsiveness of vegetable growers and processors to either changes in supply or demand. Only a handful of estimates of price elasticities (reflecting the change in quantity demanded or supplied associated with a 1-percentage point change in the price) exist at the national level, much less at lower levels. Huang estimated a national price elasticity of demand of -0.13 for processing vegetables, e.g., the quantity demanded declines by 0.13 percent for every 1 percent increase in the price (see Dong and Lin for a review of elasticity estimates). Cox and Wohlgenant obtained estimates of -0.2 and -0.67 for canned and frozen vegetables. A California study (Russo et al., 2008) estimated a processed tomato supply elasticity of 0.41 for the short run and 0.69 for the long run; no other supply elasticities for other types

[8] Because planting history was not reported in the FSA data we used, we resort to inference of vegetable planting history. Specifically, any FSA farm observed to plant *more* acres to fruit and vegetables than the number of non-base acres on that farm prior to PTPP is judged to have planting history. If the farm operator had not behaved in this way, he or she would have had to face the potential of foregoing the entire DCP/ACRE payment, which would have been an unlikely decision.

of processed vegetables were found. Consequently, we simulated the effects of the pilot program employing a range of elasticities — -0.2 to -0.4 for demand and 0 to 0.5 for supply—and observed the resulting equilibrium market price.

The simulation results, presented in Table 10, indicate that the pilot program would drive negligible changes in quantity and price. When supply is completely inelastic (vertical supply curve), the changes are the largest of the simulated cases considered; quantity increases by 0.6 percent (6,767 acres or 95,724 tons), and price declines by 2.8 percent. When processors are more responsive to price changes (supply elasticity of 0.5), the effects are very modest—a 0.1 percent increase in quantity and a 0.3 percent decline in price.

To provide perspective, we compare the simulated changes to actual market changes. Over the last decade, the average absolute percentage changes in production and price for processing vegetables from year-to-year were 10.3 and 4.6 percent, respectively, far larger than the simulated impact of the pilot program. Thus, we conclude that the economic effects of the pilot program are modest.

Concluding Comments

This analysis evaluates the Planting Transferability Pilot Program in 2009 and its effects on the market for vegetables destined for processing. The 2008 Farm Bill established PTPP so that growers could increase their plantings and offer more product to processors and ultimately to consumers. We find that 155 farms participated in the pilot program in 2009 and allocated a net change of 6,767 additional acres to processing vegetables—less than 10 percent of the PTPP-permitted total.

To estimate the market effects, we developed a simple model to replicate market conditions for 2008 and simulated the effect of the pilot program with all other factors influencing market conditions assumed to be constant. We found that PTPP resulted in a modest rise in quantities supplied (between 0.1 and 0.6 percent) and a modest decline in price (in the range of 0.3 to 2.8 percent), depending on the price responsiveness of growers and processors.

Recently, FSA data became available for farms participating in PTPP in 2010. The data indicate that five fewer farms participated in 2010 (150) than in 2009 (155), with 43 farms participating across both years. Consistent with our evaluation of 2009 data, PTPP appears to have stirred little interest.

From these results, the long-run outcomes associated with PTPP appear to depend on one's frame of reference. On the one hand, relative to the bulk of producers in the region who ordinarily plant row crops, the impact of PTPP is modest. Most Midwestern farms, given the focus on corn and soybean production, cannot be expected to react in any significant way to the relaxation of planting restrictions on their base acres. However, for the relative handful of farms without vegetable planting history that participate in PTPP, planting restrictions matter, and the number of new acres can be

expected to rise, although quite modestly. PTPP gives these producers added flexibility at the margin to expand into processing vegetables without significant penalty.

For policymakers interested in understanding how restrictions on fruit and vegetable plantings at the national level might constrain overall supply, our analysis of the pilot program points in the direction of a modest effect. Additional examination of all fruit and vegetables crops, both fresh and processing, as well as a widened geographic scope of analysis, can open the door to broader conclusions.

Lessons learned from this analysis suggest that farmers' response to relaxing planting restrictions depends on both demand- and supply-side factors and program specifications. In the case of processing vegetables, processors will not enter into contracts with growers unless they expect a profit. Similarly, growers would be reluctant to respond to greater planting flexibility for processing vegetables if they do not anticipate a net return competitive with other cropping alternatives. In addition, agronomic constraints, availability of expertise and labor, and high costs related to specialized equipment may dissuade producers from entering this sector.

Lastly, many farmers may have adequate planting flexibility at their disposal without PTPP. As illustrated in this report, farmers can expand fruit and vegetable acreage on non-base acres without a loss of DCP/ACRE payments. Most significantly, farm program rules permit fruit and vegetables to be grown on base acreage without significant penalty if the farm has a history of planting fruit and vegetables. In these cases, payments are reduced for each acre of fruit and vegetables planted. Relative to expected net returns, the loss of these program payments is likely to be marginal. Thus, for many growers who receive program payments, the relaxation of planting restrictions is not likely to alter their vegetable planting acreage.

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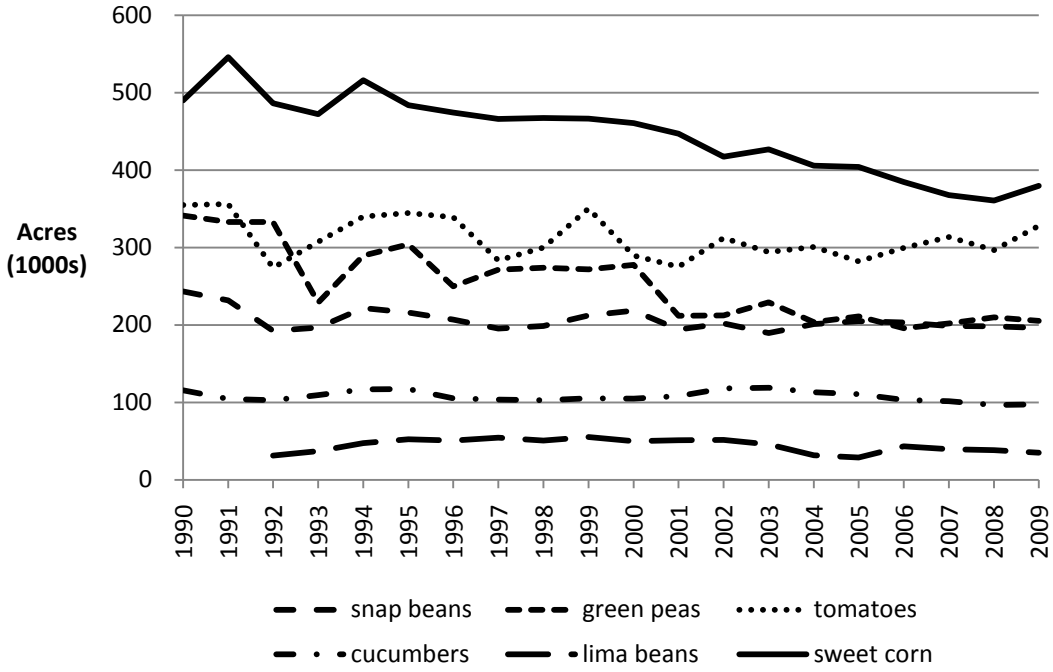
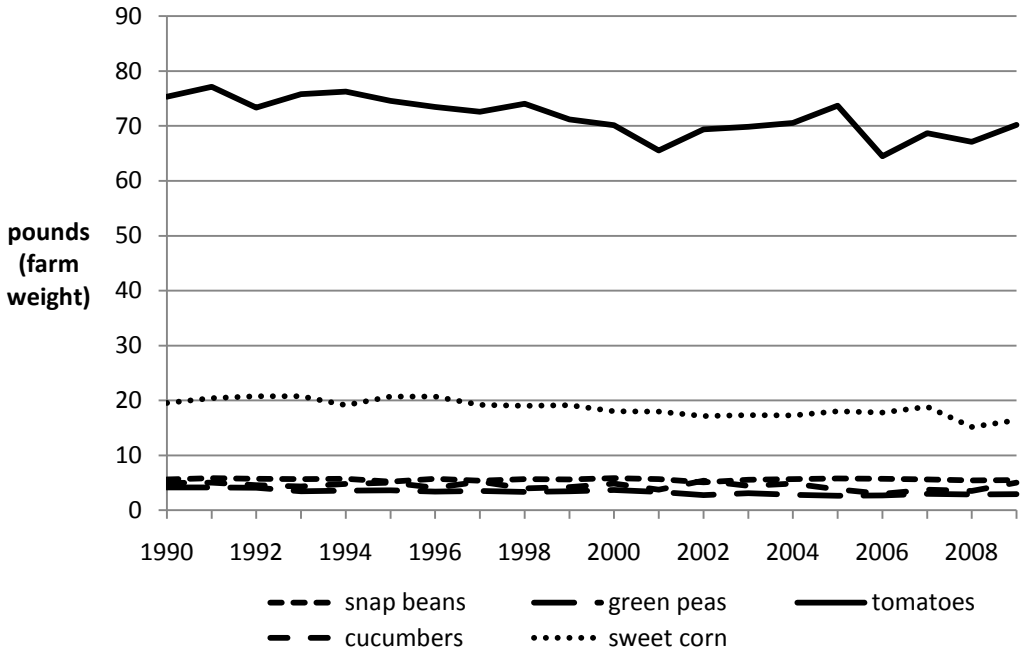
Figure 1: Annual U.S. processing vegetable area



Source: USDA, National Agricultural Statistical Service.

Figure 2: Annual per capita consumption of U.S. processing vegetables



Source: USDA, Economic Research Service.

Table 1: Planting Transferability Pilot Program allowable acreage and use, 2009

States	Base acres allowed under PTPP	Base acres actually planted	Share utilized
Illinois	9,000	1,921	21.3
Indiana	9,000	2,567	28.5
Iowa	1,000	113	11.3
Michigan	9,000	572	6.4
Minnesota	34,000	4,273	12.6
Ohio	4,000	274	6.9
Wisconsin	9,000	495	5.5
Total Midwest Region	75,000	10,215	13.6

Source: USDA, Economic Research Service Vegetables and Melon Outlook VGS-335 October 22, 2009, http://www.ers.usda.gov/publications/vgs/tables/proc.pdf, based on U.S. Department of Agriculture, Farm Service Agency data. PTTP covers the following vegetables for processing: cucumbers, green peas, lima beans, pumpkins, snap beans, sweet corn, and tomatoes.

Table 2: U.S. vegetables for processing in 2009: acres, production, prices, value

	Harvested Acreage (Acres)	Production (short tons)	Product Prices ($ per short ton)	Value of Production ($000)
Cucumbers	97,500	542,600	333	180,845
Green Peas	205,350	441,580	319	140,679
Lima Beans	34,740	48,030	529	24,945
Snap Beans	196,179	812,990	191	155,420
Sweet Corn	379,500	3,234,080	104	335,563
Tomatoes	327,800	13,970,560	87	1,218,912
Total	1,241,069	19,049,840	108	2,056,364

Source: USDA, Economic Research Service Vegetables and Melon Yearbook, 2009. Pumpkin data do not distinguish between fresh and processing and are excluded from this table.

Table 3: Acres harvested of vegetables for processing in the seven Upper Midwestern States, as reported by USDA's National Agricultural Statistics Service, 2009

	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin	7-State Total	Share of U.S. Total
Cucumbers		1,500	32,500		2,200	6,300	42,500	0.44
Green Peas				73,100		40,800	113,900	0.55
Pumpkins	12,500		6,700		7,500		26,700	0.61
Snap Beans	11,500	4,400	16,500	7,600		81,700	121,700	0.78
Sweet Corn				122,400		85,700	208,100	0.62
Tomatoes		9,800	3,400		6,600		19,800	0.06
Total	24,000	15,700	59,100	203,100	16,300	214,500	532,700	0.43

Note: U.S. data are based on USDA's National Agricultural Statistical Service data. Specific processing vegetable data are not available for some states. Processing lima bean data are not available. Pumpkin data include both fresh and processing. Data are also not available for Iowa.

Table 4: Acres harvested of vegetables for processing in the seven Upper Midwestern States, USDA's Farm Service Agency, 2009

	Illinois	Indiana	Iowa	Michigan	Minnesota	Ohio	Wisconsin	7-State Total	Share of U.S. Total
Cucumbers	645	2,021		20,030	**	1,398	4,672	28,766	0.30
Green Peas	6,394		46	581	71,798		38,595	117,414	0.57
Lima Beans	2,812				1,017		6,288	10,117	0.29
Pumpkins	10,089	16	29	31	**	**		10,169	0.23
Snap Beans	11,863	2,943	735	8,903	5,577	1,449	69,918	101,388	0.52
Sweet Corn	11,498	141	222	**	113,310		76,313	201,485	0.53
Tomatoes	619	7,752		1,398	**	5,948		15,721	0.05
Total	43,920	12,873	1,032	30,943	191,702	8,795	195,787	485,059	0.39

Note: State data are based on USDA's Farm Service Agency and U.S. data (last column) are from USDA's National Agricultural Statistical Service, respectively. Pumpkins include fresh and processing in the U.S. total. Asterisks indicate that the number of farms is too small to disclose.

Table 5: Farm planting options before and after PTPP

	before PTPP		after PTPP	
	planting on non-base acres	planting on base acres	planting on non-base acres	reduce base acres to allow increased processed vegetable planting
With fruit and vegetable history	no loss of payment	acre-for-acre payment loss	no loss of payment	Payment made on reduced base acres
Without fruit and vegetable history		Minimum of acre-for-acre payment loss *plus* market value of vegetables *or* entire DCP payment		

Source: USDA, Economic Research Service.

Table 6: PTPP participation by state

	Number of Farms	Number of Acres
Illinois	32	1,991
Indiana	32	1,755
Iowa	**	**
Michigan	**	**
Minnesota	67	4,321
Ohio	**	**
Wisconsin	**	**
Total	155	9534

Source: USDA, Economic Research Service, calculated from Farm Service Agency data.
Note: Asterisks indicate that the number of farms is too small to disclose.

Table 7: PTPP farm and acreage participation breakdown

	Participating farms that:		Total
	Planted processing vegetables	did not plant processing vegetables	
number of farms	130	25	155
number of farms with available non-base acres	93	16	109
total acres	29,032	8,474	37,505
program acres	17,906	5,710	23,615
acres planted in fruit and vegetables	9,621	2,248	11,868
acres planted in vegetables covered by PTPP	9,534	0	9,534
CRP, grass, trees, etc.	1,476	375	1,851
other acres	29	141	170
base acres	18,601	5,897	24,498
non-base acres	10,431	2,577	13,008

Source: USDA, Economic Research Service, calculated from Farm Service Agency data.

Table 8: Processing vegetables grown under PTPP

		as a share of		
	Number of Acres	7 Midwestern States FSA Farms	7 Midwestern States NASS Farms	Nationwide NASS Farms
Sweet Corn	2620	1.3%	1.3%	0.7%
Lima Beans	**	**	**	**
Green Beans	1140	1.1%	0.9%	0.6%
Green Peas	2441	2.1%	2.1%	1.2%
Tomatoes	1354	8.6%	6.8%	0.4%
Cucumbers	**	**	**	**
Pumpkins	1680	16.5%	na	na

Source: USDA, Economic Research Service, calculated from Farm Service Agency data. Number of acres and farms are too small to disclose. Not available=na.

Table 9: Planting history among PTPP participants

	number of farms	number of acres, 2009	number of acres, 2008	net change
farms without history	102	6,647	384	6,263
farms with history	40	2,316	2,382	-66
Reconstituted farms	13	570	n/a	570
total	155	9,534	2,767	6,767

Source: USDA, Economic Research Service, calculated from Farm Service Agency data.
Note: The row for reconstitution reflects the departure of farm ID numbers from FSA databases for a given year. This does not mean that the land is no longer used for farming. Instead, the land is likely to be farmed in a reconstituted farm with a new Farm ID. Year-to-year acreage changes associated with reconstitutions were not taken into account in this analysis.

Table 10: Model results from simulating PTPP

	Year 2008 Values	Planting Transferability Pilot Program Simulation				
demand elasticity		-0.4	-0.2	-0.4	-0.2	-0.4
supply elasticity		0	0.1	0.1	0.5	0.5
acres planted	1,199,970	1,206,737	1,204,020	1,204,830	1,200,914	1,201,439
price/ton	$108.5	$105.5	$106.7	$107.5	$108.1	$108.2
quantity	16,974,340	17,070,064	17,031,627	17,043,084	16,987,699	16,995,121
price change		-2.8%	-1.6%	-1.0%	-0.4%	-0.3%
quantity change		0.6%	0.3%	0.4%	0.1%	0.1%

Source: USDA, Economic Research Service.

Box 1: What is a farm under the Farm Service Agency Definition?

(adapted from Andrea Woolverton and Ed Young, *Factors Influencing ACRE Program Enrollment*, USDA, Economic Research Service, Economic Research Report 94, December 2009.)

Many agricultural producers farm combinations of owned and rented land. Together, the combinations comprise the total "farm operation" or what is referred to as the farm in USDA's Agricultural Census. ERS estimates that 844,000 farms (38 percent of all Census farms) received government payments in 2008.

Land is frequently rented from multiple landowners. If all ownership combinations were combined into a single unit, it would be impossible administratively to track program parameters and ascertain payment attribution, given the changing nature of landowner-tenant relationships over time. USDA's Farm Service Agency maintains farm records based on smaller administrative units (farms) consisting of varying groups of owners and operators. Records are maintained for over 2.2 million administrative farm units. A farmer may operate on a number of "FSA farms." For example, Farmer Jones farms 380 acres of land on three FSA farms:

- Farm A consists of 75 acres of land leased by Farmer Jones but owned by brothers Bill and Jim Smith.

- Farm B consists of 50 acres owned by Farmer Jones, 25 acres leased from Mrs. Applebee, and 30 acres leased from John Applebee, Mrs. Applebee's son.

- Farm C consists of 200 acres of land owned by Farmer Jones.

Each farm must be enrolled separately with FSA. When electing and annually enrolling in the Direct and Counter-cyclical Payment (DCP) or Average Crop Revenue Election (ACRE) program, farm operators such as Farmer Jones may treat each farm separately, enrolling one farm, but not necessarily the other farms. All owners, operators, landlords, tenants, and sharecroppers must agree in writing to elect to participate in the commodity programs. Thus, it is likely that some farmers will not enroll their entire farm operation. Farmers who elect DCP for some farms and ACRE for others are able to diversify their farm program portfolio. For more details, see USDA's Farm Service Agency Handbook.

Appendix

Farm Program Payment Reductions With and Without Planting Transferability Pilot Program (PTPP)

The 2008 Farm Act distinguishes two types of payment recipients—farms or producers—and divides them into those with planting history and those without. For a given FSA farm, planting history is established if fruit or vegetables were planted on any of their base acres in any year between 1998 and 2001. For an FSA farm, history can be established by planting even just one acre of fruit or vegetables, regardless of the specific type, on its base acreage. In contrast, a producer's history limits planting of fruit and vegetable acreage to his or her *average annual history* of plantings to the *specific commodity*. History is based on the annual average production for the years 1991-1995 or 1998-2001, as selected by the producer. For example, a producer might have a history of growing 50 acres of sweet corn and 25 acres of snap beans from 1991-1995. A farm (or producer) with a history of planting fruit or vegetables would incur only an acre-for-acre reduction in DCP or ACRE payments for each base acre planted to fruit and vegetables (or *specific* fruit or vegetable).

Farms or producers without any planting history (or producers who exceed their planting history) who opt for planting fruit and vegetables on base acres incur a more substantial penalty. The loss is either: 1) an acre-for acre reduction in DCP or ACRE payment *plus* the market value of the fruit and vegetables planted *or* 2) the entire DCP or ACRE payment, whichever is smaller. To understand how payment loss is calculated, consider three simple numerical examples presented in Table A1.[9] In column (1), a farm with 100 acres composed entirely of base area plants 20 acres of fruit or vegetables. In column (2), a farm with 50 base and 50 non-base acres plants 40 acres of fruit or vegetables. In column (3), a farm with 50 base and 50 non-base acres plants 60 acres of fruit or vegetables.

Under the acreage scenario described in column (1), consider the policy scenario in which the farm has fruit and vegetable history, row (1). In this case, the farm would forgo DCP/ACRE payments on the 20 acres planted to fruit and vegetables. The penalty becomes more stringent for producers with limited history (row 2) and farms or producers without history (row 3). For a producer with 10 acres of fruit and vegetable history, the total payment is reduced by the lesser of: (a) the entire DCP/ACRE payment or (b) the DCP/ACRE payment on the 10 base acres (the difference between the 20 acres planted on base and the history of planting fruit and vegetables on 10 base acres) plus the market value of the fruit or vegetable. For those farms or producers *without* fruit or vegetable history, the total payment would be reduced by the lesser of: (a) the DCP/ACRE payment on the 20 base acres and the market value of the fruit or vegetable or (b) the total DCP/ACRE payment. Participation in the pilot program reduces base acres on the farm which prevents the farm from incurring a penalty.

[9] Farm Service Agency Handbook contains many detailed examples illustrating the statutory provisions.

Column (2) is easier to understand. A farm or producer that plants fewer acres to fruit and vegetables relative to non-base acres incurs no loss of payment. In contrast, in column (3), the farm or producer (up to his or her history) whose fruit and vegetable acreage exceeds their non-base acres will lose DCP/ACRE payments on an acre-for-acre basis for each acre that exceeds non-base area. For those farms or farmers that do not have history, the loss equals the DCP/ACRE payment on the 10 base acres and the market value of the fruit or vegetable, not to exceed the total DCP/ACRE payment. As in column (1), participation in PTPP negates the penalty as base acres are reduced by the amount of the processed vegetable produced.

To solidify understanding of payments foregone, Table A2 compares farms that rotate planting corn and cucumbers over multiple years. Suppose a farm has 1,000 acres composed entirely of base on which the grower plants only corn (column 1). Since no fruit and vegetables are grown, there is no loss of payment. However, if the farm grows 980 acres of corn and 20 acres of cucumbers, the government payment would be reduced by $400, assuming a fruit or vegetable planting history of 20 acres and a DCP payment of $20 per acre (column 2).

In the case of a farm or producer without fruit and vegetable history or a producer exceeding historical plantings, the payment reduction amounts to the lost DCP or ACRE payments plus the market value of the fruit or vegetable produced. The reduction is capped at the value of all DCP or ACRE payments for the farm, $12,700 in the case of 10 planted cucumber acres (column 3) and $20,000 in the case of 20 planted cucumber acres (column 4). The $12,700 loss is calculated as the $12,500 market value of cucumbers plus the $200 DCP payment; the $20,000 loss is the entire DCP payment.

Meanwhile, column (5) shows the base acre reduction under PTPP—only $400. With the much smaller loss in government payments, the grower is more likely to make a decision based on market prices and the costs of planting alternative processing vegetables. The situation for the farm with a history of planting fruit and vegetables is unchanged. Their payments are reduced by $400, a relatively small amount, with or without PTPP.

Table A1: Farm Program Payment Reductions Under Various Policy and Farm Scenarios

Before PTPP	Farm Acreage Scenarios (1) 100 base acre farm, plant 20 acres F&V	(2) 50 base acre and 50 non-base acre farm, plant 40 acres F&V	(3) 50 base acre and 50 non-base acre farm, plant 60 acres F&V
(1) farm with F&V planting history	DCP on the 20 acres	None	DCP on the 10 acres (planted acres minus non-base acres)
(2) producer with F&V planting history on 10 base acres	minimum of (1) entire DCP or (2) market value of F&V planted plus DCP on 10 acres (planted acres in excess of history)	None	DCP on the 10 acres (planted acres minus non-base acres, up to producer's F&V history)
(3) farm or producer with no F&V planting history	Minimum of (1) entire DCP or (2) the market value of F&V planted plus DCP on 20 acres	None	Minimum of (1) entire DCP or (2) market value of F&V planted plus DCP on 10 base acres (planted acres minus non-base acres)
With PTPP			
(4) farm with no F&V planting history	DCP on the 20 base acres reduced for PTPP participation	None	DCP on the 10 base acres enrolled in PTPP (planted acres minus non-base acres)
(5) producer with F&V planting history on 10 base acres	DCP on the 20 base acres reduced for PTPP participation	None)	DCP on the 10 base acres enrolled in PTPP (planted acres minus non-base acres)

Source: USDA, Economic Research Service, based on FSA Handbook: Direct and Counter-Cyclical Program and Average Crop Revenue Election for 2009 and Subsequent Crop Years, http://www.fsa.usda.gov/Internet/FSA_File/1-dcp_r03_a07.pdf, accessed August 5, 2010.

Table A2:
Farm Program Payment Scenarios: Trade-Offs between Corn and Pickling Cucumbers

	without PTPP				with PTPP
	with history		without history		no history
	(1)	(2)	(3)	(4)	(5)
1. cropland acres	1,000	1,000	1,000	1,000	1,000
2. corn base acres	1,000	1,000	1,000	1,000	980
3. corn acres	1,000	980	990	980	980
4. cucumber acres	0	20	10	20	20
5. direct payment, $	20,000	19,600	7300	0	19,600
6. corn market value, $	525,000	514,500	519,750	514,500	514,500
7. cucumber market value, $	0	25,000	12,500	25,000	25,000
8. total crop value, $ (6+7)	525,000	539,500	532,250	539,500	539,500
9. total revenue (5+8)	545,000	559,100	539,550	539,500	559,100
10. Payment Reduction	0	400	12,700	20,000	400

Notes: We assume a $20 direct payment per corn base acre and no counter-cyclical or ACRE payment, a $3.50 price per bushel of corn with a yield of 150 bushels per acre, and a $250 price per ton received by growers of pickling cucumbers with a yield of 5 tons per acre.

A farm would have a history if it planted fruit and vegetables on base acreage in any year from 1998 to 2001. This does not mean they are currently producing fruit or vegetables, as is the case in column 1. Column 2 assumes a fruit or vegetable history of 20 acres.

Source: USDA, Economic Research Service, based on FSA Handbook: Direct and Counter-Cyclical Program and Average Crop Revenue Election for 2009 and Subsequent Crop Years, http://www.fsa.usda.gov/Internet/FSA_File/1-dcp_r03_a07.pdf, accessed August 5, 2010.