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Examining the Costs of Producing Processing Snap Beans and Green Peas in New York State

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Abstract: It has been a long time since we have seen a cost of production study for horticultural crops, notably processing vegetable crops, in New York State; however, research in this arena is completed in many other states and continues to offer useful information to industry stakeholders. This type of information is especially important in the processing vegetable sector in New York State as it has seen substantial acreage decreases in recent years. Here we develop a survey to collect data from processing vegetable growers in New York State and use it to calculate costs and net returns of producing snap beans and green peas. Our results indicate that the average cost of producing snap beans in New York State is \$568 per acre and is \$563 per acre for green peas; the actual producer costs drop to \$402 and \$361 for beans and peas if the processor pays for expenses related to seeds, pesticides, and harvesting. Lastly, we discuss some other issues—consumer demand, farm policy, and processing capacity—that may be negatively impacting markets for processing beans and peas in New York State, and suggest that further attention needs to be given to these issues to fully understand the future of the processing vegetable sector in New York State.

Additional index words: Break-even analysis; Cost of production; Crop budgets; New York State; Processing vegetables; Profitability analysis; Survey.

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Examining the Costs of Producing Processing Snap Beans and Green Peas in New York State

Introduction

Across the United States, the production of processing snap beans and green peas has decreased substantially between 2000 and 2010. Statistics indicate that there has been a general decline in the production of these two processing vegetables nationwide and the green pea industry has experienced more drastic changes in production than the snap bean industry. By taking a closer look at processing vegetable industries across different states, we see that Wisconsin has been the largest producer of snap beans nationally, followed by Oregon, New York and Minnesota. Minnesota dominates national pea production followed by Washington, Wisconsin, New York (data is only available from 2000 to 2006) and Oregon. In the figures presented next, we highlight statistics for snap beans in Michigan, New York, Oregon and Wisconsin and for peas in Minnesota, New York, Oregon, Washington and Wisconsin because these states were consistently the top producers of both crops between 2000 and 2011. We also use the term “Other states” to summarize statistics across a group of smaller producing states; this list of states typically changes from year to year for both crops. Depending on the year, this group of “Other states” may include Arkansas, California, Delaware, Florida, Georgia, Illinois, Indiana, Minnesota, Maryland, Missouri, New Jersey, North Carolina, Pennsylvania, Texas and Virginia for snap beans (especially in 2008-2010) while include Delaware, Indiana, Illinois, Maryland and New Jersey (especially in 2006) for green peas.

As one of the top five producing states, New York plays an important role in supplying national markets for green peas and snap beans. The latest data (2010 for snap beans and 2006 for green peas) show that New York accounts for about 10% of total national production. In recent years, dramatic declines in planted acreage of green peas and downward trends in acres planted to other key processing vegetables grown for freezing and canning have alarmed industry leaders

(Allens, Inc. 2011). A number of factors have combined to influence planting decisions and outcomes, including historically high corn and soybean prices, a 48% decline in per capita use of canned and frozen green peas since 1971, persistent production yield challenges for New York snap bean growers, increasing concentration in the processing industry, and inventory decisions, especially for frozen vegetables, made by New York processing firms during the past four years. In 2011, record rainfall in April and May also led to a sharp reduction in acres planted.

We also examine trends in other indicators, such as area planted, yields, production, and total crop values to understand the markets for these two processing vegetable crops. In New York State, the area planted for snap beans has decreased 23% from 28,800 acres in 2000 to 17,100 acres in 2011 (Figure 1A). For green peas, it instead increased about 18% from 16,500 to 19,500 acres between 2000 and 2006 (Figure 2A) while the planted areas decreased from 20,500 to 2,600 acres between 2008 and 2011 (Farm Fresh First LLC, 2011). The productivity in growing snap beans remains quite stable over the past ten years, averaging 3.4 tons per acre (calculated yields as of dividing total production by the area harvested), which is approximately close to the national level (Figure 1B) while fluctuates drastically in growing green peas from 2000 to 2006, averaging 1.9 tons per acre (Figure 2B). The production of processing snap beans decreased from 833,490 tons to 768,300 tons nationally (see Figure 1C) while that of processing green peas has dropped from 531,190 tons to 358,730 tons nationally (see Figure 2C) between 2000 and 2010. The total farm-gate value of the production of snap beans increased about 25% between \$17.24 million and \$21.59 million (see Figure 1D) while in green pea market, it almost doubled from \$6.7 million in 2000 to \$13.4 million in 2006 (see Figure 2D). However, New York's share of the national value of processing green peas decreased while it increased for the snap beans production.

An Overview of the Survey Used to Collect Information from Growers

To better understand the economic forces that drive markets for processing beans and peas, we collected farm-level data from 25 farms in New York State. The surveys were carried out for the purpose of developing crop budgets and to gain a clearer picture of the socio-economic backgrounds and planting practices of growers in these markets. Here we develop a budget framework so that farms are able to observe the economics of alternative enterprises and production systems. The main component of our survey is comprised of a grower questionnaire that asks growers to estimate various costs of production for beans and peas on a per acre basis. Of all 25 farms surveyed, 8 grow both beans and peas, 7 grow only snap beans, 7 grow only green peas, and the remaining 3 growers didn't grow beans and peas in 2009 or 2010. Geographically, a fifth of the farms are situated in Genesee County while about half of all the farms are from Orleans, Monroe, Wyoming, Livingston and Erie counties. The rest are located in Madison, Yates, Steuben, Cayuga, Oneida, Ontario and Onondaga counties.

This section will briefly summarize the results of the questionnaires filled out by these 25 growers. All of the questions included in our survey are listed in the "Appendix". As a whole, most growers are the ones who make decisions about what to grow each year, for reasons related to crop rotation, timing, past experiences, prices, market responses and profitability. On average, the businesses surveyed have been in existence for 52 years while it ranges from 15 to more than 100 years for different farms. Only a fifth of respondents hadn't changed the use of the production model since the inception of the business. Also, the farm size across all the growers surveyed ranges between 200 and 8500 acres, averaging approximately 1950 acres, of which about 50% is rented land. When we look at the change of the farm size over the past 10 years, survey results reveal that more than 50% of the growers have experienced a significant change in the scale of operation devoted to processing vegetables. Specifically, we see a group of growers undergoing changes in

their agriculture businesses in terms of the land use to grow processing vegetables, notably snap beans, peas, and in some cases sweet corn.

According to our survey results, farmers that grow processing vegetables in New York State also tend to produce livestock and other crops including corn, wheat, soybeans, vine crops, cabbage, and apples. For most farmers, corn (predominantly field corn but also sweet corn) is the major crop grown on farms. The average number of acres for snap beans is around 450 acres (ranging from 50 to 1700 acres) while, in green peas, it is around 140 acres (ranging from 30 to 450 acres). About a fifth of growers had decreased the planting area of beans over the past five years yet almost all of them expect to continue growing snap beans for the coming five years. For green peas, less than a third of growers had decreased their planting area for peas over the past five years yet almost all of them expect to continue growing peas for the coming five years.

The survey includes a series of questions that ask growers to compare the risks of producing beans and peas relative to other crops. Survey results show that, in the case of snap beans, around two thirds of growers see a higher risk in producing beans than other crops. For pea growers, more than half of the farmers surveyed saw a higher risk in producing green peas than other crops.

Almost two thirds of bean growers use conventional methods of production while about a half of pea growers use conventional methods. The other half of pea growers employ reduced or minimum or no tillage methods. None of the growers used organic production methods for processing snap beans or peas, although the use of Integrated Pest Management (IPM) methods is common. The survey also shows that one of the advantages of producing beans and peas is crop rotation, most notably with wheat, soybean and corn.

The Economics of Producing Processing Snap Beans and Green Peas in New York State

For better risk management decision, agricultural producers, extension specialists, financial institutions, governmental agencies, and other advisers in commercial vegetable production employ

enterprise budgets. These include cost estimates for essential production inputs and practices necessary to achieve specified yields, accompanied by different market price levels. This is a useful tool for growers to determine profit expectations for their own agricultural business (Fonsah, 2009; Greaser and Harper 1994), and to provide a benchmark to others in their industry. We conduct crop budgets for processing snap beans and green peas. Both budgets were developed based on the information collected from the second part of our survey using detailed data on the costs of production revealed by growers. According to previous budget studies, some regard fixed costs to include items such as equipment ownership (depreciation, interest, insurance and taxes), management and general overhead tax such as utilities, trucks and land charges (Fonsah, 2009; Greaser and Harper, 1994). Others replace fixed costs with cash overhead (property taxes, interest on operating capital, office expense, liability and property insurance, and investment repairs) and non-cash overhead such as capital recovery cost for equipment and other farm investments (Molinar et al., 2005). Variable (operating) costs vary with adopted snap bean cultural practices and typically include seed, chemicals (insecticide, herbicide, fungicide), fertilizer, fuel, labor, repairs, irrigation (Fonsah, 2009; Greaser and Harper, 1994). Other studies add additional inputs such as land preparation, planting, pest management, harvest, equipment operating costs, interest on operating capital and risk (Molinar et al., 2005) as variable costs. Overall, since “average” receipts and costs are often difficult to estimate, we include a column titled “Your Estimate” in Table 1A and 2A to allow growers to adjust items that reflect his or her specific production situation (Fonsah and Hudgins, 2007; Fonsah, 2008; Greaser and Harper, 1994).

The analysis of production costs of processing snap beans is based on the second part of the survey reported by each bean grower. We consider that fixed costs include items such as tractors and implements. The average amount of fixed costs for snap beans is \$46.36 per acre. The average cash overhead cost (based on information from 11 growers), which is the sum of land rent, office

expense, utilities, liability, property taxes and insurance, and investment repairs is \$110.18 per acre. The variable costs, \$411.06 per acre, include seed (\$59.00), fertilizer (\$96.77), land preparation (\$42.30), planting (\$11.88), cultivation (\$0.71), irrigation (\$15.36), herbicides (\$42.30), fungicides (\$14.81), insecticides (\$7.69), repairs (\$13.85), custom practices (pest management, calcium application, and harvesting, \$64.61), other variable inputs (equipment, labor, fuel and interest, \$36.59) and insurance (\$5.19). We report all of these as costs of production; however, in practice many of these are not actual producer costs as they are paid for by the processor. Typically crop budget analysis will break down variable costs into pre-harvest, harvesting and marketing operations (Fonsah, 2009). Here the pre-harvest cost is \$373.20 per acre and the machine harvesting costs \$37.86 per acre. Average total costs, which are the sum of cash overhead costs, fixed costs and variable costs, across the 14 beans growers in our survey is \$567.60 per acre. The actual average producer costs may be as low as \$402.24 per acre if the processor pays for expenses related to seed, pesticides, and harvesting activities.

The production costs of processing green peas are also based on the second part of the survey reported by growers who have cultivated peas in recent years. Table 1B demonstrates that the average fixed costs of pea growers is \$24.70 per acre; the average cash overhead cost is \$99.08 per acre. The average variable costs per acre include seed (\$112.50), fertilizer (\$94.45), land preparation (\$43.40), planting (\$15.20), irrigation (\$8.50), herbicides (\$34.03, mainly Basagran® and Thistrol®), fungicides (\$2.00), repairs (\$3.91), custom practices (pest management, calcium application, and harvesting, \$72.30), other variable inputs (equipment, labor, fuel and interest, \$23.51) and insurance (\$2.90). The total is \$439.60 per acre while pre-harvest cost is \$391.00 per acre and the machine harvesting costs is \$48.60 per acre. Average total costs, which are the sum of cash overhead costs, fixed costs and variable costs, of the green pea growers in our survey are

\$563.38 per acre. Again, if processors pay for expenses related to seed, pesticides, and harvest activities, the average per acre cost for producers is \$361.35.

Due to the uncertainty of several factors such as adopted agricultural practices, pest and disease problems, draught, torrential rains, excess supply or shortage (Fonsah, 2009), the yields and prices of processing snap beans and green peas fluctuate significantly from year to year. Our results make an attempt to capture the economic fluctuations for snap beans and green peas contracted for processing in New York State by considering the profitability associated with five different yields and prices. Table 1B and 2B summarize the estimated net returns for processing snap beans and green peas. Table 1B shows a range of yield scenarios between 2.50 and 3.85 tons per acre, and a range of prices between \$140 and \$275 per ton. Here, the combination of 2.95 tons per acre and \$195 per ton would be close to a break-even level, profiting \$7.65 per acre. A similar analysis is done for green peas in Table 2B. The yields range between 1.45 and 2.25 tons per acre, and the prices range between \$205 and \$380 per ton. The combination of 1.85 tons per acre and \$305 per ton yields a net return that is very close to the break-even level of \$0.87 per acre.

A break-even analysis is carried out for farm managers that plant processing snap beans and green peas. This is done to help form reasonable expectations of the profitability from specific price and yield combinations that will cover estimated total production costs (Sharp, 2008). The break-even (BE) cost of production, as Table 1C and 2C show, is broken down into costs per ton by cost category. Based on the discussion on profit issues above, the break-even yield level of processing beans and peas is 2.95 tons per acre and 1.85 tons per acre respectively. Therefore, the BE variable cost per ton of producing snap beans in New York State is \$139.34 per ton and the BE total cost per ton is \$192.41. For the green pea production, the BE variable cost is \$237.62 per ton and the BE total cost is \$304.53 per ton.

Summary and Discussion

Cornell University has a long track record of conducting business summaries for dairy industry in New York State (e.g., Knoblauch et al., 2009) yet similar studies for horticultural products in New York State have not been completed in recent years. Barnes and White (1991) examined the costs of production for various fresh vegetables whereas crop budgets for processing vegetables have not been done for nearly three decades (e.g., Nyberg and How, 1964; Snyder, 1978; Snyder, 1979; Snyder, 1982). However, research that conducts crop budgets for vegetables has been done in several other states including Florida (Evans and Nalampang, 2010; Smith and Taylor, 2003), North Dakota (Sell, 1993), California (Molinar et al., 2005), Iowa (Chase, 2011), Washington (Carkner, 2000), Texas (Smith et al., 2000) and Maryland (Beale et al., 2011). More specifically, crop budgets for beans and peas have been completed by University researchers in Pennsylvania (Orzolek et al., 2000), North Carolina (NCSU, 2002), Delaware (University of Delaware Cooperative Extension, 2010), Wisconsin (University of Wisconsin, 2010: Snap beans and Green peas), Oregon (Julian et al., 2000; Cross and Smith, 1991), Northeastern States (NJAES, State University of New Jersey, 2008), North Dakota (Swenson and Haugen, 2009), Washington (Gary and Willett, 1999) and Arkansas (Rainey and Hauk, 2004). These enterprise budgets have been useful tools for stakeholders in these states, and anecdotal evidence suggests that, in some cases, New York producers have used crop budgets from other states to help them make financial decisions. In this sense, there is a real need to develop crop budgets specific to field and horticultural crops in New York State, and our analysis is taking a step towards filling this gap.

Snap beans and green peas have been two important processing vegetables over the past ten years for New York State. Total production from New York State is third in the nation for beans in 2010 and fifth for peas in 2006 (USDA-NASS, New York Annual Statistical Bulletin). New York State has been a major producer of processing vegetables, but the actual amount

harvested for these crops has been falling in recent years. This is a critical concern for New York farmers and is somewhat of an enigma, given the fact that geographically the production areas are relatively close to big cities such as New York City and Boston. In brief, for snap beans, the area planted has decreased steadily since 2000 from 18,800 acres. For green peas, the area planted increased from 2000 to 2006, peaked in 2005 at 20,600 acres, and has declined in recent years from 20,500 acres in 2008 to 2,600 acres in 2011 (Farm Fresh First LLC, 2011).

Our findings presented here are derived from information revealed by 25 farm surveys that collected estimated costs of production for processing beans and peas. We present crop budgets, profitability analysis, and break-even cost of production information. Our results (summarized in Tables 1A, 1C, 2A and 2C) show that the average total budgeted cost of producing processing snap beans and green peas is \$567.60 and \$563.38 per acre, whereas the respective BE points would be \$192.41 and \$304.53 per acre for beans and peas. In our profitability analysis (Table 1B and 2B), using yields of 2.95 tons per acre and 1.85 tons per acre respectively for beans and peas, the break-even points correspond with price levels at \$195 per ton for beans and \$305 per ton for peas. Next we look at three factors that may have influenced production of processing vegetables in New York State over the past 20 years. We consider the role of changing consumer demand, agricultural policy, and structural issues and capacity constraints among plants that process vegetables.

Between 2000 and 2011, the consumption (measured in pounds per capita) of processing beans and peas has decreased. Processing bean consumption fell by 10.2% (USDA-NASS, 2010) and processing pea consumption fell by 26.7% (USDA-NASS, 2010). Over the same time period, per capita consumption of all processing vegetables fell by only 2.6% (USDA-NASS, 2010). It appears that processing beans and peas, especially peas, are losing market share to other food products and that producers need to reassess consumer demand for the various processing vegetables.

U.S. farm policy has traditionally had very few provisions that directly affect horticultural markets. The largest share of current U.S. farm programs for agricultural commodities make payments to farmers based, in part, on historical base acres planted to program crops such as wheat, corn, barley, grain sorghum, oats, cotton, rice, oilseeds, peanuts, and sugar. Starting with the 1990 Farm Bill, eligibility for payments included regulations on the crops allowed to be grown on base acres, and there continue to be restrictions on planting horticultural crops on such base acres. These planting restrictions for fruits and vegetables on base acres have potentially influenced the number of acres planted to horticultural crops over the past two decades, yet the degree of their impact is still being debated (Johnson et al., 2006).

Recent Farm Bills have considered the elimination of planting restrictions, but they remain in place. In the 2008 Farm Bill, a Planting Flexibility Pilot Program (Pilot Program) was introduced to better understand the impact of planting restrictions, and to see how producers would respond to such a change. The Pilot Program was particularly designed to examine the impact of planting restrictions on the production of processing vegetables given its geographical focus. The Pilot Program allows up to 75,000 acres of seven key processing vegetables to be planted on base acres without penalty in seven states – Illinois, Indiana, Michigan, Minnesota, Wisconsin, Iowa and Ohio—between 2009 and 2012. Surprisingly New York State was not a part of the Pilot Program. The seven states included in the program comprise approximately 20% of U.S. processing vegetables produced in the United States. In addition to the Pilot Program states, there are five southern states: New Mexico, Florida, Arizona, California and Texas, also known as the Sun Belt region, that are also considered to be affected by the planting restrictions because these states are major producers of fruits and vegetables, notably fresh vegetables. It is widely expected that policymakers will debate the effects of the planting restrictions in the discussions leading up to the next Farm Bill, scheduled to become legislation in 2012. According to Young et al. (2007), the

restrictions on fruits and vegetables may have encouraged some program participants to shift acreage away from fruits and vegetables to program crops, such as corn or soybeans, but overall the planting restrictions have had a negligible effect on the production of horticultural crops.

In addition to examining the role of changing consumption patterns and farm policy considerations, we also need to highlight issues related to the processing of vegetables in New York State. The production and processing of vegetables has changed substantially since Thomas Kensett opened the nation's first commercial canning plant in New York City in 1812. The processing industry has deep roots in New York since the original commercial pea viner was developed in Springville in 1890. In 1900, Fairport became home to the first commercially introduced sanitary can while the first successful mechanical bean harvester was introduced in Vernon, New York, followed by commercial production of the harvester in Niagara Falls in 1950. During the period between 1880 and 1950, hundreds of on-farm and family-owned vegetable canning and freezing firms disappeared in New York State. As time went on, the end of World War II further spelled the end of critical government contracts for these small food processors. However, in the decades thereafter, business structures, marketing strategies and processing technologies developed rather rapidly to meet the evolving demands of consumers in the marketplace (Associated New York State Food Processors, Inc. 1985).

Since 1950, New York's processing and production leaders have worked to address the frequently conflicting goals among balancing market power, improving the efficiency of planting, harvest, canning and freezing systems, expanding export market share and encouraging the financial interests of investors and owners in various processing facilities and market brands. Also, the history of the processing vegetable industry illustrates the critical role that farmer-owned cooperatives have played in New York State agriculture for the past decades. In response to such upheaval in post-war market, Pro-Fac Cooperative, established in 1960, attempted to reconcile the

conflicting interests of its grower members with the market demands from processors or, as the name itself implies, the interests of producers with the requirements associated with operating facilities (further details can be found in Henehan and Schmit, 2009). Evolving with such long-lasting conflicts and negotiation, the arc of this organization's storied history will end in liquidation in 2012.

Even though there were, once, hundreds of relatively important vegetable processors, only two major firms remain. The future of snap bean and green pea production in New York State will hinge in many ways on how Pro-Fac's privately held successor, Allen Canning, Inc., along with its competitor and potential merger partner, Seneca Foods Corporation, will be able to cope with a variety of market and financial challenges that have materialized during the last five years. Recently terminated merger talks between Allen Canning, Inc. and Seneca Foods represent the latest milestone in New York's long history of economic adjustment for processors and growers involved in the production and marketing of fruits and vegetables. New York growers will continue to adjust their planting and management decisions to deal with factors associated with the shift in control of the state's processing industry away from farmer-owned cooperatives to closely held family corporations.

To conclude from the above findings and observations, we think that the information presented in this study is important for the following three reasons. First, it has been a long time since we have seen a cost of production study for horticultural crops in New York State. Cornell published some research related to costs of production for (mainly) fresh vegetables (Barnes and White, 1991; Snyder, 1991), and it has been a very long time since Cornell has published something similar for processed vegetable crops (Nyberg and How, 1964; Wadsworth, 1959; Williams, 1960; Williams, 1961; Snyder, 1978; Snyder, 1979; Snyder, 1982a; Snyder, 1982b). This type of research continues to happen in many other states and offers useful information to industry stakeholders.

Second, the summarized estimated costs and net returns of snap beans and green peas were derived from surveys completed by 25 growers in New York State. As a result the analysis presented here uses real-world data that will provide a benchmarking tool for decision-makers and farmers in New York State. Third, we outline three other issues that may be negatively impacting markets for processing beans and peas in New York State—consumer demand, policy, and processing capacity. It appears that each of these may be contributing to the overall decline in the share of agricultural production devoted to processing vegetables in New York State, and further attention needs to be given to each issue to fully understand the future of these industries in New York State.

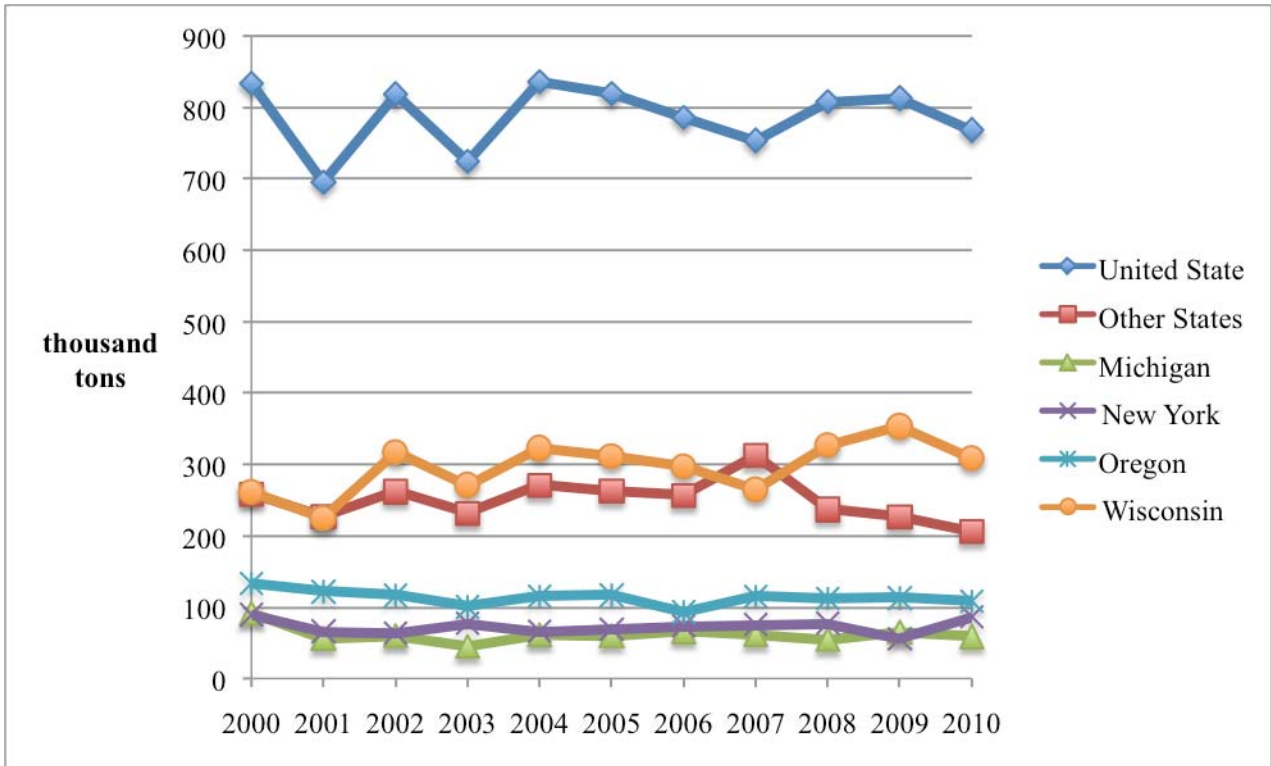


Figure 1A: Area Planted for Processing Snap Beans across States, 2000-2011

Note: Data in 2011 represent planting intentions.

Source: USDA-ERS, Vegetables and Melons Outlook

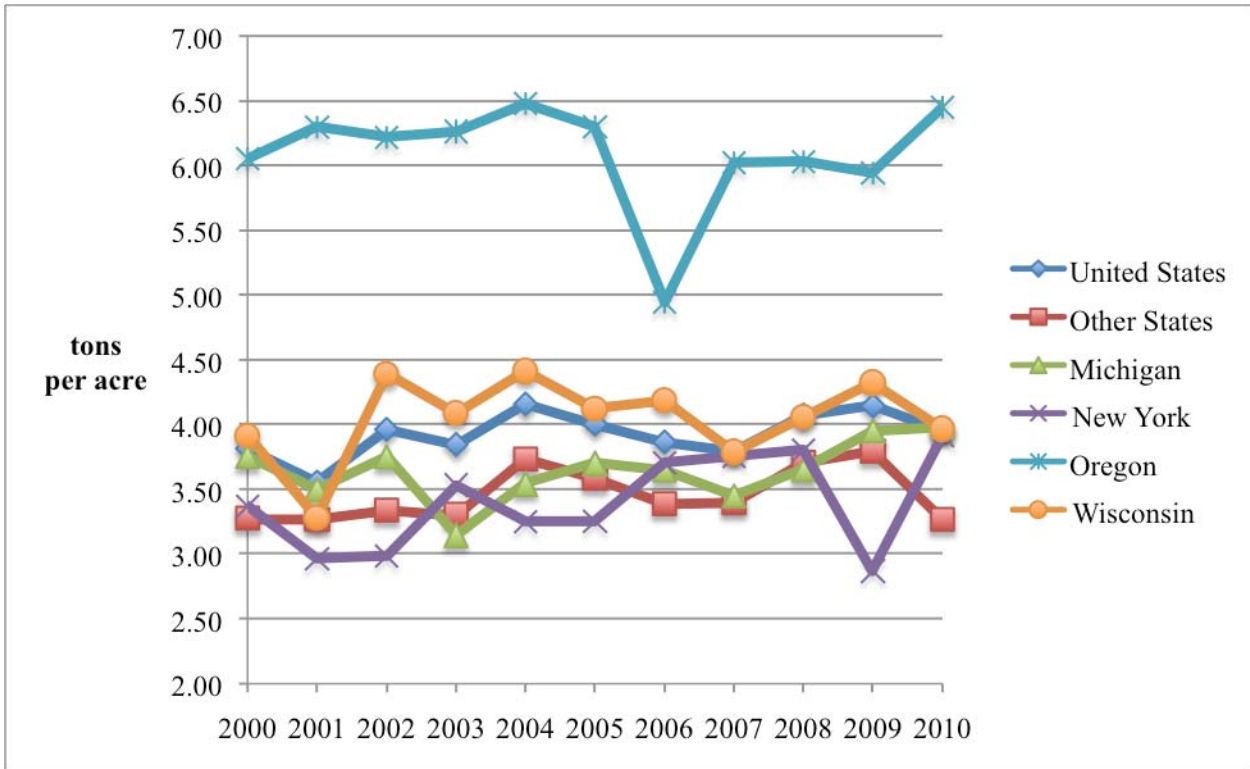


Figure 1B: Yields for Processing Snap Beans across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook

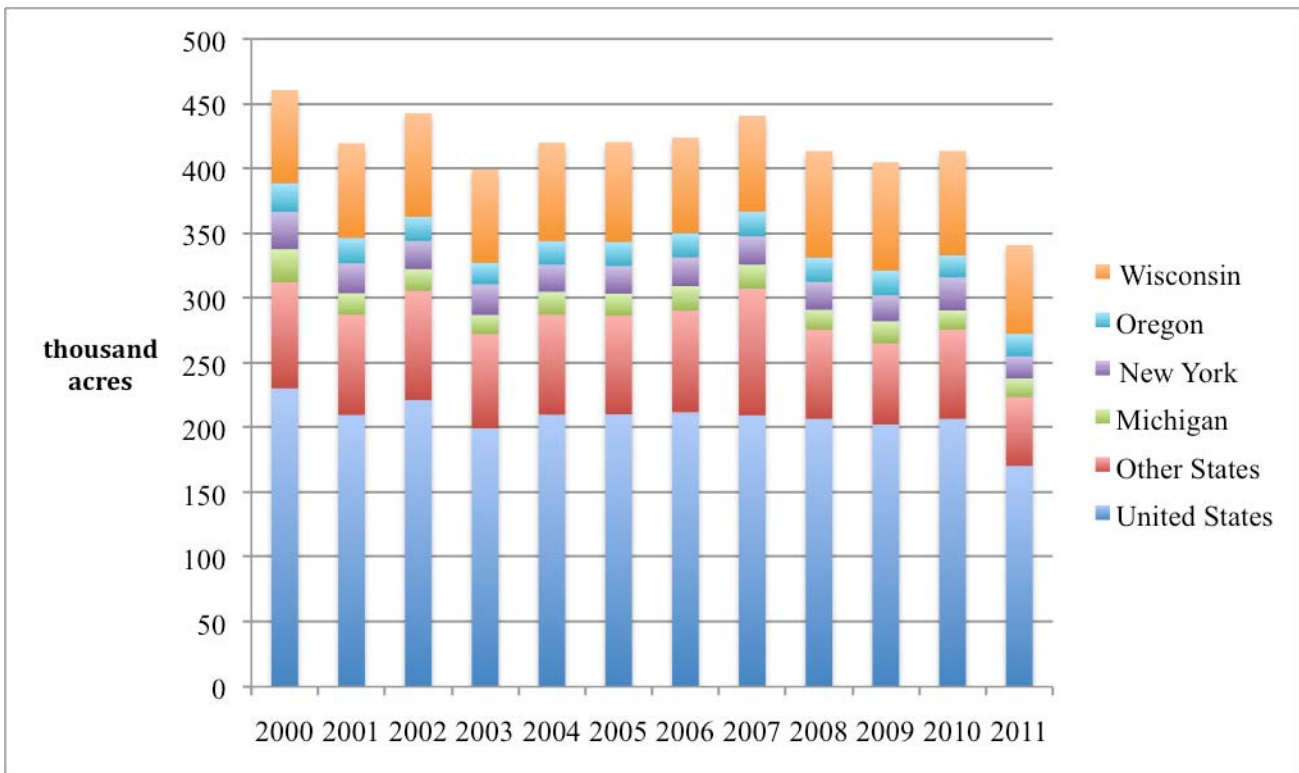


Figure 1C: Production of Processing Snap Beans across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook

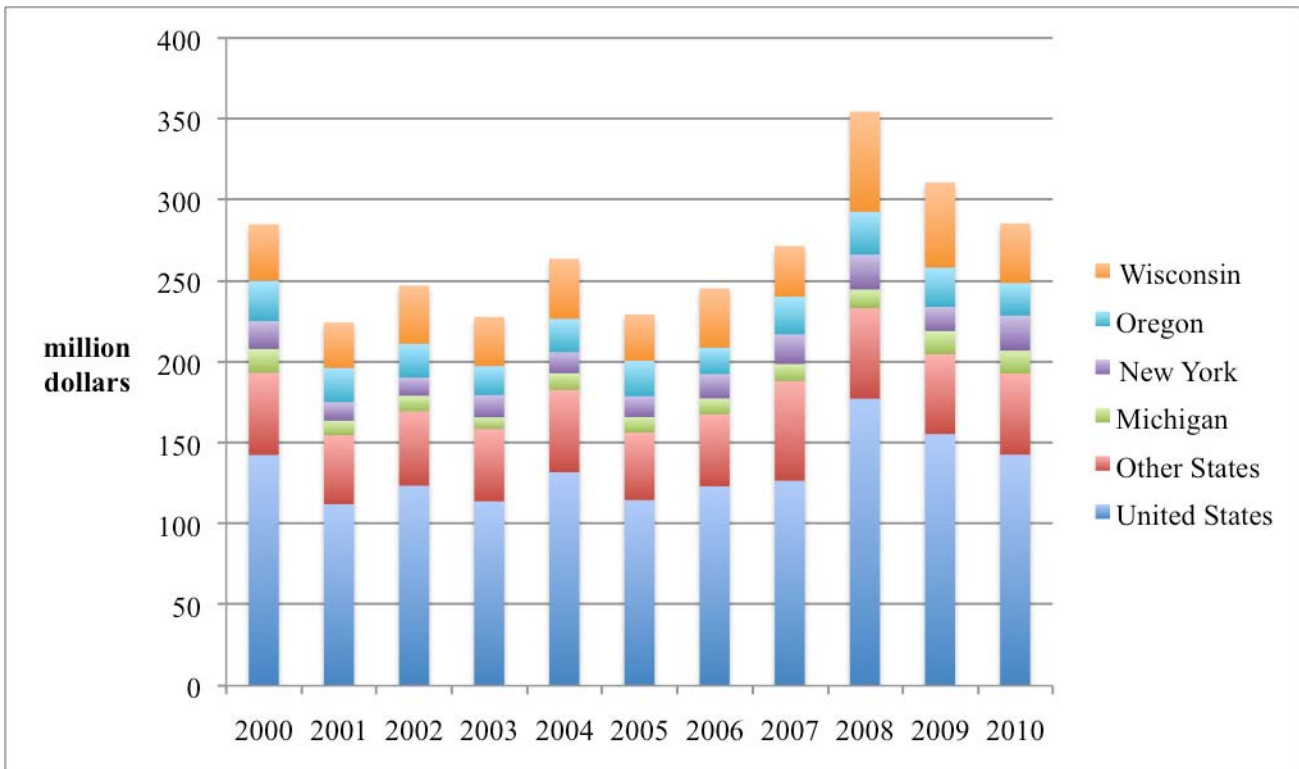


Figure 1D: Total Market Value of Processing Snap Beans across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook

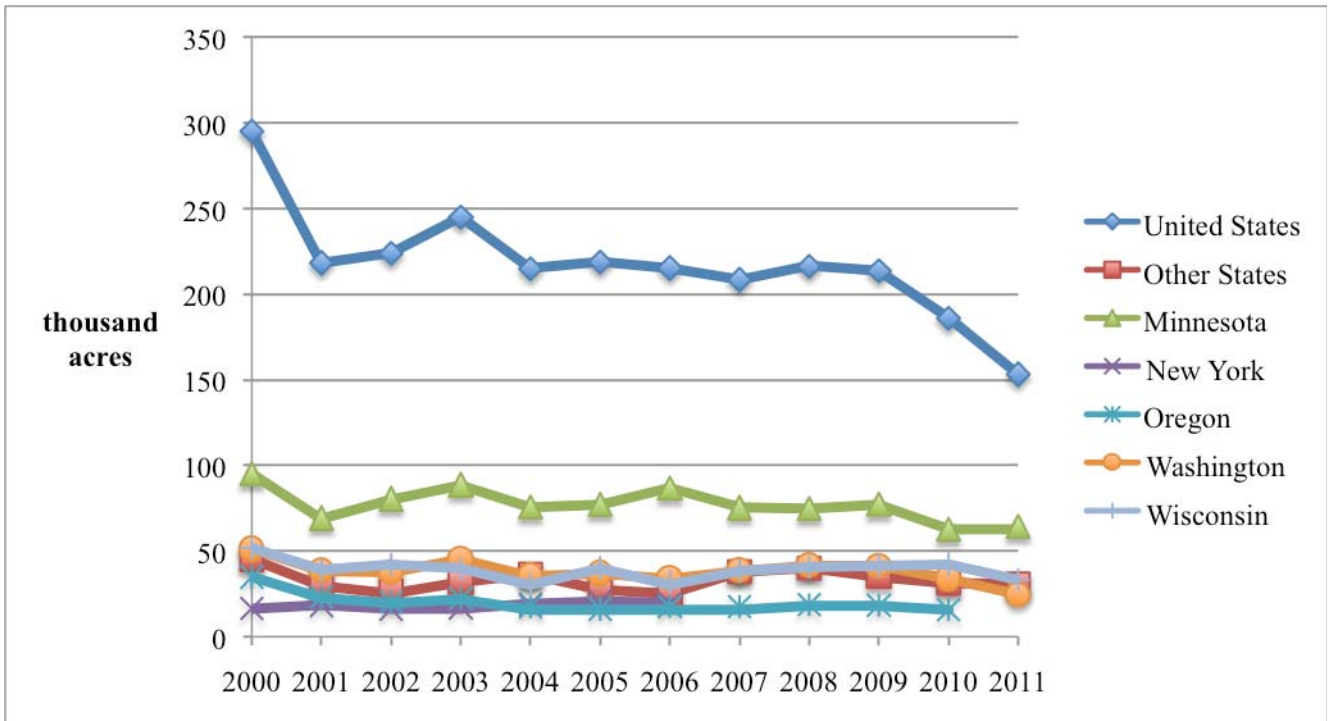


Figure 2A: Area Planted for Processing Green Peas across States, 2000-2011

Note: 2011 represents the year for planting intention
 Source: USDA-ERS, Vegetables and Melons Outlook

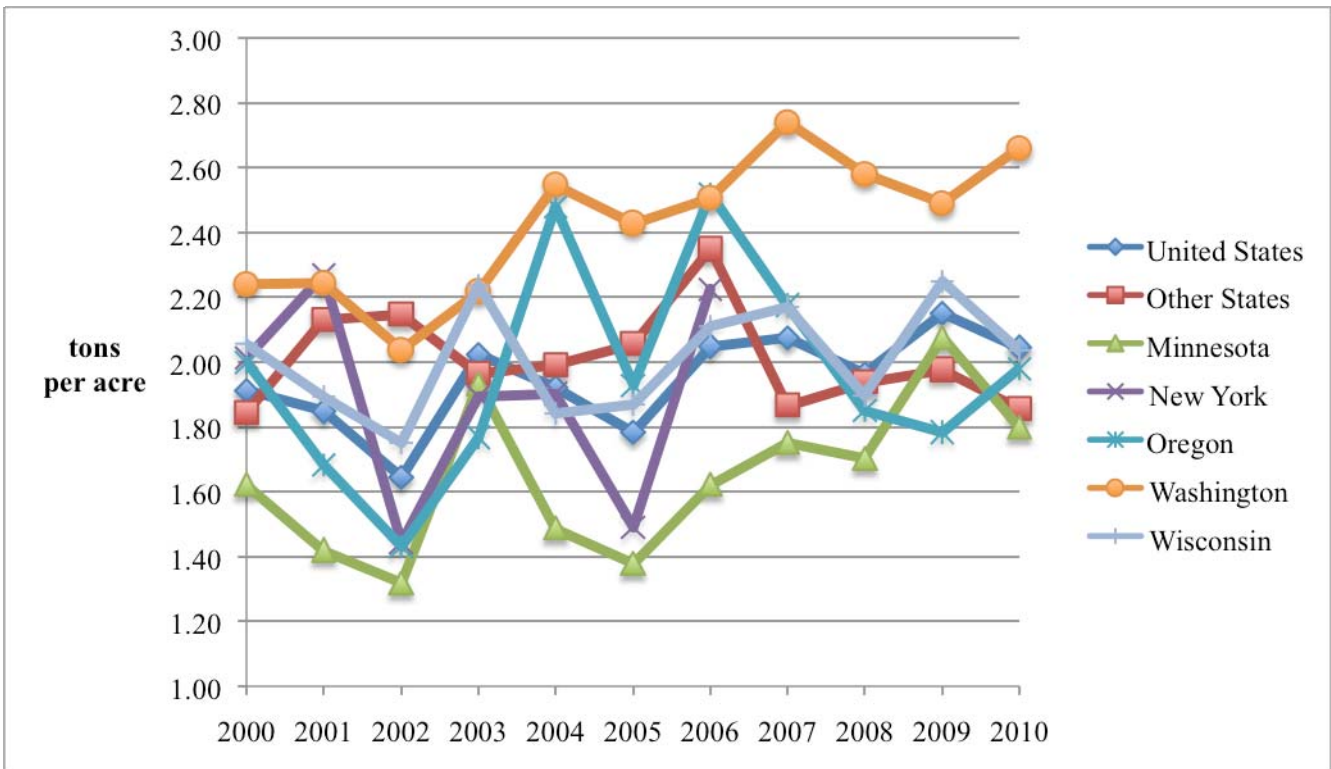


Figure 2B: Yields for Processing Green Peas across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook

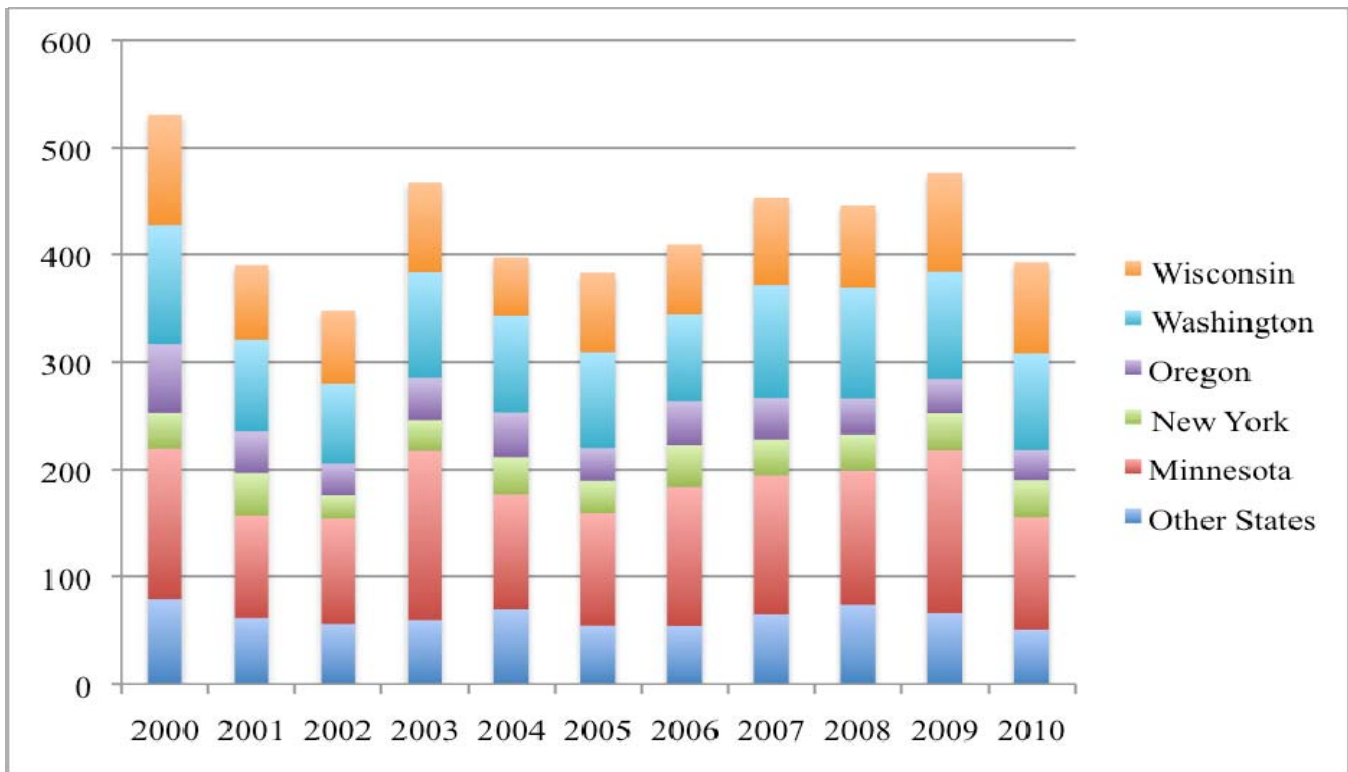


Figure 2C: Production of Processing Green Peas across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook (estimates for NYS between 2007 and 2010)

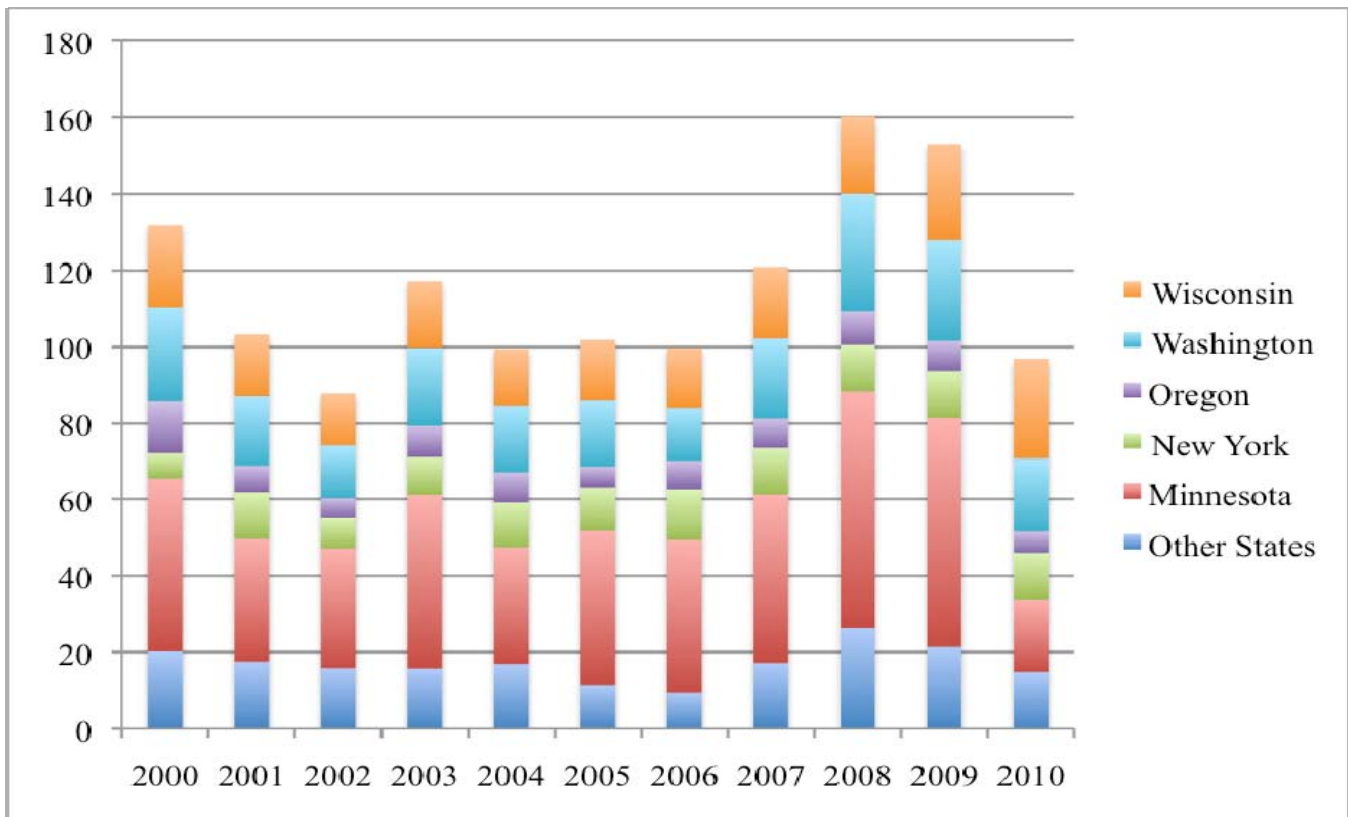


Figure 2D: Total Market Value of Processing Green Peas across States, 2000-2010

Source: USDA-ERS, Vegetables and Melons Outlook (estimates for NYS between 2007 and 2010)

Table 1A: Costs of Production for Processing Snap Beans in New York State

| Cost Per Acre (\$) | Number of respondents | Max | Average | Your Estimate |
|---------------------------------|------------------------------|------------|----------------|----------------------|
| Cash Overhead Costs | | | | |
| Land Rent | 8 | 100.00 | 54.09 | _____ |
| Office | 4 | 100.00 | 10.30 | _____ |
| Utilities | 3 | 15.00 | 2.00 | _____ |
| Liability | 3 | 10.00 | 1.88 | _____ |
| Property Taxes | 8 | 150.00 | 30.76 | _____ |
| Property Insurance | 4 | 10.00 | 3.09 | _____ |
| Investment Repairs | 4 | 47.00 | 8.06 | _____ |
| <i>Total Overhead Costs</i> | 11 | 230.00 | 110.18 | _____ |
| Fixed Costs | | | | |
| Tractors | 3 | 35.00 | 5.45 | _____ |
| Implements | 6 | 289.00 | 40.91 | _____ |
| <i>Total Fixed Costs</i> | 6 | 289.00 | 46.36 | _____ |
| Variable Costs | | | | |
| Seed ^a | 5 | 178.50 | 59.00 | _____ |
| Fertilizer | 14 | 195.00 | 96.77 | _____ |
| Land Preparation | 12 | 89.00 | 42.30 | _____ |
| Plowing | 8 | 35.00 | 11.52 | _____ |
| Disking and Harrowing | 8 | 63.00 | 15.56 | _____ |
| Others | 6 | 35.00 | 7.36 | _____ |
| Planting | 9 | 25.00 | 11.88 | _____ |
| Cultivation | 1 | 10.00 | 0.71 | _____ |
| Irrigation | 4 | 130.00 | 15.36 | _____ |
| Central Pivot | 4 | 80.00 | 11.79 | _____ |
| Irrigation Gun | 1 | 50.00 | 3.57 | _____ |
| Herbicides ^a | 13 | 104.00 | 42.30 | _____ |
| Dual, Treflan, Eptam, Sandea | 9 | 45.00 | 16.71 | _____ |
| Reflex+Basagran | 9 | 52.00 | 16.93 | _____ |
| Roundup | 4 | 52.00 | 6.21 | _____ |
| Others | 3 | 16.22 | 2.44 | _____ |
| Fungicides ^a | 8 | 38.25 | 14.81 | _____ |
| Bravo | 5 | 13.00 | 3.74 | _____ |
| Topsin M | 7 | 23.96 | 8.20 | _____ |
| Other | 3 | 10.50 | 1.66 | _____ |
| Insecticides ^a | 8 | 53.00 | 7.69 | _____ |
| Warrior | 2 | 10.00 | 0.92 | _____ |
| Capture | 2 | 6.25 | 0.82 | _____ |
| Brigade | 2 | 2.00 | 0.28 | _____ |
| Lambda-Cyhalothrin | 1 | 12.06 | 0.86 | _____ |
| Acephate | 1 | 8.47 | 0.61 | _____ |
| Orthene | 1 | 6.00 | 0.43 | _____ |
| Custom | 11 | 171.00 | 64.61 | _____ |
| Soil Testing | 6 | 21.00 | 3.34 | _____ |
| Applying Calcium Lime | 6 | 50.00 | 11.71 | _____ |
| Pest Scouting ^a | 6 | 24.00 | 3.70 | _____ |
| Pesticide Spraying | 6 | 40.00 | 8.00 | _____ |
| Machine Harvesting ^a | 5 | 130.00 | 37.86 | _____ |
| Repair and Maintenance | 7 | 70.00 | 13.85 | _____ |
| Tractors & Implements | 4 | 55.00 | 7.11 | _____ |
| Interest Charge | 2 | 15.00 | 1.79 | _____ |
| Other Variable Costs | 9 | 100.00 | 36.59 | _____ |
| Equipment | 1 | 10.00 | 0.71 | _____ |
| Misc Field/Shop Tools | 1 | 10.00 | 0.94 | _____ |
| Labor | 4 | 43.00 | 8.62 | _____ |
| Gas | 1 | 10.00 | 0.71 | _____ |
| Diesel | 7 | 33.00 | 10.31 | _____ |
| Interest on Capital | 5 | 53.00 | 6.04 | _____ |
| Business Expenses | 1 | 10.00 | 0.71 | _____ |
| Crop Insurance | 6 | 20.00 | 5.19 | _____ |
| <i>Total Variable Costs</i> | 14 | 805.11 | 411.06 | _____ |
| Total Costs | 14 | 1095.11 | 567.60 | _____ |

^a Depending on the contract, costs for these items may be covered by the processor and do not represent actual expenses to the producer. Therefore the total average cost per acre for snap beans may be as low as \$402.24 for the producer.

Table 2A: Costs of Production for Processing Green Peas in New York State

| Cost per Acre (\$) | Number of respondents | Max | Average | Your Estimate |
|---------------------------------|------------------------------|------------|----------------|----------------------|
| Cash Overhead Costs | | | | |
| Land Rent | 9 | 125.00 | 68.50 | _____ |
| Office | 2 | 10.00 | 1.80 | _____ |
| Utilities | 3 | 6.92 | 1.56 | _____ |
| Liability | 1 | 10.00 | 1.00 | _____ |
| Property Taxes | 7 | 30.00 | 14.23 | _____ |
| Property Insurance | 4 | 10.00 | 2.29 | _____ |
| Investment Repairs | 4 | 47.00 | 9.70 | _____ |
| <i>Total Overhead Costs</i> | 9 | 159.67 | 99.08 | _____ |
| Fixed Costs | | | | |
| Tractors | 3 | 15.00 | 3.33 | _____ |
| Implements | 5 | 115.76 | 21.37 | _____ |
| <i>Total Fixed Costs</i> | 5 | 115.76 | 24.70 | _____ |
| Variable Costs | | | | |
| Seed ^a | 7 | 188.00 | 112.50 | _____ |
| Fertilizer | 10 | 150.00 | 94.45 | _____ |
| Land Preparation | 8 | 89.00 | 43.40 | _____ |
| Plowing | 5 | 35.00 | 13.10 | _____ |
| Disking and Harrowing | 4 | 63.00 | 12.00 | _____ |
| Other (list) | 6 | 42.00 | 14.30 | _____ |
| Planting | 7 | 25.00 | 15.20 | _____ |
| Irrigation | 3 | 60.00 | 8.50 | _____ |
| Manure | 1 | 269.00 | 26.90 | _____ |
| Herbicide ^a | 10 | 60.00 | 34.03 | _____ |
| Dual M | 1 | 16.13 | 1.61 | _____ |
| Basagran | 9 | 19.86 | 11.28 | _____ |
| Thistrol | 10 | 22.46 | 10.80 | _____ |
| Assure II | 3 | 10.20 | 2.46 | _____ |
| Targa | 1 | 10.00 | 1.00 | _____ |
| Other | 5 | 34.00 | 6.87 | _____ |
| Fungicide ^a | 1 | 20.00 | 2.00 | _____ |
| Custom-- | 9 | 211.00 | 72.30 | _____ |
| Soil Testing | 4 | 21.00 | 4.65 | _____ |
| Applying Calcium Lime | 5 | 35.00 | 9.85 | _____ |
| Pest Scouting ^a | 6 | 20.00 | 4.90 | _____ |
| Pesticide Spraying | 4 | 16.00 | 4.30 | _____ |
| Machine Harvesting ^a | 3 | 195.00 | 48.60 | _____ |
| Repair and Maintenance | 1 | 9.05 | 3.91 | _____ |
| Tractors & Implements | 1 | 20.00 | 2.00 | _____ |
| Interest Charge | 1 | 10.00 | 1.00 | _____ |
| Other Variable Costs | 6 | 100.00 | 23.51 | _____ |
| Equipment | 1 | 10.00 | 1.00 | _____ |
| Misc Field/Shop Tools | 2 | 10.00 | 1.55 | _____ |
| Labor | 3 | 20.00 | 4.26 | _____ |
| Gas | 2 | 10.00 | 1.05 | _____ |
| Diesel | 3 | 33.00 | 6.65 | _____ |
| Interest on Capital | 1 | 10.00 | 1.00 | _____ |
| Business Expenses | 1 | 10.00 | 1.00 | _____ |
| Crop Insurance | 3 | 13.00 | 2.90 | _____ |
| <i>Total Variable Costs</i> | 10 | 675.97 | 439.60 | _____ |
| Total Costs | 10 | 916.94 | 563.38 | _____ |

^a Depending on the contract, costs for these items may be covered by the processor and do not represent actual expenses to the producer. Therefore the total average cost per acre for peas may be as low as \$361.35 for the producer.

Table 1B: Summary of Estimated Returns for Processing Snap Beans*Net returns per acre for five different yields and prices*

| Price | Yield (tons) | | | | |
|--------------|--------------|-----------|---------------|----------|----------|
| | 2.50 | 2.75 | 2.95 | 3.55 | 3.85 |
| \$140 | -\$217.60 | -\$182.60 | -\$154.60 | -\$70.60 | -\$28.60 |
| \$165 | -\$155.10 | -\$113.85 | -\$80.85 | \$18.15 | \$67.65 |
| \$195 | -\$80.10 | -\$31.35 | \$7.65 | \$124.65 | \$183.15 |
| \$240 | \$32.40 | \$92.40 | \$140.40 | \$284.40 | \$356.40 |
| \$275 | \$119.90 | \$188.65 | \$243.65 | \$408.65 | \$491.15 |

Table 2B: Summary of Estimated Returns for Processing Green Peas*Net returns per acre for five different yields and prices*

| Price | Yield (tons) | | | | |
|--------------|--------------|-----------|---------------|-----------|-----------|
| | 1.45 | 1.65 | 1.85 | 2.05 | 2.25 |
| \$205 | -\$266.13 | -\$225.13 | -\$184.13 | -\$143.13 | -\$102.13 |
| \$260 | -\$186.38 | -\$134.38 | -\$82.38 | -\$30.38 | \$21.62 |
| \$305 | -\$121.13 | -\$60.13 | \$0.87 | \$61.87 | \$122.87 |
| \$335 | -\$77.63 | -\$10.63 | \$56.37 | \$123.37 | \$190.37 |
| \$380 | -\$12.38 | \$63.62 | \$139.62 | \$215.62 | \$291.62 |

Table 1C: Break-even Costs per Ton for Processing Snap Beans

| Cost per Ton (\$) | |
|--|----------|
| Break-even fixed costs per ton | \$15.72 |
| Break-even overhead cost per ton | \$37.35 |
| Break-even variable costs per ton | \$139.34 |
| Break-even total budgeted cost per ton | \$192.41 |

Table 2C: Break-even Costs per Ton for Processing Green Peas

| Cost per Ton (\$) | |
|--|----------|
| Break-even fixed costs per ton | \$13.35 |
| Break-even overhead cost per ton | \$53.56 |
| Break-even variable costs per ton | \$237.62 |
| Break-even total budgeted cost per ton | \$304.53 |

Appendix: Grower Questionnaire

Producer (person filling out this form): _____

Farm name: _____ Phone Number: _____

Address (and county): _____

1. Are you the person that makes decisions about what to grow each year?

 - a. How are these decisions made each year? _____
2. How long has your farming operation been in business? _____
 - a. How many years has it followed the current model? _____
3. How many acres do you farm? _____
 - a. Approximately how many acres do you own? _____
4. Has the size of your farm changed significantly over the past 10 years?

5. How many acres of each of the following do you produce?
 - a. Snap Beans _____
 - b. Peas _____
 - c. Sweet Corn _____
 - d. Field Corn _____
 - e. Soybeans _____
 - f. Wheat _____
 - g. Carrots _____
 - h. Vine Crops _____
 - i. Cabbage _____
 - j. Beets _____
 - k. Onions _____
 - l. Apples _____
 - m. Other Fruit _____
 - n. Beef _____
 - o. Dairy _____
 - p. Other livestock _____
 - q. Other _____
6. How long have you been growing peas? _____ Snap beans? _____
7. Over the past 5 years, have you increased or decreased acres planted to peas/beans?
8. Do you expect to continue growing peas/beans over the next 5 years? _____

9. Do you have machinery that is used mostly in the pea/bean enterprise? _____
- a. If Yes to #9, please list machinery items and replacement values
 - i. Item: _____ Value: _____
 - ii. Item: _____ Value: _____
10. How do the returns from peas/beans compare to other vegetable crops?
- a. Better / About the same / Worse /NA
11. How do the returns from peas/beans compare to all other products you produce?
- a. Better / About the same / Worse / NA
12. How do the production risks for peas/beans compare to other vegetable crops?
- a. Better / About the same / Worse / NA
13. How do the production risks for peas/beans compare to all other products you produce?
- a. Better / About the same / Worse /NA
14. How do the costs of production for peas/beans compare to other vegetable crops?
- a. Higher / About the same / Lower /NA
15. How do the costs of production for peas/beans compare to all other products you produce?
- a. Higher / About the same / Lower /NA
16. What percentage of your farm is managed using the following production practices:
- a. Conventional Methods _____
 - b. Organic Methods _____
 - c. Reduced/Minimum/No Tillage _____
17. Do the percentages listed for question #16 apply to production of peas and beans?
- _____
- a. If no, are there: More acres in Organic / More acres in conventional / More in No-Till
18. Please list the main advantage of growing peas/beans: _____
19. Please list the main disadvantage of growing peas/beans: _____

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