

Department of Agriculture, Trade and Consumer Protection
Division of Agricultural Development
Agricultural Development & Diversification Program (ADD)
Grant Project Final Report

Contract Number: 22037

Grant Project Title: Feasibility of large-scale organic processing vegetables

Amount of Funding Awarded: \$22,500

Names of Principal Contacts: Jed Colquhoun and A.J. Bussan

Organization: University of Wisconsin-Madison

Email Address: colquhoun@wisc.edu, ajbussan@wisc.edu

WEB Address:

Report Submitted on: March 30, 2009

Please use the following questions as a guide for writing your grant project final report. In your final report, please answer each question as it relates to your grant project.

- 1) What was the original intent of the grant?
 - What did you want to accomplish with the grant?
 - How was it expected to benefit Wisconsin Agriculture?
 - What makes this project work important or significant?

The goal of this grant was to determine the feasibility of large scale organic snap bean and sweet corn production for processing in Wisconsin. Studies addressed the primary hurdles in expanding organic vegetable production systems from the small to large scale. Specific objectives were to: 1) Evaluate input costs, crop yield, and quality in response to weed management strategies that would be practical in large-scale organic snap bean and sweet corn production systems; and, 2) Evaluate sweet corn yield and quality in response to organic fertility management systems and relative effect of different management strategies on input costs.

Several vegetable processing companies have expressed an interest in large-scale organic production in the upper Midwest. The development of a large organic vegetable production and processing industry in Wisconsin represents an unparalleled opportunity in an otherwise economically challenged sector. The development of this opportunity would have broad and significant ramifications at the local grower level by returning a profit margin to the processing vegetable industry. Correspondingly, organically produced and marketed vegetable products will stimulate an end-product processing industry with increased value relative to current markets. Given the multi-national interests of the companies involved, it would be Wisconsin's loss and another production region's gain not to garner this rapidly developing business sector.

2) What steps did you take to reach your goal?

- What worked?
- What challenges did you face?
- What would you do differently?

Field research was conducted to address the above goals. The weed management research was conducted in snap beans and sweet corn and evaluated practical management strategies that could be readily adopted by growers. Organic weed management treatments consisted of either a single management tactic or combinations of tactics including different methods and number of cultivations and utilization of a stale seedbed. An herbicide-based conventional treatment was also included for comparison. Studies were arranged in a randomized complete block design with each treatment replicated four times. Data collection included weed density and biomass, visual evaluations of weed control and crop yield and quality. Input costs were calculated and correlated with crop yield and quality.

The organic fertility management research was conducted in sweet corn. The general approach was to evaluate corn response to different fertility treatments (combinations of cover crops, composted poultry manure, and organically approved fertilizers) in the first year. In the second year, the experiment was cropped to snap bean to determine the residual effect of the sweet corn fertility treatments. Data collection included crop response to fertility treatments (such as emergence, stand density, and tillering), ear leaf tissue analysis, soil fertility analysis at several times during the experimental period, and sweet corn yield. Snap bean yield was quantified in the second year. Both the organic fertility management and weed management studies were repeated twice, with a total of 3 years of field research.

3) What were you able to accomplish?

- What are the results from this project?
- Include any analysis of data collected or materials developed through project work.

Please see attached document containing a summary of this project and related data.

4) What conclusions can you make based on project work the analysis of collected data?

The shorter season processing crops, such as peas and snap beans, can be practically and economically produced using organic weed management and fertility options. Snap beans are a short-season (60 day) crop that emerge rapidly from the soil, establish a rapid canopy that out-competes weeds, and are harvested prior to weed seed production. Fertility requirements are rather low and can be met by plowing down cover crops or alfalfa. Conversely, sweet corn emerges slowly from the soil, grows slowly and barely ever forms a competitive crop canopy, is poorly competitive with weeds, and has a relatively high nitrogen requirement. Therefore, sweet corn yield reductions can be expected when comparing organic with conventional sweet corn, and production costs will be greater because of the increased fertility costs. Organic sweet corn buyers will need to account for the yield reduction and production costs when approaching organic processing crop growers.

5) What do you plan to do in the future as a result of this project?

This project has stimulated additional research and grants in this area, such as the NRI Managed Ecosystems organic systems grant with a budget of nearly \$500,000. We are pursuing additional opportunities to expand research and implementation plans in the organic arena. We will also continue to communicate the direct applications of this research through a variety of venues, such as peer-reviewed professional publications, grower field days, tours, and extension meetings, and through the popular trade press.

6) What information or additional resources are needed to commercially develop this enterprise?

This project has provided an excellent opportunity to stimulate and develop relationships between organic crop buyers and potential producers, but this opportunity could be further exploited if a more structured communication network was implemented. More specifically, Wisconsin would benefit greatly by developing a public database of organic producers, their location, crops produced and specific specialties, and packaging and processing capabilities within the state. This resource could be utilized as a “match-maker” to unite potential growers with the buyers and end-users that have observed very high demand for organic vegetable products. We have discussed this opportunity with the Organic Advisory Council.

7) How should the agricultural industry use the results from your grant project?

The results of this research have been directly implemented in the organic vegetable production system and used to make cropping decisions by the vegetable processing companies. The results have been very useful in improving the efficiency of the production system, thus increasing the margins for growers while reducing the production risks for the food processors. Additionally, these results provide valuable and realistic information for determining the value and production costs for processors and growers, respectively. Brian Flood, Pest Management Director for DelMonte, recently summarized the utility of this work: “The fertility work has shed light on the value of organic compost and we are rethinking our fertilizer inputs as a result. The cover crop work shed light on our need to redesign the pea harvest operation where we cut the tops of the peas off – less energy and leaves organic trash and insects in the fields as well as a cover crop. Your efforts spark ideas that are not a direct plot variable but because of the work new options and opportunities exist because of the project.” While processing crop plans are typically very private and undisclosed, another food processing company indicated that they are budgeting for 520 acres of organic peas, 660 acres of organic sweet corn, and 525 acres of organic snap beans in 2009, for a total organic production of 1,705 acres. The investment of this single processing company in organic snap beans and organic sweet corn alone represents direct payment to Wisconsin growers of over \$1.4 million. More importantly, they plan to pay the grower about twice as much for organic production as they do for conventional processing crops