

WSDA
SPECIALTY CROP BLOCK GRANT PROGRAM
2010
FINAL PERFORMANCE REPORTS

All projects will be completed by September 30, 2013

TABLE of CONTENTS

COMPLETED

Grant Recipient: <i>Washington State University</i> Project: Apple IPM Transition Project	<u>Page 3</u>
Grant Recipient: <i>Northwest Agricultural Business Center</i> Project: Puget Sound Food Network	<u>Page 13</u>
Grant Recipient: <i>Washington Growers Clearing House</i> Project: Tree Fruit and Grape Acreage Survey	<u>Page 18</u>
Grant Recipient: <i>Pear Bureau Northwest</i> Project: USA Pears Road Show - Mexico	<u>Page 26</u>
Grant Recipient: <i>Washington State Department of Agriculture</i> Project: European Grapevine Moth Survey	<u>Page 33</u>

IN-PROGRESS

(Reports will be included as projects are completed)

Grant Recipient: <i>Washington Farm Labor Association</i> Project: A Stable Workforce for Specialty Crops in Washington	
Grant Recipient: <i>Washington State University</i> Project: Assessing the Damage Potential of <i>Pratylenchus Penetrans</i> on Raspberry	
Grant Recipient: <i>Washington State University</i> Project: Electronic Benefits Transfer and Credit Card Capability in Farmers Markets	
Grant Recipient: <i>Washington State University</i> Project: Developing Disease Resistant Sources of Nordman & Turkish Fir Christmas Trees	
Grant Recipient: <i>Washington State Horticultural Association</i> Project: Economic Impact of the Tree Fruit Industry in Washington and the Pacific Northwest	
Grant Recipient: <i>The Regents of the University of California</i> Project: Evaluation of the Baseline Levels of Microbial Contaminants on Apples	

Grant Recipient: *Washington Sustainable Food and Farming Network*

Project: Fresh Food in Schools

Grant Recipient: *Washington Apple Commission*

Project: Global Retail Training in Care, Handling & Merchandising of WA Specialty Crops

Grant Recipient: *Sustainable Connections*

Project: Increasing Demand, Production Capacity & Competitiveness of NW WA Specialty Crops

Grant Recipient: *Washington State Department of Agriculture*

Project: Increasing Specialty Crop Producer Competitiveness through Value-Added Processing

Grant Recipient: *Yakima Valley Growers-Shippers Association*

Project: Local Process Improvements for Horticultural Pest and Disease Control

Grant Recipient: *Washington State University*

Project: Management of Rhizoctonia in Onion Bulb and Pea Crops in the Columbia Basin

Grant Recipient: *Washington State University*

Project: Management of Soilborne Fungal Diseases on Cut Flower Bulb Crops

Grant Recipient: *Washington State Farmers Market Association*

Project: Preserving Specialty Crop Farmers and Farmland through Education and Marketing at Farmers Markets

Grant Recipient: *Washington State Potato Commission*

Project: Production Efficiency and Sustainability of New Varieties of Pacific NW Potato Varieties

Grant Recipient: *Western Washington Agricultural Association*

Project: Skagit Delta Agricultural Irrigation Supply & Management Project

Grant Recipient: *Cascade Harvest Coalition*

Project: Reducing Barriers to Farmland Access for New and Beginning Farmers

Grant Recipient: *Washington Wine Industry Foundation*

Project: The Washington State Guide to Sustainable Winery Practices

Grant Recipient: *Washington State Department of Agriculture*

Project: Creating New Culinary/Agritourism Markets for WA Specialty Crop Producers

Washington State University
Apple IPM Transition Project

PROJECT SUMMARY

This project is somewhat different from other projects funded by the Specialty Crop Block Grant Program (SCBGP) in that it represents an ongoing effort over the last four year – 2008-2011. The first two years of this project were funded by the Washington State legislature through an allocation to the Washington Tree Fruit Research Commission, which in turn funded the Pest Management Transition Project (PMTP). In the last two years the Apple IPM Transition Project (AIPMTP) was supported by the SCBGP through funding of two one-year projects. It would be an injustice to the history of this effort to report on the impact of one year of what in reality has been a four-year project. However, WSU has endeavored to make clear the accomplishments for the current project as they relate to the plan of work that the SCBGP funded, while at the same time linking the current year’s accomplishments to accomplishments and impacts over the last four years.

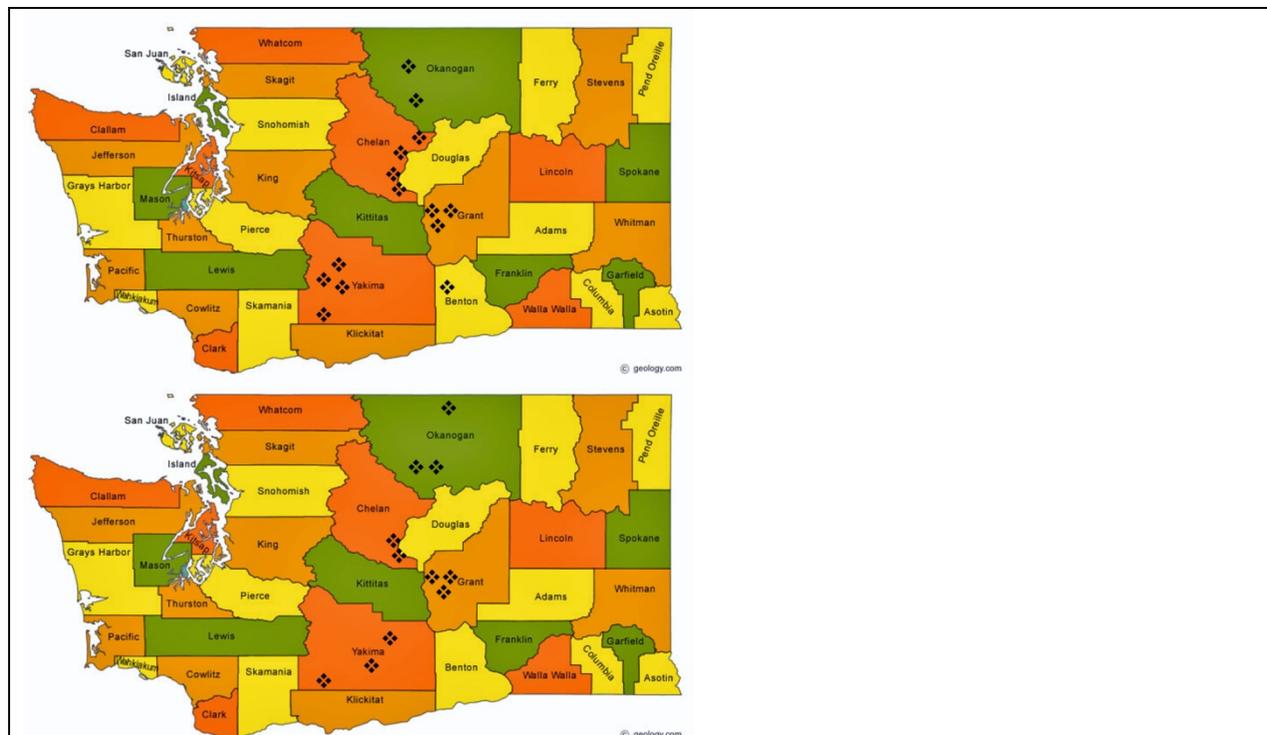
The genesis of the PMTP (current AIPMTP) was national regulatory action limiting the use of and phasing out certain pesticides that were deemed of high risk to human health, particularly farm workers, and the environment. A primary issue was the EPA’s decision to phase-out the use of azinphosmethy (AZM) in tree fruit production. AZM has been the most used insecticide in apple production over the last four decades as a control for the key pest of apple, the codling moth, aka “the worm in the apple”. Replacements for AZM and other insecticides in the same class, the organophosphates (OPs), had been or were in the process of being registered by the EPA. WSU had been conducting research on these OP-alternatives for several years. The PMTP funding provided the resources to launch an education effort targeting the apple industry on how to implement best practices using OP-alternatives. In addition, the PMTP funding provided the opportunity to connect with farm workers and environmental groups to help them understand the benefits derived from tree fruit growers transitioning to OP-alternative insecticides. A report of the PMTP can be found on the AIPMTP web site at http://pmtip.wsu.edu/downloads/PMTP_Final_Report.pdf.

It was clear that the PMTP project made great strides in helping the WA tree fruit industry implement best practices using OP-alternatives between 2008-2009, and these efforts provided much needed baseline data about practices and perceptions that would provide evidence that the original goals were met. However, efforts of the PMTP did not fulfill all of its original goals and the SCBGP provided an opportunity to request additional funding. Through the support of the WA tree fruit industry, the SCBGP provided an additional two years of funding (FY09 and FY10) and this report reflects the culmination of four years of effort, accomplishments, and impacts with emphasis on the currently funded project.

PROJECT APPROACH

Education to WA apple producers occurred in several different formats: winter meetings, newsletters, and field days, but the primary focus over the first three years of the project was on self-selected groups who committed to more intense learning and sharing of experiences. These groups were termed Implementation Units (IUs). IUs consisted of growers/managers and consultants (136 total), geographically distributed throughout the apple growing region, and representing over 94,000 acres of apple production (55%) in WA (Fig. 1). These groups met 3-4 times a year in 2008 and 2009. In 2010 the number of meeting declined in frequency and were held based on the expressed needs of the groups.

Figure 1. Implementation Unit Geographical Distribution (2008 left – 2009 right).



The **AIPMTP (PMTP) Handbook** served as the primary educational tool for IU members, but was widely distributed (over 600 copies) to the entire industry, including a Spanish language version. The PMTP Handbook is available on-line at <http://pmtip.wsu.edu/handbook.html>. It will be maintained and updated as a legacy of the current project, sustaining the continuing effort of helping apple producers adopt new IPM technologies.

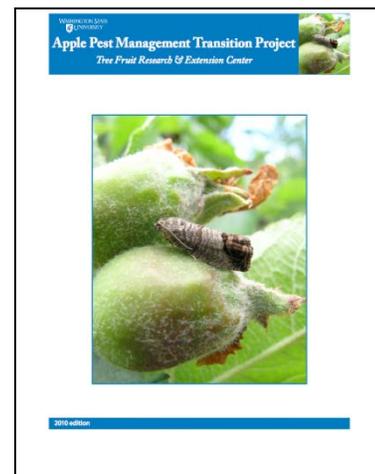
Web resources. Since the beginning of the PMTP and throughout the AIPMTP, WSU has maintained a high quality and up to date web presence. The project's home page is at <http://pmtip.wsu.edu/index.html> from which a person can access all the educational information developed during the project, find progress reports, and access the handbook, eNewsletters, and reference tools. This Final Performance Report will be added to the web page resources.

Field days. In the first two years of the project (2008-2009), WSU held several

field days where growers and consultants could share in the educational activities, such as monitoring pests, sprayer calibration and biological control, which related to the goals of the project. In the last two years, WSU did not formally hold field days, but did participate in field days organized by other groups.

Pest Management Fruit School. In 2009 WSU held a WSU Pest Management Fruit School where they covered the fundamentals of IPM and how to transition to use of new (OP-alternative) pest control technologies using best practices. The fruit school was a two-day event in which 183 individuals participated at four locations. WSU used modern electronic delivery technology to distribute the fruit school to three remote locations in real time.

Farmworker Outreach. A major effort of the AIPMTP project was to reach farm workers who are impacted by pest control activities in orchards. WSU worked with



Field day participants

30 individuals and organizations to understand the concerns and knowledge of the farm worker community and how best to reach them. Bilingual project personnel attended farm worker health fairs where we sponsored activities that helped get the word out on the relative safety of pesticides used in orchards, especially the new ones, OP-alternatives, which posed very little risk to farm workers and their families. A significant outcome of these activities was the development of a handout/poster (see right) that in a very clear way showed relevant information in ways the farm workers could understand. This poster can be downloaded from the web site (<http://pmtip.wsu.edu/downloads/PesticideLabelPoster.pdf>) and has been in high demand by growers and managers as a means to simply and clearly tell farm workers and applicators about the new products they are using for pest control and why they can now reenter the orchard after only 4 hours compared to 3 to 14 days when older insecticides were being used.



Pesticide safety poster

Assessment and Documentation. The PMTP was critical to the establishment of baseline data on perceptions and practices of apple growers and crop consultants regarding the transition away from old and to new IPM technologies. Over four years WSU implemented four major surveys of apple growers/managers (2008, 2010) and crop consultants (2007, 2009). Results of these surveys form the basis by which WSU is able to document this project's ability to meet established outcomes. This project also introduced audience participation technology, TurningPoint™. This technology allowed WSU to query different audiences with specific questions to determine what they knew and what they learned from participating in project activities. The TurningPoint™ technology is now used throughout the fruit industry by WSU Extension and other industry groups as a tool to gather needed information and to get feedback (anonymous) from clientele.

WSU project staff participated in the 2011 WSHA Meeting. They spoke in both the Spanish and English sessions about using the WSU Decision Aid System (DAS) for accurate pest management and control decisions, in the Spanish language session about new chemistries for Guthion replacement, and presented a poster summarizing the Apple IPM Transition Project's past four years. Staff also participated in a number of grower/consultant meetings and workshops during the winter of 2011, as well as a number of workshops and field days for specialized farm workers.

GOALS AND OUTCOMES ACHIEVED

The goals (objectives) of the three phases of the AIPMTP (AMTP) are provided below. The first is from the PMTP project conducted in 2008 and 2009. The second are the goals from the first SCBGP and the last are from the current funded SCBGP. Boiling these goals and objectives down they fall into three categories; 1) enhance and increase adoption of new IPM technologies and practices, 2) leave a legacy that will transcend the project, and 3) document how the project has changed perceptions and practices. WSU has summarized the accomplishments of the project as it evolved through time, making specific reference to the current project.

The goals of the original PMTP (2008-2009) were to:

1. Enhance understanding of new IPM technologies through educational programs and communication of research-based knowledge
2. Increased adoption of new IPM technologies through strategies that include the sharing information on successes and failures and communicating with all stakeholders on project progress
3. Document changes in practices, attitudes, and perceptions of growers, farm labor, and stakeholders

The goals of the first AIPMTP funded by the FY09 SCBGP were to:

1. Speed the adoption of new IPM technologies through educational programs and communication of research-based knowledge
2. Improve real-time pest management decisions through full use of the web-based WSU Decision Aid System (DAS)
3. Document and communicate changes in practices, attitudes, and perceptions of growers, IPM consultants, farm workers, and other stakeholders

The goals of the current AIPMTP funded by the FY10 SCBGP were to:

1. Finalize efforts on adoption of new IPM technologies through educational programs and communication of research-based knowledge
2. Complete legacy products that will transcend the life of the project, and
3. Conduct final documentation activities demonstrating changes in practices, attitudes, and perceptions of growers, IPM consultants, and farm workers.

The Expected Measurable Outcomes of the current AIPMTP funded by the FY10 SCBGP were:

1. Increase the adoption of OP-alternative technologies in IPM in WA apple
2. Enhance environmental quality by reducing OP use and increasing IPM practices
3. Improve knowledge of pesticide safety and reduced-risk insecticides among farm workers

The above goals and Expected Measurable Outcomes for this project were achieved.

Adoption of New IPM Technologies and Practices. The tree fruit industry faced a major challenge when faced with the 2006 EPA announcement of the phase-out of AZM by 2012. The initial survey of apple growers (2008) showed that their primary barriers to the adoption of OP-alternatives for codling moth control were that they would be too expensive, would not be as effective (as old products), and would cause other pest problems. In a follow up survey (2010 – a primary objective of the current project) these concerns had not changed (Table 1). The consultant survey (2009) showed the same barriers though a higher proportion of consultants were concerned about higher costs of OP-alternatives compared to growers and a lower proportion were concerned about efficacy (Table 1). These results are not surprising since the reality is that research had shown that OP-alternatives were less efficacious than products they were replacing and some had been identified as causing pest problems. Growers and consultants soon learned that the new technologies cost 1.5 to up to 3 times more on a per acre basis than the old technologies.

Table 1. What barriers do you face in using the alternatives to AZM (Guthion) to achieve acceptable control of codling moth? (Question D7 in surveys)

Barriers to adoption of OP-alternatives for control of codling moth	Grower survey		Consultant survey	
	2008	2010	2007	2009
Alternatives are too expensive	31%	33%	NA	41%
Alternatives are not as effective	28%	26%	NA	19%
Alternatives cause other pest problems	8%	9%	NA	12%

In addition to questions about barriers to the adoption of OP-alternatives, WSU asked growers and crop consultants a series of opinion questions with responses ranging from strongly agree to strongly disagree. A sample of responses is shown in Table 2.

Table 2. Indicate the extent to which you disagree or agree with each of the following statements (Question D8 in surveys)

	Agree or strongly agree with statement
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Statement	Grower survey		Consultant survey	
	2008	2010	2007	2009
The cost of codling moth control will be higher after the Guthion phase-out	91%	91%	98%	93%
Control of codling moth will be more difficult after the Guthion phase-out	68%	68%	70%	64%
Phasing out Guthion will make tree fruit production riskier for growers	60%	62%	62%	62%
Growers have effective alternatives to Guthion at their disposal	49%	51%	65%	77%
Phasing out Guthion will provide me with new apple marketing opportunities	10%	15%	15%	24%
Phasing out Guthion will encourage growers to use safer pesticides	62%	62%	68%	70%

Comparing responses to these statements from grower and consultant surveys showed pretty consistent agreement and with essentially no change, or very little, between the two years separating the surveys. Most growers and consultants felt that the cost of codling moth control would increase after the AZM (Guthion) phase-out and that control of this pest would be more difficult. Most growers and consultants agreed that phasing out AZM would make tree fruit production riskier, that is with more uncertainty. Growers were not as sure as consultants about the availability of effective AZM alternatives, probably because consultants were more informed about research on these products than most growers. It is also encouraging that more consultants agreed with this statement in 2009 compared to 2007. Few growers or consultants thought the phase-out of AZM would provide new market opportunities for apple sales, but most agreed that the phase-out of AZM would encourage the use of safer pesticides. The above results are examples of how perceptions either do not change over time or change very slowly has some basis in reality. For example, it is not surprising that growers, as well as consultants, agreed with the statement that codling moth control costs would increase since this has indeed been their reality.

When asked about *changes in practices* we saw some differences in grower responses between 2008 and 2010 and consultant responses between 2007 and 2009. There was a decrease in the use of OP insecticides reported by growers (2008 to 2010), however, there was a large decrease in the recommendations of consultants for use of OPs (2007 to 2009), Table 3. By contrast growers did not report any change in the use of OP-alternatives (Table 4), which is informative since they indicated a decline in use of OP insecticides for codling moth control (Table 3). We did not ask the same questions in the 2007 consultant survey so only have data from the 2009 survey in which 76% indicated that they had increased recommendation for use of OP-alternatives for codling moth control over the previous three years (Table 4). In 2008 the percent of growers using 2 or 3 applications of AZM was 73% but this had declined to 63% in 2010. These data support other data that show apple growers are using less OP insecticides and transitioning to use of OP-alternatives. But were changes in practices effective? In 2008, 57% of growers reported that fruit injury from codling moth had remained about the same over the past three years while 17% considered that injury had increased during this same period (survey question B7). In 2010, 61% of growers reported that fruit injury from codling moth had remained about the same over the past three years while 16% considered that injury had increased during this same period. So with changes in practices there was no increase, or decrease, in crop protection from the growers' perspective.

Table 3. Did your use of *OP insecticides* for codling moth change over the last three years? (Survey question B4)

Did your use <i>or</i> recommendations of OP-alternatives for control of codling moth over	Grower survey		Consultant survey	
	2008	2010	2007	2009

last 3-years				
<i>Decreased</i>	50%	59%	35%	75%
Remained about the same	40%	30%	33%	21%
Increased	6%	2%	30%	1%
Did not use or recommend	5%	9%	2%	3%

Table 4. Did your use of *OP-alternative insecticides* for codling moth change over the last three years? (Survey question B6)

Did your use <i>or</i> recommendations of OP-alternatives for control of codling moth over last 3-years	Grower survey		Consultant survey	
	2008	2010	2007	2009
<i>Decreased</i>	12%	14%	NA	8%
Remained about the same	36%	36%	NA	16%
Increased	47%	47%	NA	76%

When growers were asked what they knew about the AZM phase-out schedule almost all (99%) were aware of it but in 2008 only 35% knew what the last year (2012) was that they could use AZM, but in **2010 the good news was that 54% knew that 2012 was the last year they could use AZM** (survey questions D1 and D2). In addition, 65% of growers in 2008 and 2010 indicated that they were in process of decreasing use of AZM (Table 5). However, between 2008 and 2010 6% more growers said that they had stopped using AZM. While these changes might seem small they actually represent a large change in use of OP insecticides by the apple industry.

Table 5. Which of the following statements best reflects your approach to the Guthion (AZM) phase-out? (Survey question D3)

Statements	Grower survey	
	2008	2010
I am in the process of reducing my use of Guthion	65%	65%
I have already stopped using Guthion	18%	24%
I have not yet reduced my use of Guthion	14%	8%
I have never used Guthion, so the phase-out does not affect me	1%	1%

Pheromone mating disruption has been identified as a key component of an IPM program using OP-alternatives in the AIPMTP educational materials and activities. Most consultants (95-98%) recommended use of pheromones for control of codling moth. The percent of growers reportedly using pheromones went from 65% to 68% in 2008 to 2010, respectively, however, based on the total apple acres managed by respondents **in 2010, WSU estimated that about 86% of bearing apple acres are being treated with pheromones.**

WSU worked to encourage the tree fruit industry to use the WSU Decision Aid System as a tool to help them improve implementation of OP-alternatives in IPM programs. The use of DAS by growers increased from 37% in 2008 to 42% in 2010. Ninety-three percent (93%) of consultants reported using DAS in 2009.

What has been presented here is a small portion of the data the project has collected over the last four years. Complete results of the grower and consultant surveys can be found on the AIPMTP web site at <http://pmp.wsu.edu/impacts.html>.

One of the major areas of outreach in the project was to the Hispanic community that worked in orchards and WSU took advantage of pesticide recertification classes as a way to access this group and used the TurningPoint™ audience participation technology to capture responses. Because they conducted these activities over two winters (2008-09 and 2009-10), WSU was able to compare some of the responses to

see if the education programs were making a difference in their knowledge of the AZM phase-out and OP-alternatives. A few more of the respondents knew about the AZM phase-out 80% versus 82% in 2008-09 versus 2009-10, but more were aware of the last year AZM could be used in 2009-10 (69%) than in 2008-09 (52%). The audience indicated an increase in exposure to using the TurningPoint™ system from 27% to 57% between the two periods. The questions in this survey were focused more on pesticide safety than on IPM. For those interested complete survey results can be found at our web site - http://pmp.wsu.edu/TPsurvey2010_Sum.html.

General surveys of growers and consultants provides one view of changes in perceptions and practices but WSU also surveyed those who participated in the IUs to see what changes they had made and what value they placed on the AIPMTP. After the first year of project (2008), WSU used the TurningPoint™ system audience participation technology to ask some basic questions about the materials they had used in their education activities. Most rated the information presented in the IU meetings as relevant (84%), sixty-one percent (61%) said participating in meetings influenced their IPM decisions, and 92% said they would participate in the following year. Participants felt that the AIPMTP Handbook was both relevant to their IPM decision making (91%) and the concepts were clearly presented (93%). Seventy-two percent (72%) rated newsletters as relevant to their IPM decisions and 97% wanted to receive the letters the following year. Field days were not rated as high as the other educational activities as it seemed harder for people to get away in the middle of the growing season to participate in them. Of those that responded, 70% liked the web site and thought it was easy to find information on it.

In 2011 WSU conducted an on-line survey of those who had participated in IUs. Most of the respondents (61%) had participated in an IU two years or more. Eighty-four (84%) percent of the respondents indicated that participating in the IU influenced their IPM decisions and 81% said the AIPMTP Handbook was a helpful resource. **Sixty percent (60%) of the respondents indicated that they did NOT use or recommend AZM in 2011. Ninety-two percent (92%) used or recommend mating disruption (pheromones) for codling moth control and 93% used the WSU Decision Aid System.** The major concern about using OP-alternatives was their high cost (28%) and that some of them caused problems with other pests (24%), but 31% said there were no barriers to using OP-alternatives. All of the results of this survey are at http://pmp.wsu.edu/IU_2011_Survey.html.

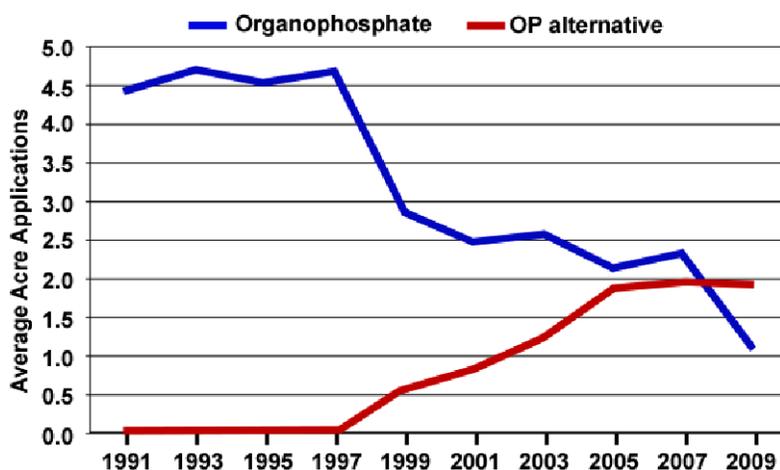


Figure 2. Acre applications of organophosphate and OP alternative insecticide in WA apple orchards based on NASS data

While it is always good to have internal baseline data to document changes in perceptions and practices in a clientele group, it is also good to have independent third-party evidence that confirms changes. WSU followed changes in insecticide use over time for WA apples that was collected in the National Agricultural Statistics Service (NASS) pesticide use surveys. For tree fruit these data have been collected

every other year since 1991. Therefore, data for pesticide use in apples in WA were available for the year prior to the start of the AIPMTP (PMTP) as well as during the project. Figure 2 shows the acre applications of OP insecticides from 1991 through 2009 used on WA apple orchards. Acre application values are used to compare use of different products or pesticides groupings because newer products are used at much lower rates per acre than older products, like OPs. An acre application represents the average number of applications of a pesticide or pesticide group applied to one acre of a crop. During most of the 1990s, an average of about 4.5 applications of OP insecticides were applied to each apple acre. The use of OP insecticides declined in the last part of the 1990s due to regulatory action and to the adoption of mating disruption, which reduced the number of OP applications. Also, in the late 1990s the use of OP-alternatives began to increase as new products were registered for use on apple. The use of OP insecticides dropped dramatically between 2007 and 2009, mostly due to declines in use of AZM. This drop represented a decline in pounds of active ingredient used in apple from 499,000 pounds to 276,000 pounds. It is of interest to note that the use of OP-alternatives did not continue to increase between 2005-09. These data independently confirm the changes occurring in use of OP insecticides in apple IPM in WA. While some of the changes are due to regulatory action much of the change can be attributed to growers and crop consultants making proactive decisions to move to new technologies supported by good information and education delivered by the AIPMTP.

Leaving a Legacy of the AIPMTP. One of the project objectives was to leave a lasting legacy for the WA apple fruit industry after this project terminates. Part of that legacy will be maintaining the web site, adding to it, and evolving it as new information becomes available. Another objective of the current project was to develop an IPM manual, but with more and more information being accessed on-line, WSU opted to develop an *on-line educational product* that captures the essence of the transition project.

This on-line resource is titled *Integrating New Insecticides into a Strategic Plan for Codling Moth and Leafrollers*. It is an educational training document found at

http://pmtip.wsu.edu/INI_presentation.html. The image above shows what a person will see when they go to the site. This narrated presentation is about a 45 minute training session with built in quizzes that must be passed in order to continue through the training.



Another legacy item already mentioned is the *pesticide information poster* developed to help farm workers understand the safety of new insecticide being used in WA apple orchards. This is a valuable tool for growers and orchard managers to use when explaining the characteristics of new insecticides they are using and why farm workers can reenter orchard after such a short period of time compared to older products.

WSU also had as an objective of the *current project* to conduct *case history studies* with which to characterize how different IPM programs implemented a transition strategy and how well they worked. Three years of IPM data was collected from seven apple orchards as part of a case history component of the project. These data have been analyzed in different ways and a report is in preparation and will be placed on the AIPMTP web site, a brief summary of results are given here. The case histories provided a cross section of IPM programs from those that would be considered successful, stable, and cost effective compared to those that were not stable and expensive. One way to assess case histories is to examine the cost of different pesticide groups over time. Figure 3 shows the accumulated cost of different pesticide groups over three years, 2007-2009.

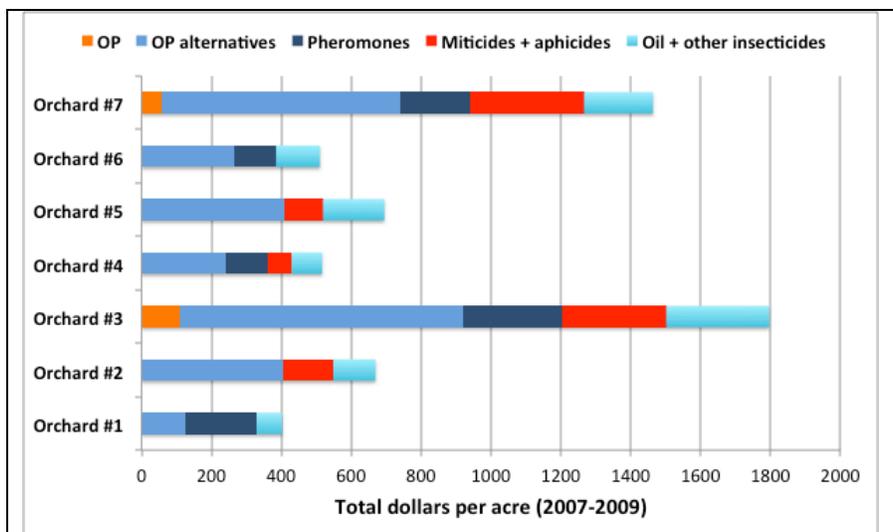


Fig. 3. Accumulated cost (2007-2009) of different groups of pesticides in seven different IPM programs.

The total cost of different IPM programs varied from \$400 per acre (Orchard #1) to \$1,800 per acre (Orchard #3). Note that five of the seven orchards used mating disruption, yet three of these were disrupted as noted by the need to apply controls for aphids and spider mites (red bars). It is also noteworthy that even though all the IPM programs used OP-alternatives some of them were more expensive and less stable than others. WSU's analysis of the cause of instability, (that is, the need to apply controls for aphids and spider mites), rested with the choices of OP-alternatives used. WSU has learned from another study that certain OP-alternatives can increase the risk of disruption of beneficial insects, predators and parasites, which often provide control of aphids and spider mites in apple orchards. Growers and crop consultants were aware of the risk of increased problems with other pests due the use of OP-alternatives (Table 1). While most of their concerns were tied to reduced efficacy of OP-alternatives or their narrow spectrum of activity, the reality is that certain OP-alternatives do disrupt biological control in apple orchards and this increases the cost of IPM programs. In the case history orchards, the added cost of disrupting biological control was about 20% of the total cost of the IPM program. These case histories will provide valuable real-life examples of how best to implement OP-alternatives in apple IPM programs.

BENEFICIARIES

This project's primary beneficiaries were those growers and crop consultants who participated in IUs. They were the principle target for the educational programs and resources developed by the project. The general grower community also benefited from the project through presentations at industry meetings outlining the best practices to follow when phasing-out the use of AZM in their pest management programs. Many growers and orchard managers also benefited from the PMTP handbook, even though they did not directly participate in IU meetings. The legacy of the PMTP is the web presentation that will continue to help growers determine how best to implement the use of OP-alternatives in their pest management program.

Farm workers were another beneficiary group who worked in an environment that became of much lower risk to their health. The development of the pesticide safety poster and work done at farm worker health fairs provided this important information to this segment of the fruit industry in a way that allowed them to understand the reduced risk of new pesticides being used by apple growers.

The citizens of Washington also benefited from the PMTP project as the apple industry moved to adopt alternative products for pest control that have much reduced impact on wild life and aquatic systems. These benefits, while not immediately apparent to the public, will bear fruit over time by mitigating negative impacts of apple production on the environment.

LESSONS LEARNED

The AIPMTP (PMTP) spanned four years of intense effort in helping the Washington tree fruit industry deal with regulatory changes impacting commonly used pesticides. The duration of the project was a challenge to keep a focused approach on the problem as the industry moved towards the adoption of new technologies.

The use of a hands-on approach working with a self-identified group of tree fruit industry leaders provided a core base to educate on best practices to use in transitioning from OP to OP-alternative based IPM programs. The establishment of the IUs provided an intense learning environment, which was a key in helping growers and crop consultants grasp the nuisances of using new OP-alternative technologies. Those involved in IUs became the peer group that talked to their neighbors and colleagues, passing on lessons they learned. The idea of training key people within an industry to provide the local leadership on implementing new ideas was used in the implementation of mating disruption technology and is being used in a new project focusing on enhancing biological control in orchard systems.

A critical lesson learned in this project that has benefited other projects is the inclusion of a specialist for assessment and documentation with training in social sciences. Dr. Nadine Lehrer was hired by the original PMTP project and served throughout the four years of the project. She provided guidance on the development and implementation of rigorous survey documents and methods. She also provided expertise in summarizing survey results and in developing reports and giving presentations. In addition, Dr. Lehrer's background in working with minority communities and her fluency in Spanish provided the project access to and credibility with the Hispanic farm worker community and their advocates.

WSU introduced the use of Turning Technologies TurningPoint audience response system in this project. This technology was used as a teaching tool in IUs, workshops, and even field days. It allowed WSU to query what people knew in an anonymous way and to use the responses to teach correct answers without embarrassing anyone. WSU also used this technology to survey small groups quickly to determine how effective their educational programs were. This technology has now been widely adopted by other groups in the tree fruit industry as a valuable tool in acquiring information, evaluating teaching, and gaining perspectives from a diverse audience on a variety of issues and topics.

More and more, a good web site presence is critical, as it is quickly becoming the information source of choice for growers and crop consultants. WSU hired an excellent web and information specialist on the project who was able to get information up on the web site quickly and managed the information flow to project participants.

WSU was convinced that the PMTP Handbook would be a great teaching tool in getting across how growers and crop consultants could best transition from OP to OP-alternative insecticides in IPM programs, and this was indeed the case. However, an *unexpected outcome* of our project was that WSU found that people in many other states, and even in Canada, were using the PMTP Handbook as a tool to understand how to use new OP-alternative technologies and inform their clientele. The PMTP Handbook is also being used in a project on Enhancing Biological Control in Western Orchards as the source document on implementing OP-alternative IPM programs and how to craft these programs to avoid disruption of biological control.

CONTACT PERSON

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ADDITIONAL INFORMATION

This project leaves a rich legacy of information found primarily on the AIPMTP (PMTP) web site at <http://pmtip.wsu.edu>. This web site will be maintained and updated as new information becomes available on practices and tools for apple IPM. The site contains resource materials such as eNewsletters, the PMTP handbook, project progress reports, articles, reference tools, and all of the survey information which was collected by the project documenting changes in attitudes and practices by Washington apple growers and crop consultants. This site also contains links to other important web site such as the Decision Aid System and Enhance BioControl project.

Northwest Agricultural Business Center Puget Sound Food Network

PROJECT SUMMARY

There are a number of barriers that prevent farms from accessing new market opportunities presented by the growing number of consumers desiring to source local farm products. The barriers include lack of knowledge about how to access market opportunities, lack of effective and efficient communication between buyers and sellers, and the absence of processing, packaging and storage facilities. Based on market research, consumers now perceive locally produced and distributed food as “clean” and of high quality. Farmers have a distinct advantage in today’s marketplace and PSFN is designed to help farmers meet demand for their products. NABC is collaborating with other agriculture organizations through projects like the Puget Sound Food Network (PSFN), to bring farm to market like never before.

Efforts to aid specialty crop producers with marketing efforts locally are extremely timely- in fact consumer marketing research has shown that Eat Local trends are more relevant to today’s shoppers than ever. What lacks is the professional and technical assistance and infrastructure to support all scales of farming into commercial and institutional markets. In order for Washington’s specialty crop producers to be profitable they need help connecting with the RIGHT buyers for diversified sales. NABC knows from experience that commercial and institutional buyers are now responding to consumer demand, they just needed help finding producers and products they could work with. PSFN provided that connection between buyers and sellers acting as “the glue” to help bind those relationships and work through perceived obstacles.

PROJECT APPROACH

The SCBGP funding that NABC received has made it possible to further develop the PSFN project and has exceeded goals not only to create a network of people, businesses, products and facilities, and provide a route to market for local agricultural products, but it has also helped open up new and emerging market channels for small and mid-size producers that were not on the radar at the time the grant application was submitted. PSFN has expanded its efforts in big ways through contracts with the City of Seattle/King County CPPW Farm to Table and the Summer Feeding Program’s Produce Bag Program, Seattle and Skagit Wholesale Markets, and delivered on participation incentives to their steadily growing network of dues paying members, continued improving client services and regular promotion of available products and producers through PSFN’s weekly fresh sheet, known as Live Market.

NABC has strengthened regional partnerships with Cascade Harvest Coalition, Ag Resources of San Juan Island, Whidbey Island Grown and Sustainable Connections by co-sponsoring trade events, chef tours, and sharing announcements through their social networking outlets. Unfortunately, there were no opportunities to work with Clallam Grown or Kitsap Co Ag Alliance.

PSFN launched and marketed an aggressive membership campaign - PSFN staff attended 13 conferences and trade shows and attended 71 planning and partnership meetings (from barns to boardrooms). Through PSFN Account Management, PSFN has helped producers facilitate new and repeat sales within the Puget Sound region. PSFN hosted five member county specific spring training sessions, including Skagit, King, Whatcom, Island and Snohomish. These meetings proved very important for staff to understand the goals, needs and expectations of our members before the height of the season.

NABC actively sought advertising/sponsors for the PSFN. Currently there are two main sponsors: Meritage and Cedar Grove Composting. NABC hopes to continue growing their list of corporate sponsors.

In addition to the work plan activities, PSFN held four seasonal wholesale markets, two in Seattle and two in Mt. Vernon. Reported sales exceeded \$40,000 over two years – this is margin-free income going directly into the hands of small farmers for wholesale volume sales to commercial and institutional food services. The markets proved helpful for producers and buyers to meet in one place and aggregate large orders- saving time and money while maintaining direct relationships. This wholesale market concept has since caught on in other parts of Washington and Oregon. NABC will be evolving this market concept, assuming there is adequate funding for PSFN in 2012 and beyond.

PSFN was delighted to collaborate again with the City of Seattle/King County on the Kids and Teens Eat Free Summer Food Service Program, privately funded by a \$225,000 Wal-Mart Foundation grant. NABC received \$28,000 to administer the program and identify a farm partner. During the months of July and August 2011, the City provided free meals and snacks to children and youth aged 1 to 18 years. Food was aggregated at Seattle Public Schools Central Kitchen and distributed to 90 approved King County sites where at least half of the children and teens were eligible for free or reduced-price school lunches. In addition to meals and snacks, young recipients were given free access to locally grown fresh produce to take home to their families each week. PSFN's role was to coordinate the supplemental produce bag program- locally produced fresh fruits and vegetables- to be distributed to meal sites. PSFN interviewed over 7 farm candidates, chose 1 based on criteria provided by the City, and then coordinated deliveries with that farm to grow, wash, and deliver 8,000 bags of produce (1,000 per week) to Seattle Public Schools Central Kitchen over eight weeks in July and August. PSFN member, Maltby Produce of Snohomish County, was selected to execute the PSFN Produce Bag Program in this groundbreaking year. The bags featured a sampling of colorful and delicious produce such as beets, radishes, carrots, beans (and bean seeds!), cherry tomatoes and apples - all grown on their 200-acre farm in Maltby, Washington. PSFN, through NABC, was responsible for all communications, reporting, and payments. Maltby Produce earned \$18,000 over a 2-month period. The City of Seattle has expressed an interest in continuing this program in future years if funding is available, and that's hopeful news for area producers.

PSFN was also chosen to provide market facilitation services as part of a Center for Disease Control-funded Farm to Table project led by Seattle Human Services Dept of Aging and Disability that saw an increased level of activity in 2011 due to seasonal availability of fresh fruits and vegetables. PSFN is working with farmers and daycare and senior meal site partners to compile local produce weekly fresh sheets, and help one of our farms create a customized "Kid-Care" CSA Box. The Union Gospel Mission was given a farm contact list so they could solicit for pick up at farms. Many repeat orders occurred during August, and orders of many new summer products available locally. Since last fall, the number of daycare and senior care meal sites ordering produce directly from local farms has grown from 8 sites to 40. It has been a tremendously popular program that PSFN hopes to continue with additional funding.

PSFN has increased its social networking presence through weekly Live Market fresh sheets sent weekly every Monday since January 2010 to every member of PSFN. PSFN also maintains a regular blog and presence on its Facebook page and announcements on Twitter.

NABC has successfully completed the project work plan. For producers, the long winter did make it more difficult to produce wholesale volumes in June, but they rebounded and definitely rose to the occasion despite the weather. PSFN's project partners, such as Cascade Harvest Coalition, Ag Resources of San Juan Island, Whidbey Island Grown, and Sustainable Connection, have been instrumental in supporting implementation efforts, especially by providing consumer resources like publications and education, and convening meetings and outreach events. PSFN has in turn supported and promoted these partners' events, outreach, and publications.

Since inception, NABC has built a process by which they validate new members and allocate their account managers based on what they produce as well as their farm location. The project manager validated all new memberships and allocated non-specialty crop producers to NABC staff members as points of contact (these supportive staff were not paid by SCBG funds). PSFN staff, who were fully or partially funded by SCBGP, managed specialty crop farmer membership accounts and market facilitation services first-hand. This ensured that the funding received through SCBG went only to support specialty crop producers. NABC maintains a membership record of all of its members and sorts them by producer type, buyer or logistical provider. Account Management for their members is the key to building rapport and effectively supporting specialty crop producers with their ongoing marketing support.

GOALS AND OUTCOMES ACHIEVED

The Expected Measurable Outcome for this project had two targets:

1) By the end of 2011, specialty crop users will report a 25% increase in their sales as a result of using PSFN. A 25% increase in sales was reached by all specialty crop users, and in many instances exceeded.

2) By the end of 2011, PSFN will have a total of 20 buyers and 80 sellers registered as users. PSFN now has 221 current members total, including: 66 Buyers, 69 Producers/Sellers, 5 Buyers/Infrastructure (primarily wholesale distributors or other aggregators), 1 Infrastructure (delivery services), 47 Individual consumers (non-business supporters), 33 Community Partners (non-profit agencies who do not purchase food). While the target of 80 sellers was not reached, the number of sellers did increase by 54% during the project period, from 45 to 69. The target for the number of buyers was clearly exceeded, with an increase of almost 350%, from 15 to 66.

NABC conducted end of year surveys in December, 2010 and again in November, 2011 targeting membership. The results measured Expected Measurable Outcomes and will also help NABC with its strategic planning in 2012 and beyond. PSFN uses online analytics to help improve business practices to stay relevant but also provide the best resources for members and community partners. NABC has worked with its members to coordinate many sales transactions and logistics, and have created a structure and a system by which to accomplish this on a weekly basis.

There are still many obstacles preventing small and mid-sized producers to diversify their customer base beyond niche markets like farmers markets and high-end restaurants. NABC has only just begun their groundbreaking work and will need to persevere on behalf of specialty crop producers so that they can be more profitable and preserve farming heritage for years to come.

BENEFICIARIES

Beneficiaries included specialty crop producers in Western Washington who were ready and willing to expand their sales into local, commercial and institutional markets specifically. Based on the differences between the year-end surveys from 2010 and 2011, PSFN was most effective in 2011. Out of 7 types of PSFN marketing assistance offered to members in 2011, members ranked the following as most helpful or significant to growing their farm sales in 2011 (ranked in order with 1 being the highest).

- 1) Made at least 1 new business connection and increased sales as a result of general outreach conducted by PSFN/NABC staff or social networks.
- 2) Participated as a buyer or seller at either *Seattle or Skagit Wholesale Market*
- 3) Considered or participated in PSFN's Seattle-based institutional projects *Farm to Table* (serving underserved senior citizens and preschool aged children) or *Summer Feeding Program*.
- 4) Listed products in *Live Market* fresh sheet or made purchase from fresh sheet lead
- 5) Met with my Account Manager and discussed sales goals/followed up with him/her at least once throughout the year, made some progress

- 6) Purchased or sold a product as a result of PSFN online marketing tool.
- 7) Considered or participated in Real Food Challenge (work with student led-groups working to improve food procurement on college campuses)

Other statistics:

- 10% of PSFN member producers reported \$3,000 and \$18,000 additional revenue generated as a result of PSFN's direct marketing and sales assistance
- 50% of members made at least one new business connection
- 5% of members were able to hire or maintain at least 1-3 employees
- No one reported losing business because of PSFN
- 50% of members are interested in using an online tool for business transactions and sales.
- 10% of those uninterested in using an online marketing tool for local food transactions are satisfied with Facebook as their primary online marketing tool.

LESSONS LEARNED

The project began with a strong emphasis on technology solutions, but NABC learned within the first three months of the project, that facilitating relationships first was key to increasing sales between buyers and sellers. While they believe that technology has a place in the redesigning of a more fair and equitable food system for smaller scale producers to be profitable, technology should be designed to compliment business relationships- not replace them. PSFN will continue building on the personal relationships and search for technologies that compliment the efforts they have already started.

The public health partnership opportunities with hospitals, schools and smaller institutions such as daycare centers, and congregate and home delivered meal sites were unexpected but very much welcomed. Farmers were able to service some of the smaller institutions - like daycare centers and senior centers - if they weren't quite ready to work with school districts. These projects not only opened up new sales opportunities for farmers, but fed people in underserved communities who otherwise did not have access to fresh food- much less locally produced fruits and vegetables. These projects pulled multiple levers that made farmers very proud to be a part of.

CONTACT PERSON

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ADDITIONAL INFORMATION

\$132,794 was received in matching funds.

PSFN Blog: <http://psfn.org/blog/> (many photos available)

PSFN 2011 Membership Survey:

<https://docs.google.com/a/psfn.org/spreadsheet/viewform?formkey=dHhyTjhEOWRldEk2czNWWVJVZnbnbFE6MQ>

PSFN Newsletter Archive: <http://www.psfm.org/newsletter-archive/>

PSFN Press: <http://www.psfm.org/press/>

PSFN Events: <http://www.psfm.org/events/>

PSFN facebook page: <http://www.facebook.com/pugetsoundfoodnetwork> (many photos archived)

PSFN Twitter feed: <http://twitter.com/psfn>

Washington Growers Clearing House Tree Fruit and Grape Acreage Survey

PROJECT SUMMARY

This project generated user-friendly, timely, basic industry information to assist the tree fruit and grape industries in their decision-making with respect to production, renewal, expansion, consolidation, year-to-year variability, and entry/exit. Specifically, the project yielded acreage inventories by crop, variety, age, productivity and production system. The industries overall garnered the on-going benefits attainable from accurate crop estimates as they strive to maximize production and labor efficiencies while meeting the demands of finite and costly processing, handling, and shipping infrastructures and work.

All members of the industry have benefited (and will continue to benefit) from more accurate and timely industry data:

- Presenting a view of the overall industry health
- Analyzing the long-term viability and sustainability within the industries and supporting agribusinesses
- Preparing accurate crop estimates and annual crop volume
- Increasing the ability to tell the “grower story” with good data.

Significant advantages are also achieved via

- Improving accessibility to acreage data by species and varieties,
- Assessing potential risks associated with variety concentrations in a given area,
- Measuring geographic dispersion of crop damage after weather events,
- Adjusting handling capacity as well as facilitating transportation, sales, and marketing functions, and
- Evaluating the rate of entry/exit into the respective industries.

Based on input from key industry members, the survey results also provided an indication of business succession plans, variety preferences (e.g. varieties, business structures such as clubs or public), and business philosophies (e.g. investment of earnings, sources of operating credit, sources of real estate financing, impacts of industry consolidation). Specialty crop production agriculture industries and growers are better informed and better prepared with current and coordinated data.

The primary beneficiaries of this project are also the primary participants: growers of tree fruit and grapes. This is only the sixth time that a survey of this type has been conducted in Washington. Prior surveys were conducted in 1948-49, 1986, 1993, 2001, and 2006. Obviously, by replicating the effort every five years, it helps to build a historical basis for looking at acreage inventory trends and associated data.

The list sample for the previous survey conducted in 2006 included over 4,400 operations. Since that time, additional consolidation occurred within the industries but it was not known to what extent and how rapidly. Simultaneously, productivity appears to have increased but it was not known to what extent and how rapidly. This latter phenomena was graphically illustrated with the 2009 cherry crop; the combination of unknown volumes, insufficient industry capacity, and weather that forced a concentrated harvest period melded to create a “perfect storm” situation whereby at least 30% of the crop was either left on the tree or disposed of at the warehouse. This type of situation cannot be economically sustainable.

As with the modifications implemented from the 2001 survey instrument to the 2006 survey instrument, the 2011 survey instrument was modified to include new topics of interest/necessity for which the industries needed a comprehensive industry input. The 2011 instrument expanded on the data requests by asking a) number of certified organic acres; b) number of acres in transition to organic; c) total acres certified in a Food Safety GAP program; d) data for the two newest AVA's (i.e. Snipes Mountain AVA and Lake Chelan AVA); e) intentions for 2011 and the next five years with respect to topwork, remove or plant; and f) grape production not harvested (i.e. due to bird/animal loss, disease loss, weather loss, or economic reasons).

This project does not build on previously SCBGP funded projects. However, the 2006 survey project was funded by USDA Risk Management Research grant funds. In addition, the Washington State Horticultural Association received SCBGP funding to simultaneously conduct an economic impact study. Together, these two projects (i.e. acreage survey and economic impact study) provide powerful information tools for producers to not only make decisions specific to their businesses but also to communicate critical issues to legislators, regulators, consumers, other participants in the supply chain, and financial institutions. These pieces represent integral ingredients in growers being able to accurately, efficiently, and effectively tell their story.

PROJECT APPROACH

The following activities were completed:

PROJECT ACTIVITY	RESPONSIBLE PARTY	TIMELINE FOR COMPLETION
Build producer lists. Review lists from commissions, associations, county assessors, marketing orders, and others to maximize coverage.	Industry Organizations NASS	October 2010 COMPLETED
Design mail survey instrument to obtain conventional and organic data for all tree fruit and grape crops.	NASS	October 2010 COMPLETED
Review mail survey instrument to ensure that all necessary questions are being asked so as to generate the desired, useful data.	Industry Organizations	October 2010 COMPLETED
Design area frame. Select both area and list samples. 1. All grape growers with 1 acre or more 2. All tree fruit growers with 5 acres or more.	NASS	October 2010 COMPLETED
Print questionnaires and other survey materials. Develop electronic formats for questionnaire and other survey materials.	NASS in collaboration with WGCH & WAWGG	October 2010 COMPLETED
Publicized the upcoming survey in newsletters and numerous industry publications. Conduct survey publicity. Encourage producers to respond. Industry organizations and publications worked together to encourage growers to respond to the survey. These included but were not limited to the following: 1. Washington Growers Clearing House weekly yellow sheet. 2. Washington Growers Clearing House industry info	Industry Organizations with assistance from NASS	March 2011 COMPLETED

<p>newsletter.</p> <ol style="list-style-type: none"> 3. Washington Growers Clearing House Booth at Washington State Horticultural Convention. 4. NASS/WSDA Booth at Washington State Horticultural Convention. 5. Good Fruit Grower magazine – article published. 6. Annual Horticultural Convention – posters about the survey were displayed at the majority of sister organizations. 7. Washington State Horticultural Association weekly Horticulture Headlines. 8. Washington State Horticultural Association quarterly newsletter. 9. Washington Association of Wine Grape Growers – newsletter and emails (twice each). 10. Washington Wine Industry Foundation – newsletter and emails (twice each). 		
<p>Send pre-survey letters to orchard operators. Explain the intent and need to report. Pre-survey letter was sent to orchard (WGCH members) and vineyard operators (members and non-members of WAWGG).</p>	Industry Organizations	December 2010 COMPLETED
<p>Train survey interviewers. Approximately 10 phone operators and 30 field representatives were trained to administer the survey and respond to grower questions.</p>	NASS	November 2010 COMPLETED
<p>Conduct data collection via mail, phone, face-to-face, and electronic formats. Conduct follow-up mailings. Contact medium and smaller operations by telephone. Conduct face-to-face interviews with large operations (i.e. those believed to have >500 acres of fruit or those with significant amounts of less prevalent fruit). Booth at Washington State Horticultural Convention.</p>	NASS	March 2011 COMPLETED
<p>Edit and analyze data. Summarize data. Generate written report of data and findings.</p>	NASS	June 2011 COMPLETED
<p>Publish final report in hard copy and electronic formats.</p>	NASS, WGCH, WAWGG	August 2011 COMPLETED
<p>Post final report on websites of industry organizations. Utilize press releases and articles/columns to share results with industry members.</p> <ul style="list-style-type: none"> • NASS press release • WGCH and WAWGG press releases • Radio interviews with four stations • Links on WGCH website and other coalition member sites; Link on WAWGG website 	Industry Orgs	August 2011 COMPLETED

• Good Fruit Grower publication		
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The full reports are available electronically at the following electronic locations:

Tree fruit acreage survey:

http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Fruit/FruitTreeInventory2011.pdf

Vineyard acreage survey:

http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Fruit/VineyardAcreage2011.pdf

Each industry specific report contains the following:

- Map
- Notes about the Data
- Acres by variety, historical, by county, by area
- Specific data per species
- Organic and Transition
- Future Intentions
- Data Collection Materials
 - Northwest Tree Fruit Coalition
 - Washington Association of Wine Grape Growers
 - Survey Instrument / Respondent Booklet
- Selected Charts and Graphs

Within the tree fruit and grape industries, two organizations provided leadership in guiding and implementing this project as well as working with NASS:

- The Washington Growers Clearing House Association (WGCH) - The Clearing House is a voluntary tree fruit grower association representing over 2,200 fruit growers. Governed by a board of tree fruit growers elected from 24 growing districts in North Central Washington, the Yakima Valley, and the Columbia Basin, it publishes a weekly bulletin tabulating prices obtained by a participating regional marketing organization as well as warehouse and marketing firms for apples, pears and cherries. Established in 1941, WGCH discusses fruit marketing, prices and supplies. The WGCH also represents growers' interests in legislative and regulatory issues at the state and federal levels.
- Washington Association of Wine Grape Growers (WAWGG) - Established in 1986, this membership organization of over 500 is a trade association of vinifera grape growers and includes a majority of Washington grape growers as its members. Membership includes wineries, researchers, associates, friends, vendors and suppliers. The organization's annual meeting is the single largest gathering of the industry in the Northwest. WAWGG has developed an extensive network of wine grape growers, processors and agri-business professionals in the state.

USDA's National Agricultural Statistics Service (NASS) conducted all survey activities, analysis, and reporting. NASS conducts hundreds of surveys every year and prepares reports covering virtually every aspect of U.S. agriculture. NASS is committed to providing timely, accurate, and useful statistics in service to U.S. agriculture.

This project was supported by the following major tree fruit and grape organizations:

- Northwest Fruit Exporters
- Northwest Horticultural Council
- Pear Bureau Northwest

- The Marketing Associations
- Washington Growers Clearing House
- Washington State Fruit Commission
- Washington State Horticultural Association
- Washington State Tree Fruit Research Commission
- Wenatchee Valley Traffic Association
- Yakima Valley Growers – Shippers Association
- Washington Association of Wine Grape Growers
- Washington Wine Industry Foundation
- Washington State Grape Society

Given that the data needs are so great and so desired within these industries, as well as affiliated agribusinesses and service providers, collaboration among these organizations was strong:

- Extensive assistance in list building of producers was supplied.
- Critical input for both questionnaire design and technical issue consultation with NASS was provided.
- Announcements of the upcoming survey in many newsletters and industry publications were publicized.
- Pre-survey letters explaining the intent and need to report were sent to orchard and vineyard operators.
- Dissemination of results to growers and affiliated industry agribusinesses.

In addition, cash match was provided by the following entities:

- Tree Top Inc.
- Northwest Farm Credit Services
- Pear Bureau Northwest
- Washington Association of Wine Grape Growers

GOALS AND OUTCOMES ACHIEVED

This project was designed to and did achieve three objectives:

1. Completed acreage and production survey for tree fruits and grapes (apples, bartlett pears, winter pears, sweet cherries, tart cherries, apricots, peaches, nectarines, plums/prunes, juice grapes, and wine grapes) that encompasses acreage planted, age, bearing and non-bearing acreage, intent to plant and/or block renewal, intent to remove and/or block conversion to another commodity, conventional production acreage, and organic production acreage.
2. Comparison of historical and current statistics by crop, geographic orientation (e.g. county, district, appellation), production system (e.g. conventional, organic), planting density (e.g. low, medium, and high), and amount harvested/not harvested.
3. Maintain sequence of regular data collection in order to be able to document trends as well as current situation. Previous surveys were conducted in 2006, 2001, 1993, 1986, and 1948-49.

The Expected Measurable Outcome for this project was achieved. The overall goal was to provide the ability to estimate crop volume through a completed acreage and production survey for tree fruits and grapes (apples, bartlett pears, winter pears, sweet cherries, tart cherries, apricots, peaches, nectarines, plums/prunes, juice grapes, and wine grapes) that encompasses acreage planted, age, bearing and non-bearing acreage, intent to plant and/or block renewal,

intent to remove and/or block conversion to another commodity, conventional production acreage, and organic production acreage. The target was a full analysis of acreage and density, including a comparison of historical and current statistics by crop, geographic orientation, and production system.

The 2011 survey screened out respondents with fewer than five acres of tree fruit and total grape acreage less than one acre. Screening out of the smaller operations was an effort to focus time and resources on records that would have more of a significant impact on the estimates. The final list sample included over 5,200 operations.

The methodology in 2011 was virtually the same as the 2006 survey, which used more advanced procedures and methodology than previous studies. The main differences were the use of an area study to measure incompleteness of the sampling list and more sophisticated adjustments for non-response and coverage. Even with the screening process eliminating the report for orchards with less than five acres, the proportion of reported data as a percentage of the total fruit acres was significantly higher than 2006, leading to higher quality results.

The modes of data collection included mail, telephone, personal interview, and online Electronic Data Reporting. Operations were given an opportunity to respond by mail beginning in December 2010. A copy of the questionnaire and respondent booklet are included in the appendix of this report and in the final survey reports for both tree fruit and grapes. The beginning date of data collection was December 1, 2010. The median date of data collection was February 15. Follow-up mailings were conducted and all medium and most smaller operations were contacted by telephone. Large operations, defined as those thought to have greater than 500 acres of fruit or those with significant amounts of less prevalent fruit, were followed up with face-to-face interviews. When possible, efforts were made to use grower electronic records.

Over 23,000 individual blocks of fruit information from approximately 2,200 growers who reported one or more blocks of tree fruit or grapes were tabulated. Most of the non-respondents were smaller-sized operations as less effort was made to follow-up with growers expected to report very small fruit acreages.

BENEFICIARIES

All members of the tree fruit and grape industries are benefiting from more accurate and timely industry data.

- Analysis of the age of orchards and vineyards (including bearing and non-bearing acreage) has a significant impact on the quality of crop analysis and the projection of crop estimates.
- Acreage and planting density data allow industry members to estimate crop volume.
- More specifically, varieties by acreage data allow for better assumptions to be made relative to yield potential and, thus, generate more accurate crop estimates.
- Assessing potential risks associated with variety concentrations in a given area, and measuring geographical dispersion of crop damage after weather events provide for improved risk management.
- Benchmarking of number of reported acres certified in a Food Safety Good Agricultural Practices program (67,376 acres) supports allocation of industry resources to facilitate grower readiness for independent, third-party certifications and continued access to markets requiring such.
- Better collaboration with other agricultural producers and organizations enhances overall sustainability of agriculture within Washington State and, therefore, encourages a greater degree of international competitiveness.

- Accurate acreage statistics provide an indication of the “health” of the industry and, thus, allow producers and affiliated agribusinesses to project both the long-term and short-term viability of the industry.
- Accurate data enables growers (i.e. those who are spending millions and paying significant amounts into the tax coffers) to make decisions that keep us viable and sustainable for the long term.

In addition, the tree fruit and grape industries are supported and lead by a number of not-for-profit organizations with primarily grower member boards of directors. The survey results provide an essential tool for setting the direction of these organizations. Strong grower participation in the survey helps these organizations to align their work with the realities of current industry varietal plantings and future growth projects. Changes in variety acreage plantings, ever more trees per acre, and the effects of accelerating industry consolidation are a few of the components that are driving the need for industry organizations to stay current with what is happening at the orchard level.

Finally, the survey results will assist in marketing. For those organizations that help drive marketing, it is vital that greater consumer demand be created through the proper allocation of grower resources. Identifying current varietal production is paramount to the long term success of Washington State growers on multiple levels:

- Confirming the ever-changing varietal plantings alerts commissions to the proper allocation of resources to promote and market tree fruits.
- Domestic and international marketing strategies must align if the industry is to grow future demand supported by the most opportune promotional activities.
- Export market access is critical to protecting domestic markets and improving grower profitability. As the varietal trends change, keeping and gaining access to current, new, and emerging markets is mandatory to the overall industry’s long term success.
- Getting more healthy and nutritious Washington tree fruits into consumers’ hands – at a profit to growers – is the true success. Confirming acreages and extrapolating future volumes provides the guidance necessary to stay ahead of the production curve with consumption-increasing messages.

LESSONS LEARNED

Several tree fruit industry leaders have offered their insights on the results of the survey and the project as a whole. These are highlighted as follows:

“The Washington Growers Clearing House Association aids in distributing the tree survey information to tree fruit growers, industry, support industries and government entities. The survey data enables growers to anticipate potential varietal production trends, evaluate potential grower returns based on future supply/demand when making decisions on what varieties to plant and in developing their business plans. Industry suppliers are able to utilize the data to determine what levels of industry support products are needed and/or what industry services to pursue. Industry organizations use the information to inform county, state and federal agencies on the strength, size and value of the tree fruit industry, which aids in determining economic benefits, in addition to needed services such as transportation, housing and/or labor needs, etc.”

Kirk B. Mayer, Manager
Washington Growers Clearing House Assn.

“Census data is of immense importance to marketers in having an indicator of what planting trends are taking place that will manifest themselves in the market place in the near or mid-term. Production follows plantings and while most marketers will know what trends are taking place within the organizations for which they market, this information gives them a clearer picture of the industry wide trends. This information will not be nearly as critical for varieties in decline

because the production stops the year following tree removal; production increases will lag plantings/grafting by 3 – 10 years.”

Bruce Grim, Marketing Manager
The Marketing Associations

“The Washington Apple commission sees the Tree Survey as a useful tool from the standpoint of aligning our promotional activities with the varietal trends within the industry. Reacting to the varietal makeup of Washington’s apple crop isn’t a wise business plan, and with the Tree Survey, we are able to anticipate increased varietal volumes and match production with export varietal makeup potential.

As the domestic market stabilizes, and planting trends continue up, the export markets will be critical for the long term success of the industry. Looking through the window glass to total industry volumes for the next five years emphasizes our need to expand, maintain, and realign our activities to increase international consumer demand. Increased volumes are just one component determining the future success of WA apple growers.”

Todd M. Fryhover, President
Washington Apple Commission

The tree fruit and grape industries are extremely grateful for the continued partnership of NASS and industry organizations along with the Specialty Block Grant Program to be able to successfully administer this survey and disseminate the results for the benefit of industry members. Without such support and commitment, these two specialty crop industries would not be able to engage in the important work of acreage surveys. The industries were also able to utilize the synergies garnered from collaboration and resource efficiencies (e.g. time, money, staffing).

CONTACT PERSON

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ADDITIONAL INFORMATION

See **Report 12-25-B-1102 Attachment A** for the following:

1. Washington Growers Clearing House press release announcing Specialty Crop Block Grant award.
2. Washington Association of Wine Grape Growers letter requesting grower participation in acreage survey effort.
3. Northwest Tree Fruit Coalition – request for grower participation in survey effort. This letter of support was sent with the survey to all growers.
4. Grape Posts (sample of three) highlighting survey and need for growers to participate.
5. Washington Grape Society announcement and request for grower participation in survey.
6. Washington Growers Clearing House – poster requesting grower participation in survey effort (mailed; displayed at all sister organization booths at Washington State Annual Horticultural Conference)
7. Washington Growers Clearing House – Industry Info 24 November 2010 – announcement of tree acreage survey; opportunity to complete survey at Horticulture Convention. This is a sample. The invitation ran in the Industry Info newsletter for two issues.
8. Washington Growers Clearing House Bulletin – 25 January 2011 – Tree Fruit Acreage Survey reminder to complete survey. This is a sample. The reminder ran for four weeks in the Bulletin. WAC letter supporting Specialty Crop Block Grant acreage survey results.

Pear Bureau Northwest USA Pears Road Show - Mexico

PROJECT SUMMARY

This activity was conducted as a joint project for the Oregon and Washington State Departments of Agriculture and to address WSDA's Specialty Crop Block Grant Program priority of enhancing international trade. The purpose of this project was to augment market development and access, as well as provide consumer education regarding the multiple varieties of USA Pears available, origin, ripening, nutritional benefits, and usage in recipes. Getting consumers more familiar with other pear varieties, such as Red Anjou, Starkrimson, Bosc, and Concorde is one of the top goals the Pear Bureau has for the Mexican market. This activity provided the opportunity for much deeper contact with consumers than a typical in-store promotion, and overall this activity helped create the necessary excitement or theater that is lacking in the marketing programs for most fresh produce items to sufficiently engage consumers. Furthermore, this activity enhanced the current promotional program of in-store promotions, PR, consumer advertising, and consumer communication activities that the Pear Bureau conducts each season in Mexico. The Pear Road Show helped the Pear Bureau make a deeper impact with its core consumers and created greater consumer attachment to the USA Pear brand.

Since March 2009, exports to Mexico were impacted by the 20% retaliatory tariff placed on pears due to the U.S.'s cancellation of the Mexican Pilot Trucking Program. This retaliatory tariff has resulted in an estimated loss of \$30 million since its inception (since the completion of the USA Pear Road Show promotions, the trucking program dispute was resolved, and the tariff on pears was removed at the end of October 2011). The Road Show was intended to help motivate consumers to buy NW pears and the retailers and importers to stock larger volumes of NW Pears, in spite of the higher cost due to the tariff which resulted in higher retail costs for consumers.

This is also a key time for the Pear Bureau to deliver a message that resonates with Mexican consumers. Mexico ranks first in terms of obesity levels for children. There are 32 million adults and 10 million children and teenagers that are overweight and obese, with 5 million adults expected to become diabetic within the next 5 years. The Pear Bureau's consumer activities, including the Road Show, emphasize the importance of a nutritious diet, exercise, and a healthy lifestyle. All of these issues are becoming increasingly important to Mexican consumers, demonstrating the growth opportunities for USA Pears in this market.

The USA Pear Road Show built upon the success of a similar promotion, the U.S. Fresh Fruit Road Show, which was conducted in Mexico from 2006-2009 as a joint activity funded under the USDA's MAP-GBI program and the Healthy Fruits for Healthy Families promotion, another joint activity funded under a 2009 WSDA SCBGP grant. The concept proved to still have a strong resonance among consumers as well as retailers.

PROJECT APPROACH

The Pear Bureau conducted a total of 80 promotional days in five major cities throughout Mexico: Mexico City, Guadalajara, Monterrey, Cuernavaca, and Queretaro. The retailers that participated are among the leading retail chains in Mexico: Soriana, Comercial Mexicana, Mega, Wal-Mart, Bodega Aurrera, Merkabastos, Chedraui and Smart.

The activities conducted during Road Show promotional days included sampling, recipe demonstrations, consultations with nutritionists, games for kids, opportunities to win USA Pear incentive items, distribution of informational materials, and appearances by a USA Pear character mascot. All of these activities educated consumers about USA Pear varieties, ripening, and provide usage ideas. From

February to May 2011, the Pear Bureau covered 58 stores, 13 events, 4 schools, 4 sport clubs, and 1 museum, reaching 44,835 contacts.

By interacting with consumers before entering the store, the Pear Bureau was able to positively influence their decisions to buy more USA Pears and purchase new varieties. The Pear Road Show also served as an incentive for retailers to increase the volumes and varietal range, improve the location of the pear display, and put USA Pears on ad during the promotional period.

Road Show promotions also took place in conjunction with 2 concerts by a pop music band, Savvy, that the Pear Bureau sponsored – these events provided the opportunity to interact with the teenage demographic that is typically difficult to connect with. No grant funds were used for entertainment costs. All costs associated with the concerts were covered by the Pear Bureau.

GOALS AND OUTCOMES ACHIEVED

The Pear Bureau's goals in the Mexican market are to increase volume, varietal mix, and maximize returns to the growers. The USA Pear Road Show augmented the Pear Bureau's core promotional activities and delivered positive results, with performance measure results surpassing all goals set prior to beginning the activity.

Expected Measurable Outcomes

- A. Northwest Pear sales during the promotional period
 - a. Target: Benchmark + 10%
 - b. Result: Benchmark + 60% (Road Show results)
- B. Variety exports to Mexico during promotional period
 - a. Target: Benchmark + 15%
 - b. Result: Benchmark + 3.71% (Road Show Final Report)
- C. Increase in sales with each retailer during promotional period
 - a. Target: Benchmark + 50%
 - b. Result: Benchmark +110% in average (Road Show results)
- D. Average price per box to Mexico
 - a. Target: \$17.25
 - b. Result: \$18.51 (Global Trade Atlas, Feb – May 2011)
- E. % of those consumers who reported that information will influence their purchase behavior positively to buy more pears
 - a. Target: 32%
 - b. Result: 83% (Road Show results)
- F. % of consumers who eat at least 3 servings of fresh fruit and vegetables a day
 - a. Target: 37%
 - b. Result: 42% (Road Show results)
- G. % of consumers who became more educated about Northwest pears
 - a. Target: 38%
 - b. Result: 86% (Road Show results)
- H. % of consumers who consider health and nutrition important purchase decision motivators
 - a. Target: 40%
 - b. Result: 100% (Study of Habits and Usage of USA Pears, August 2011)

BENEFICIARIES

The over 1,500 pear growers in Oregon and Washington benefited from the USA Pear Road Show promotion, as demonstrated by the average price per box of \$18.51 during February – May, which was well above the set goal.

	Value (USD)	Volume (MT)
February 2011	4,865,993	5,566
March 2011	5,868,534	6,222
April 2011	3,690,566	3,828
May 2011	3,764,174	4,033
TOTAL	18,189,267	19,649

Source: Global Trade Atlas

The promotion's positive results strengthened relationships with both retailers and consumers as a result of the promotions, which will contribute to future growth opportunities for USA Pears in the Mexican market.

LESSONS LEARNED

Overall, the USA Pear Road Show was a very successful promotion and delivered positive results for growers, as well as retailers and consumers. Mexico is the USA Pear industry's number one export market, and the Road Show was a unique and exciting way to connect with consumers, providing them with complete information regarding the characteristics, benefits, nutritional values and usage of Northwest pears. The end result is a more informed and motivated consumer that includes pears as part of a daily diet.

In planning and executing any promotion, especially internationally, it is important to keep in mind external factors that are outside of the control of the project. Therefore, the planning must allow for a degree of flexibility in order to adjust to the market conditions. In this project, the fluctuating exchange rate played a role, contributing to a decrease in the number of promotion days that was originally planned in order to stay under budget. The Mexican Peso – U.S. Dollar exchange rate decreased from 12.5-13 pesos/USD at the time the proposal was submitted until the end of 2010 to around 11.5 in April (an 11.5% depreciation of the US Dollar against the Mexican Peso).

Only one out of eight Expected Measurable Outcome targets was *not* achieved: the goal of increasing variety exports during the promotional period did not meet the target of 15% over 2009 exports. There are a variety of reasons that this target was not met: 1) the import tariff of 20% was in effect until June 8, when it decreased to 10%; 2) a lower crop compared to the previous year resulted in higher prices. In 2011, the average price per box was \$28.21, which was over 5% higher than 2010 price of \$26.77 per box; 3) increased competition with Argentinean varieties, which increased 210% from 34,089 boxes in 2010 to 105,796 boxes in 2011.

CONTACT PERSON

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ADDITIONAL INFORMATION

See **Report 12-25-B-1102 Attachment B** for the following:

1. Road Show Sales Data
2. Road Show Final Report
3. Study of Habits and Image for USA Pears









Washington State Department of Agriculture European Grapevine Moth Survey

PROJECT SUMMARY

Washington State's vineyard and stone fruit industries are threatened by the recent detection of the European grapevine moth (EGVM) in California. Eradication of EGVM in California also becomes increasingly unlikely as the known infestation area continues to grow. The larvae of this pest insect feed on the grapes, cherries and other commercially important stone fruit. No reproducing populations of EGVM are known to exist in Washington; however, introduction through commercial and private pathways pose a serious threat to the grape and stone fruit industries of the state.

Establishment of EGVM in the state would increase production costs by adding additional pest control measures and direct damage to fruit that would lower commodity grades or remove the fruit from trade. In addition to the direct costs, the impacted fruit industries would face domestic and international quarantine restrictions that would dictate costly mitigation measures before Washington fruit could gain access to protected markets.

PROJECT APPROACH

To develop a trap density and placement plan using GIS resources, WSDA used its own WSDA/USDA Exotic Pests of Grapes Survey (EPOGS) Manual created by Entomologist Michael W. Klaus in 2010. WSDA then placed traps according to known commercial grape areas, historical GIS maps from WSDA's Perry Beale, past knowledge/experience from grape phylloxera survey from Entomologist Michael Klaus, and information learned from the 2010 EPOGS.

To develop and conduct outreach to industry stakeholders, WSDA communicated with Vicky Scharlau, the Executive Director of the Washington Association of Wine Grape Growers (WAWGG) to disseminate information to affected growers. The 2011 EGVM survey was supported by WAWGG and the organization also assisted the agency in the industry stakeholder work and outreach needed to place traps in production vineyards.

Logistical/ordering needs were calculated by Michael Klaus and Dr. Jim Marra based on many factors including: knowledge acquired from 2010 EPOGS, extensive knowledge and experience of grape growing areas by Michael Klaus and veteran seasonal trapper supervisors, and review of google earth maps and other maps. WSDA then provided USDA APHIS with a Workplan. Traps arrived from USDA APHIS PPQ Trapping Services, Moore Air Base, Edinburg, Texas.

WSDA Public Information Officer, Mike Louisell, worked with Entomologist Michael Klaus to produce a Press Release and door hangers and to arrange meetings with Yakima Valley reporters for a media event/picture opportunity.

Supplies were staged at the WSDA Yakima field office and the routine agency methods were used to advertise and hire trapper positions. The trapper positions were also posted on the WSDA Employment Opportunities website at <http://agr.wa.gov/Employment/>.

WSDA used the standard USDA provided traps and lures for the 2011 survey and followed the approved Cooperative Agricultural Pest (CAPS) methods described in the National Grape Commodity Pest Survey. WSDA placed and monitored traps for European Grapevine Moth (EGVM) from June 24 through September 30 in sixteen Washington State counties using traps baited with pheromone lures (See **Table 1.A**). Traps were checked every two to four weeks and changed at least every four weeks.

Trap deployment focused on commercial wine and juice grape vineyards, non-commercial, residential grape vines in populated areas, abandoned vineyards, and feral, roadside grape vines. Host plants included only grape vineyards or backyard grape vines. These types of hosts were targeted because they represented the greatest risk of pest introduction and propagation.

**Table 1.A
Counties Trapped for EGVM in
2011**

Adams	Douglas	Klickitat	Snohomish
Benton	Franklin	Okanogan	Walla Walla
Chelan	Grant	Skagit	Whatcom
Columbia	Kittitas	Skamania	Yakima

The 2011 EGVM survey was supported by the Washington Association of Wine Grape Growers. The WAWGG has assisted the agency in the industry stakeholder work and outreach needed to place traps in production vineyards.

GOALS AND OUTCOMES ACHIEVED

In 2011, WSDA monitored a total of 914 EGVM trap sites as detailed in Table 1.B. Traps were placed throughout June, July and August, and monitored bi-weekly until removal in late September. The Expected Measurable Outcome of demonstrating one-third of Washington State to be a pest-free area of production with regards to EGVM by surveying one-third of vineyard acreage was achieved. WSDA surveyed approximately 27,000 acres out of approximately 65,000 total acres – over 40% of the total acreage.

All project goals were achieved.

Goal 1. The pest free status of Washington State will be maintained by early detection and possible eradication of an economically important group of insect pests. The results of this project demonstrate that the pest free status of a major grape production area in Washington State is maintained.

Goal 2. Washington State’s grape industries will be protected from an important group of destructive pest insects. The negative results of this survey demonstrated the state’s agricultural industry remains protected from an important pest of grapes and stone fruit.

Goal 3. The survey will help maintain the unregulated export of fruit from Washington State to international markets. International markets for grapes and stone fruits will remain open and unregulated for the European Grapevine moth.

2011 EGVM Trap Results

Table 1.B – Trap Sites by County

COUNTY	Number of EGVM Traps	Number of Positive Traps Sites
ADAMS	18	0
BENTON	126	0
CHELAN	15	0
COLUMBIA	1	0
DOUGLAS	8	0
FRANKLIN	104	0
GRANT	146	0

KITTITAS	7	0
KLICKITAT	14	0
OKANOGAN	1	0
SKAGIT	74	0
SNOHOMISH	25	0
WALLA WALLA	71	0
WHATCOM	52	0
YAKIMA	249	0
TOTALS	914	0

This 2011 season, no EGVM moths were caught. The EGVM pest free status of Washington State will remain.

BENEFICIARIES

The recently completed state-wide survey supports and benefits the grape and stone fruit producers of Washington State by maintaining the unregulated export of fruit to other states and countries.

European grapevine moth threatens a commercially important segment of specialty crops. For example, grapes are the 10th leading agriculture commodity in Washington, valued at \$210.1 million and in 2009; Washington vineyards produced 350,000 tons of grapes on 65,000 acres, the second highest total in the U.S. (USDA/NASS 2010). Additionally, sweet cherry production in Washington leads all states producing 245,000 tons on 35,000 acres valued at \$215.1 million. Cherries rank eighth in dollar value among Washington's agriculture commodities

LESSONS LEARNED

The introduction of EGVM is of great concern to the grape industry. The positive result of this project is that a major area of Washington State's fruit production is free of invasion by the European Grapevine Moth.

CONTACT PERSON

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ADDITIONAL INFORMATION

See **Report 12-25-B-1102 Attachment C** for the following:

1. Washington State's American Viticultural Areas
2. WSDA News Release, June 23, 2011
3. Yakima Herald Republic article, June 23, 2011
4. Reported Status of EGVM through December 7, 2011