



Apple Pest Management Transition Project

Progress Report
January 2009

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Executive Summary

The Pest Management Transition Project (PMTP) continues to meet established benchmarks in extending research-based knowledge to Washington's tree fruit industry. The primary direct delivery mechanism has been through implementation units (IUs). Fourteen IUs were established in 2008. These IUs were distributed geographically throughout the primary apple production region of Washington State and influenced changes in pest management practices on 42,600 acres of apple. Some IU participants made dramatic changes in their apple pest management programs due to the PMTP while others took smaller steps towards becoming more comfortable with new technologies that have been registered to replace organophosphate insecticides. Education was delivered via IU meetings (64 IU meetings in 2008), the PMTP website, a PMTP handbook (460 produced and distributed in 2008), newsletters (10 published in 2008), field days (5), a session at the annual Washington State Horticultural Association (WSHA) annual meeting in Yakima (250 participants), and the 2008 WSU Extension Fruit School (183 participants). The PMTP web site (<http://pmtp.wsu.edu/>) continues to be the best source for up to date and archived information about the project.

Outreach to broader stakeholder groups focused on contacting farm workers and environmental groups to assess perceptions and needs. In summer/fall 2008, 25 meetings were held with individuals and organizations that work with farm workers. These meetings identified the need for educational materials on the risks and benefits of new insecticides. The PMTP will work to develop these resources. In addition, 30 meetings were held with individuals and organizations working in the areas of environmental conservation and sustainable/bio-agriculture. These groups generally praised and supported the PMTP efforts, and opportunities to work on areas of common interest have been identified.

Assessment and documentation efforts focused on baseline surveys of fruit industry consultants and growers/managers and evaluation of IU impacts. A new assessment tool, TurningPoint, was used for gathering information and stimulating discussion. This technology allows an audience to interact with and provide anonymous feedback to a presenter through the use of "clickers". TurningPoint was used with IUs at the end of the growing season to assess the impacts of PMTP. Results indicated a high level of satisfaction with the IUs and success using new insecticides in IPM programs. In addition, a consultant survey was conducted via mail in June (08). Results of this survey, which had a 55% response rate, showed that consultants viewed codling moth as the key pest of concern and that most included Guthion as part of their pest management recommendations; however, all were aware of the EPA mandated phase-out of this product. Most consultants expressed confidence in recommending new insecticides as alternatives for Guthion. A second consultant survey and a grower survey will be sent out in the winter of 2009. The grower survey will serve as a baseline to measure future impacts of PMTP.

The administration of PMTP has changed due to the retirement of Jim Hazen (Executive Director of WSHA) and Dr. Chris Feise (Director of the WSU Center for Sustaining Agriculture and Natural Resources). Bruce Grim has replaced Jim Hazen and Dr. Marcia Ostrom has replaced Dr. Feise on the Executive Committee. The PMTP Advisory Committee (AC) met in October in Ellensburg, WA. Three new members have been added to the AC in order to broaden the base of input and influence of PMTP.

Overview of PMTP Benchmarks and Accomplishments

The PMTP will change practices, attitudes and perceptions of IPM while maintaining acceptable crop protection, sustaining grower profitability, reducing pesticide exposure risks of farm labor, and enhancing environmental health.

The PMTP recognizes barriers to the adoption of new pest control technologies in IPM. It proposes to overcome these barriers through a comprehensive program of education, training, and assessment. Research-based knowledge and technology is available and adoption of new IPM transition programs is occurring within a segment of the apple industry. Understanding the benefits and problems faced by these growers will help others hasten the adoption process.

Table 1. Summary of Benchmark and Accomplishments

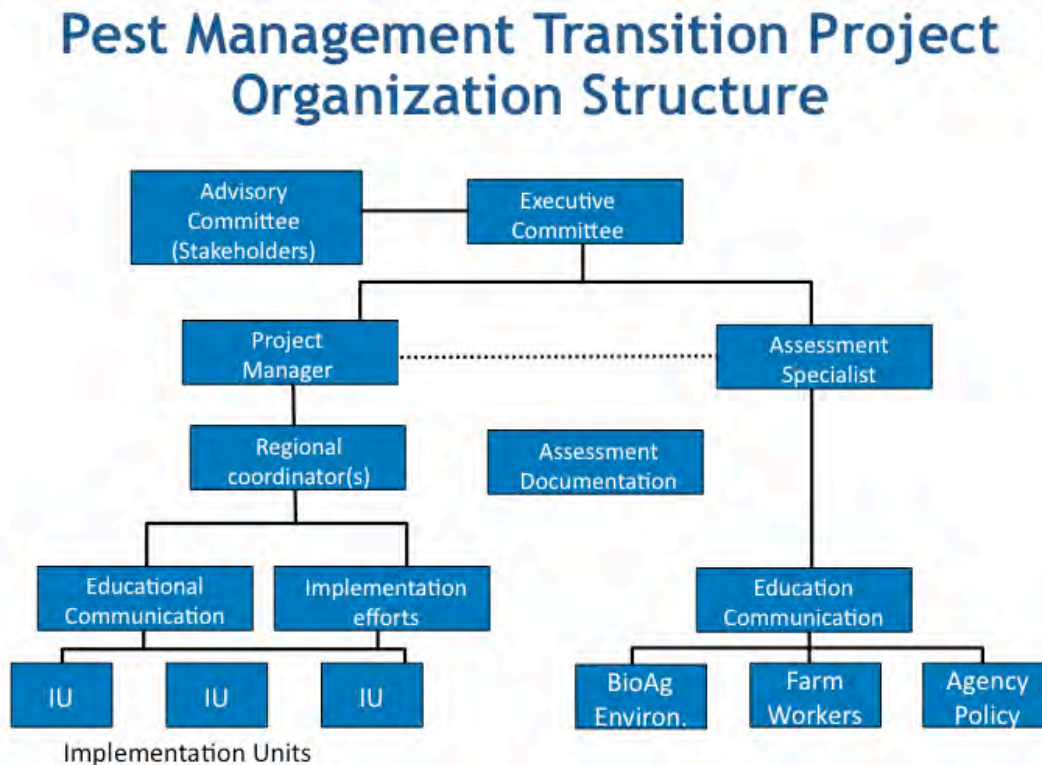
Activity Milestones	Time-line	Accomplishments
Form Executive Committee:	Summer 2007	The PMTP Executive Committee was formed in the summer of 2007 (see <i>Executive Committee</i> below).
Form Advisory Committee:	Summer 2007	The PMTP Advisory Committee was formed in the fall of 2007 (see <i>Advisory Committee</i> below).
Establish baseline: Conduct surveys of IPM practices used by growers and assess perceptions of farm labor and environmental communities about IPM technologies.	Winter of 2007 and spring of 2008.	An ‘apple consultant survey’ was sent out in June (08). An ‘apple grower survey’ will be sent out in January (09). 55+ meetings were held with farm labor and environmental groups in 2008 (see <i>Contacts and Outreach Efforts</i> and <i>Documentation and Assessment</i> below).
IPM Adoption working group: Establish a working group of successful early adopters of IPM. Identify essential activities, pitfalls, and future needs to sustain such programs.	Winter of 2007 and continuing to add new participants as adoption increases.	A group of early IPM adopters was assembled in January of 2008 to identify barriers to adoption of new IPM technologies and develop strategies for working with IU groups to increase adoption.
Education efforts: Conduct intensive, focused educational workshops on tools and methods to implement OP transition pest management programs.	Winters of 2007, 2008 and 2009 and continuing in off-season as needed.	Educational efforts have been conducted through Implementation Unit (IU) meetings, Field Tours, and Workshops (see <i>Educational Activities</i> below).

Table 1. Summary of Benchmark and Accomplishments (continued)

Activity Milestones	Time-line	Accomplishments
<p>Education products: Develop educational materials (manuals, web-based products, etc.) that support the implementation of OP transition programs for all Washington fruit crops.</p>	<p>Initial efforts in winter of 2007-08 with revisions, updates, and new information added as they become available in the next two years.</p>	<p>460 IU handbooks were distributed in 2008 (see <i>Implementation Unit handbook</i> below).</p> <p>Ten PMTP newsletters were distributed in 2008 (see <i>Newsletters</i> below).</p> <p>The PMTP web page was developed in December of 2007 and continues to be the most up to date source for PMTP information (see <i>Web Page</i> below).</p>
<p>Implementation: Carry out an action plan for the pest management transition program.</p>	<p>Establish IUs - winter 2007-08. Expand IUs in second season.</p>	<p>Fourteen IUs, distributed geographically across Washington State, met regularly in 2008 for education, planning, and sharing experiences as new IPM strategies were adopted (see <i>Implementation Units</i> below).</p>
<p>Assessment: Document change in practices using TEAM economic assessments, environmental indices, and surveys of farm labor and environmental partners about changes in the apple IPM system.</p>	<p>2008 production season and subsequently until transition goals are achieved.</p>	<p>Surveys and meetings conducted in 2008 served to establish baseline partnerships and measures from which to assess future change in IPM practices and perceptions among stakeholder groups (see <i>Documentation and Assessment</i> below).</p>
<p>Reporting</p>	<p>Report at the end of each production season. Final report at project end.</p>	<p>The first PMTP interim report was submitted to WSDA in June of 2008.</p> <p>The second PMTP interim report was submitted to WSDA in January of 2009.</p>

Pest Management Transition Project Organizational Structure (Fig. 1)

Figure 1. PMTP Organizational Structure



Executive Committee – The PMTP Executive Committee (EC) oversees project personnel, budgets, goals, and objectives. Two membership changes were made to the EC in 2008:

1. Dr. Marcia Ostrom, WSU Small Farms Program, CSANR, has temporarily replaced Dr. Chris Fiese, March 2008;
2. Bruce Grim, Director of the Washington State Horticultural Association, replaced Jim Hazen, August 2008.

Current members of the PMTP EC are listed below.

Executive Committee Members

Dr. Jay Brunner, WSU Tree Fruit Research & Extension Center, 1100 N. Western Ave., Wenatchee, WA 98801; Office: 509-663-8181 x238; Email: jfb@wsu.edu

Bruce Grim, Executive Director, Washington State Horticultural Association, P. O. Box 136, Wenatchee, WA 98807-0136; Office: 509-665-9641; E-mail: bruce@wahort.org

Dr. Jim McFerson, Manager, Wash. Tree Fruit Research Commission, 1719 Springwater Ave., Wenatchee, WA 98801; Office: 509-665-8271 x1; Email: mcferson@treefruitresearch.com

Dr. Marcy Ostrom, Director, WSU Small Farms Program, CAHNRS, 1100 N Western Ave., Wenatchee, WA 98801; Office: 509-663-8181 x263; Email: mrostrom@wsu.edu

Karen Lewis, Washington State University Extension, P.O. Box 37-Courthouse, Ephrata, WA 98823; Office: 509-754-2011 ext 411; Email: kmlewis@wsu.edu

Advisory Committee (Table 2) – The Advisory Committee (AC) provides a vital broad base of perceptions, experiences, and knowledge to improve the effectiveness of the PMTP from planning stages through the life of the project. The AC is a credible, representative source of concerns, ideas, and input serving to help shape and reshape the project. Three members were added to the AC in 2008: Dennis Nicholson, Nicholson’s Orchards; Helen Murphy, UW – PNASH; and Mary Jo Ybarra-Vega, Quincy Community Health Center. PMTP AC membership is listed below.

Table 2. Advisory Committee Members

Name	Organization	Name	Organization
Jim Cowin	Yakima POM Club	Ofelio Borges	WSDA
Orlin Knutson	Alamo Organic	Nick Stephens	Columbia IPM
Byron McDougall	McDougall & Sons	Frank Alvarez	Dovex
Steve Zediker	WA Hort. Assoc.	Edilberto Garcia	Sagemoor Farms
Kevin Knight	Growers Clearinghouse	Jose Ramirez	Stein Manzana
Keith Mathews	Yakima Valley Growers & Shippers	Alberto Roman	Larson Fruit
Charlie Pomianek	Wenatchee Valley Traffic	Ellen Gray	WA Sustn. Food & Farming
Rich Fenske	UW Occupational Health	Lisa Pelly	WA Rivers Conservancy
Leo Garcia	Wenatchee Valley College	Travis Schoenwald	Gebbers Farms
Gwen-Alyn Hoheisel	WSU Extension	Sandy Halstead	EPA Region 10
Dave Gleason	Yakima POM Club	Cynthia Lopez	WSDH
Doug Walsh	WSU IPM Coordinator	Mike Willett	Northwest Hort. Council
Lee Gale	NCW Fieldmen	Aaron Avila	GS Long Co.
Greg Pickel	Wilbur-Ellis Co.	Dennis Nicholson	Nicholson’s Orchards
Helen Murphy	UW - PNASH	Mary Jo Ybarra- Vega	Quincy Community Health Center

Advisory Committee Meetings – Two meetings of the PMTP AC are scheduled each year, spring and fall. The most recent AC meeting was held in Ellensburg, WA at the Quality Inn Conference Center on October 23, 2008. Twenty-five members of the AC and the EC participated in this meeting. Minutes of the AC meetings can be found on the PMTP web site and are appended on the CD accompanying this report.

PMTP Staff

Keith Granger, PMTP Manager. Directs education and communication activities, oversees implementation efforts, and works with the assessment specialist on assessment and documentation.

Nadine Lehrer, Assessment Specialist. Works to assess and document changes in IPM practices and spearheads education and communication efforts involving environmental groups, farm workers, and policy makers.

Wendy Jones, Web and Communication Specialist. Develops and maintains the PMTP web site, develops web-based educational products, and organizes communication efforts for the PMTP.

Nick Stephens, Regional Coordinator. Helps to establish Implementation Units and facilitate meetings and field days.

Outreach and Communication

Outreach and communication efforts of the PMTP occurred in several different venues during the summer and fall of 2008. Representatives from the PMTP presented an overview and update of the PMTP at a number of meetings both within and outside of the fruit industry. Articles on the PMTP appeared in several news media. PMTP newsletters, addressing seasonal IPM topics, were distributed via mail and email. The PMTP website was regularly updated and remains the most up to date source of information about PMTP events, meetings, and other topics relevant to transitioning pest management programs. Finally, representatives from the PMTP met with farm worker and environmental group representatives to exchange information, identify needs, and build relationships.

Public Meetings – An overview and update of the PMTP was presented at four public meetings in the summer/fall of 2008:

1. Presentation to visiting Chilean tree fruit representatives – August 27;
2. “A Taste of Washington State University” WSU Week in Seattle – August 28;
3. Water Quality Technical Subcommittee of Wenatchee Watershed Planning Unit – October 1;
4. Audubon Society, Wenatchee Chapter – October 30.

Other Meetings – PMTP overview and updates were also presented at the following meetings in the summer/fall of 2008:

1. Pesticide Incident Reporting and Tracking (PIRT) panel – July 17;
2. Opportunities Industrialization Center (OIC) “Partnerships that Work” Conference (booth and presentation) – August 6;
3. Ag Forestry Leadership Program – Agriculture seminar presentation on pesticide issues – September 10;
4. WSU Entomology graduate student seminar – November 7;
5. Washington Growers Clearinghouse board meeting – November 20;
6. Friends of Farms and Forests board meeting – December 4.

Pesticide recertification classes –

PMTP presentations were made at two Spanish language pesticide applicator recertification classes in 2008. These presentations were accompanied by the use of the TurningPoint audience

response system to measure pesticide applicators' knowledge of the Guthion phase-out and alternative methods of pest management.

1. WSU Pesticide Recertification, Pasco – November 12;
2. WSDA Pesticide Recertification, Sunnyside – December 19.

Field Days – The PMTP participated in two field tours in the summer/fall of 2008:

1. Washington Environment Protection Agency Pest Management tour (sponsored by Washington Commission on Pesticide Registration) – July 22;
2. New Paths - Health and Safety in Agriculture Western Agriculture Conference (sponsored by UW-PNASH) – November 12.

The handout that was provided to field tour participants is appended on the CD accompanying this report.

Public Articles and Interviews – The Good Fruit Grower reported on three PMTP Field Days in the August (08) issue (vol. 59: no. 13) – *Pesticide Transition Piques Interest*. The PMTP also authored an article for the Good Fruit Grower promoting the WSU Pest Management Fruit School, which appeared in the November (08) issue (vol. 59: no. 16). In addition, Nadine Lehrer worked with Informe Hispano, a Wenatchee based Spanish language newspaper, to create an article featuring the PMTP, which was published on August 28 (08). Nadine also provided information about the PMTP in a radio interview on the Spanish language Radio La Nueva in Wenatchee on September 12. Copies of written articles are appended on the CD accompanying this report.

PMTP Newsletters – Ten PMTP newsletters were distributed in 2008. The newsletters were distributed to approximately 400 people via mail and email. The newsletters addressed topics that were important to integrated pest management at that particular time of the season. Topics and dates are listed below:

Newsletter Topic	Date of Publication
PMTP Introduction and Overview	03/15/08
Airblast Sprayer Calibration	04/01/08
Codling Moth Mating Disruption	04/15/08
Petal Fall Codling Moth and Leafroller Control Strategies	05/01/08
PMTP Field Days	06/01/08
Environmental Quality Incentives Program (EQIP)	06/15/08
Monitoring Codling Moth	08/01/08
Stink Bugs – a late season pest of concern	08/15/08
Exporting Apples to Taiwan	09/01/08
WSU Pest Management Fruit School	11/01/08

Current and archived editions of the PMTP newsletter are available on the PMTP web site, <http://pmtip.wsu.edu/newsletters.html>, and are appended on the CD accompanying this report.

PMTP Web Site – The PMTP web site (<http://pmtip.wsu.edu>) provides background information about the PMTP, meeting minutes and information, educational products (including newsletters, handbook, and field day handouts), information about the Implementation Units and how to get

involved, reference tools (including speed sprayer use information, adult codling moth ID, and information on maximum residue levels (MRLs) of new products), information about the EQIP program and how to qualify, progress reports, and bilingual web forms for public comment and input, as well as a form to sign up for an IU or to receive newsletters. The web site also has quick links to a calendar of upcoming events and more links and information about topics important to transitioning pest management programs.

Broader Outreach Efforts

Primary contact and outreach to broader stakeholders in 2008 was conducted through meetings with farm worker groups to establish partnerships and assess outreach needs, and meetings with environmental and sustainable agriculture groups to exchange ideas and establish working relationships.

1. **Farm worker perceptions and needs assessment:** In summer/fall 2008, meetings were held with 25 individuals and organizations that work with farm workers in order to better understand the concerns and knowledge of the farm worker community on new insecticides, explain the work of the PMTP, and establish key points of trust for outreach to farm worker communities. These meetings, and participation in several farm worker-oriented events and outreach activities, indicated a need for educational materials on the risks and benefits of new insecticides so that orchard supervisors and service providers can better communicate with workers on pesticide safety issues. The PMTP will work with US EPA, WSDA and WISHA to develop posters and other materials with this type of information about new insecticides, and will continue to work with groups that represent the farm worker community to assess needs for education as they arise. A list of farm worker groups that the PMTP met with is appended on the CD accompanying this report.
2. **Environmental and sustainable agriculture sector perceptions assessment:** In summer/fall 2008, meetings were held with 30 individuals and organizations working in the areas of environmental conservation and sustainable/bio-agriculture. These meetings were designed to establish points of contact with groups, explain the work of the PMTP, and begin an exchange of ideas on the impacts and implications of the pesticide transition. These meetings, and participation in broader environmental group committee meetings, indicated that many groups support the PMTP and are interested in varying levels of collaboration. The PMTP will continue to work with these groups to identify areas of common interest, such as comparing pesticide use data from ongoing PMTP surveys with water quality data from nearby Watershed Planning Units, in order to better understand the environmental impacts of the pesticide transition over time. A list of the environmental conservation groups that the PMTP met with is appended on the CD accompanying this report.

Educational Activities

Educational activities of the PMTP during the summer and fall of 2008 were carried out through Implementation Unit (IU) meetings, distribution of pest management IU handbooks,

presentations at the WA State Horticultural Association annual meeting, and sponsorship and organization of the WSU Fruit School on pest management.

Implementation Units (IUs) – Primary educational efforts in 2008 were carried out through IU meetings. Sixty-four IU meetings were held in 2008. An IU was defined as a group of growers, managers, and crop consultants from the same general area who were willing to meet regularly for education, planning, and sharing experiences as new IPM strategies were adopted. The Implementation Units were formed in one of three ways:

1. Warehouse centered groups – growers, managers, warehouse, and ag-chem fieldmen associated with a particular warehouse.
2. Regional groups – targeted individuals in a given geographical area that were invited by the regional coordinators to attend IU meetings.
3. Walk-ins – people that signed up via the web or at a winter meeting.

Specific statistics of the IU's were included in the first progress report, which is available on the PMTP website (http://pmtip.wsu.edu/prog_reps.html) and appended on the CD accompanying this report. This year's experience with the Implementation Units indicated that warehouse centered groups are apt to be the most sustainable. The PMTP will attempt to refocus some of this year's Implementation Units through local warehouses in 2009. The focus of 2009 implementation efforts will be to increase the number of participants in each Implementation Unit while maintaining the same number and distribution of IUs. This year's Implementation Units included two Spanish language groups. The PMTP is working to develop the capacity again in 2009 to continue to facilitate IU meetings in Spanish as necessary.

The PMTP is in the process of surveying Implementation Unit participants to gain more information about the experience of participating in an IU in 2008. This information will be used to design and focus the IUs in 2009. A subset of IU participants was surveyed using the TurningPoint audience response system at post-harvest IU meetings in November. The remaining IU participants are being surveyed via web and mail surveys. Copies of the survey, in both Spanish and English, are appended on the CD accompanying this report. The results of the survey will be made available after all data have been collected and analyzed.

Implementation Unit Handbook – The IU Handbook (which was appended on the CD accompanying the first report and is available on the PMTP web site, <http://pmtip.wsu.edu/handbook.html>) was well received by the industry – 460 printed handbooks were distributed. Printed handbooks will be available again in 2009.

WA State Horticultural Association Annual Meeting – The PMTP hosted a session at the 104th annual meeting of the Washington State Horticultural Association (WSHA) in Yakima, WA on December 2, 2008. The session, entitled *AZM (Guthion) Phase Out: How to be Successful in a Changing Environment*, was managed by Jay Brunner and featured the following presentations:

- *Delegate and Altacor: New Products to Fit AZM Phase-Out Programs*, Mike Doerr;
- *Minimizing Negative Impacts of New Products*, Betsy Beers;
- *Dealing With Change – Grower/Consultant Panel*: Moderator – Nick Stephens;
- *Economics of Managing a Crisis Pest Situation*, Karen Lewis;
- *Extending Knowledge to New Audiences*, Nadine Lehrer;
- *PMTP: What Was Learned and Where We Are Going*, Keith Granger.

In addition to the PMTP session, Nadine Lehrer presented the PMTP at the Spanish language session of the WSHA meeting on December 2 – *Pest Management Transition Program (PMTP) / Proyecto de Transición en Manejo de Plagas (PMTP) – Responding to Changing Pesticide Regulations and Improving Health and Safety / Respondiendo a Cambios en las Regulaciones de Pesticidas y Mejorando la Salud y la Seguridad*. And, Wendy Jones presented a PMTP poster at the WSHA meeting poster session on December 2 – *Pest Management Transition Project: Helping Growers and Managers Update their IPM Strategies*. A copy of the WSHA poster is appended on the CD accompanying this report.

WSU Pest Management Fruit School:

Growers and Advisors Working Together to Optimize Resources

The PMTP sponsored the 2008 WSU Fruit School on Pest Management entitled, *Growers and Managers Working Together to Optimize Resources*. The two-day workshop on pest management was held on December 10-11 at the Wenatchee Confluence Technology Center. The event was also simulcast to the Yakima Valley Community College, Yakima WA; UI Extension Caldwell Complex, Caldwell ID; and the Agri-plex Annex, Okanogan WA. In total, there were 183 registered participants. The PMTP worked with WSU Extension and the Tree Fruit Research Commission to plan and host the event. The WSU Fruit School is a series of intensive workshops involving industry, research, and extension experts. The Fruit School targeted fruit producers, orchard managers, crop consultants and field staff. The goals of this year's fruit school were to empower growers/managers to work with crop consultants in monitoring orchards, and to encourage crop consultants to trust and use farm-based information to help make IPM decisions. The Fruit School featured four sessions:

Session 1: The Fundamentals

- Introduction, Jay Brunner
- Fundamentals of a well designed IPM system, Mike Doerr
- Fundamentals of sampling, Jay Brunner
- Economic example, Norman Suverly

Session 2: Achieving and improving control

- Introduction, Keith Granger
- Models and WSU Decision Aid System, Jay Brunner/Vince Jones
- Integrating new insecticides into an IPM plan, Keith Granger
- Integrating new fungicides into a pest management program, Chang-Lin Xiao
- Improving deposition and reducing drift, Andrew Landers
- Developing a site specific monitoring plan, Astrid Goplen
- Panel Discussion: Experience of good pest control, Keith Granger
- Economic Example, Norman Suverly

Session 3: Marketing and regulations

- Introduction, Tim Smith
- Regulatory issues affecting pest management, Mike Willett
- Panel Discussion: The practices of managing markets and pests, Mike Willett
- Public demand for sustainability in tree fruit production, Nadine Lehrer and Karina Gallardo

Session 4: Building capacity for a better pest management program

- Introduction, Tom Auvil
- Panel Discussion: The business management of pest management, Tom Auvil

- Improving the quality of your investment: Staff, Karen Lewis
- Improving the quality of your investment: Sprayer Technology, Andrew Landers
- EQIP, Justin Mount
- Economic Example, Norman Suverly

More information about the Fruit School can be found on the PMTP web site at:

<http://pmtip.wsu.edu/fruitschool.html>. A complete and detailed agenda is appended on the CD accompanying this report. In addition, TurningPoint technology was used to survey participants and conduct pre- and post- learning assessments. Results from the TurningPoint assessment are also appended on the CD accompanying this report.

Assessment and Documentation

Primary assessment and documentation efforts in 2008 were conducted through surveys of tree fruit industry consultants and growers, as well as through preliminary assessments of early IPM adoption:

Baseline surveys

Consultant survey: A survey of tree fruit industry consultants was sent out in July 2008. The survey measured levels of insecticide use, IPM practice adoption, and consultant opinions on and perceptions of the transition to alternative pest management systems during the 2007 growing season. The survey response rate was 55% (40 out of 73 mailed).

Consultants surveyed made pest management recommendations on an average of 1,950 acres of apples, about 10% of which was managed organically and 5% which was in transition to organic certification. Consultants also provided recommendations on an average of 415 acres of cherries, 370 acres of pears, and smaller acreages of apricots, grapes, peaches, nectarines, prunes, and plums. Ninety-five percent (95%) of respondents were male, and 75% were between 30 and 49 years of age. Two-thirds had parents who farmed during their childhood, and two-thirds had a four-year college degree.

Results indicated that consultants considered codling moth the pest of highest concern in 2007, and this concern corresponded with extensive recommendations of Guthion – AZM applications. However, consultants were also all aware that Guthion – AZM was being phased out, and one-third to just over one-half were aware of the various details (timing, amounts allowed) of the phase-out.

In addition, consultants reported a level of confidence that resulted in common recommendations of many alternative methods of pest control – both new non-organophosphate insecticides and also IPM practices such as monitoring, pheromone traps, and degree-day models. They reported relying on other consultants, the WSU Decision Aid System, WSU researchers, and conferences or workshops as their best sources of information on pest control. Seventy-five percent (75%) indicated an interest in more training on how to use or recommend alternatives for Guthion to manage pests.

In summary, while consultants were concerned that both the costs and control of codling moth would become more difficult and riskier after the Guthion phase-out, they agreed that WSU research has developed good information on alternatives to Guthion. These results indicate that the PMTP is having impact by providing training and resources to help the apple industry adopt

alternative technologies. A copy of the consultant survey is appended on the CD accompanying this report along with a more complete summary of the results of the survey.

Despite encouraging results, these findings are based on a small sample. A second and expanded consultant survey will be developed and distributed in the winter of 2009.

Grower survey: Based on results from the consultant survey and feedback from summer/fall meetings, a grower survey will be mailed out in January 2009 to similarly assess growers' uses and perceptions of insecticides and IPM practices during the 2008 growing season. A copy of the grower survey is appended on the CD accompanying this report.

These first consultant and grower surveys will be used as baseline data for future comparisons with upcoming practices/perceptions surveys for the 2008 (for consultants) and 2009 (for consultants and growers) growing seasons.

IPM adoption assessment

- At the close of the first full calendar year of the Pest Management Transition Project, efforts to measure the on-the-ground adoption of IPM practices are high on the agenda. Preliminary feedback from Implementation Unit members indicate that, despite challenges to adapting to a new system of pest control, growers and consultants had good success using IPM and alternative insecticides to control codling moth and leafroller in apple.
- This winter, the PMTP will follow up on these initial assessments using 1) the results from Implementation Unit evaluations, 2) data on baseline pesticide use and perceptions from grower and consultant surveys and from the WSU Fruit School TurningPoint sessions, and 3) data on farm worker pesticide knowledge gathered with the TurningPoint audience response system during Spanish language meeting presentations. Together, these sources of data will begin to give a picture of how much knowledge growers and specialized workers have concerning the Guthion phase out and IPM alternatives, how they are approaching the challenge of changing their pest management practices, and how useful the Implementation Unit programs have been in helping growers adopt alternative pest management strategies.
- This early picture of IPM adoption assessment will serve as a base for follow-up surveys and future case study analyses of IPM adoption, and will also provide insight on how to guide future IU meetings and broader outreach efforts so as to facilitate and support the use of IPM throughout the tree fruit industry.

Environmental Quality Incentives Program (EQIP)

The PMTP will continue working with the EQIP program by encouraging those receiving contracts through EQIP to participate in the PMTP by joining an IU. The education and sharing of information that is accessible through the PMTP IUs will help EQIP growers gain a better understanding of new IPM technologies that are available and in identifying strategies for implementing these technologies. This type of education and information sharing will better facilitate the successful transition away from organophosphates to new IPM technologies.