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# Transition of apple insect pest management to new pest control technology

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Codling moth adult

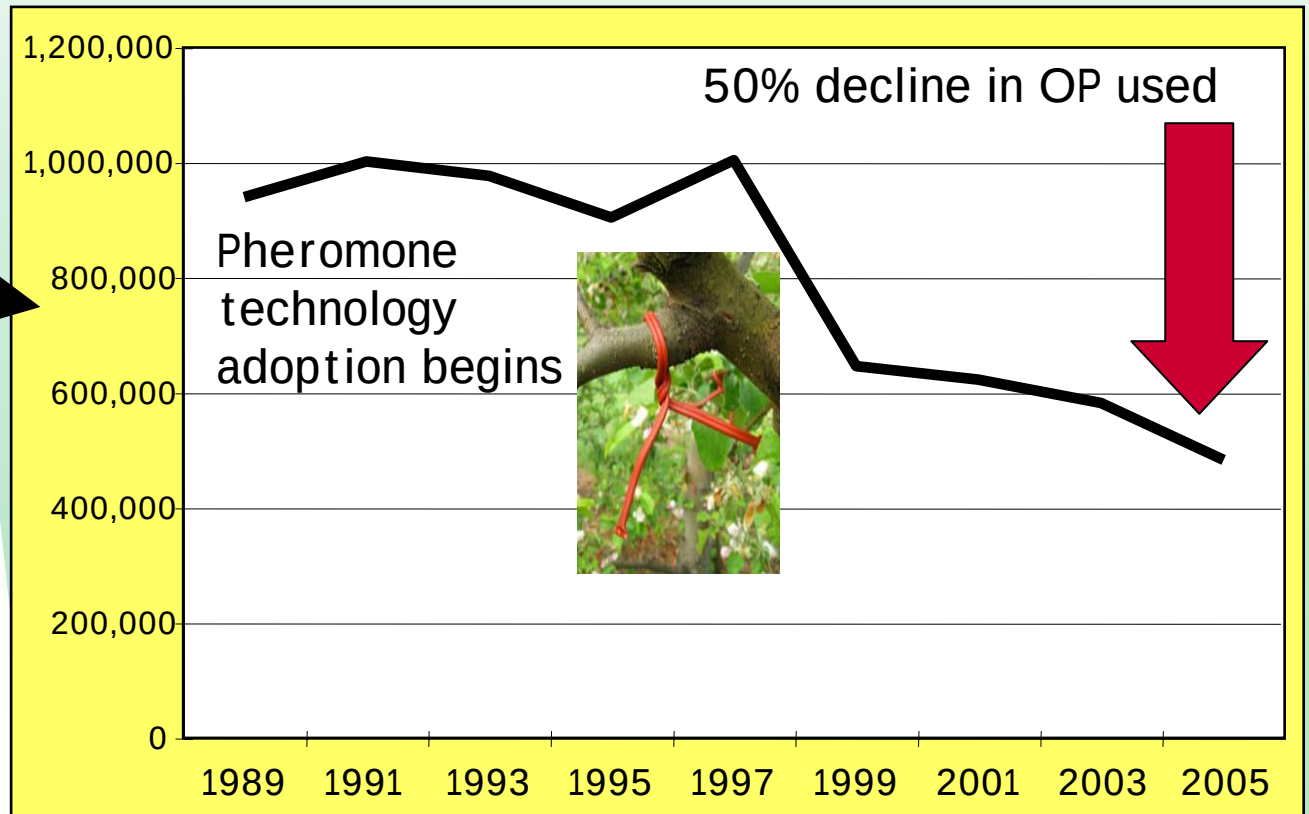
Leafroller larva

# Organophosphate Insecticide use in Apple

**2005 National Agriculture Statistics Service survey**

| Chemical | % area | No. appl. | Total pounds AI | Pounds AI/A |
|---|---|---|---|---|
| Guthion | 72 | 1.8 | 196,400 | 1.7 |
| Lorsban | 58 | 1.1 | 186,700 | 2.1 |
| Imidan | 15 | 1.4 | 87,100 | 3.6 |
| Diazinon | 5 | 1.0 | 13,300 | 1.7 |

Total pounds of OP insecticides used

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# EPA Decision on Guthion Phase Out in Apples

- Worker exposure, ecological concerns
- Guthion to be phased out over time (2008-2012)
  - 2007 limit to 4 lb ai/A
  - 2008 - 2009 limit to 3 lb ai/A
  - 2010 limit to 2 lb ai/A
  - 2011 - 2012 limit to 1.5 lb ai/A
- 60 ft buffer from permanent water and occupied dwellings
- Transition Work Group will evaluate effectiveness of alternatives and availability of international MRLs

# Alternatives to Azinphosmethyl (AZM)

| Name | Pests | Alternative products |
|---|---|---|
| Guthion | Codling moth | Assail, Calypso, Intrepid, Esteem, Rimon, Oil, Virus, pheromones, *Delegate, Altacor,* pyrethroids (Danitol, Warrior, etc.) |

# Alternatives to Organophosphate Insecticides

## Newly registered or to be registered products

**Altacor™ (rynaxypyr) product is produced by DuPont Crop Protection**

- It is a new class of insecticide that acts on muscle function.
- It is expected that Altacor is a reduced risk pesticide.
- A non-crop destruct Experimental Use Permit was provided in 2007 for limited in-field testing with growers.
- Full registration is expected to occur early in 2008.

**Delegate™ (spinetoram) product is produced by Dow AgroScience**

- This product is in the same class as Success (spinosad).
- EPA is considering spinetoram for registration as a reduced risk pesticide.
- Full registration of Delegate was announced October of 2007 to be available in 2008.

# Alternatives to Azinphosmethyl (AZM)

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| Guthion | Codling moth | Assail, Calypso, Intrepid, Esteem, Rimon, Oil, Virus, pheromones, *Delegate, Altacor,* pyrethroids (Danitol, Warrior, etc.) |

***Known issues with alternatives:***

Assail and Calypso - have been implicated in disruption of spider mite biological control and negative effects on other natural enemies.

Rimon - concern is increasing regarding its negative effects on biological control agents.

Pyrethroids - are broad-spectrum insecticides and disrupt biological control for most pests.

Intrepid - resistance is present in some populations reducing the efficacy of this product.

Oil and CM virus - short residual products, not stand alone products.

# Pest Management Transition Plan

The Washington tree fruit industry is taking a pro-active position on transitioning to new pest control technologies.

The Washington State Horticulture Association, Washington Tree Fruit Research Commission, Washington Apple Commission and other industry groups support the concept of the “transition plan”.

Funding has been obtained from the state ($550,000) and through a grant from the Ag Pilots Program (~$150,000) to initiate the transition plan (funding for 2007-2009).

# Elements of a Pest Management Transition Plan

**Administration** - provide a structure for project management and supervision.

**Education/Communication** - transmission of knowledge about new chemical tools, their use and risk.

**Implementation** - define strategies to be used the apple cropping system, including alternatives for target pests.

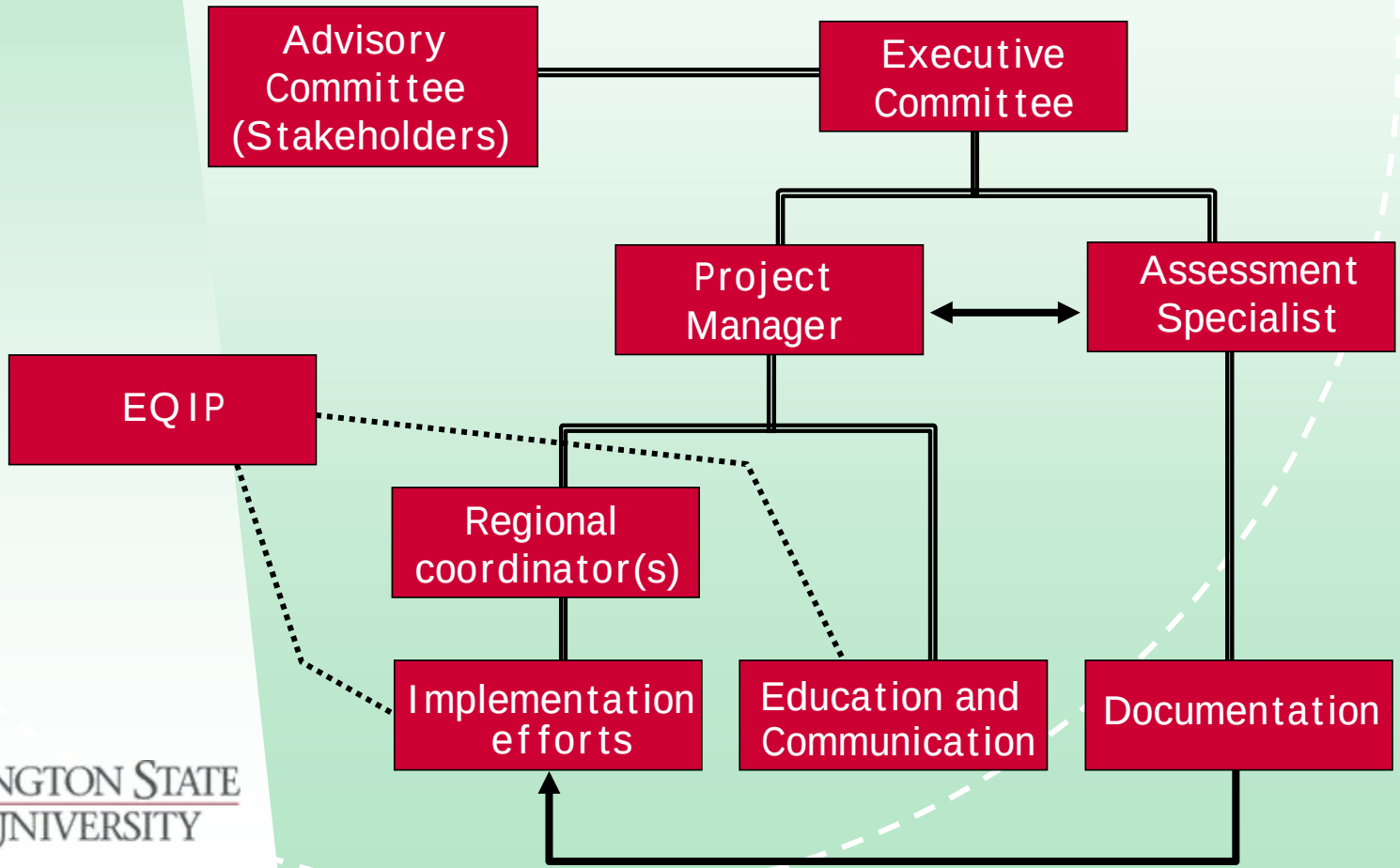
**Assessment/Documentation** - identify successes and failures of alternative programs, document social and economic benefits of programs.

# Pest Management Transition Plan Objectives

1. To enhance understanding of new IPM technologies through educational programs and communication of research-based knowledge.
2. To increase adoption of new IPM technologies through sharing information on successes and failures and communicating with all stakeholders on project progress.
3. To document changes in practices, attitudes, and perceptions of growers, farm workers, and stakeholders *(Ag Pilots Project funding requested).*

# Elements of a Pest Management Transition Plan

Organizational structure for pest management transition project



A broad based Advisory Committee is in the process of being formed to provide input into the Transition Project. This committee will meet two times per year to review plan, progress and provide input to the Project staff and leadership.

| Category | Name | Organization |
|---|---|---|
| Grower/Owner Operator | Tom Kunkel | Stemilt Management |
| Grower/Owner Operator | Jered Carlson | Yakima Pomological Club |
| Grower/Owner Operator | Steve Zediker | Wash. State Horticultural Assoc. |
| Grower/Owner Operator | Orlin Knutson | OK Organics |
| Packer/Shipper | Kevin Knight | Wash. Growers Clearinghouse |
| Packer/Shipper | Charlie Pomianek | Wenatchee Valley Traffic Assoc. |
| Packer/Shipper | Miles Kohl | Yakima Valley Growers Shippers |
| Research Extension | Rich Fenske | Univ. Washington Occupational Health |
| Research Extension | Leo Garcia | WVC Hispanic Worker Program |
| Research Extension | Doug Walsh | WSU IPM Coordinator |
| Research Extension | Gwen-Alyn Hoheisel | WSU Extension |
| Research Extension | Marcy Ostrom | WSU Extension-Director Small Farms Progra |
| Technical/Advisory | Lee Gale | North Central Washington Fieldmen |
| Technical/Advisory | Dave Gleason | Yakima Pomological Club |
| Technical/Advisory | Nick Stephens | Columbia IPM |
| Technical/Advisory | Travis Schoenwald | Gebbers Farms |
| Latino Community | Jose Ramirez | Stein Manzana Orchard |
| Latino Community | Alberto Roman | Larsen Fruit Company |
| Latino Community | Frank Alvarez | Dovex Fruit Company |
| Latino Community | Edilberto Garcia | Sagemoor Farms |
| Environmental/BIOAg | Marilynn Lynn | Washington Tilth |
| Environmental/BIOAg | Ellen Gray | Wash. Sustainable Food and Farming Networ |
| Environmental/BIOAg | Lisa Pelly | Wash. Rivers Conservancy |
| Government | Cynthia Lopez | Wash. Dept. of Health |
| Government | Ofelio Borges | WSDA |
| Government | Sandy Halstead | EPA Region 10 |
| Government | To be named | Fish and Wildlife/biologist "Entiat" |
| Industry | Mike Willett | Northwest Horticultural Council |
| Government | To be named | NRCS/EQIP |

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# Time Line for Pest Management Transition Plan

| Activity Milestones | Time-line |
|---|---|
| **Form Executive Committee:** | Summer 2007 |
| **Form Advisory Committee:** | Fall 2007 |
| **Establish baseline:** Conduct surveys of IPM practices and perceptions of farm labor and environmental communities about IPM technologies. | Winter of 2007 and spring of 2008. |
| **IPM Adoption working group:** Establish a working group of successful early adopters of IPM. | Winter of 2007-08 and adding new participants as adoption increases. |
| **Education efforts:** Conduct intensive, focused workshops on new IPM tools and methods. | Winters of 2007-08 and 2008-09. |
| **Education products:** Produce educational materials (manuals, web-based products, etc.) that support the transition to new IPM programs. | Initial efforts in winter of 2007-08 with revisions updated as new information becomes available. |
| **Implementation:** Carry out an action plan for the IPM transition program by establishing IUs. | 2008 growing season. Expand IUs in 2009. |
| **Assessment:** Document change in practices using TEAM assessment, environmental indices, and surveys. | 2008 and 2009 growing seasons. |
| **Reporting:** Annual report at the end of each production season. Final report at project end. | Winter of 2008 and 2009 and/or end of project period. |

# Apple Export Markets and MRLs for Selected Azinphos-methyl Alternatives by Country

| Country | Phosmet (ppm) | Acetamiprid (ppm) | Novaluron (ppm) | Thiacloprid (ppm) | AZM (ppm) |
|---|---|---|---|---|---|
| Mexico | 10 | 1 | 2 | 0.3 | 1.5 |
| Canada | 10 | 1 | 2 | 0.3 | 2 |
| Taiwan | 2 | 1 | none | none | 2 |
| Indonesia | 10 | none | none | none | 1 |
| Hong Kong (Codex) | 10 | none | 3 | 0.7* | 2 |
| United Kingdom | none | none | 2 temporary | 0.5 | 0.5 |
| United Arab Emirates (Codex) | 10 | none | 3 | 0.7* | 2 |
| Saudi Arabia | none | none | none | none | none |
| India (Codex) | 10 | none | 3 | 0.7* | 2 |
| China | none | none | none | none | none |
| USA | 10 | 1 | 2 | 0.3 | 1.5 |

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