Areawide Organic Pest Management
The Peshastin Creek Project, Year II

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Introduction
Organic pear production may be highly appropriate for areawide pest management. The major pear pests, codling moth and pear psylla, have management tactics available that make areawide organic management possible: mating disruption for CM, kaolin (Surround) for PP.

Implementing organic production on an areawide basis, rather than orchard by orchard, enhances opportunities for migration of natural enemies. Most natural enemies of PP are generalists and migrate from native vegetation surrounding orchards. Organic ‘islands’ in conventional production areas have difficulty encouraging natural enemies—less selective conventional management tends to isolate them from native vegetation. Areawide implementation of softer production will reduce the barriers to natural enemy migration.

While biological control is the optimal approach to reducing insecticides in pear, biological control alone cannot control the major arthropod pests. To obtain a long-term stable pest management program, research needs to develop a consistently effective integrated program that coordinates chemical control with biological control.

Objectives
This was the second year in a three-year development project of an areawide organic pest management program for pears. In February 2002, twelve family farms, along the Peshastin Creek drainage of the upper Wenatchee Valley, WA, formed the Peshastin Creek Growers Association, with the mission of increasing use of environmentally-friendly pest management techniques to enhance water and soil quality, improve worker safety, and reduce pesticide inputs.

In 2003, we continued our pursuit of the two main objectives:
1. Development of organic or soft pest management in an areawide context.
2. Comparison of pest and natural enemy densities, crop damage and cost effectiveness between pest management strategies categorized as:
   - Organic (certified Organic management practices),
   - Soft (organic when possible, allows use of IPM’s and other selective pesticides), and
   - Conventional (uses organophosphates and other non-selective insecticides).

Results and Analysis
ANOVA’s were conducted on data normalized by Box-Cox (+1) transformation. Means separations were done with Fisher’s Protected Least Squares Differences Tests.

Sampling Techniques
All sampling was done weekly.

Discussion
Pear psylla densities—adults, eggs, and nymphs—were lower in all three programs in 2003 relative to 2002. There were higher adult PP densities in the ORG program relative to SOFT and CONV, although the difference occurred near harvest—thus possibly not economically significant. PP nymphs, the damaging stage of PP, were kept below the economic threshold in all programs.

Predator densities increased in late-season in the ORG and SOFT programs, which followed increases in PP densities. This suggests orchards managed for PP will never see large numbers of predators; PP damage thresholds may be too low to sustain higher predator populations.

Pest Control Programs

2003 Cost for Insect Pest Control

- Sprayable
- No-Mite
- Average No. applications
- Pyramidal
- Cyd-140
- Entrust
- Guthion
- Imidacloprid
- Intrepid
- Avadex
- Oil
- Actara
- Agri-mek
- Assail
- Acramite
- Capath
- Buxam
- Sulfur
- Surround
- Thrionad
- Acephate
- Spectracide
- Netafim

2003 Mean Cost for Insect Pest Control

- Organic
- Soft
- Conventional

2003 Mean Cost for Pest Control

Table 1. 2003 pest control programs.

Costs for pest control were comparable between programs. SOFT programs tend to be most variable in cost, possibly due to flexibility. The disparity in cost allocation to the main pests suggests that the cost and effectiveness of materials is a significant factor in CM control, but that ORG programs are achieving PP control despite these factors—biocontrol may be sufficient to augment the less-effective chemicals available for selective programs.

Conclusion
Over a two year period, Organic and near-organic Soft pest management strategies have been successful in managing pests, and initial results suggest chemical costs for Soft and Organic to be competitive with Conventional. Further analyses are in progress to determine the effects on fruit yield, quality and grower satisfaction. Results from these analyses as well as a third year of study will provide better determination of the feasibility and benefits of implementing organic and soft programs on an areawide scale.

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