Survey of IPM Practices in Washington Tree Fruit

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Introduction

- In 1989 and 1990 a survey of pesticide use and IPM practices was conducted in Washington for apple and pear production, respectively.
- Since 1991 the National Agriculture Statistics Service (NASS) has surveyed pesticide use in fruit crops every other year - 1991, 1993, 1995, 1997, and 1999.
- In 2000 the Washington Tree Fruit Research Commission and Washington State University funded a survey of IPM practices of apple, pear and for the first time cherry.
- The objectives of this survey effort were to:
  - Compare results with previous WA surveys and NASS data
  - Determine changes in IPM practices that have occurred over the last decade, and
  - Establish a new base-line for evaluating future changes in IPM practices in WA.
- Surveys were mailed to growers in March that had been selected at random from mailing lists.
- This poster represents a preliminary look at the results of the survey.

Apple Results - Grower Characterization

- 1000 surveys sent out and 17% returned compared with 37% in 1989.
- There were more **"part-time"** growers in 2000 (30%) compared with 1989 (24%). These are growers that obtain most of their income from off-farm activities.
- There were more growers producing fruit with **"organic"** practices in 2000 than in 1989. (see table)
- **Red Delicious** made up only 41.2% of the survey responders orchards in 2000 compared to 68.3% in 1989.
- Most growers also produced other fruit crops including pear (53%) and cherry (34%).

Category	1989	2000
Full-time grower	76.0%	70.0%
Part-time grower	24.0%	30.0%
Conventional	98.6%	89.5%
Organic/transition	1.4%	10.5%
% Red Delicious	68.3%	41.2%

Apple Results - IPM Practices

- There was a general increase in the use of IPM practices in 2000 compared to 1989.
- Most growers reported using orchard monitoring as a key IPM practice.
- More growers report using pheromone traps.
- More growers report using treatment thresholds which probably reflects the greater availability of these tools in the fruit industry.
- More growers identified that they were actively using biological control as part of their overall IPM practices.

Use these IPM parcitces	1989	2000
Orchard monitoring	91%	99%
Pheromone traps	67%	93%
Treatment tresholds	37%	92%
Alternate row spraying	28%	76%
Reduced pesticide rates	54%	89%
Biological control	34%	81%
Degree-day model		92%
Integrated mith control		89%

Apple Results -Reporting Information

- Growers were asked to report pesticide use from one apple block that was "typical" of their pest management practices.
- The average size of block from which reports were received was 23.3 acres. This compares with an average of 19.9 acres in the 1989 survey.
- The average number of trees per acre in the reporting block was 301 compared to 194 in the 1989 survey.
- Most orchards were irrigated with under-tree sprinklers (73%) with most of the rest (18%) being over-tree sprinklers.
- All reporting blocks had a grass or mixed grass-weed cover crop.
- 98.5% of the growers used ground air blast sprayers to apply pesticides.
- **63% of growers reported using mating disruption** as a control for codling moth. The average number of years growers had been using mating disruption was 3.4. 56.5% of growers stated that use of mating disruption had increased over 1999 while 30.6% had decreased use of this IPM tactic compared to 1999.

Apple Results -Pesticide use patterns

- The average last spray application by pesticide class is given below.

Pesticide class	1989	2000
Insecticide	28-Jul	10-Jul
Fungicide	30-May	10-Jun
Nutrients	----	29-Jun
Plant growth regulators	1-Jul	13-Jun

- This is important information because the EPA often uses the Pre-harvest interval of a pesticide as the last application date.
- The use statistics of some of the more common insecticides used in apple are shown in the **table to the right** for the 1989 and 2000 WA surveys and the 1991-1999 NASS survey data.
- These data show that Guthion (azinphosmethyl) use has decreased at least in percent area treated, other products have disappeared because of regulatory action (Phosphamidon, Penncap-M) and new product (Provado) use has increased.

Average number of application per season and % of apple acres treated at least one time.

Pesticide	1989	1991	1993	1995	1997	1999	2000
azinphosmethyl	2.9	2.8	3.3	3.3	2.9	2.3	2.6
% area treated	98	90	81	94	91	78	58
chlorpyrifos	1.3	1.4	1.3	1.3	1.4	1.3	1.1
% area treated	56	65	85	80	91	65	68
ethyl parathion	1.2	1.0					
% area treated	42	32					
methyl parathion	1.1	1.5	1.2	1.2	2.0	1.1	
% area treated	17	28	24	19	33	5	
phosmet	2.4	2.1	1.1	2.4	1.2	2.0	1.2
% area treated	4	9	19	2	<1	7	10
petroleum oil	1.1	1.1	1.1	1.0	1.2	1.8	1.3
% area treated	90	88	88	77	87	69	90
phosphamidon	1.8	1.2	1.4	1.4	1.4		
% area treated	74	72	67	9	2		
imidacloprid					1.4	1.2	1.4
% area treated					65	50	34

azinphosmethyl - Guthion; chlorpyrifos - Lorsban; ethylparathion - Parathion; methyl parathion - Penncap-M; phosmet - Imidan; phospamidon - Phosphamidon; imidacloprid - Provado

Pear Results - Grower Characterization

- 866 surveys sent out and 22% returned.
- There were more **"part-time"** growers in 2000 (28%) compared with 1990 (16%). These are growers that obtain most of their income from off-farm activities.
- There were more growers producing fruit with **"organic"** practices in 2000 (14.0%) than in 1990 (4.5%). Organic means certified organic plus transitional organic.
- **Anjou** and Red Anjou comprised (32%) of pear followed by **Bartlett** and Red Bartlett (25%). Other varieties reported were Bosc and Comice.
- Most growers also produced other fruit crops including apple (84%) and cherry (35%).
- The average size of the pear reporting block was 10 acres.
- The number of trees per acre in 2000 (169) was only slightly higher than that reported in 1990 (145).

Pear Results - IPM Practices

- There was a general increase in the use of IPM practices in 2000 compared to 1990.
- Most growers reported using orchard monitoring as a key IPM practice.
- A few more growers report using pheromone traps in 2000.
- The same proportion of growers report using treatment thresholds in both years.
- More growers identified that they were actively using biological control as part of their overall IPM practices.

Use these IPM parcitces	1990	2000
Orchard monitoring	91%	93%
Pheromone traps	67%	78%
Treatment tresholds	68%	68%
Alternate row spraying	38%	44%
Reduced pesticide rates	68%	68%
Biological control	50%	64%

Cherry Results - Grower Characterization

- 500 surveys were sent out and 22% returned.
- 5.8% of the cherry growers reported they were producing fruit with **"organic"** practices. Organic means certified plus transitional organic.
- **Bing** comprised (62%) of cherry variety in reporting blocks followed by Lambert (14%), Lapins (9%) and Rainier (8%).
- Most growers also produced other fruit crops including apple (62%) and pear (10%).

More detailed information on pesticide use in all crops will be provided in a complete report by the end of December. Data from this survey will be a valuable tool in helping shape pesticide policy at the national level. This information will also be valuable as a benchmark against which to measure changes in IPM practices over time.