Pear psylla and mite management

New choices for 2004

John E. Dunley
Washington State University
Tree Fruit Research and Extension Center
Wenatchee, WA
Pear pest management - where are we?

• Haven’t lost a material to resistance in many years

• Many more options than 10 yrs ago

• IPM
  ▪ More complex
  ▪ But more effective
Hard or soft?

• **Mating disruption**
  - Is an important option
  - Esp. in soft programs

• **Chemical management**
  - Remains most important
  - Even in soft programs

• **Biocontrol is a good goal**

• **Integrate**
  - Use the best of both chemical and biological controls
In pears ...

- Chemicals instead of mating disruption
  - Can still be soft
New registrations in 2004

• Calypso – Sept 2003
• Zeal – Sept 2003

• Q1  (already ended)
  ▪ Fujimite* (fenpyroximate, Nichino America)

• Q2  (ends 3/31)
  ▪ Kanemite* (acequinocyl, Arvesta)

• Q3  (6/30)
  ▪ Applaud (buprofezin, Nichino America)
  ▪ Clutch (clothianidin, Arvesta)
  ▪ Diamond (novaluron, Crompton)

• Q4  (9/30)
  ▪ (flonicamid, FMC)
New registrations

• EPA is mostly playing catch-up
  ▪ Most registrations due 2003 didn’t occur

• Only one new mode of action
  ▪ New products are all in the same classes as available materials
    • Except Applaud
    • Yeah!
  ▪ Some work better than available comparable compounds
    • Fujimite
    • Diamond
Lots of new choices

• Getting through registration quickly
  ▪ OP-replacements
  ▪ Safe for consumers
  ▪ More environmentally-friendly

• Some new classes
  ▪ More chloronicotinyls
  ▪ More METIs
  ▪ Unique miticides
Last year’s problems

• Codling moth

• Spider mites

• Not too bad
  ▪ Leafrollers
  ▪ Pear psylla
  ▪ Grape mealybug

• Pear rust mite
  ▪ Continued problems
  ▪ But no new answers
    ▪ Perhaps Fujimite
Chloronicotinyls

- **Provado**
  - PP, GMB
- **Actara**
  - PP, GMB
- **Assail**
  - CM, PP, GMB
- **Calypso**
  - CM, PP, GMB
- **Clutch**
  - CM, PP, GMB
Calypso

• New this year
• Bayer
  ▪ Works well against the targets
    • Codling moth
      ▪ Equal to Assail
    • Pear psylla
      ▪ Equal to Actara
      ▪ Better than late-season Assail
    • Grape mealybug
      ▪ Equal to Actara and Assail
• May have the same sort of effect on mites
Calypso

- **Best used early in the season**
  - First generation codling moth
    - Re-entry interval is short
    - Pick up pear psylla, grape mealybug
  - First generation pear psylla
    - Clusterbud
    - Petal-fall
    - Target first and second instar nymphs

This

NOT this
• All chloronicotinyls work
• Also Applaud
Clutch also works

Accumulated Nymph Days High Trial 2

Accumulated Nymphs/Leaf Low Trial 2
Chloronicotinyls and mites

• Problems with mite increases noticed
  ▪ First noted with Provado in 1995

• Early research with Assail also noted problems
  ▪ In development tests
    • Small plots
  ▪ Last year, some observations
    • How much of it is real?
Spider mites in Assail-treated apple

• Used Assail and Imidan for codling moth control
  • Measured levels of spider mites and predatory mites

• Treatments:
  • Untreated check
  • Imidan for 4 covers
  • Assail for 4 covers
  • Assail for 2nd cover, Imidan for other covers
  • Assail for 1st generation, Imidan 2nd generation
  • Assail with oil for 4 covers
  • Assail with oil for 2nd cover, Imidan for other covers
  • Assail with oil for 1st generation, Imidan 2nd generation
Spider mites in Assail-treated apple

- Assail x 4 increased mites

Dunley - Northcentral Washington Pear Day Jan 04
Spider mites in Assail-treated apple

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cumulative Mite Days (09 Sep)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imidan C1-2-3-4</td>
<td>6.05</td>
</tr>
<tr>
<td>Assail + oil C1-2-3-4</td>
<td>254.15</td>
</tr>
<tr>
<td>Assail C1-2-3-4</td>
<td>159.75</td>
</tr>
<tr>
<td>Assail/oil C1-2 + Imidan C3-C4</td>
<td>50.41</td>
</tr>
<tr>
<td>Assail C1-C2 + Imidan C3-C4</td>
<td>70.26</td>
</tr>
<tr>
<td>Assail/oil C2 + Imidan C1-C3-C4</td>
<td>72.47</td>
</tr>
<tr>
<td>Assail C2 + Imidan C1-C3-C4</td>
<td>42.69</td>
</tr>
<tr>
<td>Untreated check</td>
<td>25.88</td>
</tr>
</tbody>
</table>

Assail x 4 increased mites
Viagra for mites?

- At low concentrations, Assail and Calypso appear to increase mite reproduction.
How to avoid mites?

• Use pyrethroids as a last resort
• Use chloronicotinyls sparingly
  ▪ 2nd cover is not disruptive

  ▪ Use chloronicotinyls with oil
    • Oil provides some miticidal activity
Dealing with mites

• Old answers
  ▪ **Agri-Mek**
    • Some mites in pear are resistant
  ▪ **Savey / Apollo**
    • Kills eggs
    • Effective when used infrequently
    • 1 application per season
  ▪ **Vendex**
    • Selective (soft on predatory mites)
    • Resistance can be an issue
  ▪ **Pyramite**
    • Excellent for European red mites
    • Variable performance on two-spotted spider mites
New materials for mite control

• Acramite (Crompton)
  ▪ Not really new
  ▪ Very effective
  ▪ Very selective

• Essentially has become the standard miticide in pear
New materials for mite control

• Zeal (Valent)
  ▪ Very effective
  ▪ Very selective

• Acts much like Acramite
  ▪ But better on European red mite

• Also (probably 2005)
  ▪ Envidor (BAJ 2740, Bayer)
    • Also works well
    • Excellent fit for three product — Resistance Management
New miticides

- All work well in controlling two-spotted spider mites

```
Zeal = Secure
BAJ = Envidor
```

```
TSSM Control
```

- Check
- Mesa 1%EC
- Secure72WG
- Acramite50WS
- BAJ 2740 240SC
- Agri-Mek0.15EC+ oil
- Pyramite60WP+oil
- Savey 50WP

```
Motes/leaf
```

```
```

```
0 0.5 1 1.5 2 2.5 3
```

WASHINGTON STATE UNIVERSITY
World Class. Face to Face.
Resistance management

• Many options

• Use material once per season
  ▪ Several are limited to once

• Rotation, Rotation, Rotation
  ▪ Little difference in cost
  ▪ Little difference in efficacy
The Peshastin Ck. Areawide Project

• The Peshastin Creek Growers Association
  ▪ Association of local growers and fieldmen

• Pest Management Program
  ▪ Based on Organic insect management practices
    • Areawide techniques to control Pear psylla and Codling moth
    • Reduce non-selective pesticide use
    • Increase potential migration of beneficial insects
**PP densities**

- **Nymphs**
  - Some small differences through season
- **Eggs**
  - No differences throughout season
PP densities

- Nymphs
- Eggs

- Densities lower in 2003 than in 2002

Dunley - Northcentral Washington Pear Day Jan 04
**PP densities**

- **Nymphs**
- **Eggs**
- **Densities lower in 2003 than in 2002**

**2002 Eggs**

**2003 Eggs**

**2002 Nymphs**

**2003 Nymphs**
Peshastin Creek Areawide Organic Project

• Organic and near-organic Soft pest management strategies
  ▪ Equal to Conventional over 2 year period
    • Pest control
    • Control Costs

• Benefits
  ▪ Increased biological control
  ▪ Increased returns?
Avoid the storms

• Use selective materials when possible
  ▪ Selective materials work
  ▪ Protect your insecticides
  ▪ Protect your predators

• Go Soft!
Conclusion

• Even soft materials pack a punch