Pear Pest Management: New Chemistries

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Pear Pest Management

What are the key Pests?

- Pear psylla
- Spider mites
- Codling moth
- Pear rust mite
- San Jose Scale
- Leafroller
- Grape mealybug
- True bugs

Complex System
Pear Pest Management
What are the Control Options?

- **Traditional Insecticides**
  - Endosulfan, Carzol, Sulfur, Lorsban, Guthion, Imidan

- **Synthetic Pyrethroids**
  - Asana, Danitol, Warrior

- **Neonicotinyl Insecticides**
  - Actara, Assail, Calypso, Clutch, Provado

- **Insect Growth Regulators**
  - Esteem, Intrepid, Centaur, Azadirachtin

- **Biological Insecticides**
  - Surround, Oil, CM virus, Success, Entrust, MD

- **Miticides**
  - Apollo, Savey, Acramite, Zeal, Envidor, Nexter, FujiMite, Kanemite
Pear Pest Management

How Do We Make Control Decisions?

- **Know the pests in your orchard**
  - What is the most problematic?
  - Know the life cycle of target pests

- **Know the insecticides**
  - Many new products control multiple pests
  - Know which pests and susceptible stages

- **Optimize insecticide timing**
  - Monitor your orchard
  - Know pest densities & life stages present

- **Start with high input (do less later)**
  - New insecticides are slower, less toxic and have shorter residuals
Pear Pest Management
Where Do We Start?

- Pre-Bloom PP Program
- Use Particle Film to Repel Adult PP
- Kaolin (Surround) or ??
- Three applications
  - Start Before Significant Egg Deposition
  - Try to Keep New Growth Covered
  - Good Set up for Nymph Control Programs at CB and PF
Pear Psylla Management
Efficacy Trial 2005 - Particle Film

Immediate Reduction In Adult PP Activity

3 Applications
DD, TC, FW
Invelop (Talc) w/w conc.
3% = 25 lb/100
5% = 40 lb/100
10% = 80 lb/100
Surround 5% w/w

[Graph showing immediate reduction in adult PP activity with different treatments]
Pear Psylla Management
Efficacy Trial 2005 - Particle Film

Adult activity significantly reduced with 3 apps of particle film

3 Applications
DD = 8 March
TC = 21 March
FW = 4 April
Pear Psylla Management Efficacy Trial 2005 - Particle Film

Reduction in Adult PP Activity = Direct Effect on Egg Deposition

3 Applications
DD = 8 March
TC = 21 March
FW = 4 April

Average PP Egg / Spur / Week (post treatment - petal fall)

Concentration Important
NO improvement with oil

96% Reduction
Excellent Control
Pear Psylla Management
Efficacy Trial 2005 - Particle Film

Reduction in Egg Deposition = Direct Effect on Nymph Emergence

Reduction in Nymphs through 1st generation
Pear Pest Management
What about CB and PF?

- **Neonicotinyls** (Actara, Assail, Calypso, Clutch, Provado)
  - All are effective against PP and GMB
  - Some pre-bloom restrictions (bee-tox)

- **Insect Growth Regulators**
  - Centaur - PP, GMB
  - FujiMite - PP, Mites, SJS(?) and PRM(?)
  - Esteem - PP, SJS, LR, CM (ovicide)
  - Azadirachtin - PP (short residual)

- **Agri-Mek**
  - PP, PRM, TSSM, ERM
Neonicotinyl Effective Against 1\textsuperscript{st} and 2\textsuperscript{nd} Instar Nymph

Pear Psylla Management
Efficacy Trial 2005 - Neonicotinyls

Nymph / Leaf (CB = 30 March - PF = 26 April)

All Products Provide Good Control

- Actara
- Assail
- Calypso
- Clutch
- Agri-Mek
- Check

Washington State University
World Class. Face to Face.
Pear Psylla Management
Efficacy Trial 2005 - Programs

CB and PF Control Options
For Pear Psylla

Clusterbud Application 30 March
Petal Fall Application 26 April
Weekly Leaf Samples

Average PP Nymph / Leaf / Week
First Generation (4/27 - 5/31)

Assail
Assail Centaur
Assail FujiMite
Agri-Mek
Check

Nymph / Leaf / Week
Grape Mealybug Management
Neonicotinyls and Centaur (Applaud)

Assail, Calypso, Clutch and Centaur
Effective options for GMB control

Cumulative GMB Crawler / Leaf

Clusterbud Application
5 April

Mid Summer Application
20 July

Biweekly Leaf Samples

Cum. GMB / Leaf

Assail Calypso Clutch Centaur Check

All Products
Reduce Seasonal GMB / Leaf

Pear Pest Management
What about Summer?

- **Neonicotinyls**
  - Better on PP in spring but effective in summer
  - Assail and Calypso - good CM (watch out for PHI)

- **Insect Growth Regulators**
  - Centaur - PP, GMB (14 d PHI)
  - FujiMite - PP, Mites, and PRM(?) (14d PHI)
  - Azadirachtin - PP (short residual) (0 d PHI)

- **Agri-Mek**
  - PP, PRM, TSSM, ERM (28 d PHI)
**Pear Psylla Management**

**Neonicotinyls - Summer**

30 June Application

- Clutch - 6oz
- Assail - 8oz
- Calypso - 6oz
- Actara - 5.5oz

### Average Nymph / Leaf / Week (6 July - 25 July)

- Clutch: 0.0
- Assail: 0.5
- Calypso: 1.0
- Actara: 1.5
- Agri-Mek: 2.0
- Check: 2.5

Also CM control

If timed appropriately

7 d phi
Pear Psylla Management
FujiMite and Centaur (Applaud)

New Registrations
FujiMite and Centaur (Applaud)

30 June Application

Assail (30SG) 8 oz/a
FujiMite 32 fl oz/a
Centaur 2 lb/a

Average PP Nymph / Leaf / Week (6 Jun - 25 Jun)

- Assail
- FujiMite
- Centaur
- Agri-Mek
- Check

Also CM
Also GMB
Also Mites
Pear Psylla Management

Programs - Target Life Stage

- **Nymphs**
- **Summerform adults**
- **Eggs**
- **Winterform adults**

- **Feb**
  - Oil, Sulfur
- **Mar.**
  - Oil, Thiodan (Carzol)
- **April**
  - Surround
- **May**
  - Clusterbud
  - Assail, Calypso, Clutch, Centaur, Esteem
- **June**
  - Petal fall
  - Actara, Provado, Agri-Mek
- **July**
  - Agri-Mek or FujiMite
- **Aug.**
  - Summerform adults
- **Sept.**
  - Winterform adults
- **Oct.**
## Pear Pest Management
### What About Mites?

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Limit to one application of any one class of chemistry per season

*One Trial in 2005
Mite Management
PRM Efficacy Trial - 2005

Pear Rust Mite Control
With New Chemistries

Average PRM / Leaf / Week
(4 Aug - 15 Aug)

One Application - 2 Aug.
All Provide PRM Control
Relative to UTC

Very Little PRM Data Available

One Trial in 2005
Pear Pest Management
What about Codling Moth?

- **Neonicotinyls**
  - ✓ Assail and Calypso

- **Insect Growth Regulators**
  - ✓ Intrepid - ovicide and larvicide
  - ✓ Rimon - ovicide *(apple only)*
  - ✓ Esteem - ovicide - 45 d PHI

- **Biological**
  - ✓ Oil, virus, Success, Entrust, Pheromones

- **Organophosphates**
  - ✓ Guthion, Imidan
Codling Moth Management Efficacy Trial - 2005

Codling Moth Control with Neonicotinyls

Percent CM Injured Fruit

- 27 Jun (1st CM Generation)
- 18 Aug (2nd CM Generation)

Full Rate = 21 d Control
2/3 Rate = 14 d Control

Not Very Good Control

Handgun Applications

Full Season CM Programs
Things to Remember

Resistance Management

- Don’t use the same class of chemistry against more than one generation.

- Use Particle Film and CM mating disruption to reduce the number of insecticide applications.

- Monitor orchards and only apply insecticides when necessary.