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Washington State University

100% CM Control with a Brand New Insecticide, Guaranteed!

Mike Doerr

WSU-TFEC

Wenatchee, WA

Smokin' Hole

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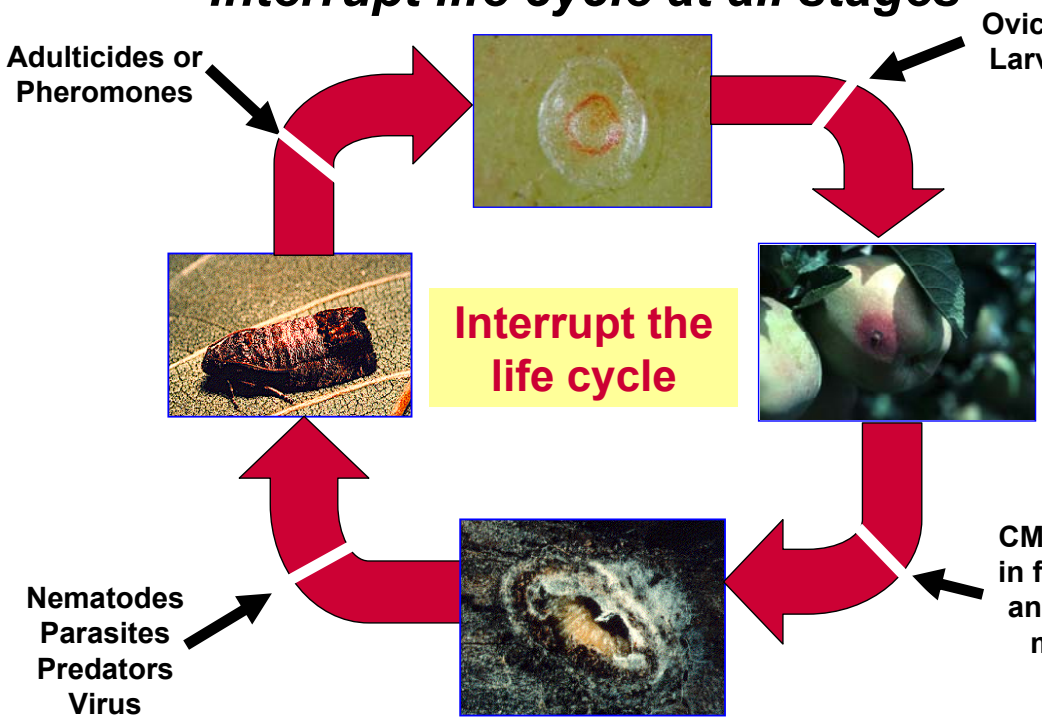
Best Chance for Success

Interrupt life cycle at all stages



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What's Wrong with CM Management?

- Economic hardship = reduced inputs
- Improper monitoring program = wrong decisions or assumptions
- Spray coverage limited due to horticulture or sprayer technology
- **Improving product choice and timing**
- **Managing insecticide resistance**

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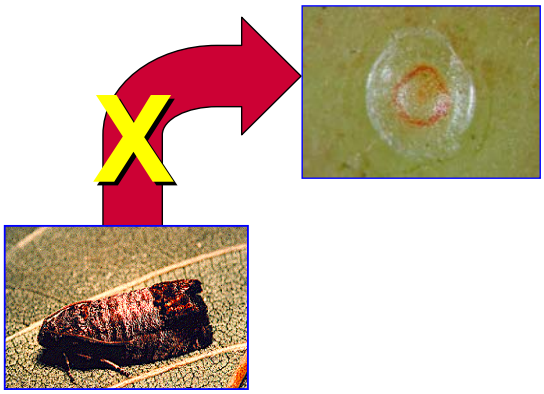
Best Chance for Success

- **Reducing oviposition**
  - **Adulticides limited to pyrethroids**
  - **Pheromone still effective**
    - **Best in areawide situation**
    - **MD + insecticides best approach in high pressure**



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Best Chance for Success

- **Killing eggs**
  - **Esteem, Diamond** effective if applied under eggs (100DD)
  - **Intrepid** effective if under or over eggs
  - **Oil** effective if over eggs

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Ovicides for Controlling CM

- **What level of control can be expected**

Insecticide	# tests	Ave. % control
Guthion	16	96.3%
Diamond*	4	89.7%
Intrepid	6	71.9%
Esteem**	2	70.0%
Oil	9	52.0%

* Product not yet registered for use on tree fruit
** 1st generation only

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Best Chance for Success

- **Preventing larval entries**
  - **Fast acting chemicals optimal for fruit protection**
  - **Guthion, Imidan, Assail, Calypso, Success/ Entrust, Avaunt, Warrior**

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Larvicides for Controlling CM

- What level of control can be expected

Insecticide	# tests	Ave. % control
Guthion	16	96.3%
Imidan	2	92.3%
Warrior	2	91.1%
Assail	21	87.3%
Calypso	16	83.4%
Success	10	82.9%
Entrust	2	75.1%
Avaunt	10	66.5%

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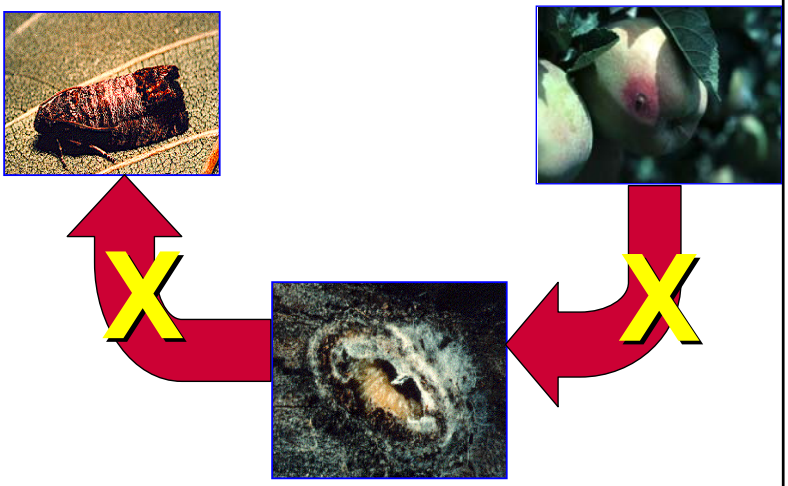
Best Chance for Success

- **Difficult once larvae are in fruit**
  - **Growth regulators (Intrepid), virus**
  - **Slower mode of action, effect greatest on next generation**



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Virus for Controlling CM

- **Product Choice**
- **Bioassays show no difference in toxicity**
  - **Cyd-X, Carpovirusine, Virosoft CM**
- **Field-aged residue studies**
  - **Break in efficacy noted between 7-14 days**
  - **10 day treatment interval likely**

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Larvicides for Controlling CM

- **What level of control can be expected**

Treatment	Rate AI/A (OBx10^{13})	Interval	1st generation % injury	1st generation Moths/tree
Cyd-X	0.27	14 d	40.0	1.8
Cyd-X	0.27	7 d	29.2	3.6
Carpovirusine	0.40	10 d	34.8	1.2
Virosoft	0.38	10 d	38.8	0.0
Untreated	- - -	- - -	48.2	17.6

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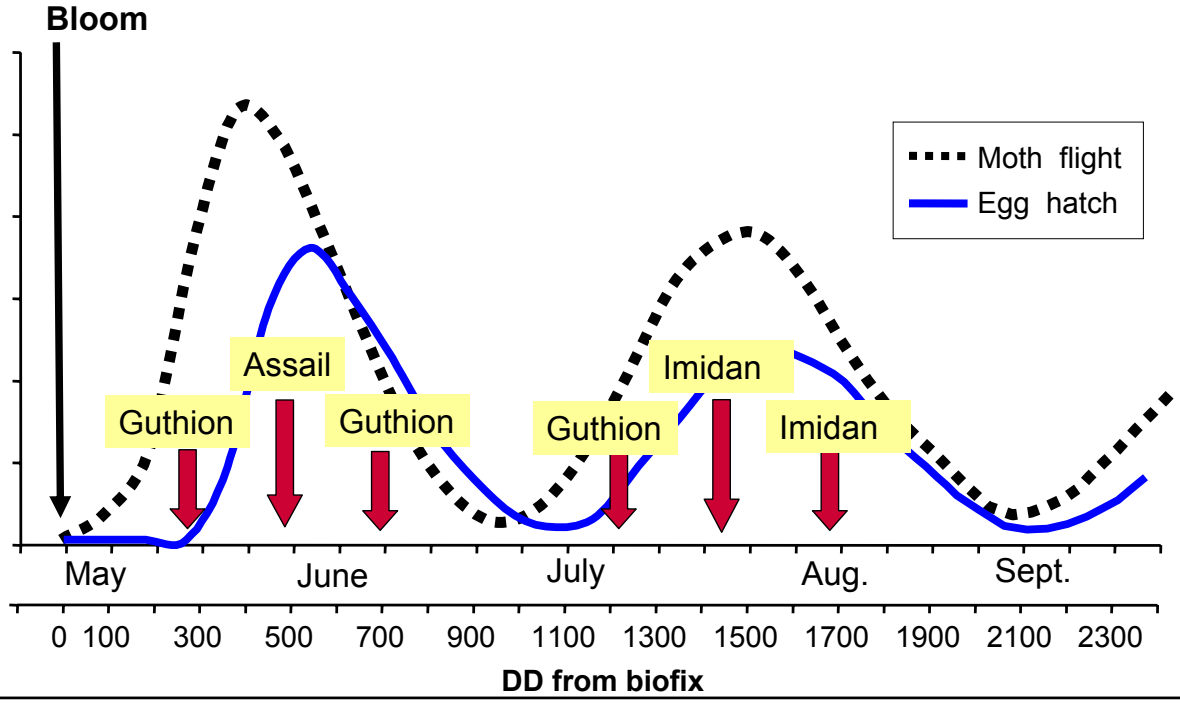
Assumptions: NO OP resistance; High CM pressure



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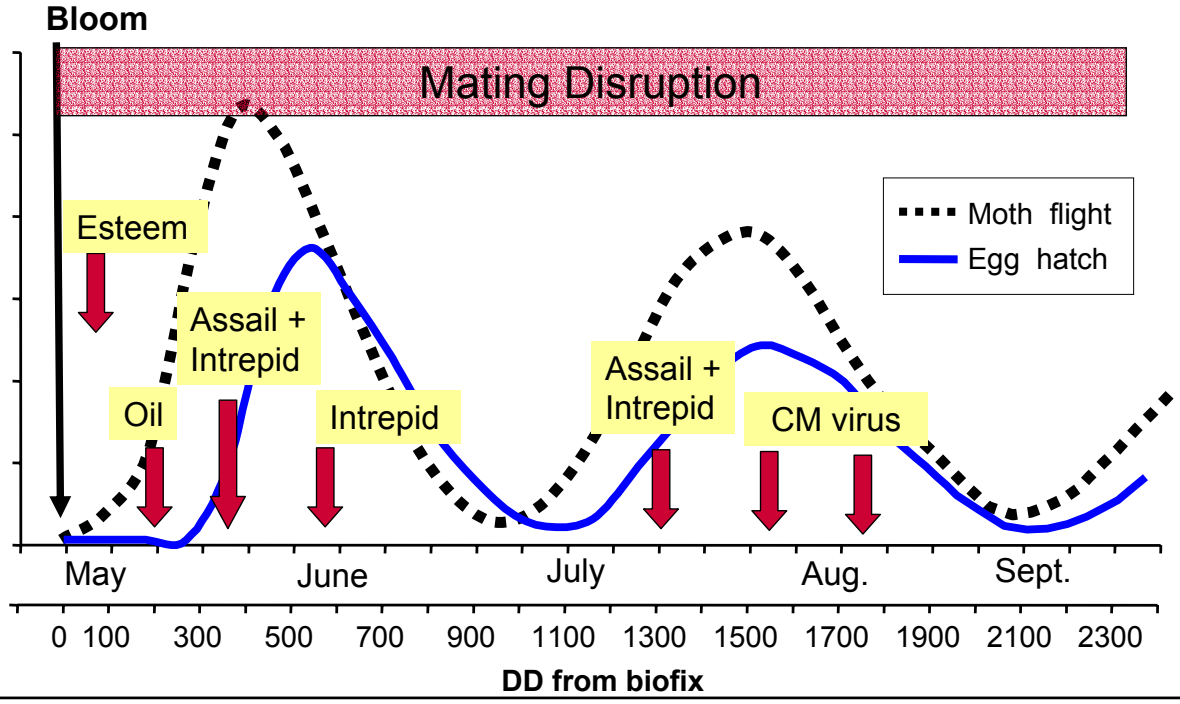
Assumptions: OP resistance problem; High CM pressure



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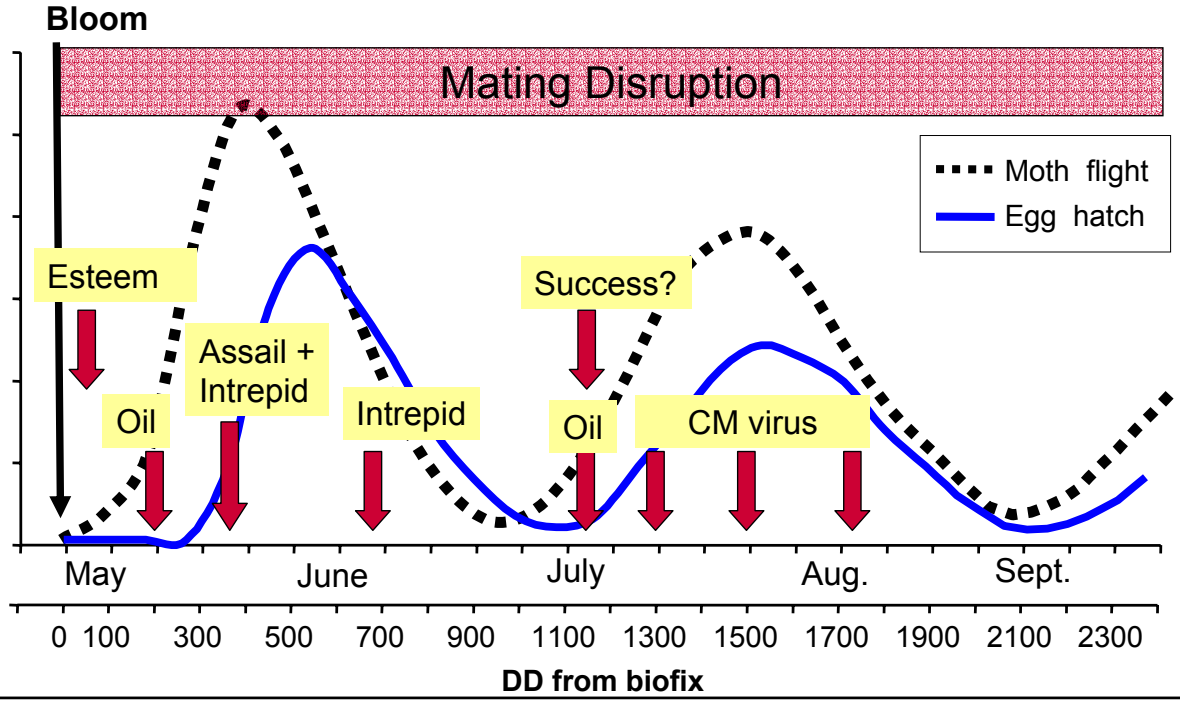
Assumptions: OP resistance present; moderate CM pressure



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Organic Control in Royal Slope

- 270 acres using full rate of MD
- 2002
  - CM / trap - 67.0 (3 weeks in Aug.)
  - Hand removal - 158 bins, 989 man hours
  - % injury - 5% at harvest
  - Packout - 16 of 25 boxes/bin
- 2003
  - CM / trap - 45.6 (1st gen.)
  - CM / trap - 3.6 (2nd gen.)
  - % injury - < 1% no hand culling
  - Packout - 21 of 25 boxes/bin

Year	$ controls	losses
2002	407	368 bins
2003	487	38 bins

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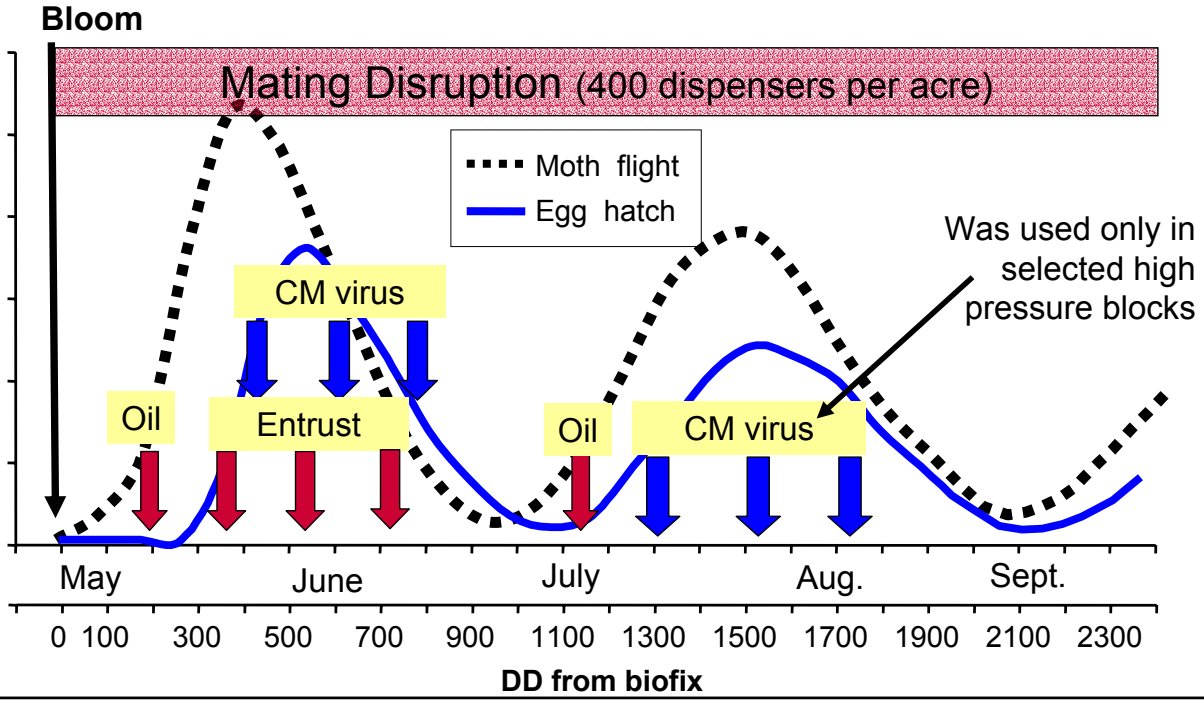
Organic control at Carson Frenchman Hill orchard - 2003



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Best Chance for Success

- ✓ Be creative, don't keep doing the same thing if it is not working!
- ✓ Establish a consistent monitoring program
- ✓ Use mating disruption as a base to your CM control program
- ✓ Use new products correctly - rates and timing
- ✓ Mix modes of action of new products