

Pest Control Techniques for the Backyard Orchard

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Commercial vs. Backyard



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Good Resources

- www.extension.usu.edu/ipm
- www.extension.usu.edu/insectpath
- www.ipm.ucdavis.edu/default.html
- Common Sense Pest Control (Olkowski et al)
- USU Home Orchard Pest Management Guide
- Pests of the Garden and Small Farm
- *Materials:* www.ipmtech.com , www.bioquip.com



Fundamentals for any garden or backyard orchard:

1. Identify and Suppress the pest(s)
 - Learn how to find and identify pests
 - Understand that rarely can you eradicate them
 - Use inexpensive, non-disruptive approaches
2. Prevent pest problems in the first place
 - Intercept the pest in fall, winter, spring
 - Plant resistant varieties



Monitoring tools and techniques

- Yellow sticky traps
- Two-sided Scotch tape
- Tanglefoot
- Pheromone traps
- Flashlight/headlamp for nighttime scouting
- Slice a pear, peach, or apple and re-visit
- Max/min thermometers



Dealing with common infestations

- Aphids within curled leaves
- Codling moths within fruit
- Armyworms and cutworms underground
- Wood borers in apples, pears, willows, aspens



Arthropod Pest Suppression

- **Hand-pick** the eggs, caterpillars, aphids, earwigs
- **Trim off shoots** that are totally infested
- **Water**--briskly applied to leaf tops and undersides
- **Recognize the good guys**
 - Aphid mummies
 - Spider mite predators



Non-OP Pest Suppression

- **If a chemical spray is necessary:**
 - Insecticidal soap
 - Rubbing alcohol as a spreader
 - *Bacillus thuringiensis* (Bt)
 - Horticultural oil
 - Neem oil
 - Imidacloprid (watered in) for apples, pears, crabs, roses, and ornamental tree or shrubs
 - Pyrethroids (esfenvalerate, permethrin, lambda-cyhalothrin)
 - Beware of alkaline, hard water issue.



An Ounce of Prevention

- Row-covers for fruiting vegetables or leafy vegetables (using organdy/screen materials)
- Banding trees with cardboard strips
- Bag the fruit
- BugBarrier (for spider mite, root weevil, plum curculio, cutworms)



Tree Fruit Particulars

- Dormant applications for tree fruit are critical
- For peaches, Bt at bloomtime
- Viral formulations for CM
- For pear psylla and aphids: kaolin clay.
- Lime-sulfur repellent to many leafroller moths.
- Cut out dead/diseased wood



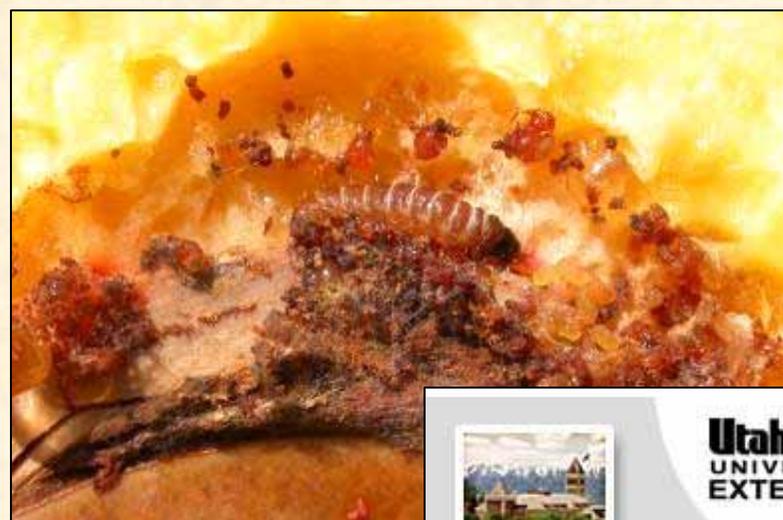
Anarsia lineatella
Peach Twig Borer



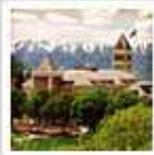
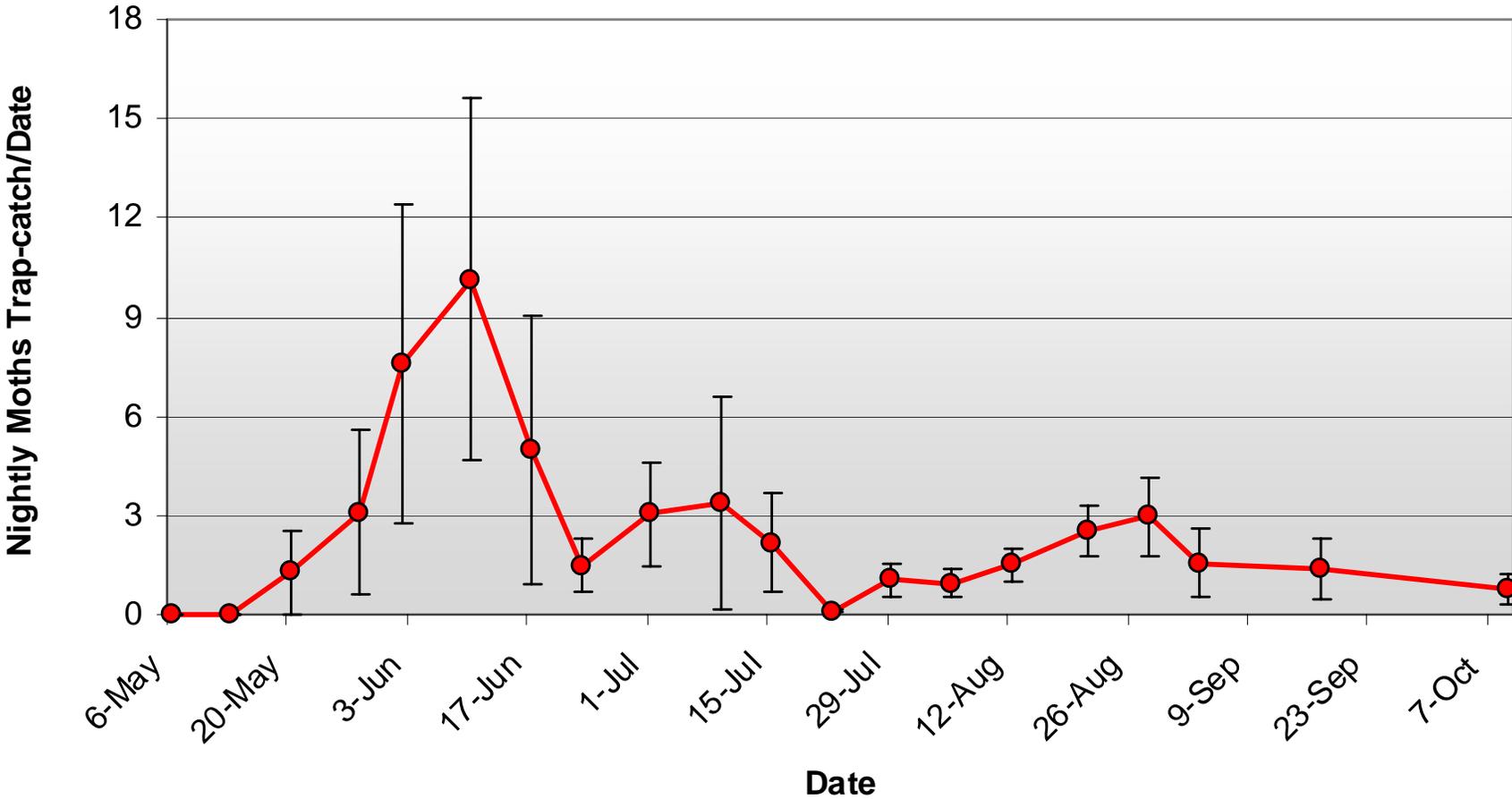
Twig Borer Life Cycle



Typical Fruit Damage



2003 Peach Twig Borer Flight Pattern



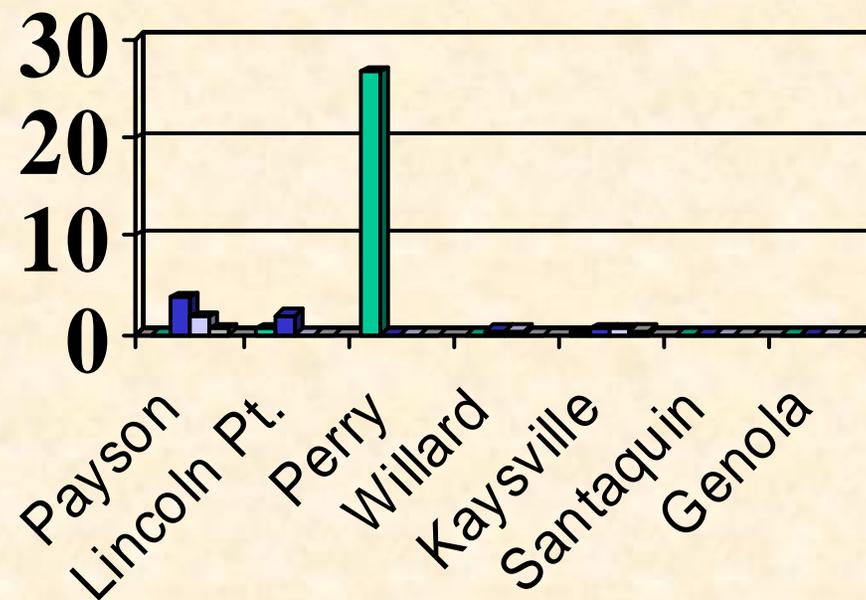
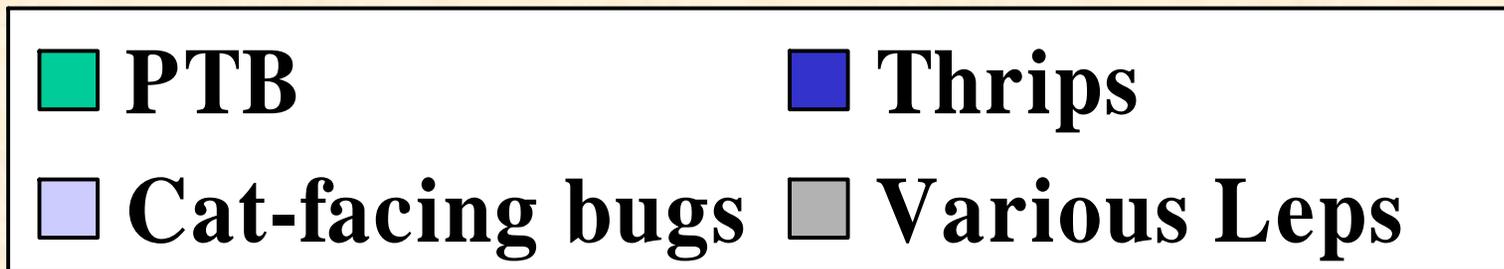
Trapping Results: 2003

- Total PTB: **4,863**
- Average per trap: **413**
 - Duration: April-October
- Ave. *per block*: **608**
 - Boxelder County: 1,976
 - Utah County: 131

Site	Total PTB	Per-Trap
Perry	3388	1694
Willard	564	282
Kaysville	256	128
Payson	19	9.5
Santaquin	60	30
N. Santaquin	91	91
Genola	83	41.5
Lincoln Pt.	402	201
Overall:	4863	
Average:	608	413



Peach Harvest Damage (%)



2003 Shoot Strike Counts

Orchard Site	Mean Strikes/tree	Harvest Damage (%)
Payson Peaches	0.00	0.00
Lincoln Pt. Nectarines	0.06	0.50
Perry Peaches	2.30	26.80
Willard Peaches	0.01	0.00
Kaysville Peaches	0.04	0.12
Santaquin Peaches	0.00	0.00
Genola Peaches	0.00	0.00



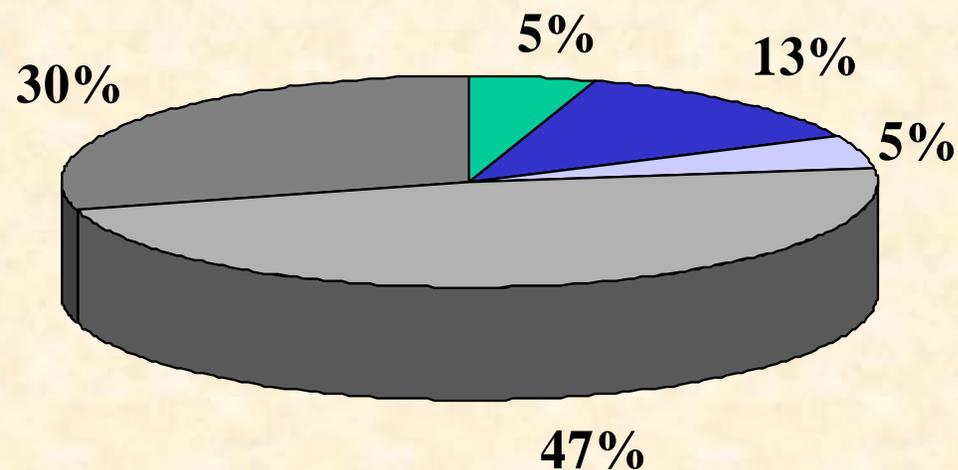
Key Elements for Management

- Overwinters as a larva in hibernacula
- 3-4 generations/year
- First generation targets succulent shoots.
- 2nd and 3rd generations target fruit.



Degree-Days (DDs) for Each Stage

- Total required for a generation: **1,092.6** DDs
 - Pre-ovipositing Adult: **50.4**
 - Ovipositing Adult: **124.2**
 - Egg: **165.6**
 - Larva: **464.4**
 - Pupa: **288.0**



■ Pre-ovipositing Adult ■ Ovipositing Adult ■ Egg ■ Larva ■ Pupa

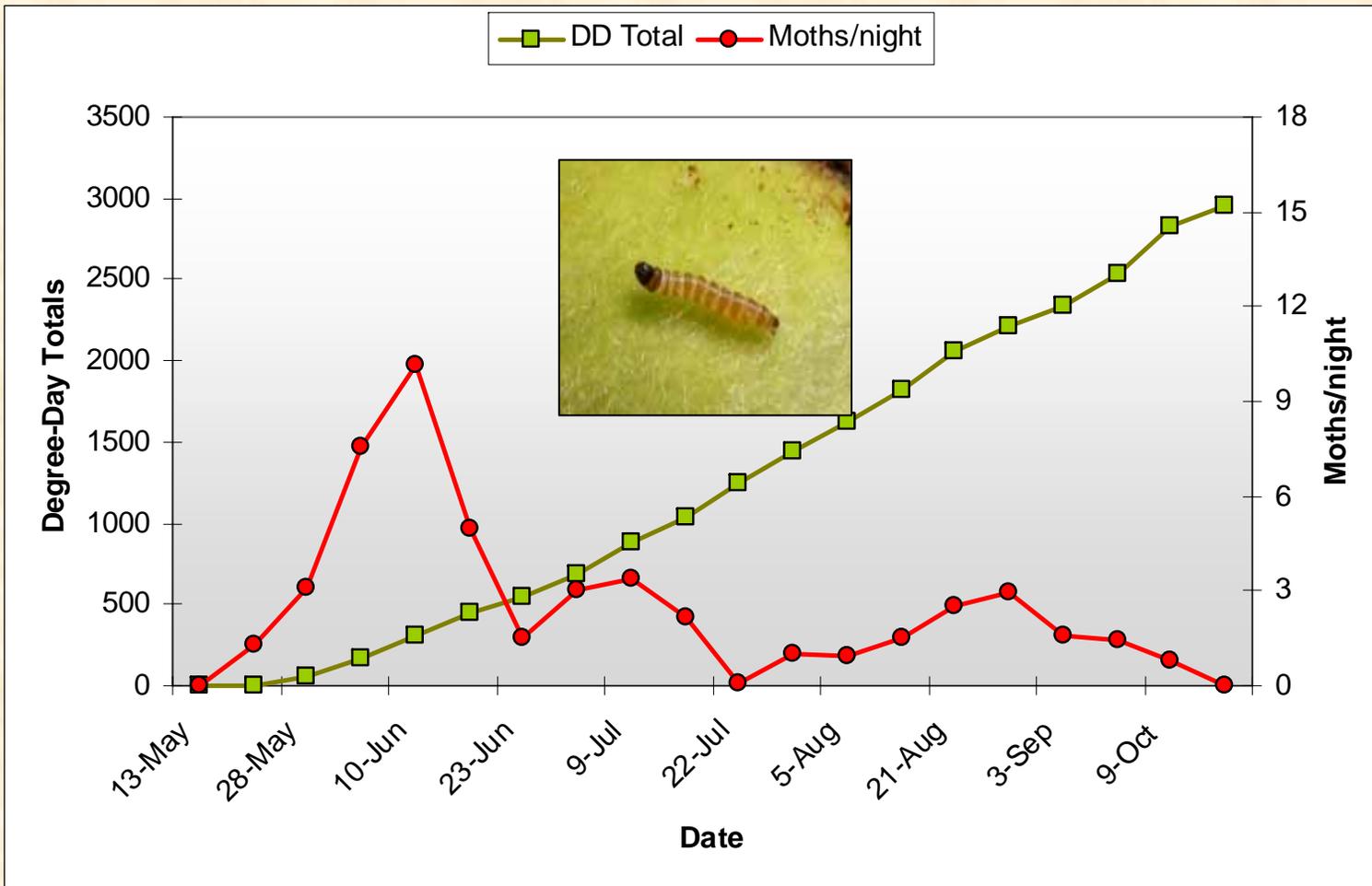


Translate DDs into Biology

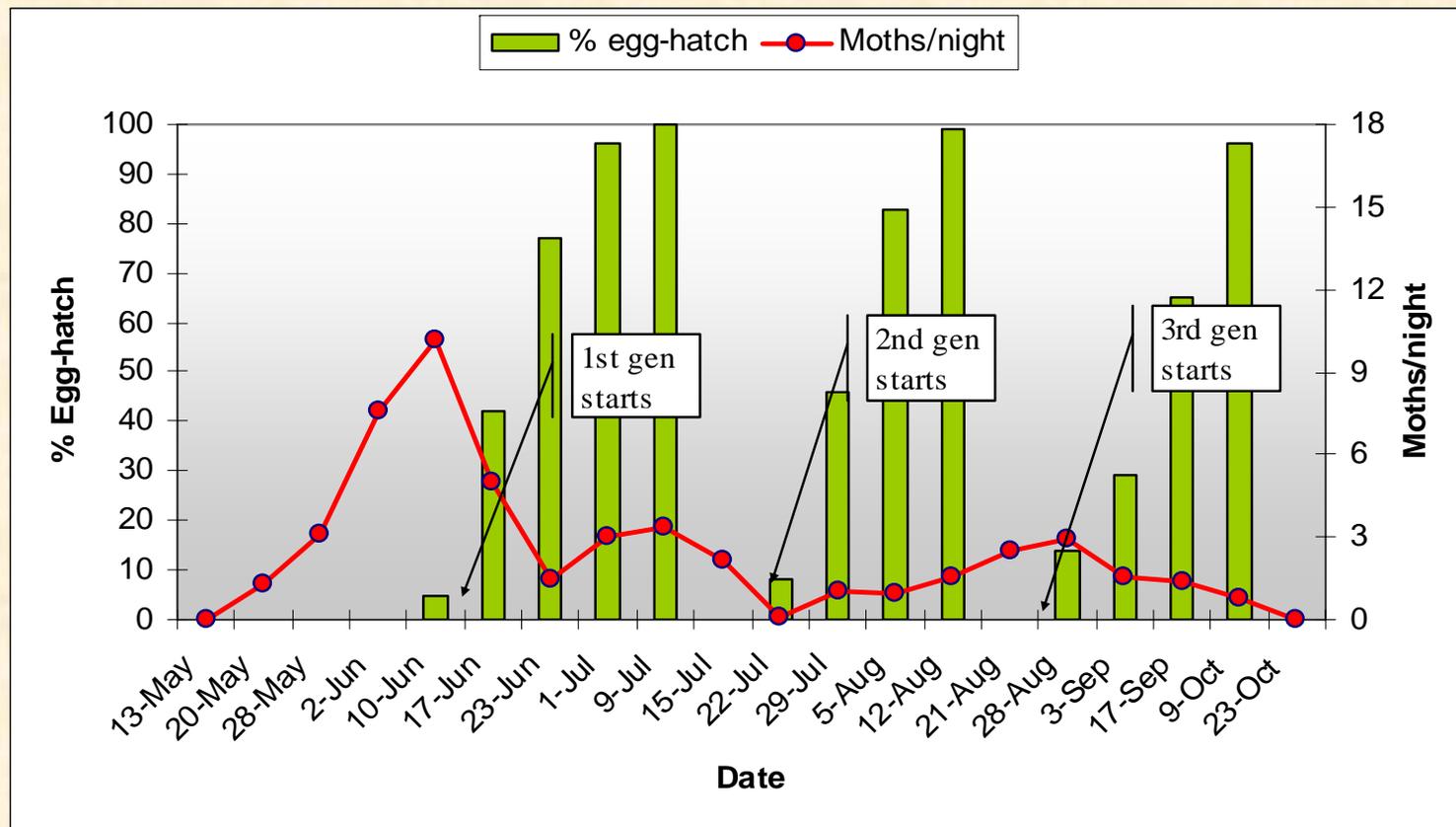
- PTB larvae require **3-5** shoots to complete their development.
- *Residence time* per shoot:
 - 464 DDs / # shoots
 - between 155 and 93 DDs per shoot.
- Assuming warm temperatures (~22 DDs per day), the residence time is:
 - 4-7 days per shoot
 - larva will likely be “re-surfacing” every 4-7 days.



2003 PTB Flight and DD Accumulations



Egg-hatch Relative to Date (based on DD model projections)



Strategies for 2004

- Accurate trapping is key to precision in management.
- Average DDs for first moth emergence in 2003:
 - **367 ± 53 DDs**
 - get traps out ~ 250 DDs to ensure reliable biofix.
- 340-640 is likely peak egg-hatch window for 1st generation.
- First generation sprays may need to be initiated at 300-400 DD.



On the Horizon in 2004

- As more and more orchards are abandoned or neglected, beware of:
 - Greater Peachtree Borer
 - Giant CA Prionus Beetle
 - Shothole Borers



- For more information on tree borers, see recent talks by Dr. Alston at: www.extension.usu.edu/SlideShowIndex.htm

Tree Borer Management

(courtesy Diane Alston, March 3rd, 2004)

- Trunk Protection
 - Timing is critical (northern Utah)
 - Ash/Lilac borer – May 1- late June
 - Bronze birch borer – late May – June
 - Aspen borer – May-July
 - Peachtree (Crown) borer – late June – August
 - Poplar-and-Willow borer – July – Sept.
 - Locust borer – August – Sept.
 - Shothole borer – June and late Sept.
- Insecticides: carbaryl, endosulfan, pyrethroids (permethrin, bifenthrin)



Thank you

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 - www.extension.usu.edu/SlideShowIndex.htm

