Pest Control Techniques for the Backyard Orchard

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March 4th, Home Orchard IPM

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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

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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

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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, lamda-cyhalothrin)
  - Beware of alkaline, hard water issue.

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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

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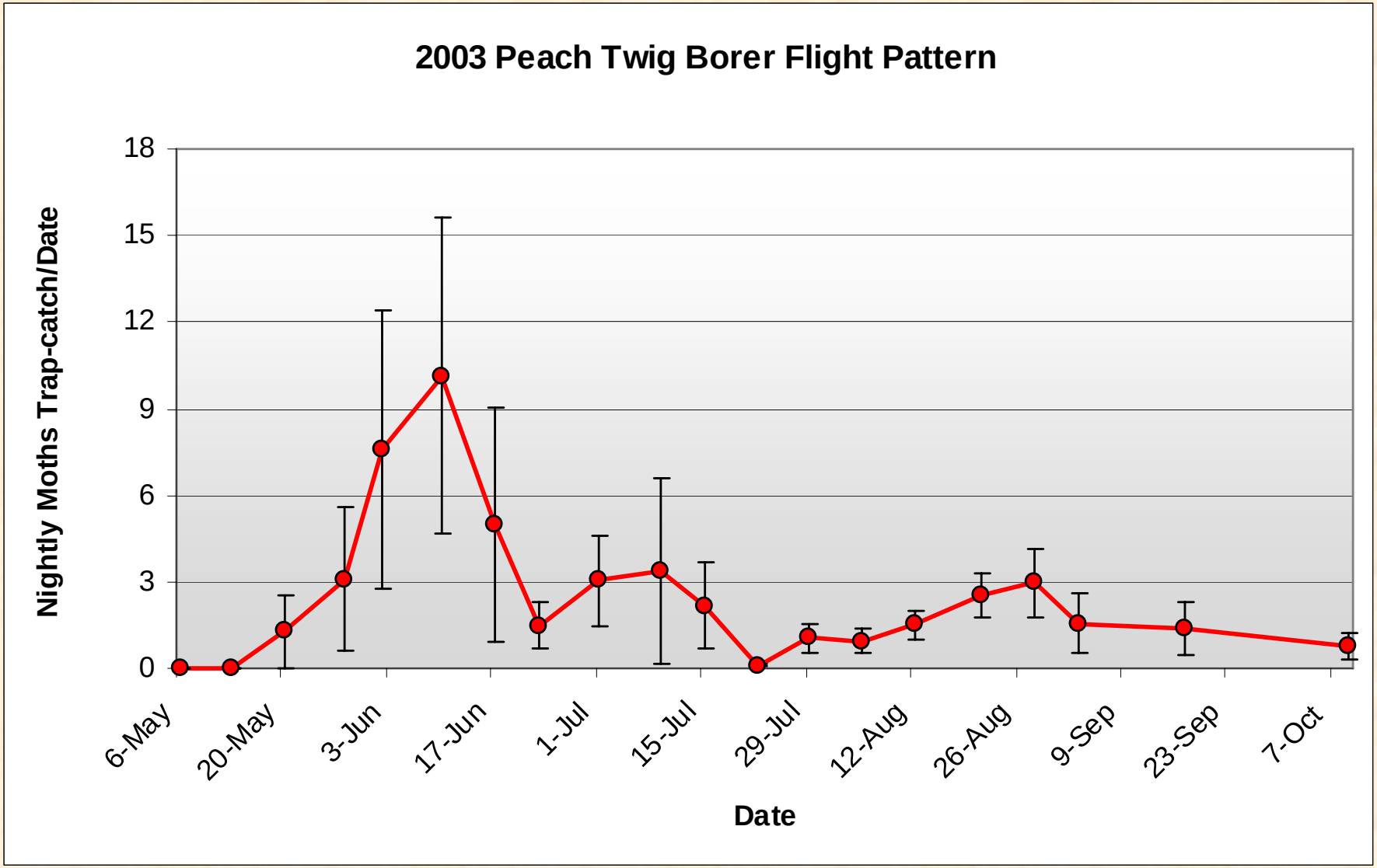
Typical Fruit Damage



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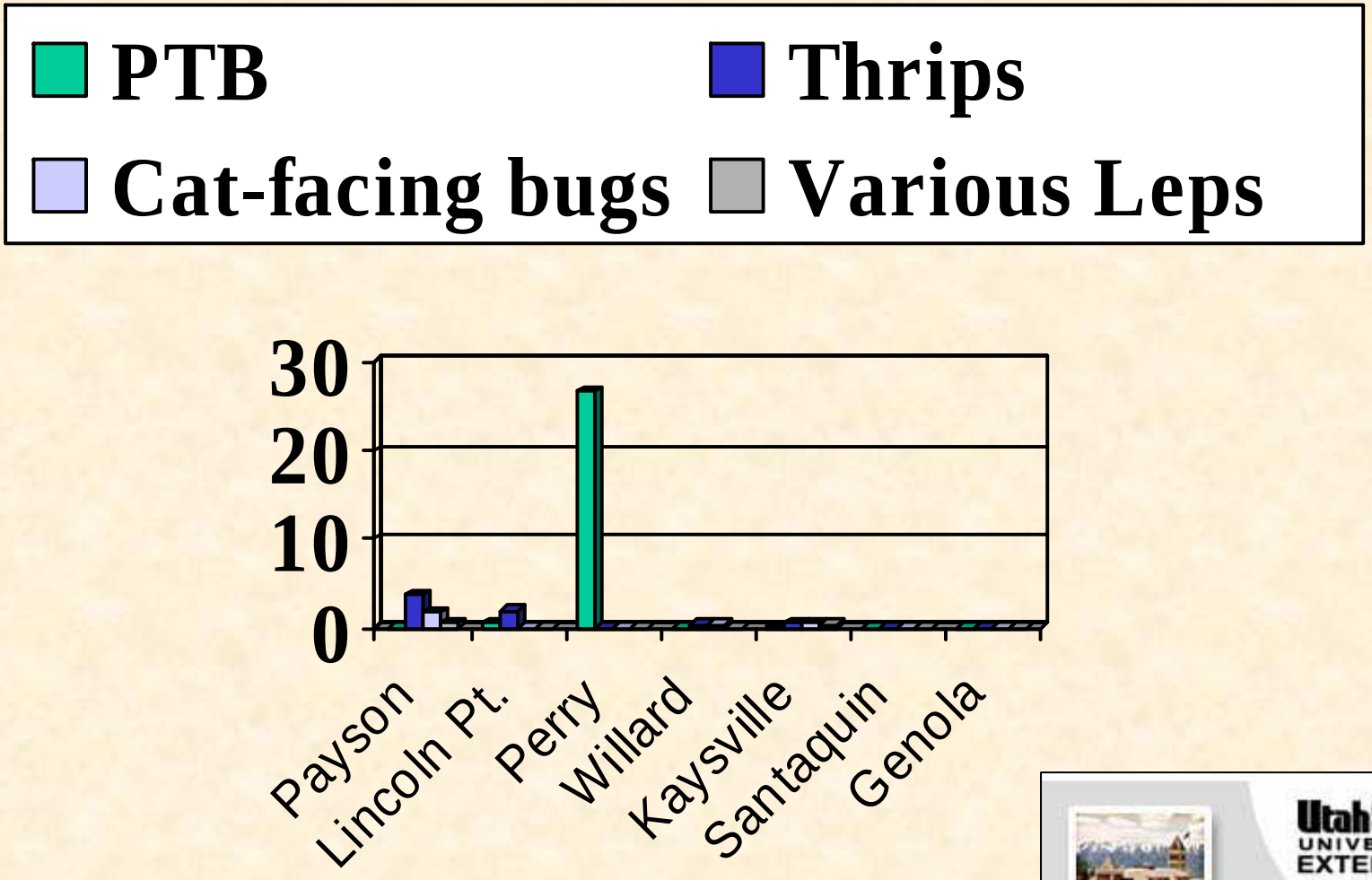
Trapping Results: 2003

- 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

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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.

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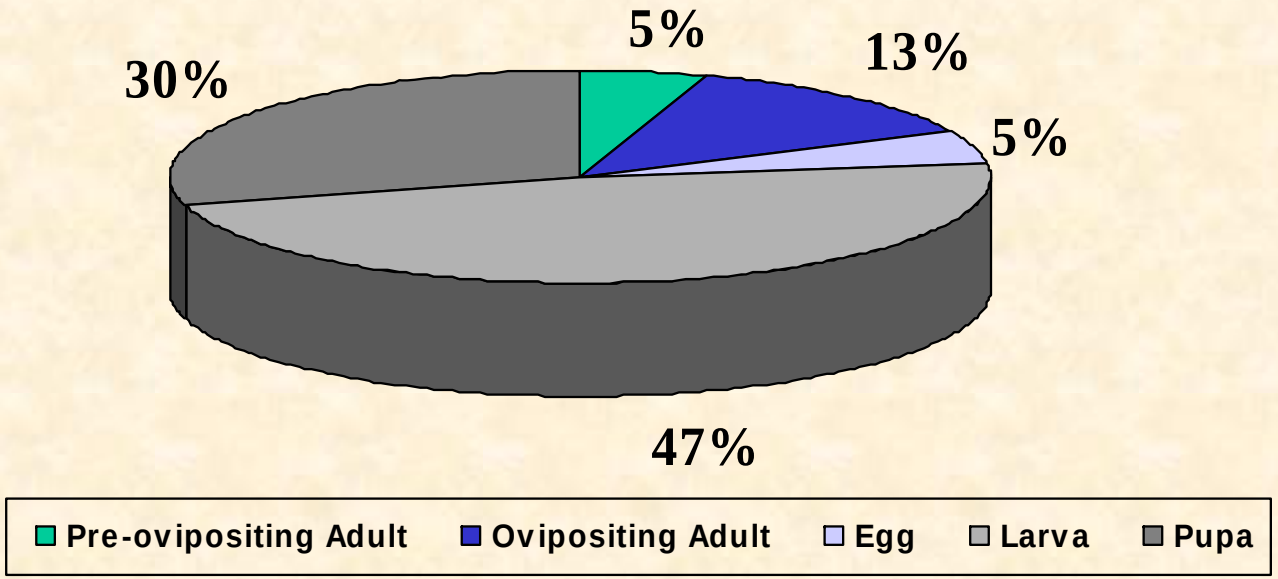
Degree-Days (DDs) for Each Stage

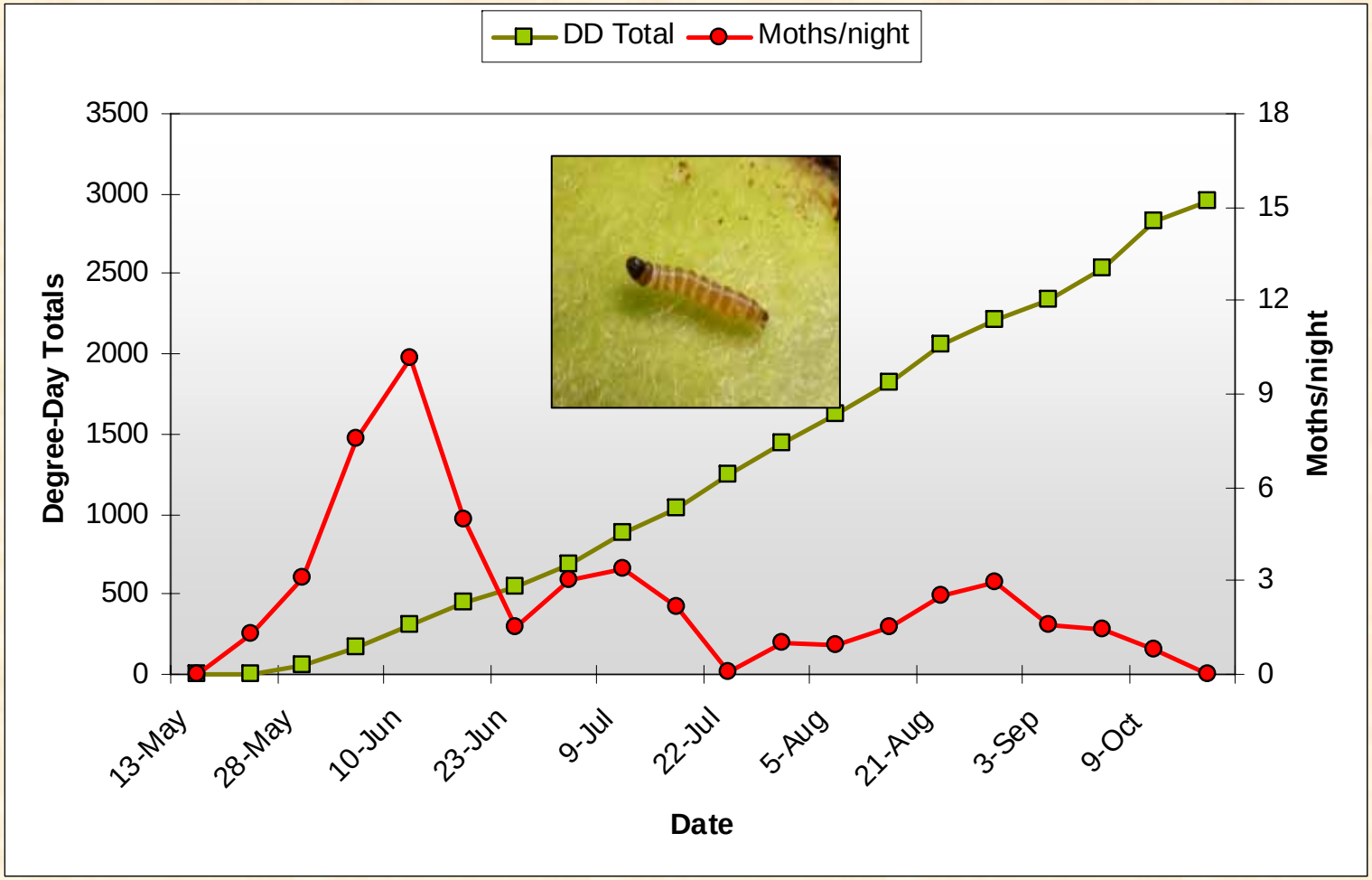
- Total required for a generation: **1,092.6** DDs
  - Pre-ovipositing Adult: **50.4**
  - Ovipositing Adult: **124.2**
  - Egg: **165.6**
  - Larva: **464.4**
  - Pupa: **288.0**



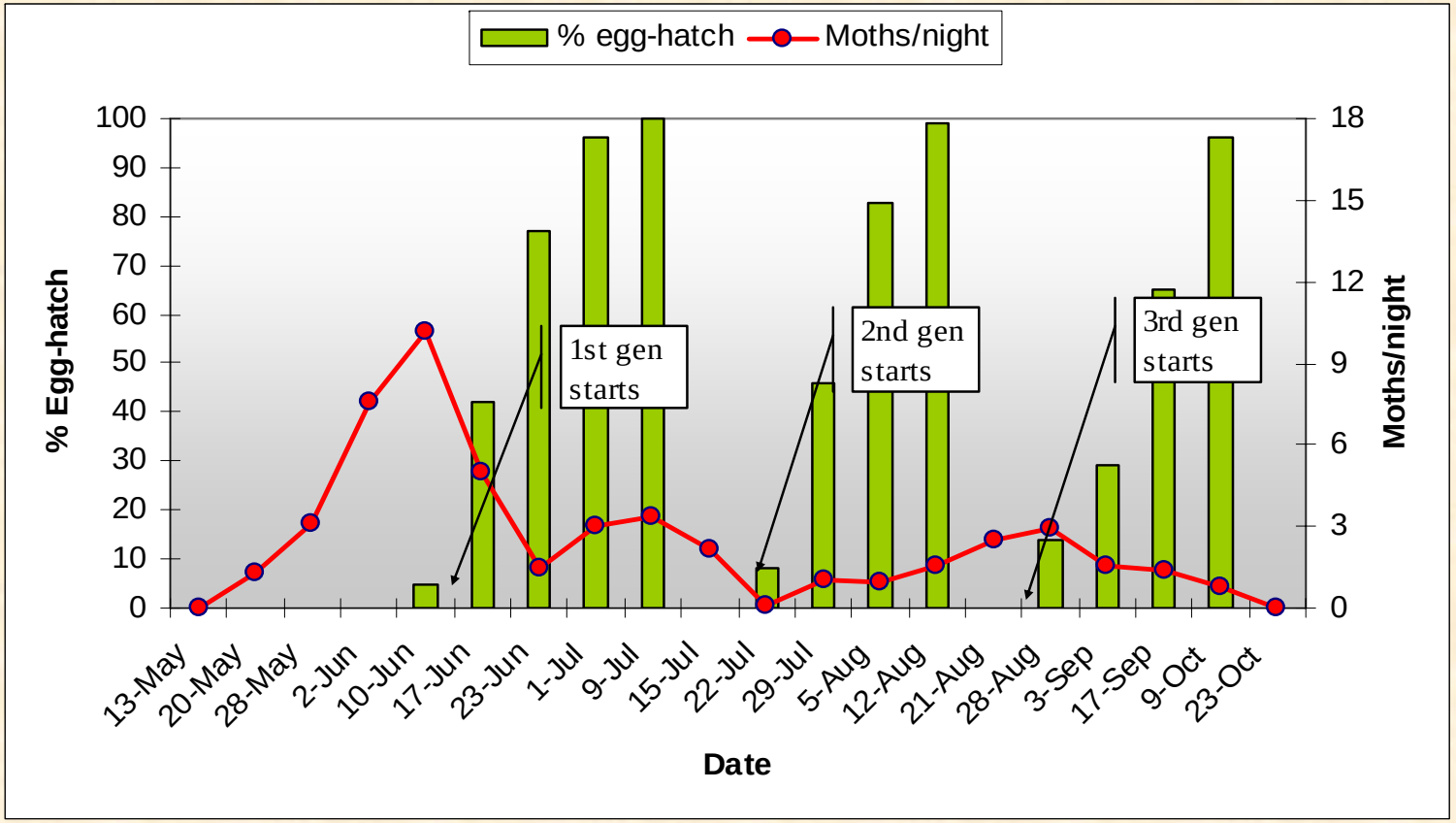
Translate DDs into Biology

- 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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