Obliquebanded Leafroller

A Contaminate Pest of Tart and Sweet Cherries in Michigan

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Description

Adult

* Varies in color, from light tan to dark brown
* Female is larger and darker in color
* Wingspan 17-30 mm (Bell-shaped wings)
* Active at dusk

Larvae

*Dark brown/black head capsule

* Head capsule is flattened
* Green/yellow bodies, some with brown pigmentation
* Range from 20 – 30 mm long

Life Cycle

- Overwinter as young larvae under tree bark
- In spring, overwintering larvae feed on buds and leaves
- As leaves expand, larvae web and roll leaves where they remain concealed except when feeding
- Pupation occurs inside the rolled leaf
  - Lasts 10 to 12 days
- Moths emerge from mid-June to mid-July and mate
- Eggs are laid on leaves shortly after mating
- Eggs incubate 10 to 12 days
- Larvae emerge 350-400GDD base 42 after adult biofix
- Female can lay up to 900 eggs in her 7-8 day oviposition period
- New larvae quickly find feeding sites
  - Crawl to new site
  - Travel on silk strands in wind
- Two generations per year
  - 1st peak adult flight is mid June to early July
  - 2nd peak adult flight is mid to late August

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Region: East Central

Station: East Lansing (MSUHort)

Model: Obliquebanded Leafroller

Select Date: Oct 14 2011

Execute

East Lansing (MSUHort) Obliqueba

2011		Temperature(	
Day	Date	Max	
Sun	10/9	81.4	48
Mon	10/10	77.2	47.9
Tue	10/11	79	46.5
Wed	10/12	70.3	47.8
Thu	10/13	64.3	50.7

Today's data:

2011		Temperature(	
Day	Date	Max	
Fri	10/14	Actual (12:40-12:45AM): 58	Actual (

ustained Catch)

9/26	9/28	9/30	10/2	10/4	10/6	10/8	10/10	10/12
204	174	145	137	117	87	45	0	0
225	194	165	157	138	107	66	21	0
245	215	186	178	159	128	87	41	0
263	232	203	195	176	145	104	59	17
278	248	219	211	191	161	119	74	33

ustained Catch)

9/26	9/28	9/30	10/2	10/4	10/6	10/8	10/10	10/12
291	261	232	224	205	174	133	87	46

About the obliquebanded leafroller model on Enviro-weather

More information on obliquebanded leafroller at IPM Resources

About the model:

Using a base of 42 F, degree days are accumulated beginning March 1.

First generation

- 900 DD –first adult emergence (biofix 1)*
- 1150 DD – peak adult flight
- 1250 DD – first egg hatch
- 1300 DD – peak egg hatch, **typical treatment time with conventional insecticides**

Second generation

- 2,050 DD – first emergence of 2nd generation adults (biofix 2)
- 2,300 DD – first eggs laid by 2nd generation adults
- 2,450 DD - peak egg hatch, **typical treatment time with conventional insecticides**

Conventional insecticide sprays are timed 400 degree days base 42 F after biofix 1 and biofix 2. BT and Spintor insecticide sprays are aimed at 450 DD 42 after biofix 1. Application of the insecticide "Confirm" is timed at 350 DD 42 after biofix 1.

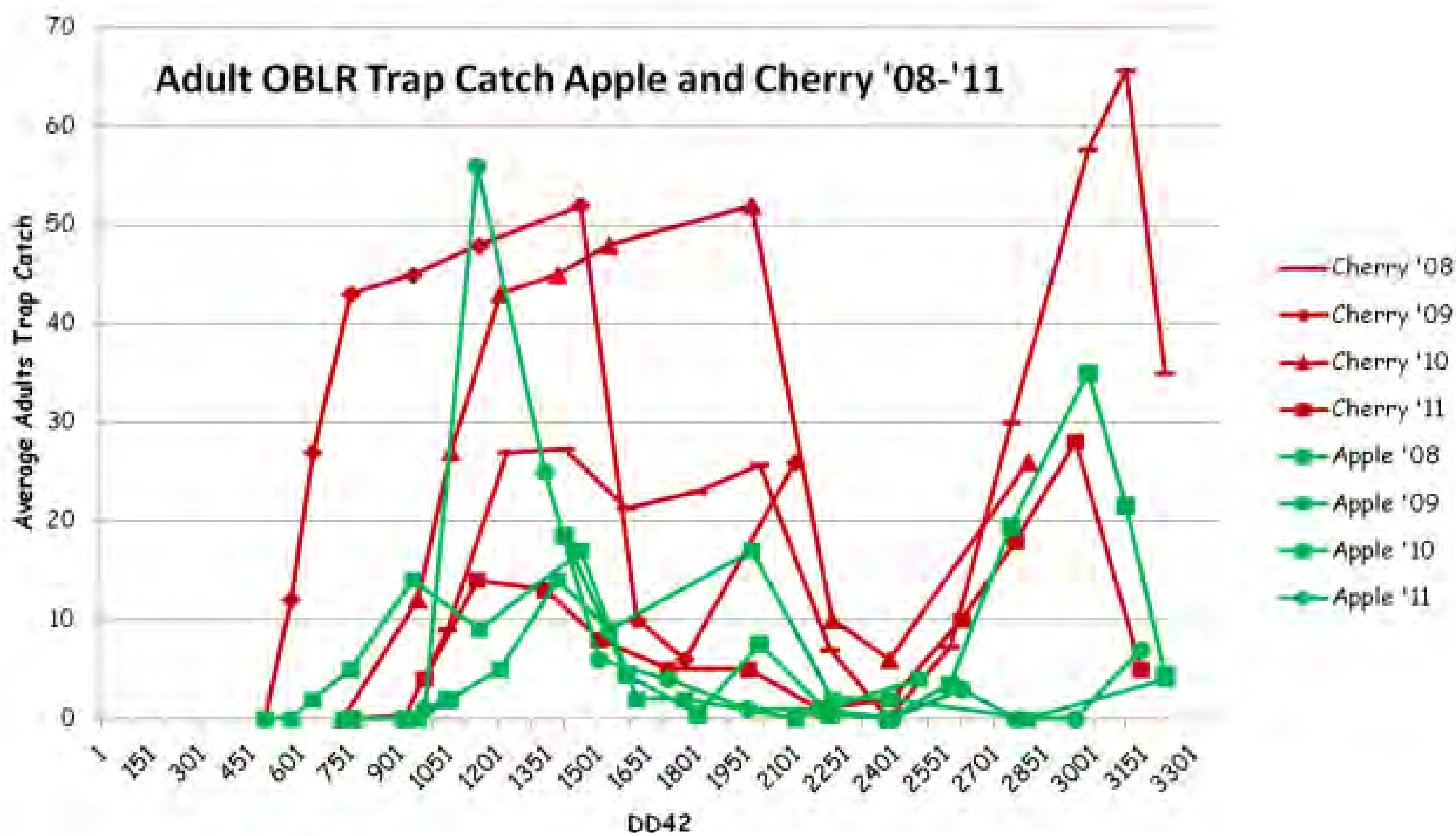
Using the model:

- Check traps weekly.
- Locate the Biofix Date (first date of sustained catch) on the top row (in this example, 7/4).
- Follow that column down to determine the Base 42F Degree Days (DD) that have accumulated between the biofix date and the date listed at the left side of that row (in this example, 380 DD between 7/4 and 7/16).
- Egg hatch begins 400-450 DD (Base 42) after biofix. At this point, apply insecticide spray for summer generation OBLR, followed by applications on two week intervals.
- Fall generation: follow same steps as for summer generation.
- Note that forecast data is provided (where available) to help with planning in the near-term.
- Control is recommended at 350-450 DD (check product) from the biofix date.
- Repeat for additional blocks with a different biofix date.

References

- Howitt, Angus. 1993. Common Tree Fruit Pests. NCR 63. Michigan State University.
- More information on obliquebanded leafroller at IPM Resources

Based on biology in apple



420 DD Petal fall and first treatment timing in cherry
900 DD – First adult Emergence
1,150 DD – Peak Adult Emergence
2,050 DD – 2nd Generation Adult Emergence

- Relatively similar flight patterns in apple and cherry
- Larger populations and longer emergence in cherry
- More detectable peak of second generation in cherry—a function of population size?

Monitoring Adults

- Because of wide host range,

pheromone traps are difficult to use

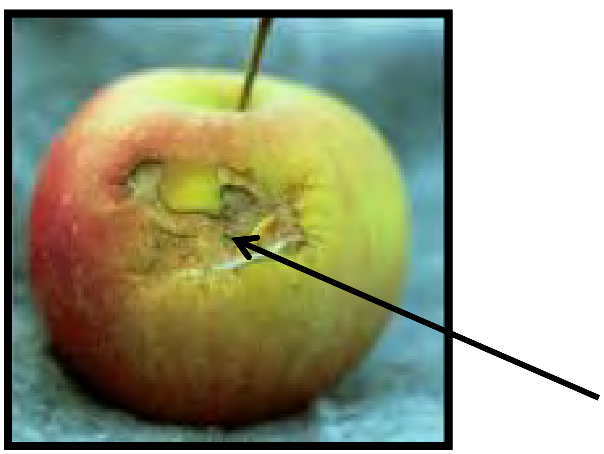
- Traps tend to catch a lot of moths making them less useful for decision-making

- **Interpreting moth captures in apple**
  - A consistent catch of 20-plus moths/trap for 2-3 wk usually indicates a problem
  - Very low catch of <20 moths/flight period generally means non-problematic density
  - Use traps to set biofix (www.enviroweather.msu.edu)

Scouting for Larvae

- Monitor orchard for overwintering larvae
  - At early petal fall, look at 20 clusters/tree in five trees for each orchard
  - Apply insecticide if observe 2 + larvae or feeding sites/tree
- Use pheromone traps to determine when summer adults emerge
  - After emergence, scout 10 fruit clusters and 10 terminals on 5 trees per orchard, weekly
- Threshold: 3 larvae per tree

Damage in Apple



- Overwintering larvae feed on buds, leaves, and flowers
- Also feed on developing fruit causing deformed and scarred fruit
  - Many will fall in June drop
- Summer larvae feed on skin and flesh of apple just below surface

Damage in Cherry

- Not as well documented in cherry
  - Problematic in sweet and tart cherry
- Overwintering larvae feed on buds, leaves, and flowers
- Summer larvae web leaves together
- Summer larval generation often coincides with harvest
  - Larvae in tanks!

Rationale for Increase in OBLR in Cherry

- No known increase in OBLR in apple
- Current hypothesis of larvae in tanks in 2010-11
  - OP's are still backbone of cherry insecticide programs
  - Because of OP resistance in codling moth, apples do not rely on OP's
  - OBLR resistance to OP's + OP use = larvae in cherry tanks at harvest
- New Lepidopteran materials in apple
  - Growers have moved away from OP's, and as a result, OBLR populations are kept in check
- In cherry, Lepidopteran insecticide is a additional spray
  - Added 1-2 sprays/season
  - Increased $

- 2010
  - Extremely warm year with adequate moisture
    - Hastened development of OBLR generation
    - Excellent 'growing' conditions for insects
  - More overlap in generations and more larger larvae
    - Larvae were present for much of summer
    - Lots of larvae visible floating in tanks
- 2011
  - Cool and wet start
  - Warm and dry during harvest
  - Based on 2010 tank contamination, many sprayed at petal fall
    - Summer generation larvae were too small to see/scout for near tart cherry harvest
    - Small larvae don't float in tanks
    - Made it through to the processor where they were detected in fruit

Additional Information from 2011

- Petal fall spray did not eliminate OBLR summer generation larvae at harvest
  - Particularly, if populations were large
  - May need to spray at petal fall *and* 7-10 days pre-harvest until population size has decreased in high pressure sites
    - Particularly in years of late harvest
    - Particularly if leaving fruit to hang for juice market

Control Options

- Need to think about control differently for apple and cherry
  - Damaged fruit vs. contaminated product
    - Mode of action
    - Rate of activity
    - Age of larva (smaller larvae are easier to kill than large)
    - PHI
  - OP resistance issues apply to both crops

Control Strategies Employed in 2011

- Many cherry growers added additional spray to insect management program
- Two timings for control:
  - At petal fall/shuck split, target small overwintering larvae
  - Near harvest, target summer generation larvae
- Preliminary efficacy trials show adequate control with newer products
- Targeting the summer larval generation is difficult
  - Unable to scout effectively
  - Managing PHI and timing insecticide applications
- Some growers reported well-timed sprays of new materials, but control was not adequate
- Delegate, Belt, Altacor, Entrust* and Bt's* are labeled

Conclusions

- OBLR is emerging new contaminant pest of tart and sweet cherries
  - OP resistance is likely cause of increases in OBLR population
  - Cherry growers will need to add additional Lepidopteran material for OBLR control
    - Potentially at petal fall *and* pre-harvest
    - Need to control OBLR early to minimize webbing leaves/cherries together
      - American brown rot
- New materials are effective
  - Costly
  - Need to be well-timed

Future Research

- Better understanding of OBLR biology and behavior in cherry
- Improved monitoring techniques for spring and summer larval generations
  - Perhaps tweak the current model to reflect differences between apple and cherry
- Need to understand relationship between OBLR and American brown rot
- Continued efficacy work


Thanks!

PRC 1/24/2012

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