



Asian ladybeetles are an efficient biocontrol agent, feeding on a variety of insect pests, especially aphids, in food crops, trees and landscape plantings.



Soybean aphid example





Predators can delay aphids reaching threshold

Delayed at 4 /12 sites
F=11.44, P=0.0041

Kalamazoo (MI)

mean # aphids/plant

● Field Average of SBA
● SBA on caged plants
● SBA on open plants

Mary Gardiner
MSU Entomology

Predators can prevent aphids reaching threshold


Prevented at 5/12 sites
F. 10.27, P=0.0043

West Madison (WI)


mean # aphids/plant

● Field Average of SBA
● SBA on caged plants
● SBA on open plants


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Efficient biocontrol agent, feeding on a variety of insect pests, especially aphids, in food crops, trees and landscape plantings.



But also.....



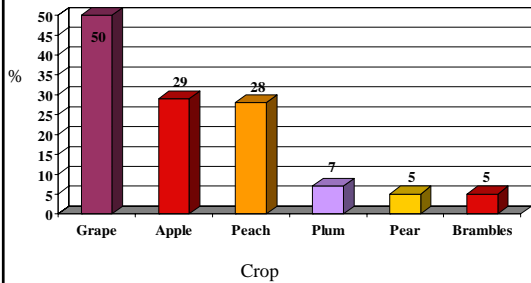
1. Potential contaminant in fall fruit crops
2. Off-flavor in juice and wine if crushed
3. Nuisance, sometimes a health concern to homeowners

Monthly emails about Asian Ladybug to MSU Extension, 2001

NUMBER OF EMAILS

Jan Feb Mar Apr May Jun Jul Aug Sep Oct

In which of the fruit crops did you have MALB feeding? (OH Survey, Joe Kovach, OARDC)



Beetles are attracted to wounded fruit (Joe Kovach, OARDC)

| Crop (n) | Wounded | No Wounded |
|------------|---------|------------|
| Apple (25) | 5.0 | 0.3 |
| Peach (25) | 4.0 | 0.0 |
| Grape (25) | 11.0 | 1.5 |



Beetles in juice & wine

- Beetles release defense secretions when crushed
- Wine aroma and flavor modification
Peanut, bell pepper and asparagus flavor in white wine
Peanut, asparagus/bell pepper, earthy/herbaceous in red wine
- Sweet, acid and bitter tastes affected in reds
- 12 beetles per lug (33 lb) is detection threshold in wine grapes (Aurora)
- National Grape Coop. imposed a threshold of 10 beetles/10 lb of fruit in 2005
- Masking is the most promising remedial winemaking technique



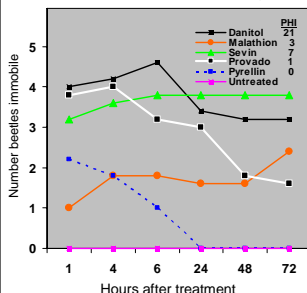
Michigan experience with MALB

- 'Outbreaks' of MALB seen in 2001, 2003, 2005; also good aphid years
- Beetle populations were low in 2002 and 2004
- More of a contamination problem in late ripening grape varieties
- For 'pest' status, need a combination of:
 - beetle abundance
 - environmental conditions (cold weather, then warm)
 - susceptible fruit when beetles are active
- 2005 example of temporal escape from pest problems

Toxicity assays

(Williams, Ellis and Fickle, 2002)

- Beetles exposed to tainted grape juice on dental roll
- Exposed for 2h, then dental rolls removed
- Observations of immobility made at different times after treatment



Beetles are variably sensitive to insecticides.

Provado provides high initial activity, with a short duration of residual activity.

Need activity, with a short PHI.

Repellency-toxicity assays (protection)

(Williams, Ellis and Fickle, 2002)

Groups of 5 beetles placed in container with treated grape clusters
Number of beetles per cluster counted 1, 4, and 24 h later

| Treatment | Rate/acre | Beetles per cluster (out of 5) | | |
|-------------------|-----------|--------------------------------|-------|--------|
| | | 1 h | 4 h | 24 h |
| Aza-Direct (neem) | 20 oz | 0.0 b | 0.0 b | 0.25 c |
| Stylet oil | 2.0 oz | 1.0 b | 2.5 a | 2.25 b |
| Untreated | | 2.5 a | 3.0 a | 4.75 a |

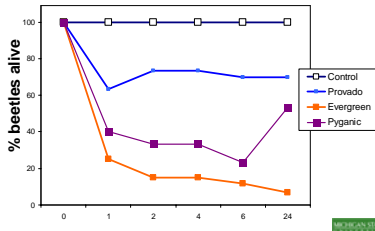
Repellent products can help prevent beetles getting into clusters

Repellency-toxicity assays (removal)

- Groups of 10 lady beetles added to Concord clusters, left to get into them.
- Sprayed with insecticides at rates equivalent to labeled rates in 50 gall of water.
- Measure number of beetles alive.

TREATMENTS

- Untreated
- Provado 1 oz
- Evergreen (pyrethrum + PBO) 8oz
- Pyganic (pyrethrum) 16oz



I.P.M. for Multicolored Asian Ladybeetle



- Observe beetle populations during the growing season
- Identify whether MALB is present
- Pay close attention to fruit near harvest
- Only if needed, use chemicals with some repellency



- Select chemical control options with short PHI's
 - Provado (1 day)
 - Neem-based products (0-1 day)
 - Pyrethrums: Evergreen (12 h), Pyganic – organic option (12 h)
 - Baythroid? (3 day)



- Repellency is as important as mortality
- Remember, ladybeetles are our friends (most of the time!)

For more information.....



MSU Extension Website



- General Information
www.msue.msu.edu/ipm/asianladybeetle.htm
- Information for Fruit Growers
www.msue.msu.edu/ipm/beetleFruit.htm