

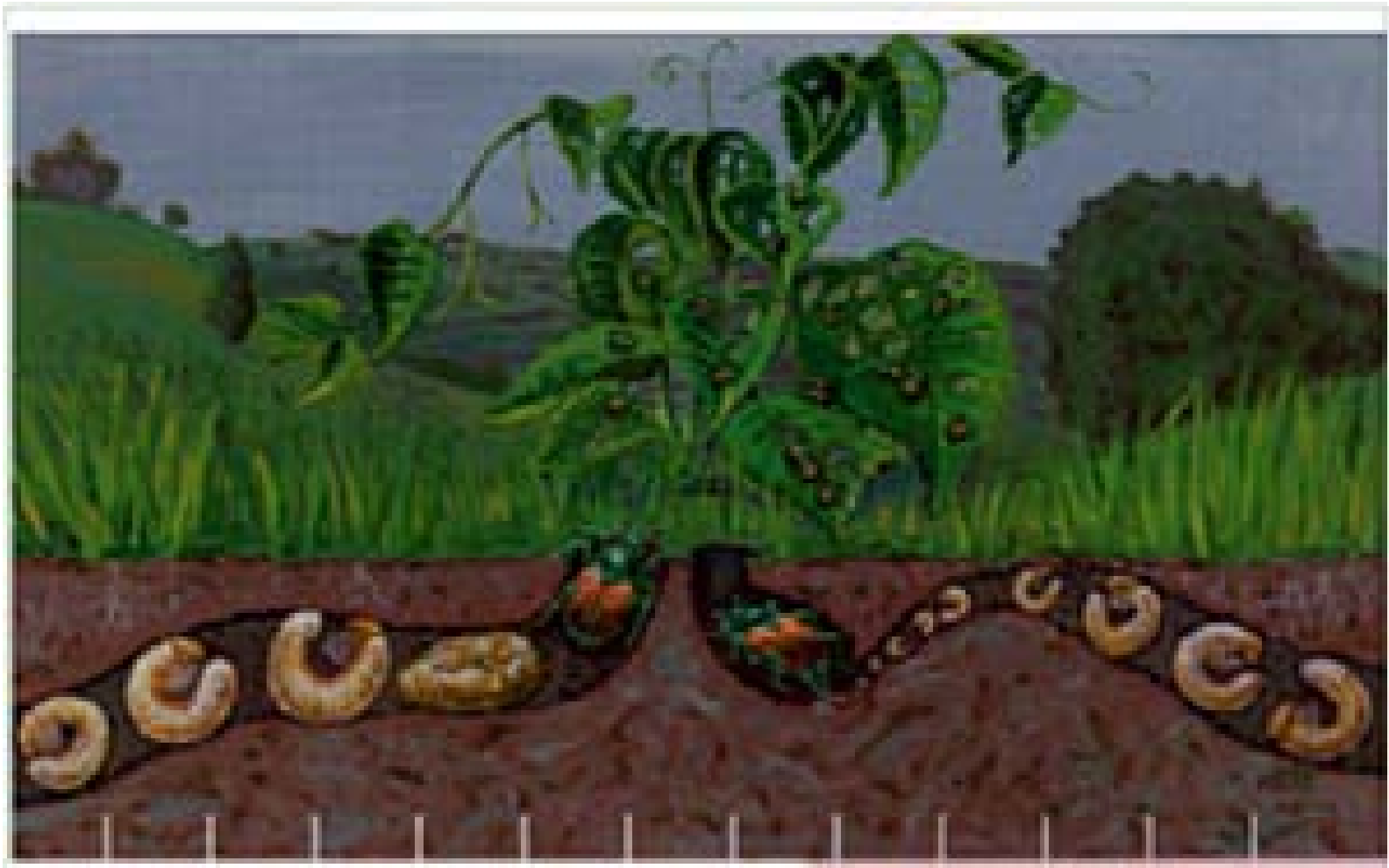
Alternative Control Methods for Japanese Beetles on Grapes



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Japanese Beetle Life Cycle



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Japanese Beetle DON'TS

- Don't use Japanese beetle traps
 - Just say no !
- Don't wait to spray
 - Control low numbers early in the season
 - Damaged leaves bring in more beetles



Why do we need alternative methods for Japanese beetles?

“I still can use Sevin,
can't I?”



Reasons to consider alternatives

- Residual activity
- Days to harvest
- Application method
- Organic alternatives
- Other Pests
- New invasive pests of grapes
 - Brown marmorated stink bug
 - Spotted winged Drosophila



Insecticides for Japanese Beetle in ID-94 at shatter stage

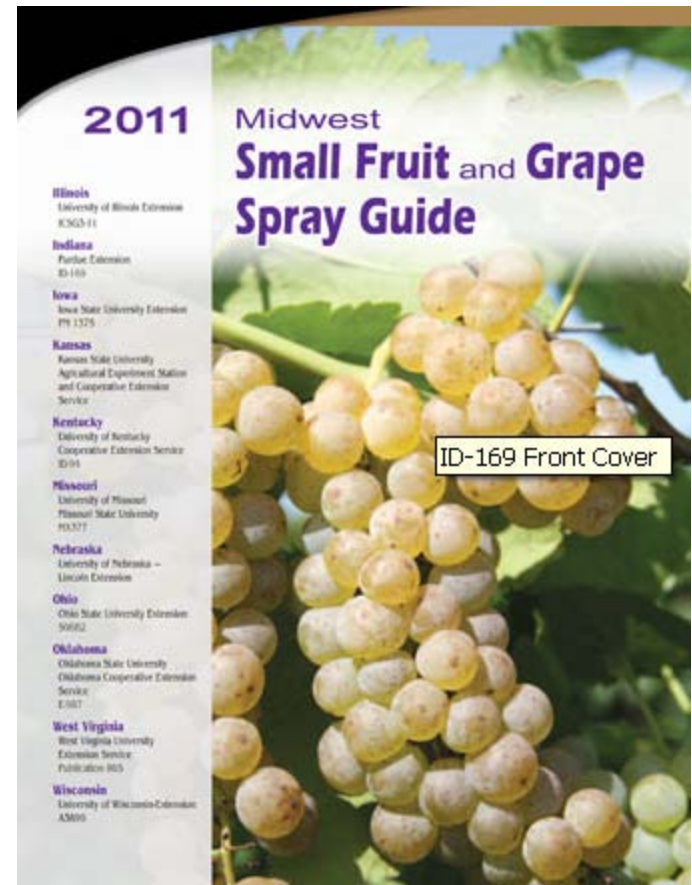
- Actara
- Assail
- Avaunt
- Aza-Direct
- Belay (foliar only)
- Brigade (10WP/2 EC)
- Brigadier
- Danitol
- Imidan
- Mustang Max
- Neemix
- Platinum (soil only)
- Pyganic
- Sevin
- Voliam Flexi



Effectiveness of Recommended Insecticides (ID-94, page 30)

- Highly Effective (+++)
 - *Baythroid* (3 – 3 days)
 - *Danitol* (3 – 21 days)
 - *Mustang Max* (3 – 1 day)
 - *Renounce* (3 – 3 days)
 - Sevin (1A – 7 days)

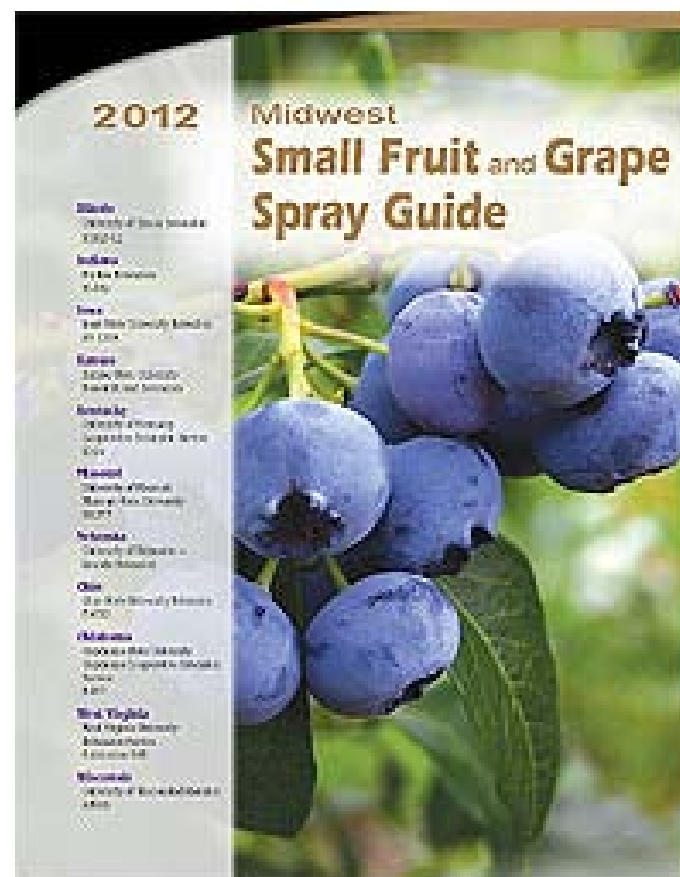
Blue = Restricted Use Pesticide (RUP)



Effectiveness of Recommended Insecticides (ID-94, page 30)

- Moderately Effective (++)
 - Assail (4 – 7 days)
 - *Brigade* (30 – 21 days)
 - Imidan (1B – 7/14 days)
 - Malathion (1B – 3 days)

Blue = Restricted Use Pesticide (RUP)



Effectiveness of Recommended Insecticides (ID-94, page 30)

- Slightly Effective (+)
 - Belay (4 – 0/30 days)
 - Provado (4 – 0 day)
 - Venom/Scorpion (3 – 1/28 day)



What Hasn't Been Proven

- Adult control through grub control
 - Adults are excellent fliers
- Milky Spore to control grubs
 - Milky disease occurs naturally



Residual Activity

- Formulation matters!
 - Sevin XLR >> other carbaryl formulations
- Systemics provide longer control
 - Platinum 2F



Pre-Harvest Intervals (days to harvest) for grapes

• Aza-Direct (<i>OMRI</i>)	0	• Voliam Flexi	14
• Neemix (<i>OMRI</i>)	0	• Danitol	21
• Provado	0	• Brigade	30
• Belay (foliar only)	0 (30)	• Brigadier	30
• Mustang Max	1	• Platinum (soil only)	60
• Venom (foliar only)	1 (28)		
• Malathion	3		
• Baythroid	3		
• Actara	5		
• Assail	7		
• Avaunt	7		
• Sevin	7		
• Imidan	7/14		



Application Methods

- Most products used as foliar sprays
 - Used as needed with scouting
- Platinum used as a soil application in advance of Japanese beetle arrival



Organic Control Methods

- Fine netting to exclude them during peak flight
 - Shade cloth materials (1/6")
- Neem oil sprays (2-3 days)
 - Aza-Direct
 - Neemix
- Pyganic (1 day)



Other Pests to Control While Spraying for Japanese Beetle

- Green June beetle
- Leafhoppers
- Grape berry moth
- Asian lady beetle
- Grape rootworm
- Wasps at harvest



New Invasive Pests

Brown Marmorated Stink Bug

- 2010 found in KY
- In at least 12 counties
- Pest of grapes and other fruits
- Builds to high levels June- Aug
- Will taint juice ($>9/\text{lug}$), but not wine



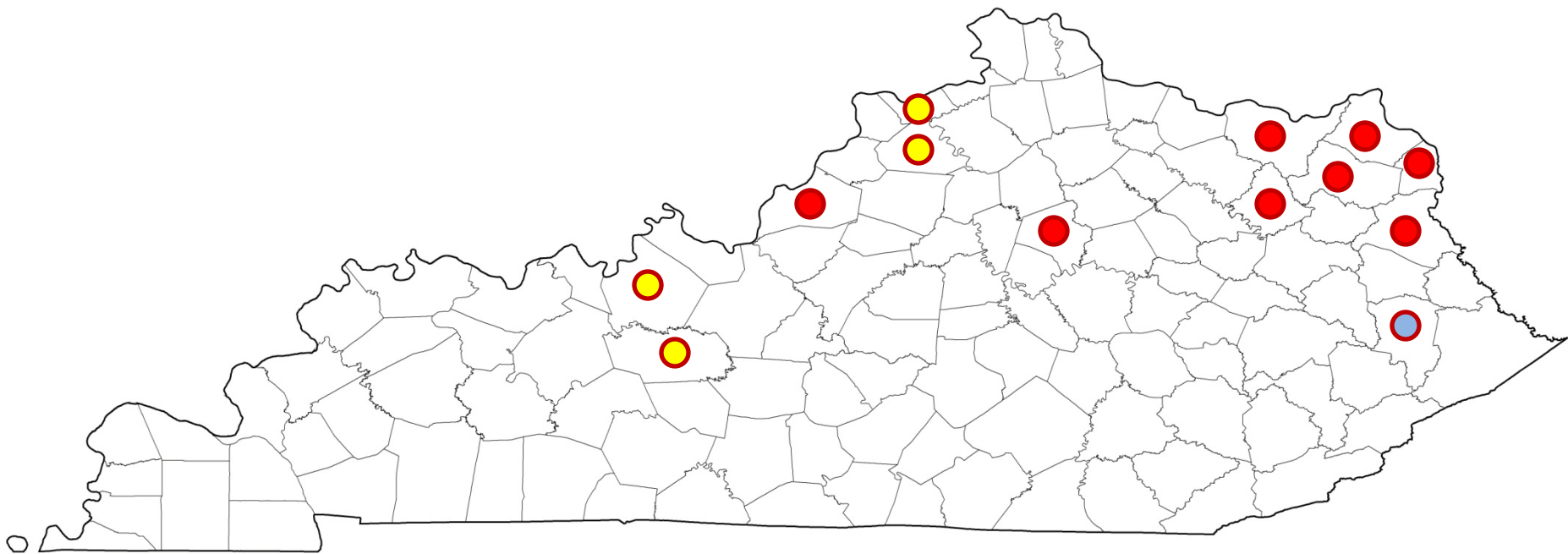
Confirmed

- Fayette
- Jefferson
- Rowan
- Carter
- Boyd
- Lawrence
- Greenup

Reported

- Grayson
- Breckinridge
- Henry
- Carroll
- Lewis
- Floyd

Brown Marmorated Stink Bug



- Established
- Single Specimen
- Indoor stink bug complaints

First report: Early October 2010



Look alike that



we have in KY



Crops attacked

Vegetables

- Beans
- Tomato
- Pepper
- Squash
- Leafy vegetables
- Melons
- Sweet corn
- Eggplant
- Pumpkin
- Cucumber
- Okra

Fruit

- Peaches & nectarines
- Apples & pears
- Grapes (tainted juice)
- Cherry
- Persimmon
- Black & raspberries
- Blueberries
- Mulberry
- Strawberry
- Figs
- Citrus

Field Crops

- Corn
- Soybeans
- Tobacco ?
- Cotton ?

Nut Crops

- Pecans
- Hazelnuts

BMSB as a Household Issue

Aggregate in high numbers in small confined spaces such as:

- behind bookshelves
- beneath mattresses
- inside window AC units

Enter buildings over an 8 to 10 week period high on structure

Stink when disturbed (like cilantro)!

Can feed on houseplants inside (orchids)



Brown marmorated stink bug

BMSB insecticides (T. Leskey: USDA)

• Malathion	92.5
• Brigade	91.5
• Venom	67.3
• Danitol (Hi)	66.7
• Actara	56.3
• Belay	55.6
• Mustang Max	49.6
• Baythroid	49.1
• Provado	40.0
• Assail	23.7
• Imidan	20.0
• Avaunt	11.3
• Sevin	9.2

Japanese beetle insecticides

• Malathion	++
• Brigade	++
• Venom	+
• Danitol	+++
• Actara	-
• Belay	+
• Mustang Max	+++
• Baythroid	+++
• Provado	+
• Assail	++
• Imidan	++
• Avaunt	++
• Sevin	+++

What we expect next

- Continue to spread to new counties in 2012
- Increased reports of household invasion in Oct/Nov 2012
- 2012 Reports of BMSB as a backyard pest
- 2013 Reports of BMSB becoming a field crop pest
- 2013 or 2014? USDA APHIS approval to release Chinese wasps to help with BMSB

Spotted winged Drosophila

Pest of small fruit
including grapes

Found in North
Carolina, Virginia, Ohio,
Michigan and other
states

Can attacks sound fruit
before they fully ripen

Can vector
yeasts and
bacteria to
the berries

What makes this fruit fly
different is the females ovipositor
(egg layer), it has teeth to
penetrate the skin of fruit

Spotted winged Drosophila

- Attack as fruit turn color
 - Cherry
 - Strawberry
 - Grape
 - Blackberry
 - Raspberry
 - Blueberry
 - Peach

Spotted winged Drosophila

SWD insecticides

(R. Van Steenwyk: 2011)

- Malathion 7 - 14 d
- Danitol 7 - 14 d
- Actara < 1 day
- Mustang Max 3 - 7 day
- Baythroid 3 - 7 day
- Provado 3 - 7 day
- Assail 1 - 3 day
- Sevin < 1 day
- Delegate 3 - 7 day
- Entrust 3 - 7 day

Japanese beetle insecticides

- Malathion ++
- Danitol +++
- Actara -
- Mustang Max +++
- Baythroid +++
- Provado +
- Assail ++
- Sevin +++
- Delegate -
- Entrust -

Watch Pre-harvest intervals (PHIs) carefully when spraying close to harvest