Stink Bugs in Field and Vegetable Crops
Ongoing Research and Extension Activities

Larry Godfrey
Dept. of Entomology and Nematology
UC-Davis

Mohammad-Amir Aghaee, Kevin Goding, and Luis Espino
Stink Bugs in Field Crops
Ongoing Research and Extension Activities

- Rice
  - Redshouldered stink bug
  - Brown marmorated stink bug (BMSB)
- Cotton
  - Brown stink bug
  - Cool-season vegetable crops
    - Bagrada bug
- Other
Stink Bugs in Field Crops

Ongoing Research and Extension Activities

- Rice
  - Rice Stink Bug
    - occurs in southern U.S
    - serious pest of rice – causes “pecky” rice
    - We DO NOT have that species in California
  - Numerous other causes for pecky rice
    - agronomic
    - environmental

- Redshouldered stink bug
- Brown marmorated stink bug (BMSB)
Stink Bugs in Field Crops
Ongoing Research and Extension Activities

• Rice
  • reports from one rice production area in Sacramento Valley of some pecky rice
    • low level but consistently seen
    • we searched for insect-related cause
    • found few Redshouldered stink bug
    • one report from Mississippi of this species feeding on rice
Grain Quality

Redshouldered stink bugs
• pest of tomatoes and other crops
• prefers grasses
• Biology changing?
  • initially was told we could not find them in early Aug. because the second generation was finished
• commonly found them
• did two studies in rice in 2013 and expanded these in 2014
Grain Quality

redshouldered stink bugs
• placed four redshouldered stink bugs in a cage over plants in milk stage and left until maturity; replaced weekly (Luis Espino)
Grain Quality

redshouldered stink bug cage study

- Brown rice
- Milled rice

- Not infested cage
- Infested cage

- Milling yield
- Head rice yield
Grain Quality

redshouldered stink bugs
• second study
• placed two red-shouldered stink bugs in a cage over a panicle
  a.) in milk stage and
  b.) in dough stage
• left until maturity (Godfrey)
Grain Quality

redshouldered stink bug panicle study

Grain Yield from 15 Panicles

- Red Shouldered milk stage
- Empty cage milk stage
- Red Shouldered late timing
- Empty cage late timing

Percentage of Pecky Rice

- Red Shouldered milk stage
- Empty cage milk stage
- Red Shouldered late timing
- Empty cage late timing
Grain Quality

redshouldered stink bug panicle study - 2014

% Yield Loss

Boot  Milk  Dough

M-202  M-206  Calmochi-101  Calhikari-202  S-102  L-206

M-202  M-206  Calmochi-101  Calhikari-202  S-102  L-206

M-202  M-206  Calmochi-101  Calhikari-202  S-102  L-206
Grain Quality

redshouldered stink bug panicle study

% Pecky Rice

[Bar chart showing the percentage of pecky rice at different stages: Boot, Milk, Dough, for various cultivars and lines: M-202, M-206, Calmochi-104, Calhikari-202, S-402, L-206.]
Grain Quality

• Surveyed 40 rice fields in Sacramento Valley rice for stink bugs
• Fields with higher stink bug numbers
  • weedy fields (grassy weeds)
  • fields near riparian habitat
  • fields in areas with more crop diversity (row crops)
• nightshade and wild tomatillos
• Johnson grass and sprangletop
Grain Quality

redshouldered stink bugs
Stink Bugs in Field Crops
Ongoing Research and Extension Activities

• Rice
  • Brown marmorated stink bug (BMSB)
  • funded by Rice Research Board to look at potential to damage rice
  • had to do work in Contained Research Facility
  • colony of BMSB in quarantine
Stink Bugs in Field Crops
Ongoing Research and Extension Activities

- Rice
  - Brown marmorated stink bug (BMSB)
  - did reproduce on rice
  - could not look at panicle/kernel damage
Stink Bugs in Field Crops
Ongoing Research and Extension Activities

• Rice
  • Brown marmorated stink bug (BMSB)
  • will examine kernel damage in laboratory study
  • Specialty rice from North Carolina coastal area
  • Significant damage
Stink Bugs in Field Crops
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    - Bagrada bug
  - Other
Managing Stink Bugs in Cotton: Research in the Southeast Region

Figure 2. Percentage of green, brown, and southern green stink bugs at selected test locations, 2004–2008. Stink bugs classified as “other” were primarily *Buschistus quadrator*.
Brown Stink Bug

*Euschistus servus*
Cotton Susceptibility to Stink Bugs
Reproductive Structures

Bolls susceptible to stink bug damage for about 25 days past anthesis. Prefer medium sized bolls, small bolls abscise, larger bolls remain on the plant.

Stink Bugs in Field Crops

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• Cool-season vegetable crops
  • Bagrada bug

• Other
Bagrada Bug

- Funding from CDFA/USDA Specialty Crop Block Grant Program
- Oct. 2014 to June 2017
- Research in Salinas production area
- L. Godfrey, S. Joseph, S. Dara, R. Smith
<table>
<thead>
<tr>
<th>Objective 1.) Bagrada bug biology in Salinas Valley.</th>
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<tr>
<td>▪ Investigate the host use pattern of Bagrada bug in the Salinas Valley</td>
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<td>▪ Investigate the number of generations per year of Bagrada bug in Salinas Valley</td>
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<th>Objective 2.) Infestation &amp; damage severity of Bagrada bug to broccoli &amp; cauliflower in Salinas Valley.</th>
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<td>• Identify windows of vulnerability of broccoli and cauliflower to injury by Bagrada bug throughout the growing period</td>
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<td>• Identify yield impacts to broccoli and cauliflower by Bagrada bug</td>
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<th>Objective 3.) Design management plans for Bagrada bug on broccoli and cauliflower in the Salinas Valley.</th>
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<td>• Relay cropping to reduce the damage from Bagrada bug</td>
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<td>• Conventional insecticides for Bagrada bug management</td>
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<td>• Biological insecticides for Bagrada bug management</td>
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<th>Objective 4.) Extend results.</th>
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Kudzu Bug

- not a stink bug but a close relative – a Plataspidae
- called a bean plataspid
- pest of soybeans in the SE U.S.
- aggregate on houses in the spring and fall
Kudzu Bug

DISTRIBUTION MAP

Kudzu bug (Megacopta cribraria) January 1, 2009 - December 31, 2014

Legend
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014

[Image of a map showing the distribution of the Kudzu bug across the southern United States, with different colors indicating the presence of the bug in different years.]

[Image of a close-up of a Kudzu plant with the bug.]
Stink Bugs

Why so many?

- most are difficult to kill with insecticides
- using more selective products
- not exposed to insecticides
- most wide host range
- more riparian habitats, weedy areas
- move indoors for winter
- crawl into tight spaces – perfect for “hitchhiking”
- global travel