

# SCRI BMSB 3 proposal

## Objective 2. Research gaps (focusing on biological control)

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*Funding*

**USDA** United States Department of Agriculture National Institute of Food and Agriculture  
Specialty Crop Research Initiative

*Collaborating Institutions*

**OSU** Oregon State University **NC STATE UNIVERSITY** **PennState**

**OSU** Oregon State University **UNIVERSITY OF MARYLAND** **UNIVERSITY OF GEORGIA**

**Washington State University** **Utah State University**

**Northeastern IPM Center** **Cornell University** **University of Kentucky**

**RUTGERS UNIVERSITY** **THE OHIO STATE UNIVERSITY** **UC DAVIS**

**UNIVERSITY OF MINNESOTA** **VirginiaTech** **Berkeley**

**MICHIGAN STATE UNIVERSITY** **UC RIVERSIDE**

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, Specialty Crop Research Initiative under award number 2016-51181-25409.

***Objective 2:***

**Refine and customize pest management tactics for BMSB**

*Hypotheses:*

- Biocontrol strategies can be customized to specific specialty crops in different regions.
- Understanding key factors limiting impacts from *T. japonicus* and completing a successful release petition to APHIS/PPQ will allow expansion and optimization of classical biocontrol across the US.
- Bio-rational tactics such as perimeter sprays, attract-and-kill, and action thresholds based on trap captures can be refined and made dynamic based on seasonal risk for multiple specialty crops.
- Landscape factors and crop stage can help determine BMSB risk in specialty crops where BMSB is an emerging pest.

Further biocontrol research needed  
(from yesterday's presentation)

- What factors influence dispersal of *T. japonicus*?
- What factors influence local retention of *T. japonicus*?
- Occurrence & impact of associated endosymbionts
- Overwintering limitations
- Impact of local landscape & climate
- Competition with native predators & parasitoids
- Occurrence & impact of *Nosema* pathogens
- Impact of native natural enemy augmentation

***Objective 2:***

**Refine and customize pest management tactics for BMSB**

Hypothesis:

- ❖ *Biocontrol strategies can be customized to specific specialty crops in different regions.*
  - What factors influence local retention & conservation of natural enemies?
    - Impacts of local landscape & climate
      - Optimizing local overwintering
    - *T. japonicus* competition with native predators & parasitoids
    - Impact of native natural enemy augmentation
    - Occurrence & impact of *Nosema* pathogens

***Objective 2:***

**Refine and customize pest management tactics for BMSB**

*Hypothesis:*

❖ *Understanding key factors limiting impacts of *T. japonicus* and completing a successful release petition to APHIS/PPQ will allow expansion and optimization of classical biocontrol across the US.*

- Biological differences among *T. japonicus* populations
  - Host specificity & non-target impacts
  - Occurrence & impact of associated endosymbionts
- Factors influencing dispersal / retention of *T. japonicus*
- Impact of local landscape & climate (*host plant diversity, overwintering, etc.*)
- Competition with native predators & parasitoids

***Objective 2:***

**Refine and customize pest management tactics for BMSB**

Hypothesis:

❖ *Bio-rational tactics such as perimeter sprays, attract-and-kill, and action thresholds based on trap captures can be refined and made dynamic based on seasonal risk for multiple specialty crops.*

- Optimizing local retention of *T. japonicus*
- Integrating & optimizing for conservation of natural enemies
- Potential for Manipulation of *Nosema*?

***Objective 2:***

Refine and customize pest management tactics for BMSB

Hypothesis:

- ❖ *Landscape factors and crop stage can help determine BMSB risk in specialty crops where BMSB is an emerging pest.*
  - What factors influence dispersal of *T. japonicus*?
  - What factors influence local retention of *T. japonicus*?
  - Overwintering limitations
  - Impact of local landscape & climate
  - Occurrence & impact of *Nosema* pathogens

# Discussion ...

