Impact and Management of Brown Marmorated Stink Bug in Field Crops

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• Stink bugs move into soybean fields at the R4 (full pod) growth stage.

• Injury results in aborted pods, undeveloped pods, punctured and deformed seed.

• Reductions in seed quality and yield

• Delayed senescence (stay green)
Field cage studies: VA, MD and DE
Seed weight per 20 rowfeet of double-crop soybean plants enclosed in cages infested with BMSB nymphs at the R2 and R4 growth stages. 2010.
Percent of seeds damaged by BMSB in double-crop soybeans enclosed in cages infested with nymphs at the R2 and R4 growth stages. 2010.

![Graph showing the percent of damaged seeds at R2 and R4 growth stages with different nymph infestation levels.]

- **Infested at R2**
- **Infested at R4**

**Percent damaged seeds**

**Number of nymphs per rowfoot**

- 0
- 1
- 2
- 4
Stink bug feeding can also delay maturity, causing ‘stay green’ syndrome.
BMSB Population-Soybean Yield Relationship
Based on infestation gradient across rows - Maryland 2012

Distance from field edge (ft)

Bushels per acre

Number of BMSB per rowfoot

$R^2 = 0.93$

$R^2 = 0.80$
Estimated yield loss

Assuming 50’ area of ‘stay green’ on one or two borders results in complete loss.

10 acre field
15% loss if two borders infested
7.5% loss if one border infested

20 acre field
11% loss if two borders infested
5.5% loss if one border infested

40 acre field
7.5% loss if two borders infested
3.8% loss if one border infested
Pattern of Kernel Damage and BMSB Populations in Field Corn

% Damaged Kernels

Distance from edge (m)

Mean Stink bugs / 10 plants
Evaluation of Field Corn for Brown Marmorated Stink Bug Injury and Associated Fungi and Metabolites

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What we know so far – Biology and Damage

• BMSB is spreading into OH and coastal plain of VA and MD.
• At the local scale, higher abundance is associated with more dwellings and landscapes fragmented with woodlots.
• At a broad spatial scale, abundance is negatively associated with higher temperatures (particularly during July).
• Injury and damage to soybean are similar to that caused by native stink bug species.
• Complete yield loss can occur along soybean field edges.
• Significant injury to corn kernels can occur on outer rows.
• Mycotoxin levels, particularly fumonisin, are higher in BMSB-damaged corn and positively correlated with the proportion of damaged kernels.
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