The Old, the New, and the in Between: Insect Pests Across Two Seasons

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FIELD CROPS & FORAGE
IPM LAB

Agenda

- Stink bugs: Injury, biology, and management considerations
- Soybean tentiform leafminer: A new pest of soybeans
- Corn Leafhopper: Consistent activity for a second year

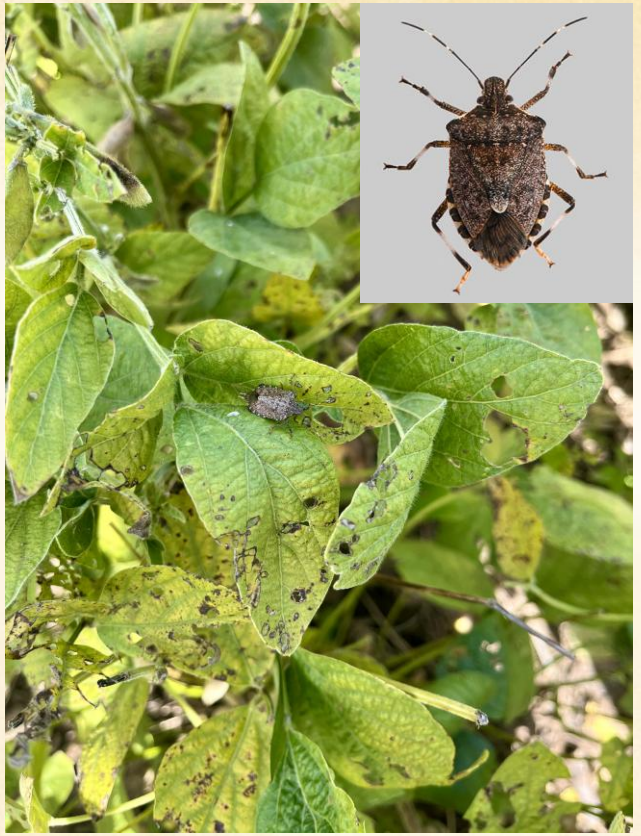
Stink Bugs Are Major Soybean Pests

Native Species

Green stink bug
Chinavia hilaris

Brown stink bug
Euschistus spp.

Invasive Species



Brown marmorated stink bug
Halyomorpha halys

Redbanded stink bug
Piezodorus guildinii

Injury to Soybeans

Reduce yield, seed quality, and germination

Early pod and seed development: pod loss and seed abortion

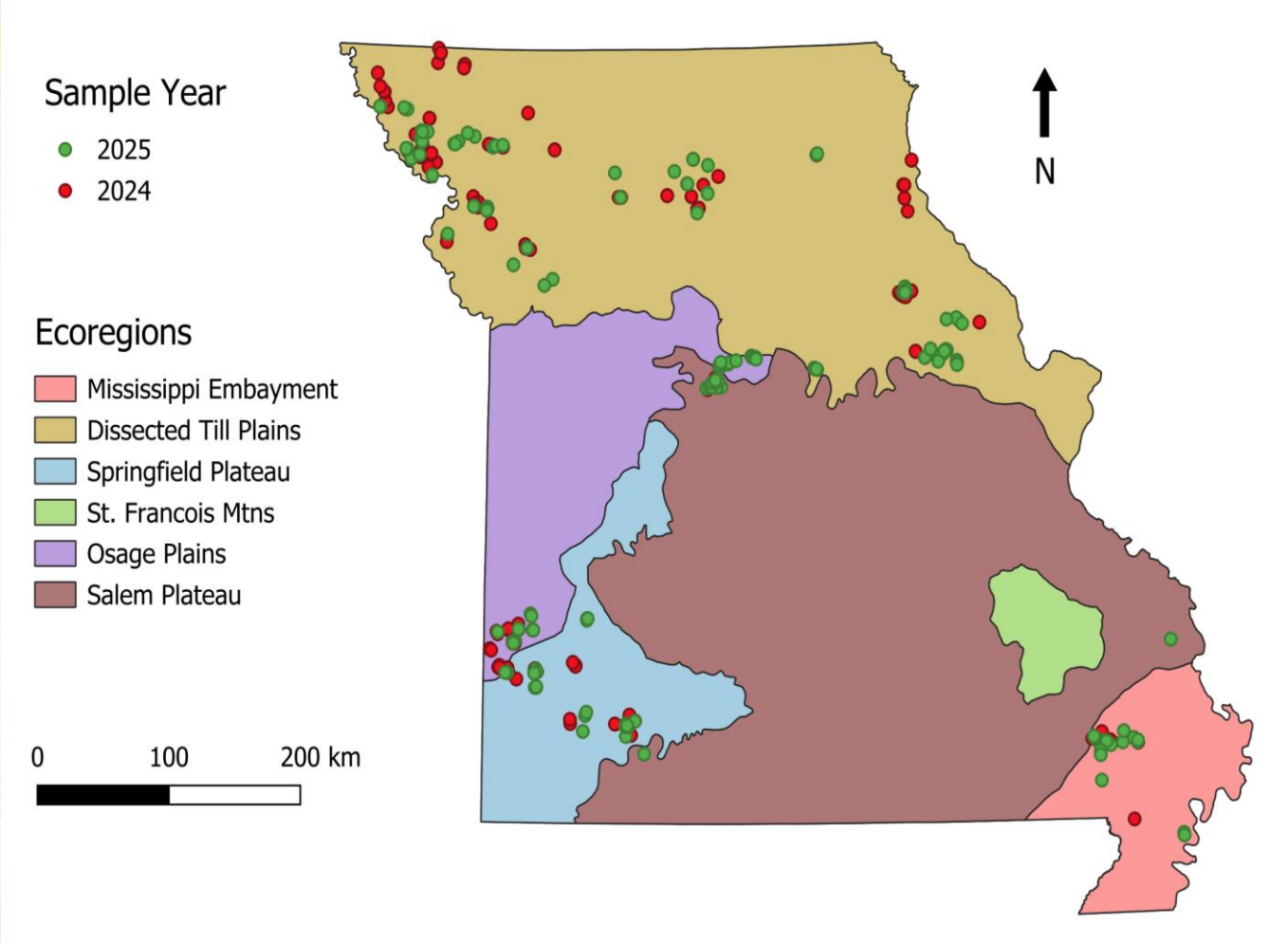
Pod fill: shriveled, deformed, and smaller seeds

Seed maturation: seed deformation and discolored puncture marks

(McPherson and McPherson 2000)

Injury to soybean resulting from stink bug feeding (increasing feeding from left to right. (A. Michel).

Stink Bugs in Missouri Soybeans



316 soybean fields

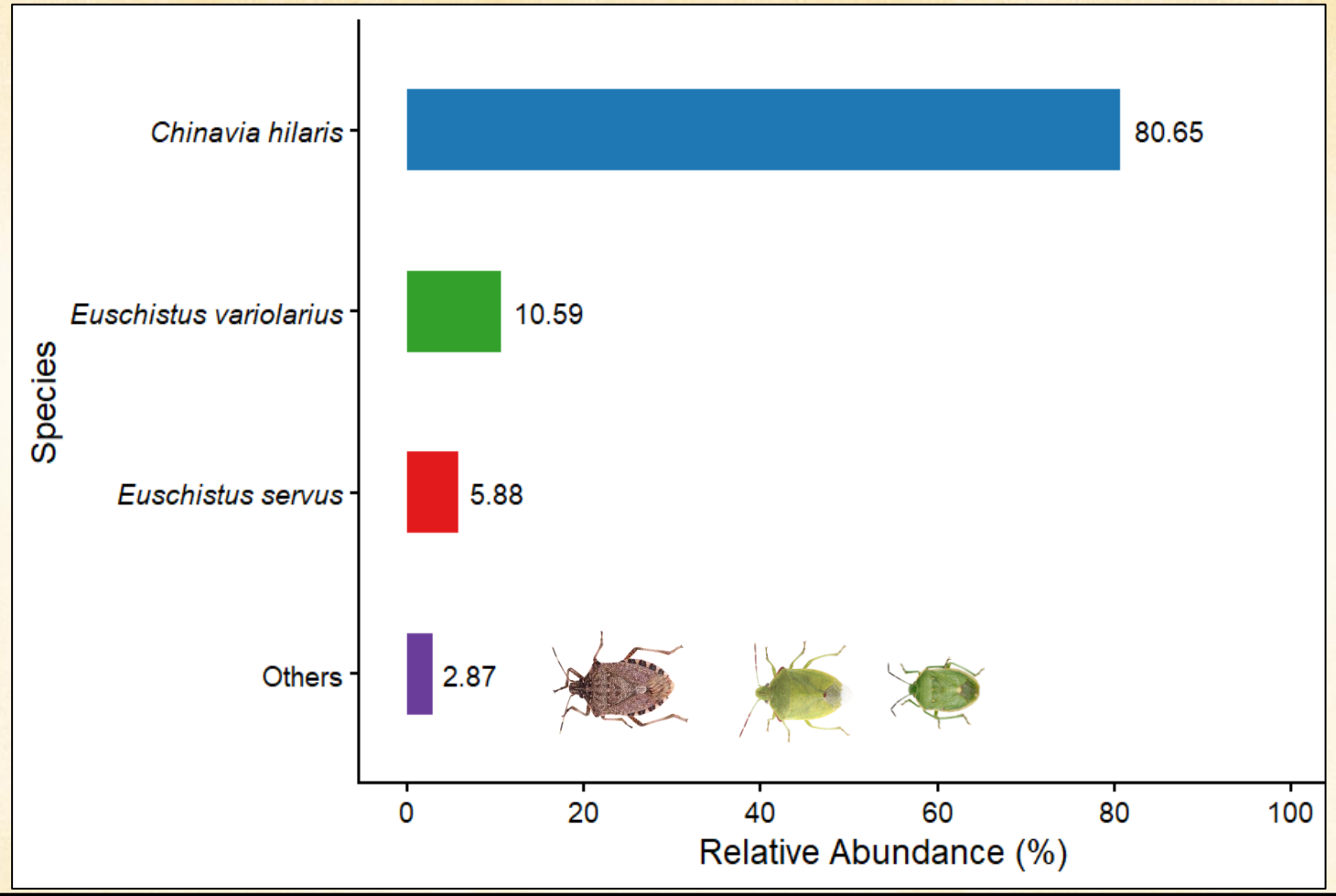
2024: 164 Fields

2025: 152 Fields

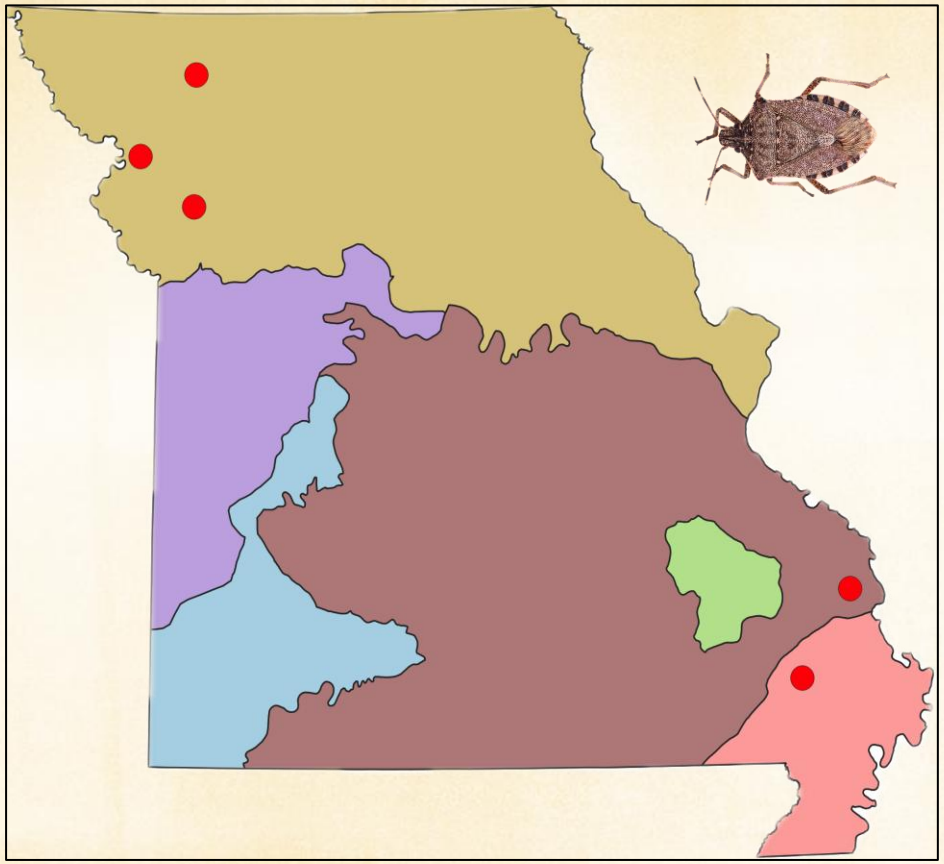
Six sets of 25 sweeps in each field

Three sets at the field edge and three sets in the interior

Green Stink Bug: The Most Abundant Species



Brown Marmorated Stink Bug



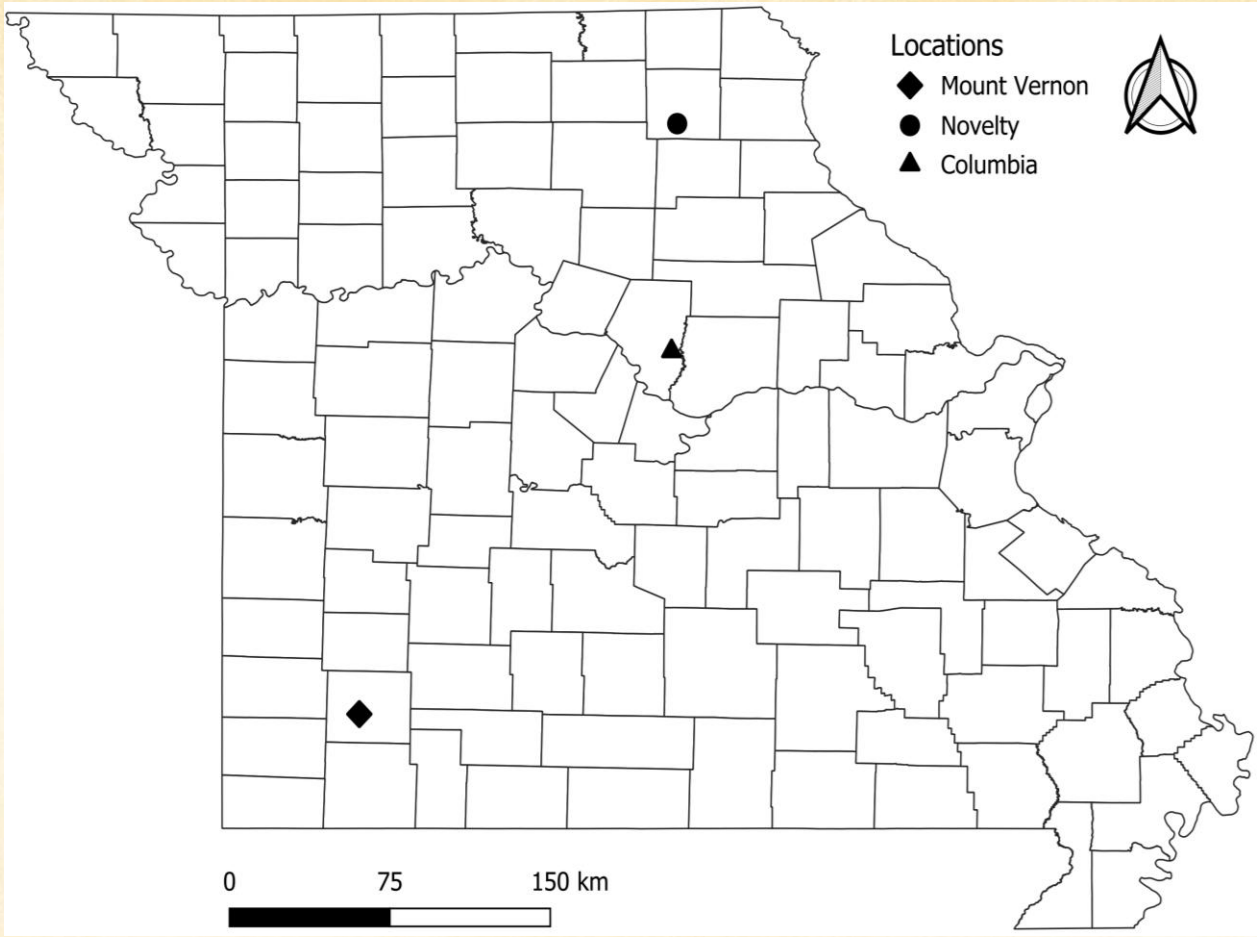
Stink Bug Phenology in Missouri Soybeans

Three locations: Novelty, Mount Vernon, and Columbia

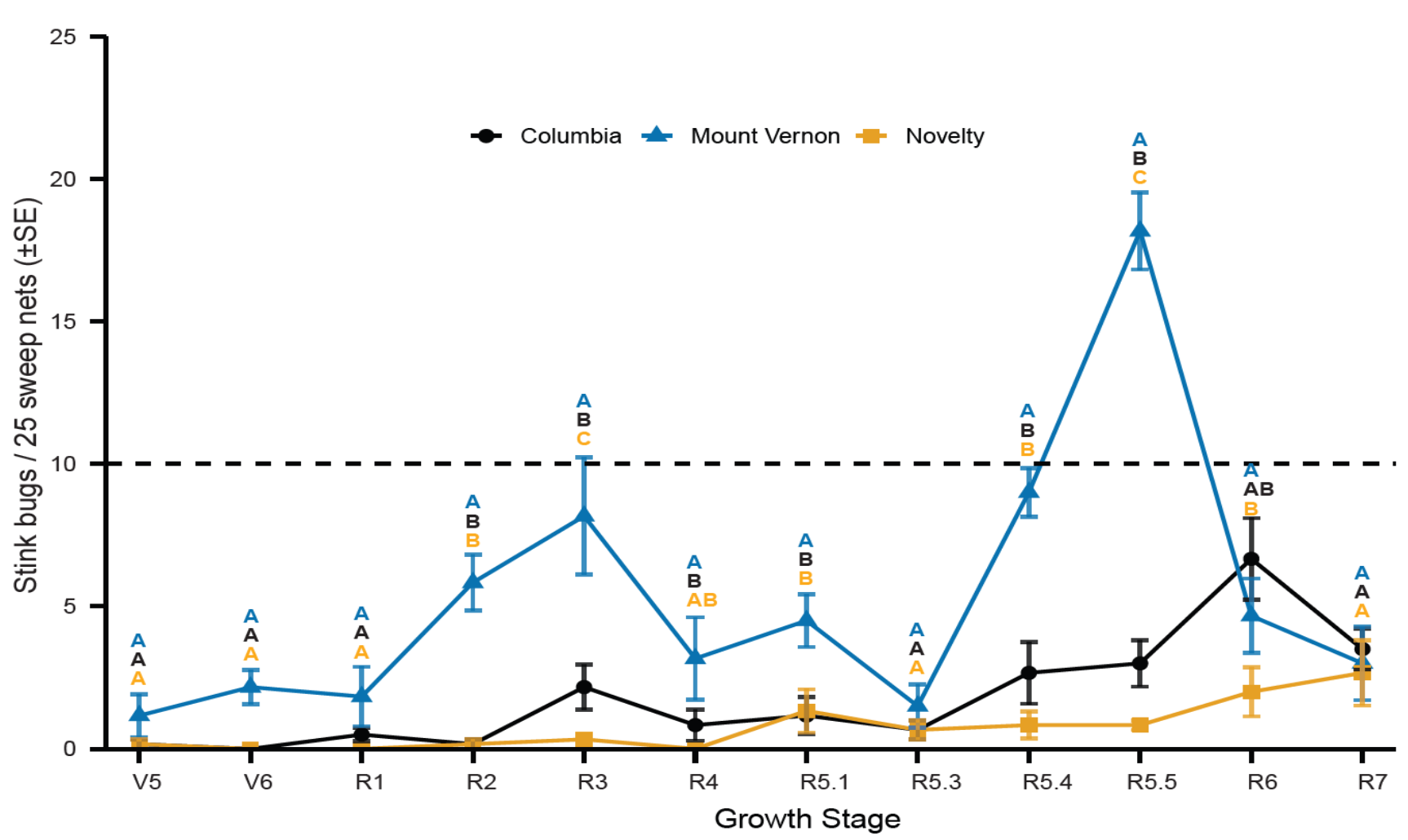
Weekly from V4- R7

Six sets of 25 sweeps/field/week

Stink bugs were identified to species level and released back into the fields



Abundance Varies by Location and Soybean Growth Stage



Threshold levels were met in Mt Vernon

Populations peaked during reproductive stages

Management

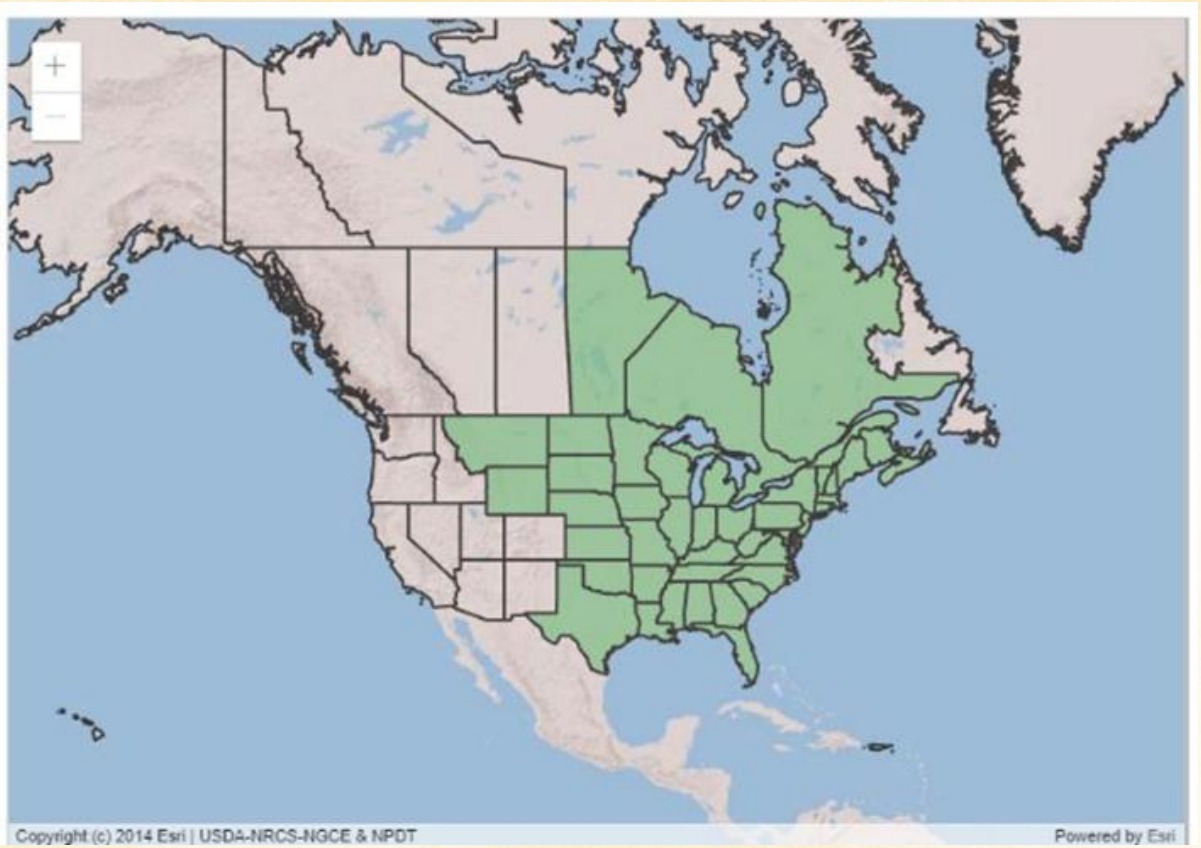
- Scout fields for stink bugs throughout the reproductive stages
- Sample multiple points, including the edge and interior
- Treatment decisions are based on the combined number of nymphs (>1/4 inch) and adults
- **Seed production:** 5 stink bugs per 25 sweeps or 1 stink bug per 1 ft of row
- **Grain:** 10 stink bugs per 25 sweeps or 3 stink bugs per 1 ft of row

Soybean Tentiform Leafminer (STL):

A New Pest of Soybeans in MO

Known Host Plants

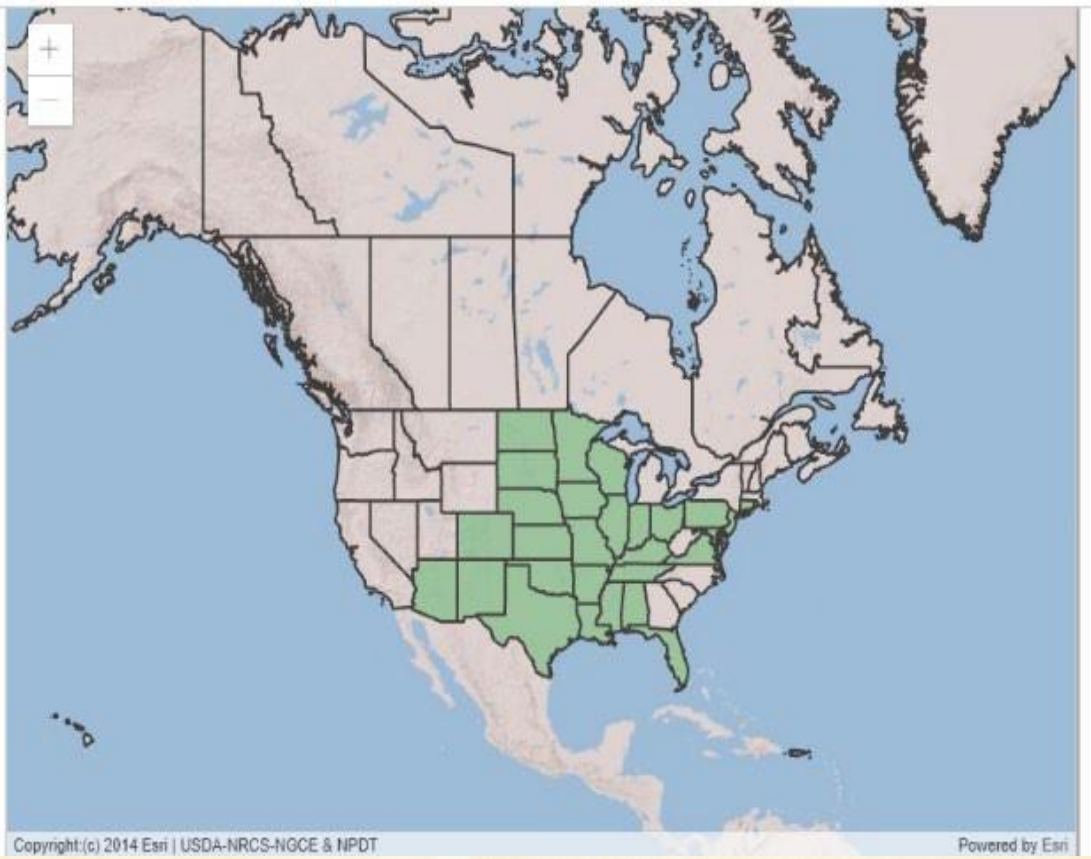
Amphicarpaea bracteata
American hogpeanut



Davis & De Prins 2011, Koch et al. 2021

Known Host Plants

Strophostyles leisoperma
Slickseed fuzzybean



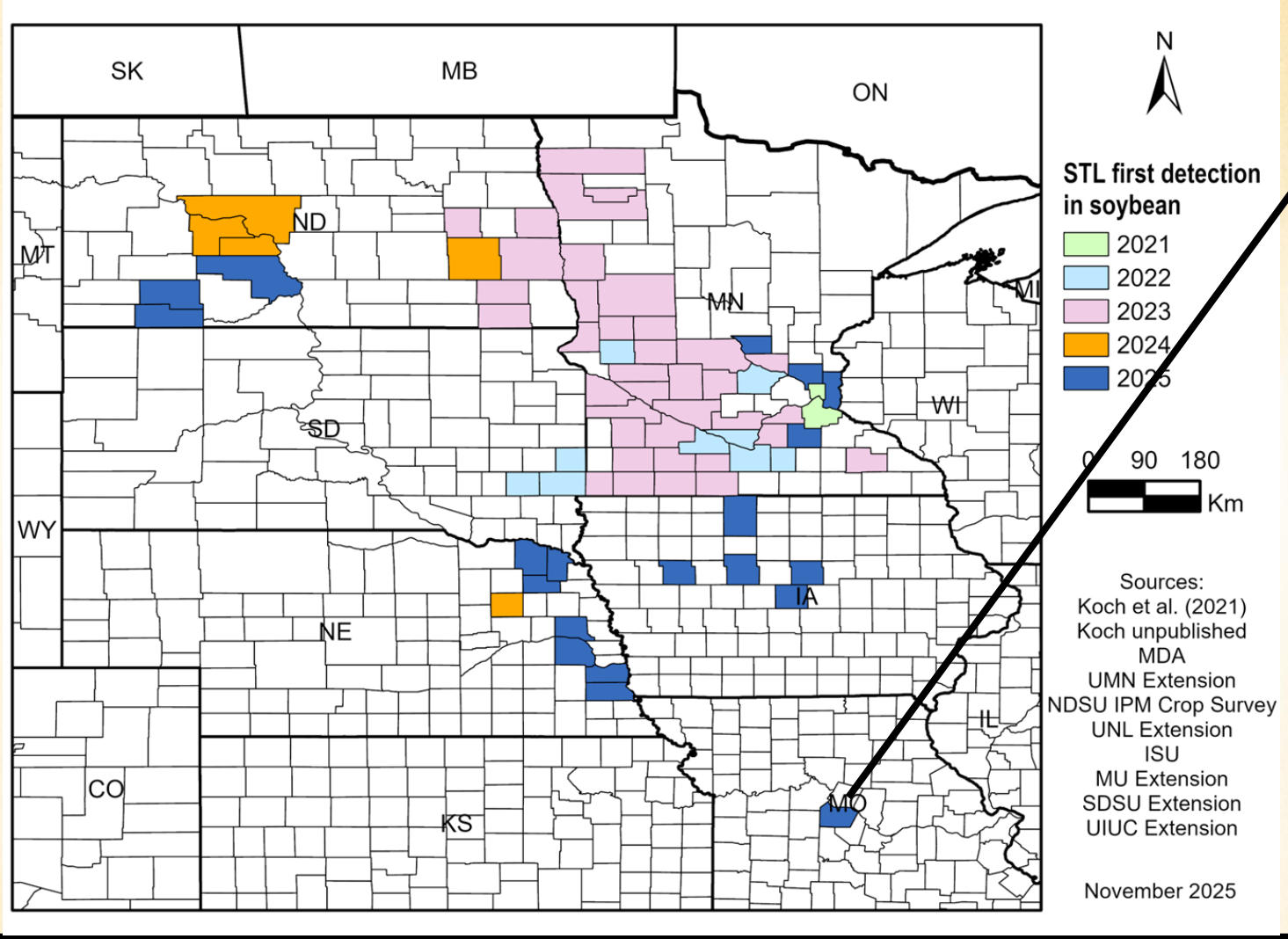
Injury

STL larvae feeding causes white blotches on the leaf

These blotches eventually become tentiform - slightly raised or tented

Injury from STL reduces leaf area, like defoliation

County-level first detections in U.S. soybean



2025 in Missouri

Cooper County

Field edge

Near a wooded area

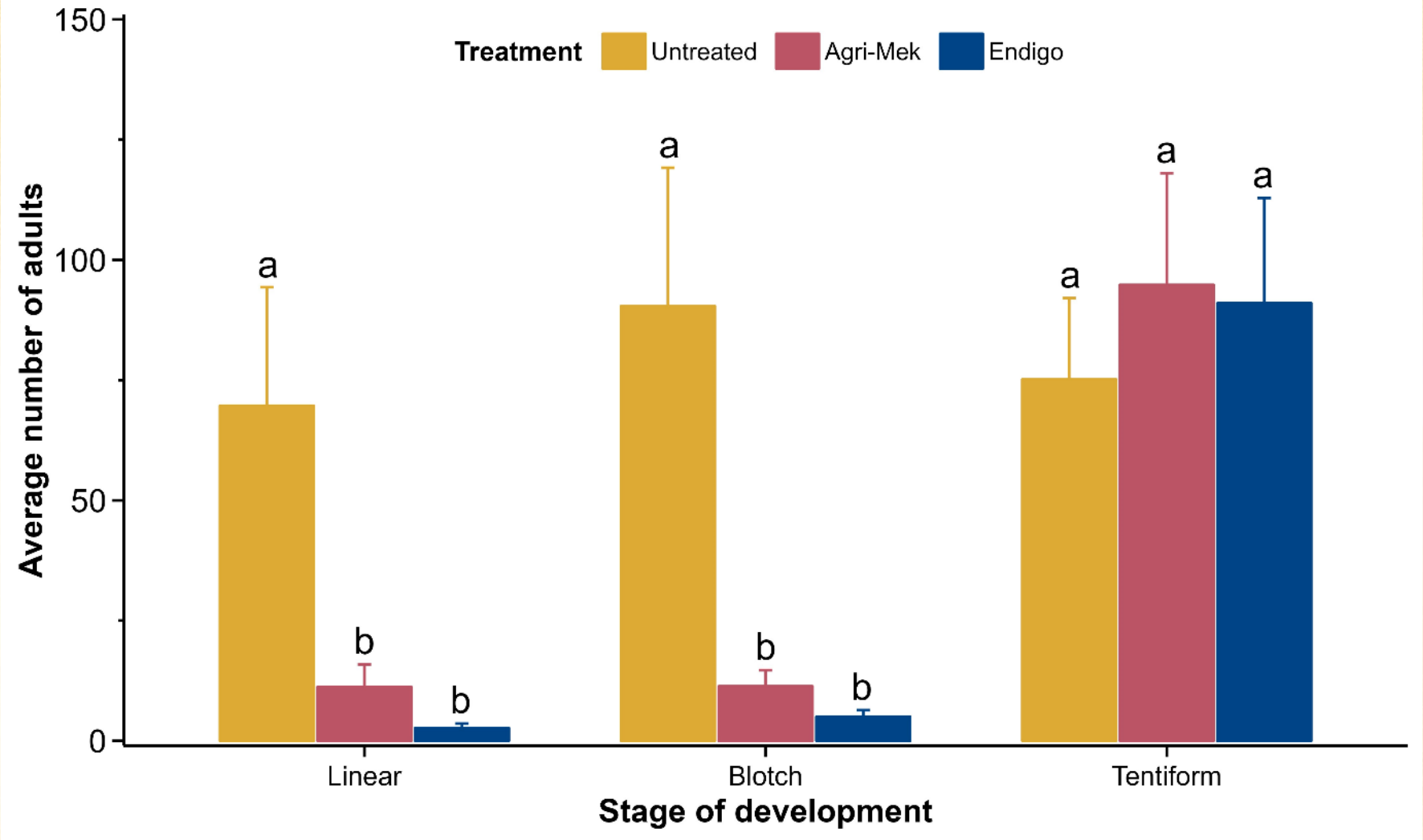
STL Management

Management decisions for defoliators are based on estimates of defoliation from the entire canopy

Current defoliation thresholds:
30% - vegetative states
15% - reproductive stages

Application of foliar insecticides could be an option during the early stages

Chemical control – Potted plants



Fuhr et al. 2024

Summary

- **Confirmed in MO in 2025**

One location, Cooper County

- **Within-field distribution**

Edge-infesting species

- **Chemical control**

Translaminar insecticides appear effective against early instars

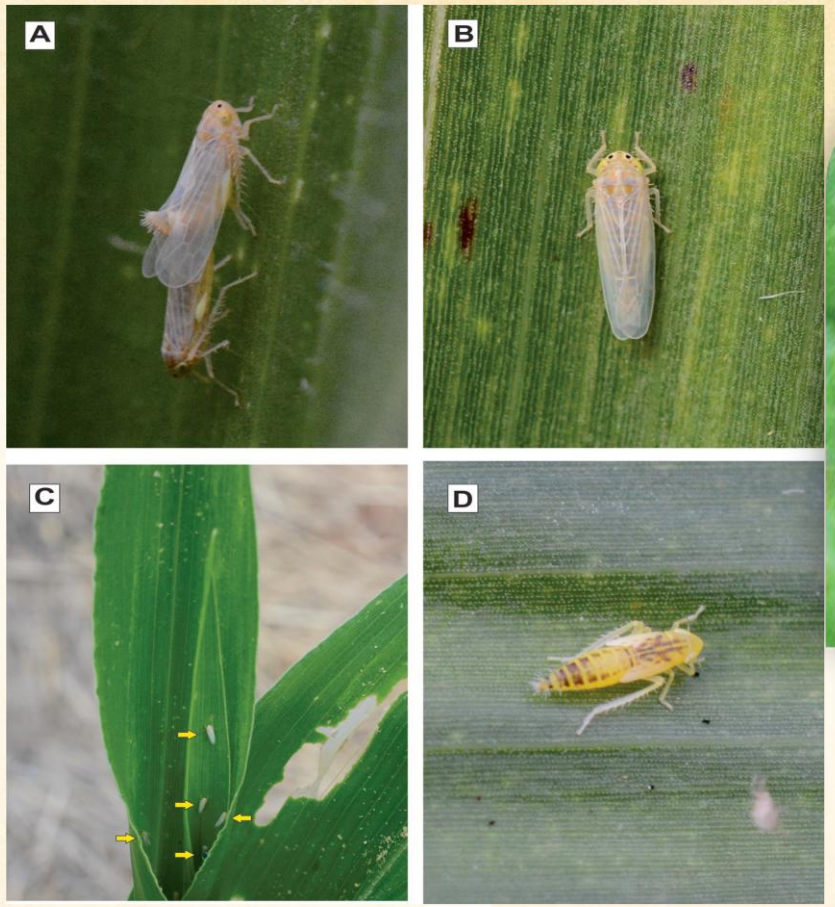
- **Host range**

Likely limited to soybean & native hosts

TAKE-HOME MESSAGE

Corn leafhopper: Consistent activity for a second year

Identification



A - Adults in copulation (female above and male below), **B** adult, **C** presence of adults in the maize whorl (yellow arrows indicate adults of *D. maidis*), and **D** nymph.Oliveira and Frizzas,

- 1/8 in. long, narrow, pale yellow to greenish-yellow
- Black spot above each ocellus on the crown of the head between the eyes
- Crown of the head is smooth

Identification

Corn leafhopper

Two black dots between their eyes and no facial markings. Photo: Ivair Valmorbida

Aster leafhopper

Tan body and presence of facial markings on the head. The aster leafhopper also has two black dots between the eyes. However, the light/white halos are not present. Photo: Ivair Valmorbida

Phloem-feeding Specialist

Uses corn and its wild relatives, the teosintes, and the gamagrasses as primary hosts

Only breeds on species of corn and teosintes

It is known to feed on other plant species

(i.e., Eastern gamma grass, sorghum, johnsongrass, and millet)

Life Cycle

Females produce on average 151 eggs

Eggs are deposited on leaf tissue

Nymphs will emerge in 2.5 days in temperatures of 80-90°F

Injury to Corn

Directly by removing sap

Nymphs and adults feed directly on the corn plant by sucking the nutrients

Shiny appearance of leaves due to the corn leafhoppers excreting honeydew as they feed

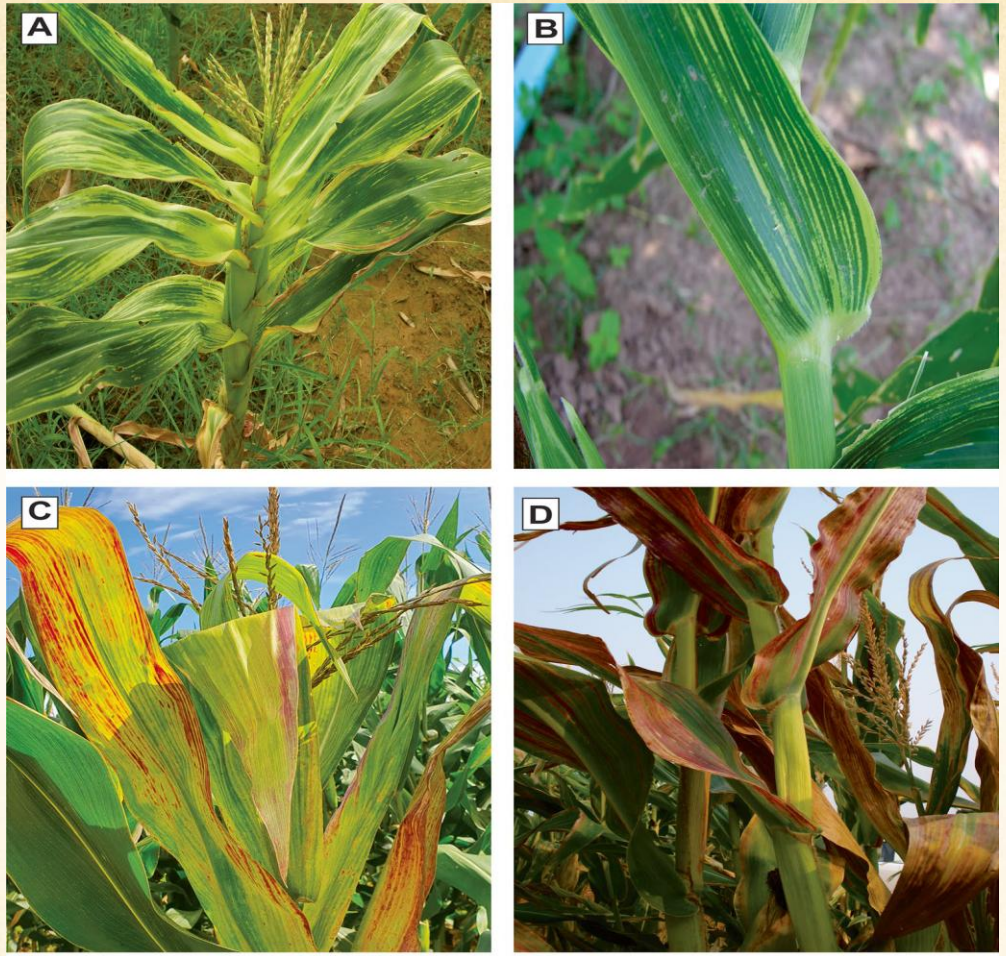
Honeydew can lead to black sooty mold, which can affect photosynthesis and negatively impact plant health

Photo: S. Biles

Injury to Corn

Indirectly by vectoring corn stunt

- Corn stunt spiroplasma (CSS)
- Maize bushy stunt phytoplasma (MBSP)
- Maize rayado fino virus (MRFV)
- Maize Striate Mosaic Virus (MSMV)



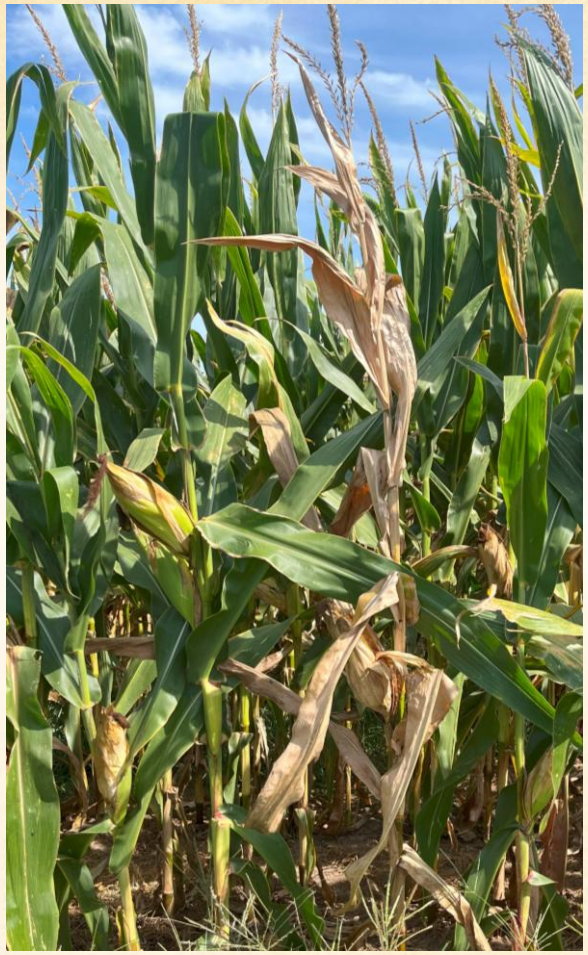
A, **B -** Symptoms of CSS; **C**, **D** MBSP.
Photos: Oliveira and Frizzas, 2021.

Corn Stunt Cause Severe Yield Losses

Corn stunt can lead to up to 100% yield losses

Corn stunt diseases are systemic and vascular (phloem)

Affect the physiology and nutrition of corn

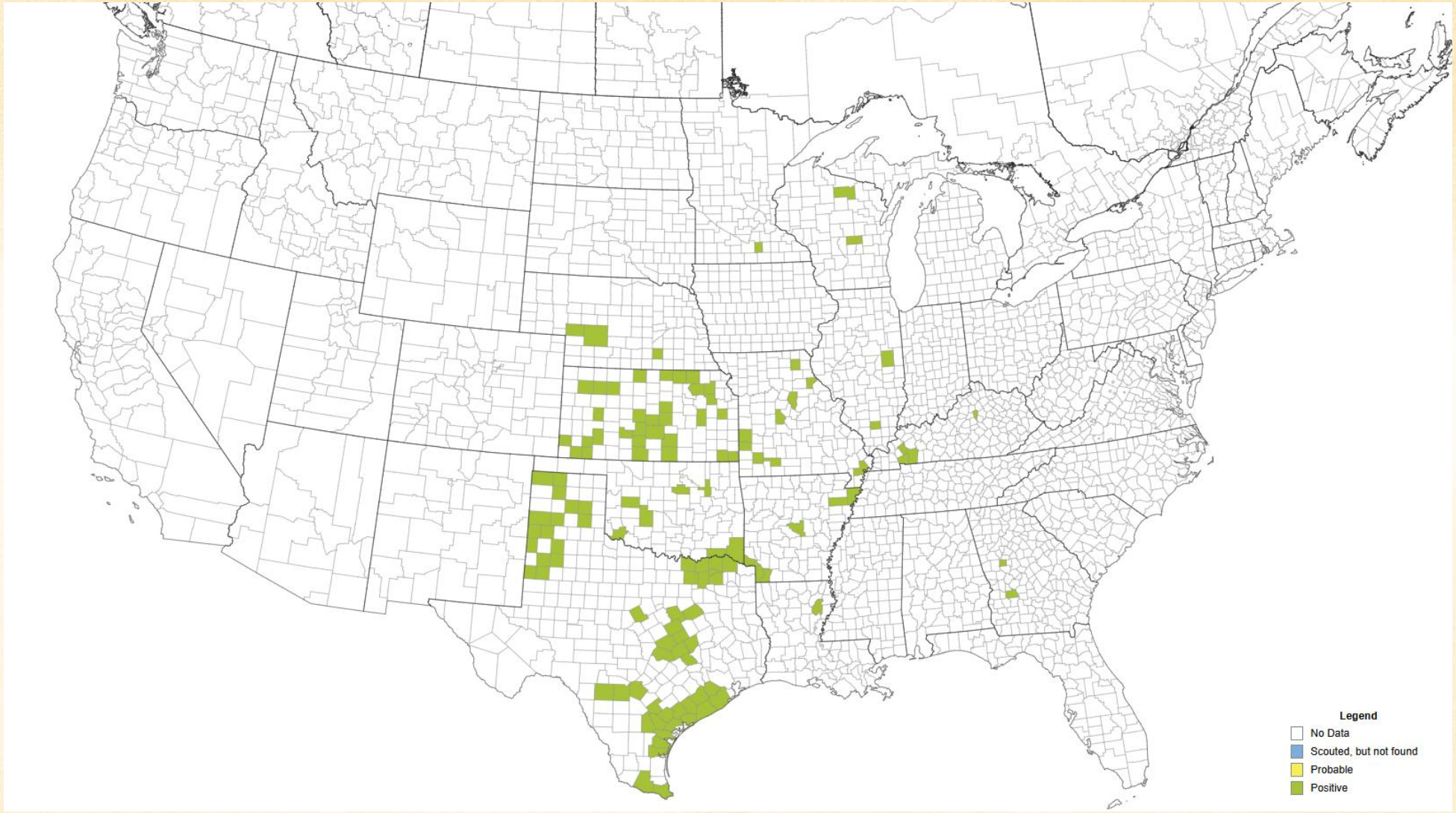


Health Plants

Infected Plants

Photo: Tim Schnakenberg

2025 Corn Leafhopper Distribution

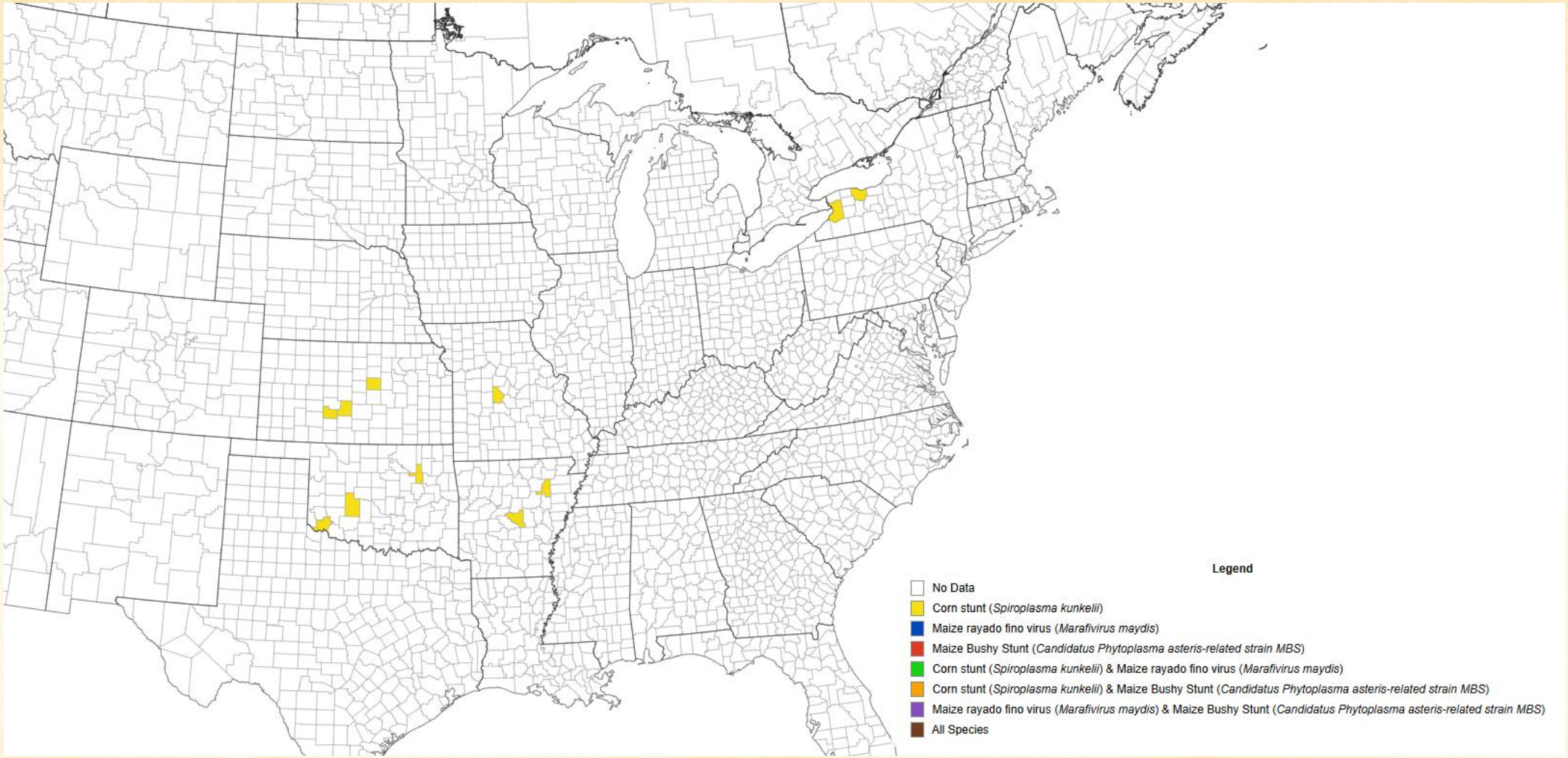


Southern IPM Center

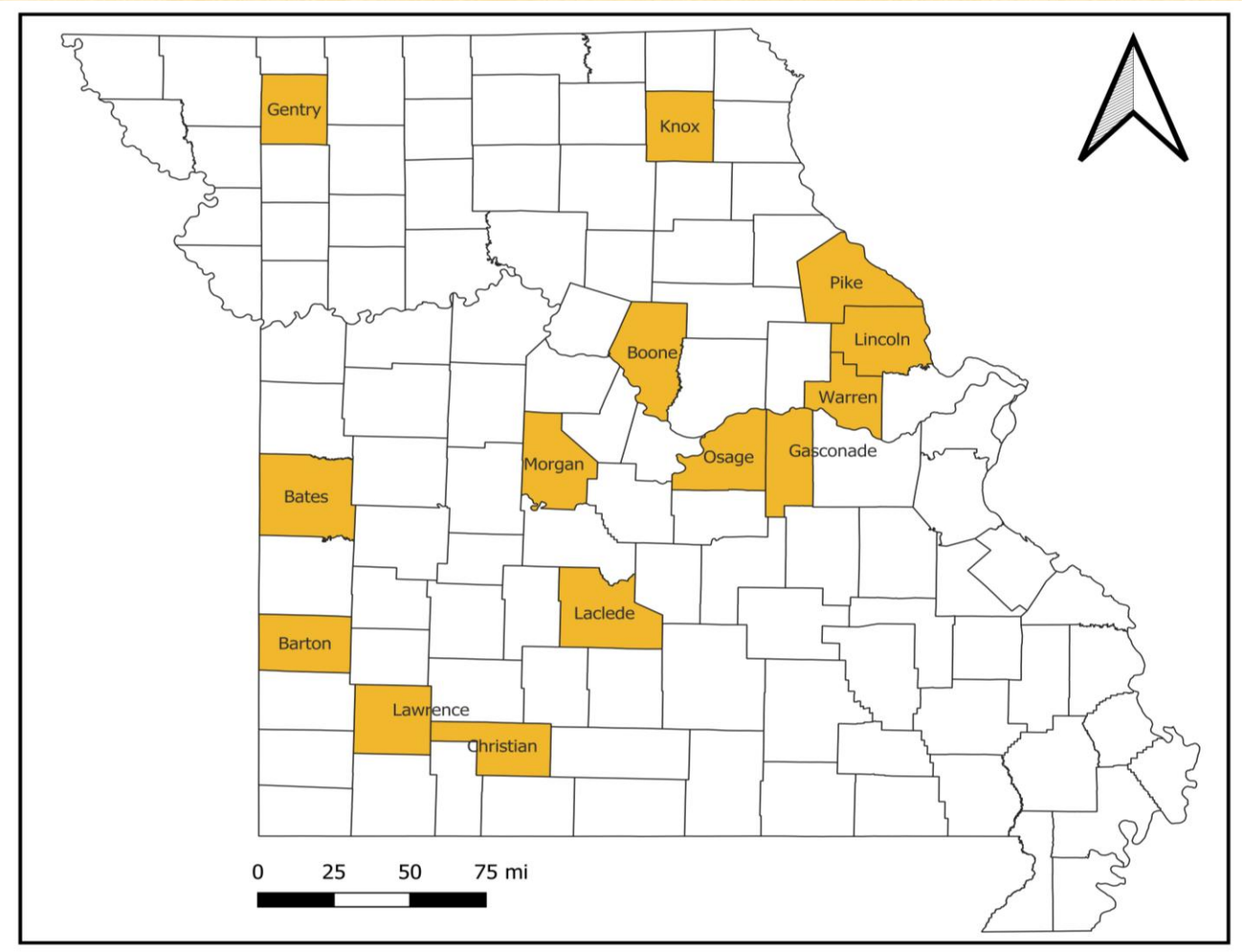
North Central IPM Center

University of Missouri

2025 Corn Stunt Distribution



Corn Stunt in MO

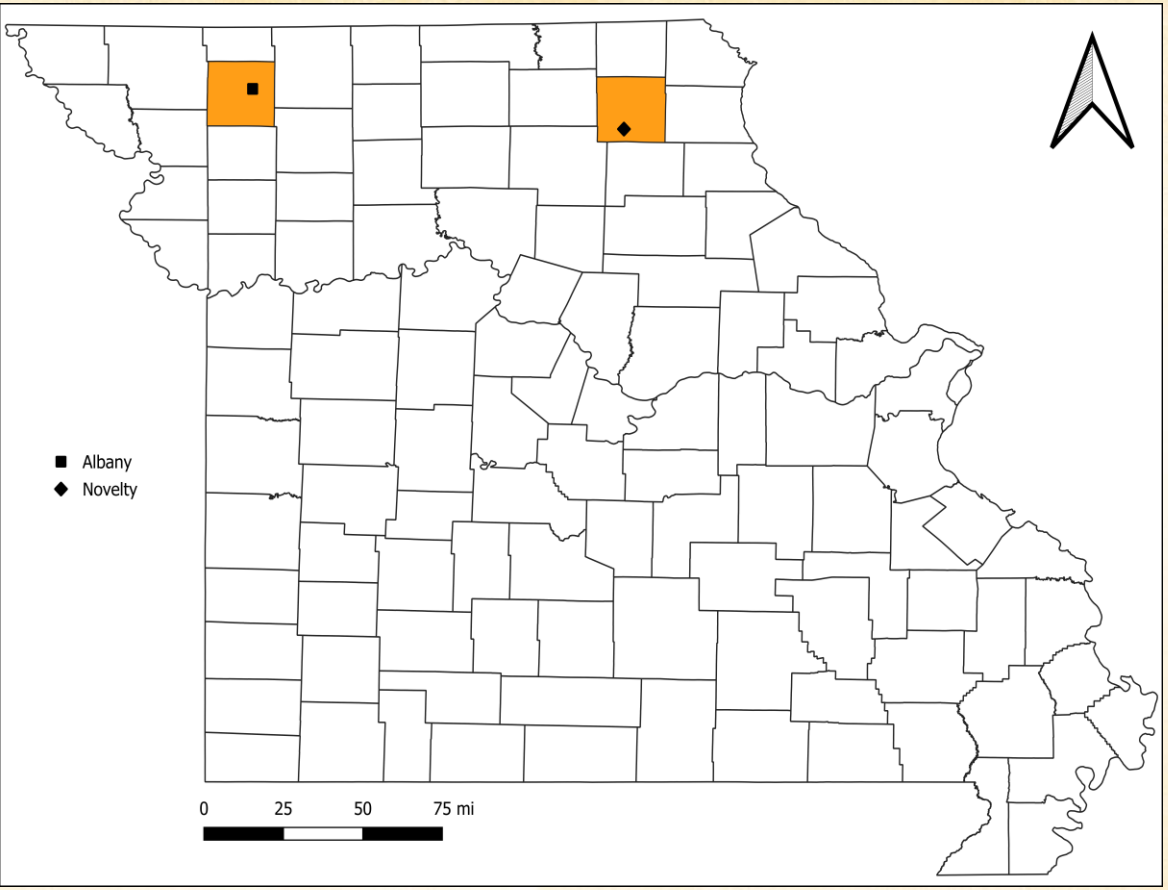


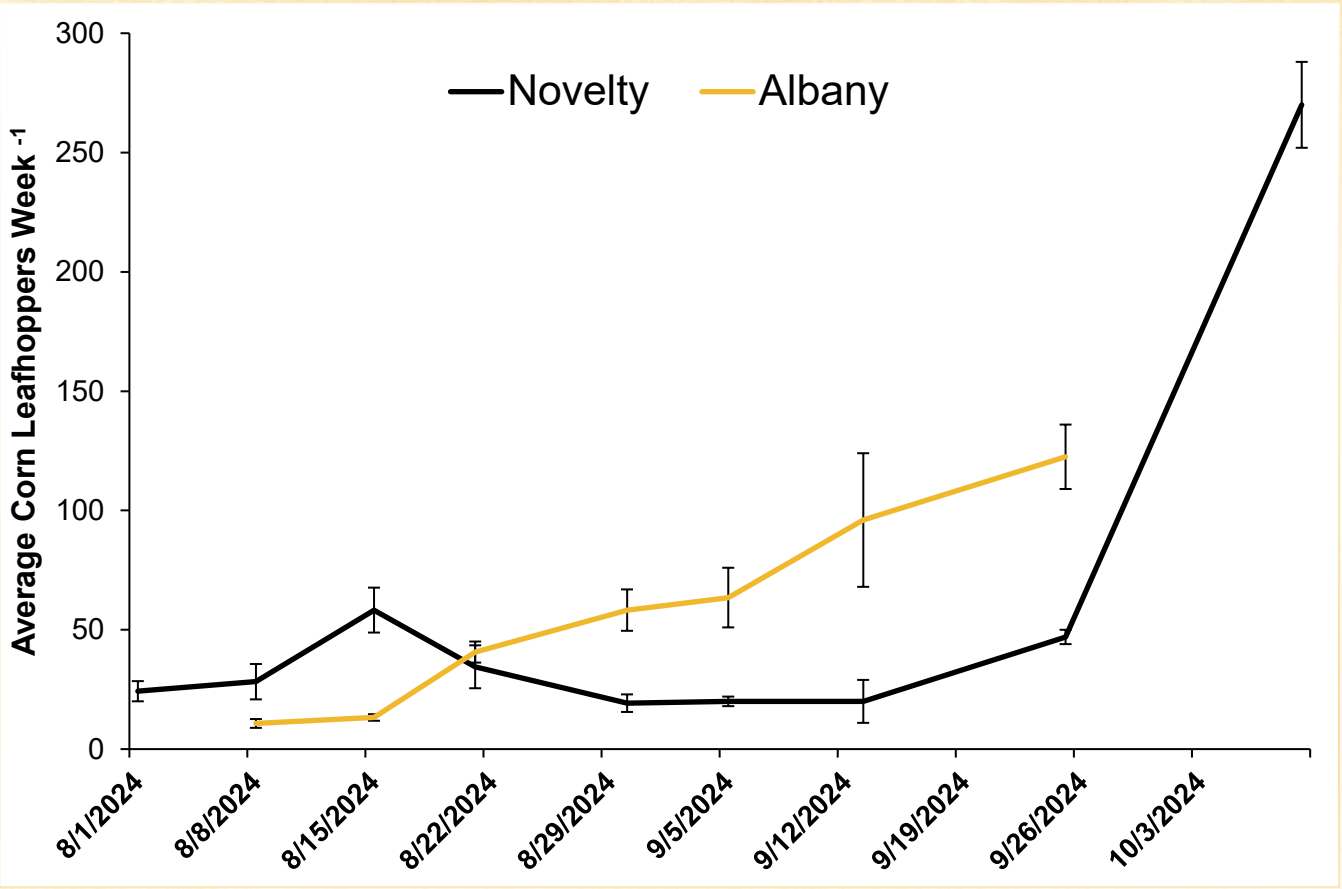
Dr. Mandy Bish

Dr. Peng Tian

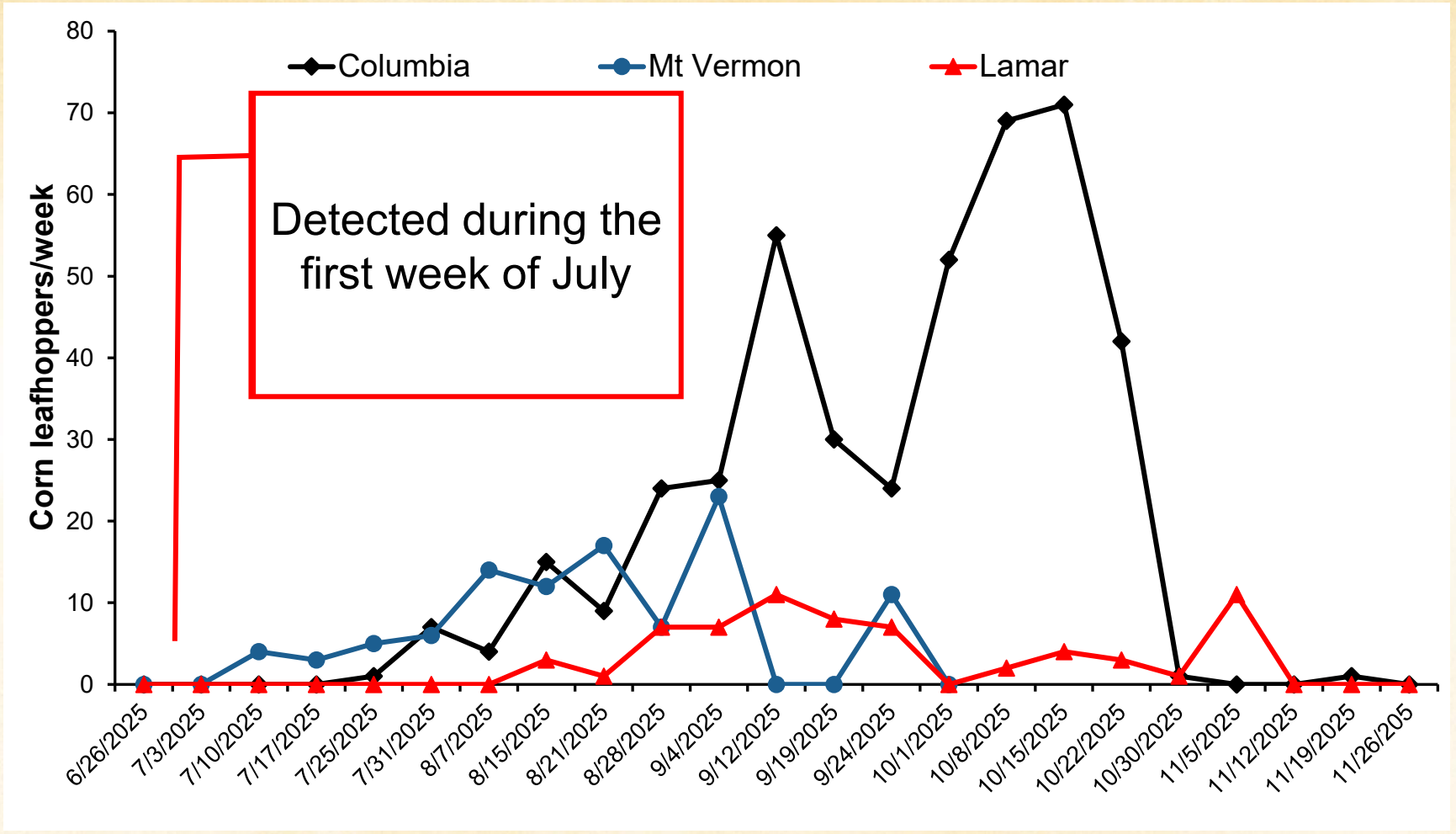
The percentage of positive cases in 2025 was lower than in 2024

2024 Corn Leafhoppers Monitoring in MO





2025 Corn Leafhopper Monitoring



Can Corn Leafhoppers Overwinter in MO?

The short answer is: **Very unlikely**




Management

- Corn stunt disease incidence will not be reduced by insecticide control. If you see disease symptoms in the field, the plants have already been infected
- Insecticidal seed treatments can provide control of corn leafhoppers up to the V3 growth stage
- Foliar insecticide applications (Assume that any corn leafhoppers are potentially viruliferous)

Management

- There is no threshold level. Insecticide applications are recommended when the pest is detected.
- VE to V8 is the most critical window to prevent yield-damaging pathogen infections. However, protecting through R1 is recommended
- Plant as early as possible

Thank You!

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Pest Monitoring Network
https://ipm.missouri.edu/pestMonitoring/

United States Department of Agriculture
National Institute of Food and Agriculture

Southern IPM Center

North Central IPM Center

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