Species Composition and Relative Abundance of Stink Bugs in Cotton and Other Crops in the Brazos River Bottom Production Area of Texas

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Introduction

Stink bugs have recently emerged as an economic pest of cotton in the Brazos River Bottom (BRB) production area of Texas, but many producers remain uncertain which species are infesting fields and causing the majority of damage. A study was initiated in 2011 to determine which species commonly infest cotton fields in the BRB. The species composition and relative abundance of stink bugs in nearby corn, milo, and soybean fields was also examined to determine which of these crops may be contributing stink bugs to cotton. Presented herein are results from the first year of data based on collections of adult stink bugs.

Materials and Methods

- Ten cotton, 11 corn, 6 milo, and 4 soybean fields throughout the BRB production area were sampled weekly for stink bugs in 2011.
- Sampling was initiated when crops reached the following growth stages – green silk for corn, first week of bloom for cotton, full bloom for milo and soybean – and was continued until respective plants were harvested or reached physiological maturity.
- Standard 16-inch sweep nets were used to sample cotton and soybean fields (200 sweeps x two rows per field). Corn fields were sampled by visually examining plants (240 plants per field) and hand-collecting observed stink bugs. Milo plants were sampled by vigorously tapping the entire seed head into a sweep net (240 heads per field) to dislodge stink bugs.
- Samples were collected from all sides of each field and >15 m from the field margin to minimize border effects.
- Collected adults were identified to species using several dichotomous keys (Rolston 1974, Rider and Chapin 1992, McPherson and McPherson 2000, and/or published illustrations (Esquivel et al. 2009). Occasionally, identified specimens were sent to the Texas A&M Insect Collection facility for confirmation by the Assistant Curator, Edward G. Riley.

Results & Discussion

- A total of 10 stink bug species were collected and identified among the 4 crops (Table 1).
- Soybean fields contained the greatest diversity (9 species; Table 1) and abundance of stink bugs on a per field basis (212 stink bugs/field; Fig. 1)
- Six species were found in cotton (Table 1) with *Euschistus servus* and *Thyanta custator accerra* accounting for the majority of stink bugs collected from cotton (Fig. 1)
- *E. servus* also was the prevalent species found in corn (67%) and soybean fields (67%) (Fig. 1).
- Given the prevalence and abundance of *E. servus* in soybean fields and, to a lesser extent, in corn fields, these crops are likely contributing stink bugs to cotton.
- Interestingly, no southern green stink bugs (*Nezara viridula*) were found in any of the sampled fields, or captured in blacklight traps established throughout the BRB. This species was commonly observed in cotton and soybean fields in previous years, and was captured in large numbers in blacklight traps last year.
- It has been speculated that temperature during the winter is the most important factor contributing to the annual variation of *N. viridula* populations (Kiritani 1964). Indeed, the winter of 2010/2011 was unusually cold in the BRB and may have resulted in substantial mortality of overwintering adults.
- The severe drought conditions during the 2011 production season also may have been a contributing factor as stink populations, in general, were considerably lower in 2011 than in previous years.
- A general decline in *N. viridula* populations has been observed in Georgia and South Carolina during the past few years, but the complete absence of *N. viridula* populations, as observed in the BRB in 2011, has not been reported elsewhere and warrants investigation.
- Investigation of this phenomenon may provide insight on factors that influence the population dynamics of stink bugs, and ultimately provide information that can be used to enhance management strategies for this pest in cotton.

Conclusions

Based on the first year of data, the brown (*E. servus*) and red-shouldered stink bug (*T. c. accerra*) appear to be the two main species infesting cotton fields in the BRB production area, and subsequently are likely responsible for most of the stink bug damage observed in cotton. Our findings also suggest soybean and corn fields may be contributing these stink bugs to cotton as these two species were abundantly found in nearby soybean fields and, to a lesser extent, in corn fields. Although stink bug populations were considerably lower in 2011 than in previous years, factors responsible for the complete absence of the southern green stink bug (*N. viridula*) can only be speculated at this time. Investigation of this phenomenon may provide information that can be used to improve management strategies for stink bugs in cotton as well as in other crops.

Table 1. Species of stink bugs found in the four major crops produced in the Brazos River Bottom production area of Texas, 2011.

Stink bug species	Corn	Cotton	Milo	Soybean
Chinavia hilaris (formerly *Acrosternum hilare*)	X	X	X	X
Thyanta custator accerra	X	X	X	X
Oebalus pugnax	X	X	X	X
Euschistus servus	X	X	X	X
E. quadrator				X
E. crassus				X
Edessa bifida				X
Piezodorus guildinii				X
Mecidea major			X	*X*
Cosmopepla lintnerinia	*X*			

X indicates only one specimen found in a particular crop.

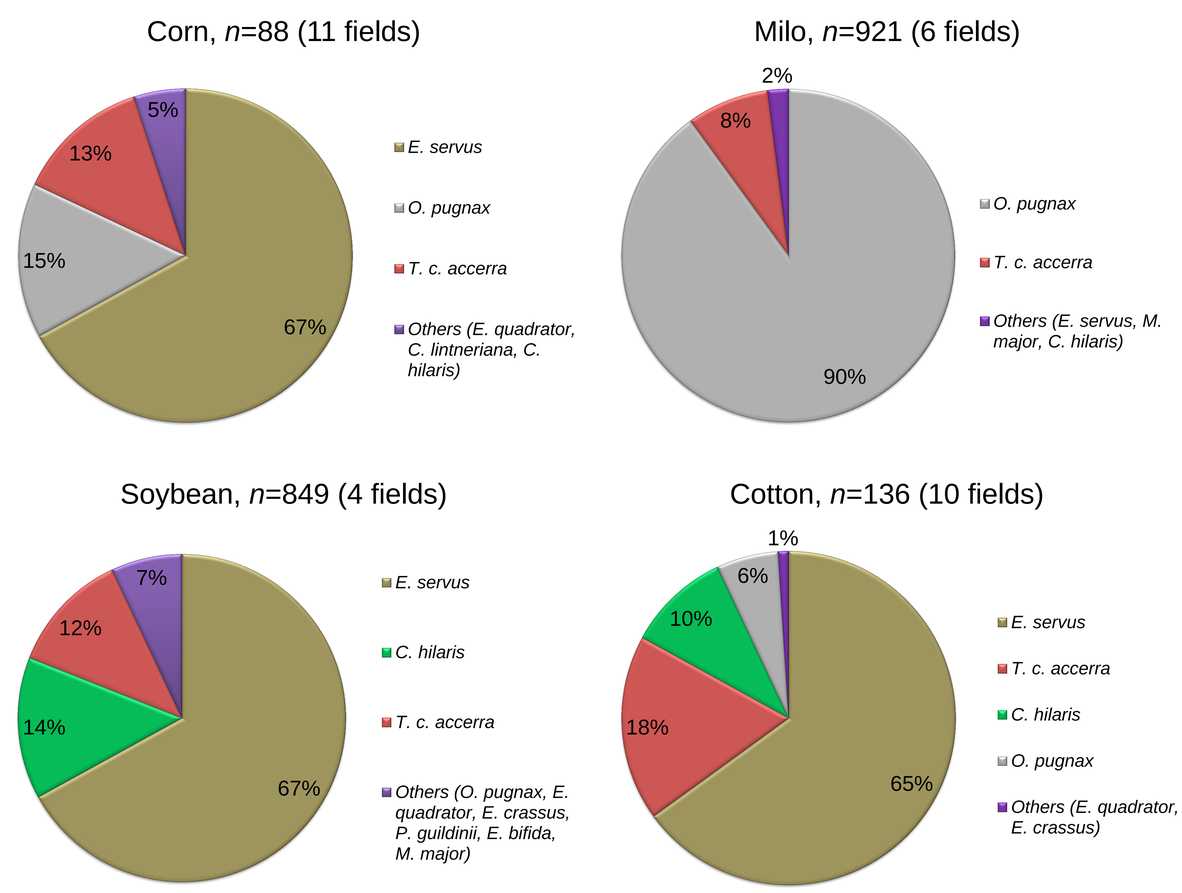

Figure 1. Species composition and relative abundance of total stink bugs (*n*) collected from four majors crops produced in the Brazos River Bottom production area of Texas, 2011.

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