

QUANTITATIVE ANALYSIS OF FEEDING BEHAVIOR OF SOUTHERN CHINCH BUG, *BLISSUS INSULARIS* BARBER (HEMIPTERA: BLISSIDAE), ON RESISTANT AND SUSCEPTIBLE ST. AUGUSTINEGRASSES

Murugesan Rangasamy^{1,4}; Elaine Backus²; Ron Cherry¹; Heather McAuslane¹.

¹*Department of Entomology and Nematology, University of Florida, Gainesville, FL, 32611, USA; mrangasamy@dow.com*

²*USDA Agric. Research Service, San Joaquin Valley Agric. Sciences Center, Parlier, CA, 93648, USA;*

³*Department of Entomology, University of Nebraska, Lincoln, NE, 68583, USA;*

⁴*Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN, 46268, USA.*

St. Augustinegrass is the most widely planted turfgrass in Florida and other Gulf coast States in the United States. The southern chinch bug, *Blissus insularis* Barber, is the most serious insect pest of St. Augustinegrass. Host plant resistance has been one of the most successful pest management methods for this insect. 'Floritam', a polyploid variety of St. Augustinegrass with resistance to southern chinch bug has long been but few populations of southern chinch bugs have developed resistance to this variety. Although significant progress has been made in identifying new sources of southern chinch bug resistance in St. Augustinegrass lines, such as the polyploid FX-10 and the diploid NUF-76, the mechanisms of resistance in these lines are unknown. Previous studies reported high levels of antixenosis in both lines and possible antibiosis in NUF-76. Understanding the feeding behavior of southern chinch bugs on the resistant FX-10 and NUF-76 is important to elucidate the mechanisms of resistance. For the first time, the electrical penetration graph (EPG) technique was used to quantify southern chinch bug feeding behavior on resistant and susceptible St. Augustinegrass lines. Southern chinch bugs made more frequent probes, produced longer-duration waveform events for pathway-related behaviors (searching for an ingestion site) and spent less time in ingestion-related waveforms on FX-10 and NUF-76, compared to the susceptible Floritam and Palmetto. Relatively more stylet probes per insect on FX-10 and NUF-76 than on Floritam and Palmetto suggest the presence of stylet penetration impediments around the vascular bundle in resistant varieties. In addition, the short duration of presumed phloem sap ingestion on FX-10 and NUF-76 suggests the possible presence of resistance factors in phloem sap or blockage of sieve elements.