**Introduction**

Cotton fleahopper, *Pseudatomoscelis seriatus* (Reuter) (Hemiptera: Miridae), can cause excessive loss of cotton squares, resulting in reduced yield and harvest delays. Cotton fleahopper is a key insect pest of cotton in Texas and Oklahoma, and an occasional pest in New Mexico, Arkansas, Louisiana, and other mid-South states. Within Texas, regional average cotton fleahopper induced yield loss estimates vary, reaching up to 6% in Texas (Williams 2000). Damage to individual fields vary from none to extremely high loss when heavy populations develop and are left uncontrolled.

How is this variability in cotton fleahopper damage explained? This variability is partly associated with cultivar differences and other host plant factors (Holtzer and Sterling 1980, Knutson et al. 2009, Barman et al. 2011), with timing and magnitude of cotton fleahopper movement from non cultivated weed hosts to cotton and the stage of cotton development when migration occurs (Parajulee et al. 2006), and with physical stressors in particular soil moisture (Stewart and Sterling 1989).

Understanding how these factors contribute to cotton fleahopper fluctuations may allow better estimation of cotton risk from cotton fleahopper damage. Our ultimate goal is to discern when in-season management (i.e., insecticides, irrigation) is most useful to reduce risk to cotton fleahopper damage than has been previously achieved.

**Summary Interpretation**

We live in a climate that produces highly variable weather in Texas, but this may contribute less to fleahopper fluctuations than other factors. Fleahopper populations are less sensitive to plant water stress and more sensitive to plant development stage, which may partly explain field to field differences experienced by growers. Detection of fleahoppers in early planted cotton may serve as early warning of cotton fleahoppers in later-planted cotton. Plant/boll vigor in good soil moisture conditions likely benefits cotton in tolerating cotton fleahopper, but it is not advisable to consider this effect in spray decisions given other predominant factors (plant development stage and the previously well-known square sensitivity to damage).

**Results**

**Corpus Christi: Insect Measurements.** Fleahoppers were detected late with good numbers first occurring June 1, corresponding to mid-bloom for the early planting (42 DAP) and early bloom for the late planting (31 DAP). The early planting had much higher populations when fleahopper first appeared in the field, and sprays suppressed the population in the early planting. As in 2011, water regime did not affect initial fleahopper densities. Two weeks later (June 14), cotton fleahopper populations increased as the later planting matured, and the sprays did not suppress this expanding population.

**Lubbock: Plant Measurements.** Total fruit set per plant increased with increasing irrigation. Yield reduction attributable to fleahopper was not detected; even though the early planting had higher fleahopper populations (including ones above the economic threshold of 15 fleahoppers per 100 plants in our area).

Irrigation level significantly influenced cotton fruit physiology, with larger and heavier bolls with harder carpell walls produced at high irrigation regimes compared to those at the low irrigation and dryland (see below).

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**Plants Water Stress and Insect Seasonality Effects on Cotton Fleahopper Damage**

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