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COTTON PLANTING DATE AND EPIZOOTIOLOGY OF THE COTTON APHID FUNGUS, NEOZYGITES FRESENII

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Abstract

Studies were conducted to investigate the interaction of cotton planting date and epizootiology of the cotton aphid fungus, *Neozygites fresenii*, in cotton aphid (*Aphis gossypii,* Glover) populations. Delta Pine 491* cotton was planted on April 22, May 6, May 20, and June 3, 2003. Four, 1-acre plots were planted in a randomized complete block design for each planting date. Five plants were sampled from four locations in the northeast, northwest, southeast, and southwest quadrant of each 1-acre replicate on a biweekly schedule from mid June through August. The terminal and first true leaf were taken from each of the 5 plants, and single leaves were taken from within the canopy at 14" and 28" above ground from each of 5 plants once plants had reached sufficient maturity. These samples were kept separate to determine aphid populations and infection levels within each 1 acre replicate and within the vertical structure of the plants from each sampling location. Aphid populations from individual samples were estimated by direct counts of rinsed leaves, and aphids were stored in alcohol until they could be mounted for determining infection levels and stage of infection by light microscopy using the following criteria 1) uninfected, 2) with capilloconidia, 3) with hyphal bodies, 4) with conidiophores and sometimes saprophytic fungus also present, or 5) with saprophytic fungus and no signs of *N. fresenii*. Ten apteratae and up to ten alatae were evaluated for degree of infection from each quadrant within each acre for a total of 40 apteratae and up to 40 alatae per plant height per replicate. Temperature and relative humidity were monitored within the cotton canopy at a single central location within each 1-acre replicate of each planting date. This study provides information that may be used to correlate planting date, aphid population densites, vertical plant structure, presence and timing of infected alatae, temperature, and relative humidity with timing and intensity of *N. fresenii* epizootics. Such information contributes to the basic question of what initiates *N. fresenii* epizootics in the field, which has applications toward cultural practices for augmenting natural epizootics and selecting conditions for jump-starting epizootics using artificially disseminated inocula. Cultural and augmentative practices that could be used to initiate early epizootics or increase their intensity may reduce the need for aphicide applications and help ensure the occurrence of epizootics.