Remote Sensing and Spatial Technology in Cotton Pest Management

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ABSTRACT

Image based insect management zones were used to create prescriptions for various site-specific insect-management treatments during the growing season. Insect pests targeted with this approach have been tarnished plant bug, thrips, and stink bug. These sucking insects, especially tarnished plant bug, show strong preference for more vigorous portions of the crop. Intensive field sampling and analyses have verified relationships between biological data and imagery data. Treatment effectiveness was determined by analysis of pretreatment and post-treatment data from site-specific and broadcast treatment fields. These analyses have shown equivalent control by site-specific insecticide treatment applications compared to broadcast treatment applications.

Spectroradiometry and aerially acquired imagery data were studied for potential use in end-of-season insect management and harvest aid decisions. Cutout is the stage of cotton development when the crop produces the latest cohort of blooms that produce harvestable bolls. Cutout is currently determined by visual observations and counts and is defined as node above white flower five (NAWF=5), i.e. the average topmost first position white flower is five nodes below the terminal. Cutout is the point in crop development for initiation of countdown in heat units to subsequent management decisions, such as when to terminate insect control and when to apply harvest aid and/or defoliation products. Precise time of cutout is not yet clearly determined with imagery data. However, preliminary data suggest that normalized difference vegetation index (NDVI) values plotted during late crop development may provide guidance for when to apply harvest aid and defoliation products.