

**EMPLOYMENT OF SPATIALLY VARIABLE  
INSECTICIDE APPLICATIONS FOR TARNISHED  
PLANT BUG CONTROL IN COTTON**

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**Abstract**

In cotton production, there are many factors that can reduce crop yield. One important cause is insects. Insects that cause loss to the fruit are frequently more destructive than those that damage leaves, stems and roots. This study describes an improvement in insect control practices directed against fruit feeding insects (i.e., the Tarnished Plant Bug [TPB]) by integrating remote sensing imagery with on the ground sampling efforts by observers (called cotton scouts). The ecological premise at work is that just as the sensors used to acquire the image detect differences in crop status, the TPB has the sensory and behavioral capabilities to respond to differences in cotton phenological development (and possibly many other species of insects; e.g., boll weevils and noctuid moths). As a result, the first areas of a crop to be attacked by an insect pest are likely to be those areas where the crop vigor is best. Since the image can distinguish between different areas of crop vigor the image, once classified with the use of the normalized difference vegetation index (NDVI), defines the different sampling strata for the consultant to use. When both imagery and scouting indicate a cotton pest's spatial distribution it is possible to develop a spatially registered map prescribing which areas of a field are to be sprayed or unsprayed. This spatial prescription can be uploaded into a controller on a DGPS equipped ground sprayer. Thus, the GPS-GIS capabilities of equipment installed on the sprayer determine which areas of the field are sprayed or unsprayed for a particular cotton pest like the plant bug. (See Dupont et al., in this Proceedings for additional details.)