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DEVELOPING PRESCRIPTION INSECTICIDE (SVI) APPLICATIONS WITH COTTON YIELD MAPS

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Tests were conducted in 2002 at Hardwick Planting Company near Newellton, LA. A yield grid map was created with yield data collected from wheat (2000) and grain sorghum (2001). A yield map was developed by defining low yielding (20% of a 216 acre field) or normal to high yielding (80% of field). The field was divided into eight equivalent blocks. Each block was assigned one of the two treatments, (SVI vs. broadcast whole plot). Treatments were assigned to plots in a RBD. SVI treatments were prescribed to zones within each plot according to the yield map. Field zones that were considered low yielding were not sprayed in the SVI. Entire blocks were sprayed in the broadcast treatment. Applications were made using a fixed wing aircraft equipped with an onboard computer, GPS guidance system, and liquid flow controller. Three insecticide treatments were applied to the test area using a single site-specific prescription. Pre- and post-treatment insect pest densities were recorded using handheld computers equipped with GPS receivers. Heliothines (bollworm and tobacco budworm) and other arthropod pests were sampled but only heliothine data was used in this evaluation. Heliothine infestation levels were determined by sampling 10 random plants per site. Densities were evaluated by examining fruiting forms (squares, white flowers, bloom tags, and bolls) for larvae and damage to fruiting forms. A GPS equipped cotton picker recorded harvest yield data. Pre-treatment arthropod surveys indicated significant variations in pest densities across the field. Insect pests were controlled in both the broadcast and SVI sprayed plots. Post-treatment scouting indicated insect presence in the non-sprayed SVI zones. Mean yield data comparing the two treatments was not significantly different. Insect control costs were lower in SVI treatments than in the broadcast. Insecticide use declined by 20% ($21.66 an acre) in the SVI treatment. Using SVI technology in prescription applications with sufficient science-based data to support recommendations can moderate production costs. The results of this study support the integration of precision agricultural technologies into current IPM strategies and further reduce foliar insecticide requirements.