COMPARISON OF MANAGEMENT SYSTEMS IN COVENTIONAL AND TRANSGENIC COTTON

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Abstract

Recent concern has been raised with the decline of lint quality associated with high yielding and transgenic cotton (*Gossypium hirsutum* L.) varieties. Field studies were conducted at the both the Cherry Farm Unit and the Central Crops research station in North Carolina. Objectives were to compare Roundup Ready varieties in Roundup and conventional herbicide systems, compare Bollgard varieties with and without insecticide, and to compare conventional and transgenic varieties' lint yield and quality. Nine varieties were planted including: Fibermax 958, Phytogen 355, Stoneville 474, Delta and Pine Land 436 RR, Stoneville 4793 R, Fibermax 989 RR, Paymaster 1218 BG/RR, Delta and Pine Land 451 B/RR, and Stoneville 4892 BR. Insect thresholds were fifteen percent eggs or three percent worms for cotton bollworm (*Helicoverpa zea* (Boddie)), and five percent damaged bolls for green stinkbug (*Acrosternum hilare* (Say). Each variety had one treatment with no insecticide, and the rest of the plots were treated with Karate at 0.04 lbs. ai/A when thresholds were met throughout the season. No differences in damaged bolls or yield were observed between insecticide treatments at either location. The conventional weed control program consisted of a preemergent tank-mix of Prowl and Cotoran. The postemergent broadcast applications were Staple with and without MSMA at the two leaf stage and Select at the six leaf stage, followed by a Cotton-Pro and MSMA tank mix post directed at layby. The Roundup program was two broadcast applications at the one and four leaf stages followed by a post directed spray at layby. Each of the Roundup Ready varieties were in a treatment with the conventional and Roundup weed control systems. Data were analyzed in SAS 8.2e under the general linear model. Means were separated by Fisher's protected LSD at α=0.05. Insect pressures were low, and there were no boll damage differences between insect management programs. The Roundup system provided excellent control on all weeds throughout the season. The Staple alone treatment was weaker on morningglory species than the Staple/MSMA combination. Select was excellent on annual grasses. There were no lint yield differences by variety at either location. Micronaire at Clayton was within the acceptable range for all varieties. Micronaire at Cherry was lower for all varieties, and some were in the discount range. Length, uniformity, and strength were all within acceptable ranges at both locations across varieties.