

**ON-FARM TESTING OF SITE-SPECIFIC MANAGEMENT
FOR IRRIGATED COTTON**

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Abstract

Precision or site-specific agriculture can in theory mean greater use-efficiency of inputs on fields that are spatially non-uniform. Site-specific technologies like variable-rate fertilization and light-activated Weed Seeker sprayers are commercially available. However, little systematic testing of variable-rate technologies (VRT) have been done with cotton in the Texas High Plains. The objectives, therefore, of this study were to compare variable-rate P fertilization, light-activated weed seeker spraying, and variable-rate nematicide applications with conventional, blanket-rate applications of these inputs in two irrigated cotton sites in the Southern High Plains. Half-acre grid, GPS-referenced soil samples were taken in the spring of 2000 at the 30-acre sites of Ropesville and Lamesa, TX. Hand-harvesting of 0.002 acre was done at each of the 60 grid-points at each site and at Lamesa a stripper harvester fitted with Micro-Trak® optical yield monitoring system was used.

The rate VRT-P applied was slightly less and more than the P blanket-rate at Ropesville and Lamesa, respectively. At Ropesville, P response was observed with VRT-P only and on Amarillo soil at Ropesville but not on Portales (high pH soil). Phosphorus response at Lamesa was only observed with Micro-Trak® yield-monitored data and not with hand-picking. Elevation/landscape position affected yields at Lamesa and was observed by hand-picking and by Micro-Trak®, and could delineate future management zones. At either site, lint yields were not affected by Temik®, so extra Temik® in VRT plots was not economical. At Ropesville, we assume that lint yields were not affected by light-activated VRT post-direct Roundup® (average rate of 7 oz/ac applied) vs. blanket Roundup® (average rate of 32 oz/ac applied).