WEED MANAGEMENT IN STRIP TILLAGE ROUNDUP READY (GLYPHOSATE-TOLERANT) COTTON

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Abstract

Studies were conducted in Goldsboro, NC in 1998 and 1999 and Lewiston, NC in 1999 to evaluate weed management programs in strip-tilled 'Paymaster 1220RR/BG' cotton (*Gossypium hirsutum*). Cotton was planted in 38-inch rows on sandy loam soil. The wheat cover crop was terminated with a Roundup Ultra (glyphosate) (1.0 qt/A) treatment approximately 30 days prior to planting. Twelve herbicide systems were evaluated which included a factorial arrangement of preemergence (PRE) systems and postemergence (POST) systems. Preemergence herbicide options included 1) nothing, 2) Prowl (pendimethalin) (39 fl oz/A PRE) plus Cotoran (fluometuron) (1 qt/A PRE) broadcast, 3) Prowl (39 fl oz/A PRE) banded (19-inch band), or 4) Prowl (39 fl oz/A PRE) plus Cotoran (1 qt/A PRE) banded. Postemergence herbicide options included 1) nothing, 2) Roundup Ultra as needed (1.5 pt/A ASN) alone, or 3) Roundup Ultra (1.5 pt/A ASN) followed by (fb) Caparol (prometryn) (1.2 qt/A) plus MSMA (2.67 pt/A) late post directed (LAYBY). Roundup Ultra was applied to four leaf cotton or smaller, after the 4L growth stage Roundup Ultra was applied post-directed to minimize Roundup Ultra contact with the cotton foliage. Soil-applied herbicides were applied on a band in the PRE systems in a 19-inch band on the drill.

As expected, when NO POST herbicides were used, Prowl plus Cotoran PRE broadcast provided better weed control of johnsongrass (*Sorghum halepense*), large crabgrass (*Digitaria sanguinalis*), smooth pigweed (*Amaranthus hybridus*), sicklepod (*Cassia obtusifolia*), pitted morningglory (*Ipomoea lacunosa*), and eclipta (*Eclipta prostrata*) compared to other soil-applied herbicide options. However, general weed control was inadequate (less than 80%) in all cases where NO POST herbicides were utilized. In systems with Roundup Ultra ASN without soil-applied herbicides, weed control was 90% or greater for all weeds except for smooth pigweed (*Amaranthus hybridus*) and pitted morningglory (*Ipomoea lacunosa*). In systems with Roundup Ultra followed by LAYBY, weed control was greater than 90% for all weeds evaluated. Even though Roundup Ultra ASN controlled all weeds evaluated late season, significant yield loss occurred when no soil-applied herbicides were used. High weed populations prior to the first Roundup Ultra application are the likely cause of this yield reduction. LAYBY herbicides were less important than soil-applied herbicides for preserving cotton yield potential. All weed control systems fit well in a strip-till cotton program. Banded applications of Prowl or Prowl plus Cotoran followed by Roundup Ultra provided equivalent weed control and yield while reducing herbicide inputs compared to broadcast soil-applied systems. This approach eliminated yield reductions from early season interference.

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