WEED MANAGEMENT IN ULTRA NARROW ROW COTTON IN NORTH CAROLINA

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Abstract

Transgenic, herbicide-tolerant cultivars give growers new options to manage weeds in ultra narrow row cotton. Weed control, cotton yields, and net returns from various management systems were compared in Buctril-tolerant Stoneville BXN 47, Roundup-tolerant Paymaster 1220RR, and non-transgenic Deltapine 51 cotton. The experiment was conducted in conventionally tilled sites at Rocky Mount and Goldsboro in 1997 and 1998 where large crabgrass, pitted morningglory, prickly sida, and sicklepod were present. Common cocklebur, common lambsquarters, common ragweed, goosegrass, Palmer amaranth, and tall morningglory infested the no-tillage site at Clayton in 1998.

Prowl (1.8 pt/A) preplant incorporated (PPI) and Cotoran (1.5 qt/A) preemergence (PRE) were applied in all conventionally tilled Deltapine 51 and Stoneville BXN 47 systems. Staple (1.2 oz/A) or Staple plus MSMA (1.0 pt/A) was applied early postemergence over-the-top (POT) of four-leaf Deltapine 51 cotton and followed by no treatment or Staple late POT to eight-leaf cotton. Similarly, Buctril (1.0 pt/A) or Buctril plus MSMA was applied early POT of Stoneville BXN 47 cotton and followed by no treatment or Buctril late POT. Total POT systems in conventionally planted Paymaster 1220RR included Roundup Ultra (1.0 qt/A) POT of four-leaf cotton, POT of four- and 15-leaf cotton (after cut-out), and POT of one-, four-, and 15-leaf cotton. Roundup Ultra applied POT to four-leaf cotton following Prowl PPI plus Cotoran PRE also was included. A surfactant at 0.25% (v/v) was included with Staple and MSMA treatments. Herbicide applications were identical at the no-tillage site except Prowl was applied PRE.

Following soil-applied herbicides, Staple plus MSMA early POT controlled Palmer amaranth, common ragweed, and common lambsquarters more than Staple alone at early POT. Additionally, Staple plus MSMA early POT controlled morningglories and sicklepod more than Staple at early and late POT. Staple following Staple plus MSMA did not improve weed control. Buctril early POT controlled common cocklebur, common lambsquarters, common ragweed, and morningglories more effectively than Staple. A follow up application of Buctril late POT or MSMA in mixture with Buctril at early POT only improved Palmer amaranth, sicklepod, and tall morningglory control. Roundup Ultra POT twice controlled most weeds more than one application, and control of large crabgrass, common lambsquarters, prickly sida, common cocklebur, and common ragweed was similar to systems utilizing Buctril or Staple. Roundup Ultra applied POT of cotton two or three times controlled goosegrass, Palmer amaranth, and sicklepod better than Buctril or Staple systems, but pitted morningglory was controlled less. However, Prowl plus Cotoran in conjunction with Roundup Ultra POT controlled all weeds, including morningglories, at least 88%.

At the Rocky Mount site, which was severely infested with large crabgrass, all systems controlled large crabgrass effectively and there were no differences among systems for yields or net returns. At both Clayton and Goldsboro, yields and net returns were greater in the Roundup Ultra system containing soil-applied herbicides when compared to systems with Roundup Ultra applied once or twice. However, yields and net returns in total POT systems when Roundup Ultra applications were initiated at one-leaf cotton were similar to those of the soil-applied system. Yields and net returns from Deltapine 51 were similar to those of the more effective Roundup Ultra systems only when MSMA was applied in mixture with Staple at both locations. Similarly, MSMA in mixture with Buctril improved yields and net returns of Stoneville BXN 47 cotton when sicklepod was present. Yields and net returns from systems with Buctril plus MSMA early POT were similar to those of the most effective Roundup Ultra and Deltapine 51 system.

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 1:740-741 (1999)
National Cotton Council, Memphis TN