WEED MANAGEMENT IN ROUNDUP READY® COTTON K.M. Jennings, J.M. Robbie, A.S. Culpepper and A.C. York North Carolina State University Raleigh, NC

<u>Abstract</u>

Field experiments were conducted at Clayton and Goldsboro, North Carolina in 1996 to evaluate weed management systems utilizing Roundup applied postemergence over-the-top of Roundup Ready Cotton (Gossypium hirsutum L.) compared to weed management with Staple and standard herbicide programs. Weed management systems consisted of the following herbicide combinations: Treflan applied preplant incorporated (PPI) at 1.0 pt pr/A with Cotoran preemergence (PRE) at 2.5 pt pr/A or followed by (fb) 1) Roundup early postemergence (EPOT) at 1.5 pt pr/A alone or fb Bladex at 2.0 pt pr/A plus MSMA at 2.4 pt pr/A mid post-direct (MPD), 2) Roundup EPOT fb Roundup MPD at 1.5 pt, 3) Roundup EPOT fb Roundup MPD fb Roundup late post-direct (LPD) at 1.5 pt, 4) Cotoran at 2.0 pt plus MSMA at 2.4 pt early post-direct (EPD) alone or fb Bladex at 2.0 pt plus MSMA at 2.4 pt MPD, 5) Staple at 1.2 oz pr/A EPOT alone or fb Bladex Additional treatments included plus MSMA MPD. Roundup EPOT alone or fb Bladex plus MSMA MPD, Roundup EPOT fb Roundup MPD alone or fb Roundup LPD. All POST treatments except Roundup were applied with a non-ionic surfactant at 0.25% (v/v). Cotton was planted on 38-inch rows and was not cultivated.

Weed species evaluated included pigweed species (*Amaranthus* spp.), common cocklebur (*Xanthium* strumarium), common lambsquarters (*Chenopodium* album), common ragweed (Ambrosia artemisiifolia), jimsonweed (*Datura stramonium*), morningglory species (*Ipomoea* spp.), prickly sida (*Sida spinosa*), sicklepod (*Senna obtusifolia*), and a mix of large crabgrass (*Digitaria* sanguinalis), broadleaf signalgrass (*Brachiaria* platyphylla), and goosegrass (*Eleucine indica*).

Generally, late-season control from Roundup EPOT alone was below 75% with the exception of jimsonweed, prickly sida, and common lambsquarters control. Bladex plus MSMA MPD following Roundup EPOT and multiple applications of Roundup provided excellent season-long control of broadleaf weeds and annual grasses.

Excellent season-long control of all weed species was obtained with Treflan plus Cotoran followed by two applications of Roundup. Control was comparable to that with Treflan PPI, Cotoran PRE, Cotoran plus MSMA EPD or Staple EPOT, and Bladex plus MSMA MPD.

With systems including Treflan PPI and Cotoran PRE, sicklepod was controlled 63 and 75% by Roundup EPOT and Cotoran plus MSMA EPD, respectively. Staple EPOT provided significantly less control at 7%. Morningglory was controlled 71, 73, and 86% by Roundup EPOT, Staple EPOT, and Cotoran plus MSMA EPD respectively. Control was 88% or better from all three treatments for prickly sida, common ragweed, common lambsquarters, and annual grasses. Cocklebur control by Staple EPOT, Cotoran plus MSMA EPD, and Roundup EPOT was 78, 82, and 54%, respectively. Staple and Cotoran plus MSMA provided better control of pigweed and jimsonweed than Roundup EPOT. However, control from all three treatments was 80% or better.

At both locations cotton lint yield was similar with all treatments including Roundup EPOT regardless of the presence of Treflan plus Cotoran. No significant yield difference between Treflan and Cotoran fb Roundup EPOT, Treflan and Cotoran fb Cotoran plus MSMA EPD or Treflan and Cotoran fb Staple EPOT at Clayton was observed. However, at Goldsboro yield with Staple EPOT was significantly lower than yield with Treflan and Cotoran fb Roundup EPOT or Cotoran plus MSMA MPD. When Bladex plus MSMA MPD followed these treatments, yields were similar. No late-season injury was observed at either location.

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