

**ARE PREEMERGENCE HERBICIDES NEEDED
IN ROUNDUP READY (GLYPHOSATE-
TOLERANT) COTTON?**

A. S. Culpepper

**University of Georgia
Tifton, GA**

**A. C. York and R. B. Batts
North Carolina State University
Raleigh, NC**

Abstract

A series of three field experiments were conducted at nine locations in North Carolina from 1996 through 1999 to examine the role of soil-applied herbicides in Roundup Ready cotton weed management programs. All experiments were conducted in fields heavily infested with weeds. Species present at one or more of the locations included large crabgrass (*Digitaria sanguinalis*), broadleaf signalgrass (*Brachiaria platyphylla*), seedling johnsongrass (*Sorghum halepense*), mixtures of morningglory (*Ipomoea*) species, common cocklebur (*Xanthium strumarium*), sicklepod (*Senna obtusifolia*), common ragweed (*Ambrosia artemisiifolia*), smooth pigweed (*Amaranthus hybridus*), Palmer amaranth (*Amaranthus palmeri*), common lambsquarters (*Chenopodium album*), prickly sida (*Sida spinosa*), smooth groundcherry (*Physalis subglabrata*), and jimsonweed (*Datura stramonium*). Soil-applied herbicides included Treflan (trifluralin) preplant incorporated (PPI) + Cotoran (fluometuron) preemergence (PRE) in the first experiment, Prowl (pendimethalin) PPI + Cotoran PRE in the second experiment, and Command (clomazone), Cotoran, Prowl, Staple (pyrithiobac), Zorial (norflurazon), Command + Cotoran, Prowl + Cotoran, Prowl + Staple, Staple + Cotoran, and Zorial + Cotoran PRE in the third experiment. Soil-applied herbicides were applied at normal use rates.

Total postemergence systems with Roundup overtop followed by Roundup or Caparol + MSMA directed controlled weeds well. Late-season weed control was generally greater than 90%. Soil-applied herbicides had little effect on late-season weed control, and they had no effect on cotton yield in systems with Roundup applied overtop at 1- and 3- to 4-leaf cotton. When Roundup application was delayed until 3- to 4-leaf cotton in the absence of soil-applied herbicides, weeds competed enough with the crop prior to Roundup application to reduce yield at two-thirds of the locations. Yields with soil-applied herbicides plus one overtop application of Roundup were similar to yields with two overtop applications without soil-applied herbicides.

It is recognized that there are some weeds, such as Florida pusley (*Richardia scabra*), that are not controlled by Roundup. If such species are expected, a soil-applied herbicide would be advised. Otherwise, excellent weed control and cotton yields can be achieved with total postemergence systems. However, two overtop applications of Roundup, with the first application initiated about the 1-leaf stage of cotton, will usually be needed to avoid early season weed competition. The primary value of soil-applied herbicides in a Roundup Ready system is the flexibility they provide in timing of Roundup. Because of time, labor, and equipment constraints, many growers have difficulty making two timely overtop Roundup applications. When soil-applied herbicides are included in the system to provide some early season control, Roundup application can be delayed until cotton reaches the 3- to 4-leaf stage.