

**THE CHALLENGES OF MANAGING TROPICAL SPIDERWORT
(*COMMELINA BENGHALENSIS*) IN ROUNDUP READY COTTON**

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Abstract

Roundup Ready cotton is now the standard technology grown across the Southeast. Most growers have adopted this technology due to convenience, reduced labor inputs, and shifts to conservation tillage practices. Many times a dinitroaniline herbicide is the only herbicide besides glyphosate (Roundup, others) used in these production systems. With this high dependence on Roundup Ready technology, glyphosate, and conservation tillage, tropical spiderwort has emerged as a major weed problem in several Southeastern areas and is currently the most troublesome weed infesting Georgia cotton.

Experiments were conducted at two Georgia, one North Carolina, and one Florida location during 2003 to evaluate preemergence (PRE), early postemergence over-the-top (POT), and lay-by herbicide options for postemergence and residual tropical spiderwort control and crop injury. Experimental designs were randomized complete blocks with treatments replicated three or four times. All treatments were applied between 15 and 20 GPA to tropical spiderwort no larger than four inches. Tropical spiderwort populations during mid-season were 150+ plants per square yard at both GA locations, 7 plants per square yard in FL, and 1.5 plants per square yard in NC. Roundup Ready cultivars were planted between April 30 and May 9 and Prowl was applied preemergence over each experiment. Visual estimates of weed control and crop injury were taken throughout the growing season.

In Georgia, Prowl applied PRE provided no control of tropical spiderwort. Cotoran (1 qt/A) mixed with Prowl controlled tropical spiderwort 69% at 3 weeks after treatment (WAT). Zorial (1.25 lb/A) added to Prowl plus Cotoran improved control an additional 9%.

Roundup WeatherMax (22 fl oz/A) following Prowl PRE controlled tropical spiderwort 77, 64, and 34 to 44% in NC, FL, and GA, respectively, at 2 WAT. Visual control estimates were a measure of emerged plants present at time of the POT application being suppressed by the Roundup as well spiderwort plants continually emerging after the POT application. Control in Georgia was less than in other states possibly because of the intense spiderwort population that emerged (150 plants per square yard) the week following POT applications. Dual Magnum (1.33 pt/A) mixed with Roundup POT improved spiderwort control 17 to 32% because of residual activity. An additional treatment of Staple (0.6 oz/A) plus Roundup WeatherMax POT was included in GA and NC. Staple mixed with Roundup did not improve spiderwort control compared to Roundup alone. Cotton was not injured by Roundup alone but Dual Magnum plus Roundup caused up to 14% necrotic speckling within 1 week of application; injury was not detectable at 2 WAT. Injury from Roundup plus Staple was less than 5% in NC but ranged from 17 to 34% in GA at 4 days after treatment. No injury was detectable by 2 WAT.

At lay-by in GA and NC, Roundup WeatherMax (22 fl oz/A) alone or mixed with Direx (1.5 pt/A), Command (1.33 pt/A), Valor (1 or 2 oz/A), or Spartan (5.5 to 6.7 oz/A) were directed to cotton following Prowl PRE with either Roundup or Roundup plus Dual Magnum early POT. At 2 WAT, spiderwort control was greater than 90% in NC and 80% in GA except with Roundup or Roundup plus Direx. Continual emergence of spiderwort after the lay-by treatments reduced control by most treatments by season's end. Similar control (82 and 91%) was noted when Roundup plus Dual were applied POT and followed by any lay-by treatment except Roundup alone. When Dual Magnum was not included POT, late-season control greater than 82% was only noted when Spartan or Command plus Roundup were directed. These two directed mixtures were 30 to 32% more effective than Roundup alone (58%). Both Command (leaf whitening) or Spartan (stem necrosis) applied at lay-by injured (15 to 22%) cotton at one Georgia location.

At harvest, no labeled herbicide system provided greater than 85% control in GA and NC.