

**WEED CONTROL, CROP TOLERANCE, AND COTTON YIELD WITH TOUCHDOWN,  
DUAL MAGNUM, CAPAROL, AND ENVOKE WEED MANAGEMENT SYSTEMS**

**S.B. Clewis, W. Everman, I.C. Burke, and J.W. Wilcut**

**North Carolina State University**

**Raleigh, NC**

**D. Miller**

**Louisiana State University**

**C. Koger**

**USDA-ARS-SWRU**

**Stoneville, MS**

**T. Baughman**

**Texas A&M Research and Extension Service**

**A. Price**

**USDA-ARS**

**Auburn, AL**

**D. Porterfield**

**Syngenta Crop Protection Inc.**

**Cary, NC**

**Abstract**

Experiments were conducted in five states at 6 locations from 2002 through 2003 to evaluate weed control, crop tolerance, and yield potential with a total postemergence (POST) weed management system that included combinations of residual and transgenic herbicides in Roundup-Ready® cotton. The transgenic cotton varieties included Fibermax 989 RR/BG, Deltapine 458 BR, and Stoneville 4793 RR. The experimental design was a factorial treatment arrangement of all possible combinations of early-postemergence (EPOST), POST or post-directed (PDS), and late post-directed (LAYBY) options with 3 to 4 replications of treatments. The EPOST treatments included Touchdown alone or in tank mixture with Dual Magnum. The POST/PDS treatments included No POST, Envoke alone POST or PDS, Envoke plus MSMA PDS, and Envoke plus Touchdown PDS. The LAYBY treatments included NO LAYBY or Caparol plus MSMA plus Induce. The herbicides rates were Touchdown at 2 pt/ac, Dual Magnum at 1 pt/ac, Envoke at 0.1 oz/ac, MSMA at 2.67 pt/ac, Caparol at 2 pt/ac, a nonionic surfactant (Induce) was used at 0.25% v/v was included in all Envoke and Caparol plus MSMA treatments. Early season cotton injury and discoloration was minimal (<1%) with all treatments, mid- and late-season injury was (<2%) except for Envoke POST (9-11%). Injury can occur when Envoke applications are made to small cotton under saturated soil conditions. Annual grasses were controlled by 90-93% with Touchdown while the addition of MSMA increased control at least 10-20 percentage points. While, Envoke is not a grass herbicide it did provide some suppression and either numerically or statistically improved control of large crabgrass, goosegrass, or barnyardgrass at least 20 percentage points when followed by LAYBY treatments compared to systems that did not contain Envoke PDS or POST. Envoke did not antagonize grass control with Touchdown. Envoke POST and PDS applied alone or in combination with Touchdown or MSMA increased sicklepod control 25-30 percentage points, smooth pigweed control 21-23 percentage points, and Ipomoea complex 19-38 percentage points compared to EPOST only systems. The addition of a LAYBY treatment increased control of all weeds 11-21 percentage points. Cotton yield increased 300-810 lb/A with the addition of Envoke POST/PDS alone or in combination with MSMA or Touchdown compared to EPOST only systems. Envoke + Touchdown PDS had the highest yield of 1920 lb/A. The addition of a LAYBY treatment of Caparol + MSMA increased cotton yield by 390 lb/A to systems without a LAYBY. These data indicate that the spectrum and level of weed control was broader with Envoke in combination with Touchdown PDS than seen with other treatments. Also, cotton injury was minimal with all treatments applied PDS and Envoke PDS or POST did not affect cotton yield.