

## EVALUATION OF ENVOKE, STAPLE AND COTORAN WEED MANAGEMENT SYSTEMS

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

North Carolina State University

Raleigh, NC

C.T. Koger

USDA-ARS

Stoneville, MS

D.K. Miller

LSU AgCenter

Baton Rouge, LA

D. Porterfield

Syngenta Crop Protection

Cary, NC

A.J. Price

USDA-ARS

Auburn, AL

### Abstract

Field experiments conducted in 2002 and 2003 at Goldsboro, NC, and in 2003 at Rocky Mount, Lewiston-Woodville, and Kinston, NC, Stoneville, MS, Auburn, AL, and St. Joseph, LA, evaluate the use of Staple with Envoke in conventional cotton. Treatments were a factorial arrangement (all possible combinations) of preemergence (PRE) by postemergence (POST) by late post-directed herbicide options (LAYBY). PRE herbicide options included Prowl (0.9 qt/A), Prowl plus Staple (0.6 oz product/A), or Prowl plus Cotoran (1.0 qt/A). Postemergence treatment options included no herbicide, Envoke (0.1 oz product/A) EPOST to 5 lf cotton, Envoke plus Staple (0.6 oz product/A) EPOST, or Envoke EPOST to 5 lf cotton plus Envoke POST to 7 lf cotton. LAYBY herbicide options included no herbicide or Caparol (0.65 qt/A) plus MSMA (1.33 qt/A). All EPOST, POST, and LAYBY treatments were applied with a non-ionic surfactant at 0.25% (v/v).

Weed species evaluated included common ragweed (*Ambrosia artemisiifolia*), common lambsquarters (*Chenopodium album*), ivyleaf morningglory (*Ipomoea hederacea*), jimsonweed (*Datura stramonium*), large crabgrass (*Digitaria sanguinalis*), Palmer amaranth (*Amaranthus palmerii*), pitted morningglory (*Ipomoea lacunosa*), prickly sida (*Sida spinosa*), redroot pigweed (*Amaranthus retroflexus*), sicklepod (*Cassia obtusifolia*), and yellow nutsedge (*Cyperus esculentus*).

Cotton injury in the form of discoloration was observed 2 wk after EPOST applications that included Envoke or Envoke plus Staple to 5 lf cotton at Kinston, NC, Lewiston, NC, and Auburn, AL. Injury was less than 10% in all treatments for which it was observed, transient in nature, and did not affect yields.

Large crabgrass control was greater with Prowl plus Cotoran PRE than Prowl plus Staple PRE or Prowl alone. Select POST at 1 qt/A plus 1% crop oil concentrate was required for adequate weed control. Prowl plus Cotoran PRE and Prowl plus Staple PRE controlled redroot pigweed greater than 72%, while Prowl PRE controlled this species 28%. Prowl plus Cotoran PRE controlled common ragweed and common lambsquarters greater than 80%, while Prowl PRE and Prowl plus Staple PRE controlled these species 38% or less. Envoke controlled common lambsquarters, common ragweed, Palmer amaranth, and redroot pigweed at least 80% or greater regardless of PRE treatment but controlled prickly sida and jimsonweed 28% or less. Staple plus Envoke EPOST controlled jimsonweed and prickly sida greater than 72%. Sequential Envoke applications controlled ivyleaf morningglory, pitted morningglory, sicklepod, and yellow nutsedge greater than 82%. There was a main treatment LAYBY effect and the inclusion of a LAYBY treatment increased control of all weeds listed above 9-35%.

The highest cotton yields required Cotoran PRE or Staple PRE or EPOST, Envoke EPOST, and a LAYBY treatment of Caparol plus MSMA. There was a main treatment effect for LAYBY herbicide treatments with a yield increase of 3-50% for treatments that included a LAYBY. Staple PRE or POST plus Envoke EPOST provide complementary weed control, and when used in a systems approach, offer effective broad spectrum broadleaf weed control for cotton when used in conjunction with soil applied herbicides and properly timed LAYBY herbicides. The inclusion of other herbicides sites-of-action will be important for management of herbicide resistance.