

**YELLOW (*Cyperus esculentus*) AND PURPLE NUTSEDGE (*C. rotundus*) CONTROL IN COTTON**  
**S.C. Troxler, W.D. Smith, W.E. Thomas and J.W. Wilcut**  
**North Carolina State University**  
**Raleigh, NC**

**Abstract**

A field study was conducted at Lewiston-Woodville, NC to evaluate nutsedge (*Cyperus spp.*) management and cotton yield in herbicide programs utilizing Roundup Ultramax (glyphosate), CGA-362622 (proposed trifloxysulfuron sodium), or Staple (pyrithiobac) early postemergence (EPOST) in combination with post-directed (PDS) or late post-directed (LAYBY) herbicides in Roundup-Ready (glyphosate-tolerant) cotton. Field studies consisted of a randomized complete block design with three replications of treatments. All field plots received Prowl (pendimethalin) at 2.4 pt/acre plus Cotoran (fluometuron) at 2.0 pt/acre preemergence (PRE). POST treatment options consisted of Roundup Ultramax at 1.6 pt/acre EPOST followed by (fb): 1) Caparol (prometryn) at 2.0 pt/acre LAYBY, 2) Roundup Ultramax at 1.6 pt/acre PDS fb Caparol at 2.0 pt/acre LAYBY, 3) Caparol at 2.0 pt/acre plus MSMA at 2.66 pt/acre LAYBY, 4) Roundup Ultramax at 1.6 pt/acre plus MSMA at 2.66 pt/acre PDS fb Caparol at 2.0 pt/acre LAYBY, 5) Roundup Ultramax at 1.6 pt/acre PDS fb Caparol at 2.0 pt/acre plus MSMA at 2.66 pt/acre LAYBY, or 6) MSMA PDS at 2.66 pt/acre fb Caparol at 2.0 pt/acre plus MSMA at 2.66 pt/acre LAYBY. Additional POST systems evaluated included an embedded POST by PDS by LAYBY factorial. POST options included CGA-362622 at 0.10 oz product/acre (0.0045 lb ai/acre) or Staple at 1.2 oz product/acre. PDS options consisted of no PDS or MSMA at 2.66 pt/acre. LAYBY options included Caparol at 2.0 pt/acre or Caparol at 2.0 pt/acre plus MSMA at 2.66 pt/acre.

In the field experiment, an EPOST treatment of CGA-362622 controlled purple (*Cyperus rotundus*) and yellow nutsedge (*C. esculentus*) 85 and 80%, respectively. Equivalent control was observed with Roundup Ultramax EPOST. Staple controlled both nutsedge species less ( $\leq 50\%$ ). The addition of MSMA to LAYBY treatments increased purple and yellow nutsedge control in CGA-362622 and Staple POST systems. MSMA PDS increased nutsedge control for Staple systems. Roundup Ultramax applied as an EPOST and PDS treatment controlled purple and yellow nutsedge greater than 94%. The addition of MSMA LAYBY did not increase nutsedge control systems that used Roundup Ultramax EPOST plus PDS. No significant differences in cotton lint yield were observed from purple and yellow nutsedge POST herbicide management programs.

Greenhouse studies were conducted at the Weed Science Research Unit in Raleigh, NC to evaluate and characterize the nature of CGA-362622, Roundup Ultra, Liberty (glufosinate), MSMA (Bueno 6), Staple, and their interactions for reduction of yellow and purple foliage and root/tubers. Greenhouse experiments were conducted during the fall of 2000 and spring of 2001. The experiments consisted of a randomized complete block design with four replications of treatments and the experiments were repeated in time. Separate studies were conducted for yellow and purple nutsedge. POST herbicide treatments included: no POST herbicide, CGA-362622 at 0.068 (0.0032 lb ai/acre) and 0.10 oz/acre (0.0048 lb ai/acre), Roundup Ultra at 2.0 pt/acre, Liberty at 2.24 pt/acre, Staple at 0.6 oz product/acre, MSMA at 1.33 and 2.66 pt/acre, and all possible tank mixtures thereof. A nontreated control was included for comparison. All treatments received MSMA at 2.66 pt/acre LAYBY 30 DAT to simulate the LAYBY application that cotton growers typically employ for late season weed control. Plants were harvested 60 DAT, partitioned into roots and shoots, and dried for 72 h at 35 C. Percent reduction was measured relative to the nontreated control.

In greenhouse experiments, the MSMA LAYBY treatment alone reduced purple and yellow nutsedge shoot dry weights by 32 and 44%, respectively. CGA-362622 POST fb MSMA LAYBY reduced purple and yellow shoots at least 73%. Rate of CGA-362622 influenced yellow nutsedge shoot dry weight reduction. Shoot dry weight reduction of purple and yellow nutsedge by CGA-362622 fb MSMA LAYBY was equivalent to Roundup Ultra POST fb MSMA LAYBY. Liberty POST fb MSMA LAYBY reduced yellow nutsedge shoot dry weights 79%, but was less effective on purple nutsedge (45%). MSMA applied POST plus LAYBY decreased nutsedge shoot dry weights a minimum of 53%. The addition of MSMA in a tank mixture with Staple POST fb MSMA LAYBY increased reduction in yellow nutsedge shoot dry weight compared to the same system without MSMA POST.