

## REDUCED INPUT WEED CONTROL IN ROUNDUP READY COTTON

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### Abstract

Research was conducted in 2003 at the Northeast Research Station in St. Joseph, La, and in Lewiston, NC, to evaluate reduced input weed control programs in Roundup Ready cotton. The study consisted of a factorial arrangement of early postemergence (EPOST) treatments applied to 3 to 4 leaf cotton and layby treatments. The EPOST treatments included Touchdown IQ (glyphosate) at 0.75 lb ai/A applied alone or in combination with Dual II Magnum (metolachlor) at 0.95 lb ai/A, Staple (pyrithiobac-sodium) at 0.032 lb ai/A or Envoke (trifloxysulfuron-sodium) at 0.0048 lb ai/A, and no EPOST treatment. The layby treatments included Caparol (prometryne) at 1.0 lb ai/A or Valor (flumioxazin) at 0.063 lb ai/A in combination with MSMA at 2.0 lb ai/A, and no layby treatment. Applications were made to DP 458 BR cotton on a silt loam soil in St. Joseph and to STV 4897 BGRR cotton on a sandy loam soil in Lewiston. Weed species evaluated at St. Joseph included redroot pigweed (*Amaranthus retroflexus*), hemp sesbania (*Sesbania exaltata*), pitted morningglory (*Ipomoea lacunosa*), entireleaf morningglory (*Ipomoea hederacea*), barnyardgrass (*Echinochloa crus-galli*), large crabgrass (*Digitaria sanguinalis*), broadleaf signalgrass (*Brachiaria platyphylla*), and goosegrass (*Eleusine indica*). In Lewiston, species evaluated included yellow nutsedge (*Cyperus esculentus*), goosegrass, pitted morningglory, entireleaf morningglory, common ragweed (*Ambrosia artemisiifolia*), Palmer amaranth (*Amaranthus palmeri*), and large crabgrass. Parameters measured included visual weed control late season at both locations and seedcotton yield in St. Joseph and lint yield in Lewiston.

In St. Joseph, both EPOST and layby application were needed to maximize weed control and seedcotton yield. With the exception of hemp sesbania and broadleaf signalgrass, weed control with Touchdown IQ was enhanced with the addition of a residual component at the EPOST application, with the best tank-mix partner varying depending on weed species. With the exception of goosegrass, where Caparol/MSMA performed better (88 vs. 81%), differences in weed control were not observed between layby programs. Averaged across layby treatments, addition of a residual component to Touchdown IQ significantly increased yield over the herbicide applied alone (952 to 1343 lb/A vs. 470 lb/A), with Staple providing the greatest benefit (1343 lb/A). Averaged across EPOST treatments, layby programs resulted in equivalent seedcotton yield (1007 lb/A vs. 852 lb/A). In North Carolina, results were similar with full compliment programs needed to maximize weed control and yield and residual benefits varying by weed species. Addition of a residual herbicide to Touchdown IQ, however, did not result in a yield increase over the herbicide applied alone (581 to 592 lb/A vs. 590 lb/A) when averaged across layby treatments. Averaged across EPOST programs, yield was similar for layby programs evaluated (599 lb/A vs. 598 lb/A).

In conclusion, in a reduced input Roundup Ready weed control program, both EPOST and layby applications are needed for maximum weed control and yield. Residual herbicides benefited weed control at both locations and yield in Louisiana when included with Touchdown IQ as an EPOST program. Caparol or Valor is equally effective for maintaining season-long weed control and maximizing yield with MSMA in a layby program.