

**COMPARISON OF WEED MANAGEMENT
STRATEGIES IN ROUNDUP READY
(GLYPHOSATE-TOLERANT) COTTON
CROPPING SYSTEMS**

**A. L. Helm, J. W. Keeling,
P. A. Dotray and D. T. Carmichael
Texas Agricultural Experiment Station
Texas Tech University**

Abstract

Conservation tillage cotton cropping systems using a winter cover crop have gained increased acceptance on the Texas Southern High Plains. The development of Roundup Ready® cotton provides new options for postemergence weed control in these systems without cultivation or hand hoeing. Three conservation tillage-cropping systems were compared to conventional tillage at the AG-CARES research farm near Lamesa TX to evaluate the use of Roundup Ultra (glyphosate) postemergence-topical (PT) and postemergence-directed (PD) in Roundup Ready® cotton cropping systems. These systems, consisting of conservation tillage 40" rows, ultra-narrow row (UNR), and rye-sorghum-cotton rotation (R-S-C) were compared to conventional tillage. Rye was planted as a winter cover crop in the conservation tillage 40" rows and the UNR and was terminated in late March. All cropping systems consisted of three weed management systems. These include: 1) Prowl (pendimethalin) preplant incorporated (PPI) followed by (fb) Caparol (prometryn) preemergence (PRE) + cultivation (2X) (except in the UNR system) + spot spray (Roundup Ultra) plus hand hoe; 2) Prowl fb Roundup Ultra PT/PD; and 3) Roundup Ultra PT/PD (the UNR system received a late PT application of Roundup Ultra instead of the PD application). Each plot was 26 feet by 300 feet and received 13 inches of irrigation during the growing season through a LEPA irrigation system. Two Paymaster varieties (PM HS26 and PM 2326RR) were planted on May 12, 1999.

Prior to any of the Roundup Ultra applications, the residual herbicides alone and the residual herbicides fb Roundup Ultra provided adequate control of both Palmer amaranth (*Amaranthus palmeri*) and Russian thistle (*Salsola iberica*) in all systems, while 1998 fall applications of Roundup Ultra provided some level of silverleaf nightshade (*Solanum elaeagnifolium*) control in all treatments. Early season tillage in the conventional tillage system provided some control of pigweed and Russian thistle in the Roundup Ultra alone. In all cropping systems residual herbicides followed by two applications of Roundup Ultra provided equal levels of control to the residual herbicides + cultivation. Roundup Ultra PT/PD controlled all weed species except pigweed in the UNR system, which had only one application of Roundup

Ultra. Season-long control of pigweed in the residual herbicides fb Roundup Ultra (PT/PD) provided similar control to the residual herbicides + cultivation + spot spray + hand hoe. However, Roundup Ultra alone did not provide the season-long pigweed control. Residual herbicides fb Roundup Ultra in the conventional tillage and the UNR systems produced higher net returns than the other treatments. Roundup Ultra alone gave the higher net returns in the conservation tillage 40" rows and the R-S-C rotation systems.