

**EFFECT OF POSTEMERGENCE DIRECTED  
APPLICATIONS OF PERMIT ON COTTON  
GROWTH AND YIELD**

**D. K. Miller, B. R. Leonard, P. R. Vidrine,  
C. F. Wilson and D. R. Lee  
Louisiana State University Agricultural Center  
Baton Rouge, LA**

**Abstract**

Research was conducted in 1999 at the Macon Ridge Research Station in Winnsboro LA on a Gigger silt loam soil (pH 6.0, OM 1.0%) to determine the effects of postemergence-directed (PDIR) applications of Permit (halosulfuron) with or without MSMA on cotton growth and yield. Experimental design was a randomized complete block with a factorial arrangement of Permit rates applied either with or without MSMA. PDIR applications of Permit at 0.188 (0.25 oz/A), 0.38 (0.5 oz/A), 0.56 (0.75 oz/A), or 0.75 (1.0 oz/A) oz ai/A with or without MSMA at 0.8 lb ai/A (1.0 pt/A) were made to DP 458 BRR cotton at the 4 to 5 node growth stage. A nontreated check was included for comparison. Nonionic surfactant at 0.25% v/v was included with all treatments. Herbicide treatments were applied in conjunction with cultivation on a 20 in band at 15 GPA. Each 6.67' x 35', 2 row plot, including the nontreated check, received cultivation at the time of herbicide application. Plots received no preemergence (PRE) herbicides at planting on May 19. Research was conducted in a relatively weed free area and weeds which did emerge were controlled by hand hoeing, cultivation, and a PDIR application of pyriithiobac (Staple) at 1.0 oz ai/A (1.2 oz/A) plus fluazifop (Fusilade 2000) at 0.188 lb ai/A (24 oz/A) in conjunction with cultivation. Parameters measured included plant height 6, 21, 48, and 77 days after treatment (DAT), total plant dry weight (1 m of row/plot) 33 DAT, node above white flower (NAWF) 45 DAT, and seedcotton yield. Data were subjected to contrast analysis.

A two-inch rainfall was received approximately two hours after herbicide application. A significant Permit rate by MSMA interaction was not noted for plant height 6, 21, and 77 DAT and seedcotton yield, therefore data for Permit rates are averaged across MSMA application for these respective parameters. At the time of the initial measurement, plants treated with Permit exhibited a slight chlorosis and visible height reduction. At 6 DAT, all rates of Permit resulted in equivalent heights, which represented a 33% reduction compared to the nontreated check. At 21 DAT, plants treated with Permit at 0.188 oz ai/A averaged 35.1 cm in height which was equal to the 34.1 and 33.4 cm for the 0.38 and 0.56 oz ai/A rates, respectively, and greater than the 0.75 oz ai/A

rate (31.3 cm). All Permit rates resulted in a significant height reduction of at least 27% when compared to the nontreated check (48.4 cm).

A significant Permit rate by MSMA interaction was noted for plant dry weight, height 48 DAT, and NAWF. Although slight differences were noted within Permit rates applied with or without MSMA, all treatments resulted in significant differences for these respective parameters when compared to the nontreated check. Whole plant dry weight and plant height 48 DAT was reduced at least 19 and 16%, respectively, following application of Permit either with or without MSMA. A delay in maturity was observed as herbicide treatment resulted in a NAWF count of no lower than 4.7 compared to 4.3 for the nontreated check.

Severe late season drought adversely affected both final plant height and seedcotton yield. At 77 DAT, plant height following Permit application ranged from only 67.3 to 71.6 cm and was reduced at least 11% compared to the nontreated check. Seedcotton yield was extremely poor ranging from only 738 to 1032 lb/A. As a result, growth parameter reductions with Permit rates were not reflected in seedcotton yield reductions when compared to the nontreated check.

PDIR application of Permit with or without MSMA resulted in significant reductions for all growth parameters measured when compared to a nontreated check. Significant rainfall (2 in) within hours of application may have resulted in increased uptake of and subsequent increased injury potential from Permit. Growth parameter reductions were not manifested in seedcotton yield reduction. Poor growing conditions later in the season, as evidenced by no greater than a 14.6 cm height increase between the 48 and 77 DAT measurements, may have masked any negative yield effects following Permit application.