

POPCORN TOLERANCE TO MESOTRIONE, TEMBOTRIONE AND TOPRAMEZONE. Thomas T. Bauman and Michael D. White, Professor and Research Associate, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907.

A field trial was conducted in 2007 to test the tolerance of four popcorn hybrids to X and 2X rates of three HPPD herbicides: mesotrione, tembotrione and topramezone. These herbicides were sprayed 31 days after planting to V-3 stage popcorn that was 25 cm tall. Mesotrione was applied at rates of 105 and 210 g/ha. Crop oil concentrate (Herbimax) (1% v/v) was added to the mesotrione treatments. Tembotrione was applied at rates of 92 and 184 g/ha. Methylated seed oil (MSO Concentrate) (1.0% v/v) and 28% UAN (3.5 l/ha) were added to both tembotrione treatments. Topramezone was applied at three rates; 12, 18 and 39 g/ha. Methylated seed oil (MSO Concentrate) (1.0% v/v) and 28% UAN (2.5 % v/v) were added to both rates of topramezone. Spray volume for the post-emergence treatments was 187 l/ha. Plots were maintained weed free for the entire growing season with a pre-emergence application of s-metolachlor+atrazine (3.2 kg/ha) and mechanical cultivation.

The four hybrids differed greatly in their response to the different herbicides. While all four popcorn hybrids exhibited some bleaching of treated leaves, each hybrid varied in their sensitivity to the HPPD herbicides. One hybrid was very sensitive. Two hybrids were intermediary in sensitivity. One hybrid was fairly resistant. No injury was visible from any treatment 21 days after treatment however. More injury was observed from treatment with mesotrione than from tembotrione or topramezone. The 2X rates caused more injury than the X rates. No difference in grain yield was observed for three of the hybrids in spite of injury observed earlier in the season.

While HPPD herbicides can cause significant visual injury, this injury may not result in a reduction in popcorn yield.