

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

Popcorn is an important crop on many farms in Indiana. Weed control in popcorn can be challenging because popcorn hybrids vary greatly in their response to herbicide application and herbicide options are more limited for popcorn than for dent corn.

Field trials were conducted in 2007 and 2009 to determine the impact of X and 2X rates of mesotrione, tembotrione and topramezone on three popcorn hybrids. Mesotrione was applied at rates of 105 and 210 g ai/ha. Crop oil concentrate (Herbimax) (1% v/v) was added to the mesotrione treatments. Tembotrione was applied at rates of 92 and 184 g ai/ha. Methylated seed oil (MSO Concentrate) (1.0% v/v) and 28% UAN (3.5 l/ha) were added to tembotrione treatments. Topramezone was applied at rates of 19 and 37 g ai/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 three hybrids differed greatly in their response to the different herbicides. All of the popcorn hybrids showed some bleaching of treated leaves, but varied in their sensitivity to the HPPD herbicides. No injury was visible from any treatment later in the season. More injury was observed from treatment with mesotrione than from tembotrione or topramezone in 2007. In 2009 less injury was observed with tembotrione than with the other two herbicides. The 2X rates caused more injury than the X rates in both years. No difference in grain yield was observed for any of the hybrids in spite of injury observed early in the season. HPPD herbicides can cause significant injury to popcorn, but this injury may not result in a reduction in popcorn yield.