

EVALUATION OF BEST MANAGEMENT PRACTICE (BMP) RATES OF ATRAZINE TANK MIXED WITH SEVERAL BROADLEAF HERBICIDES IN FIELD CORN AT ROCHESTER, MINNESOTA. Lisa M. Behnken, Ryan P. Miller, Fritz R. Breitenbach, and Jeffery L. Gunsolus, Extension Professor, University of Minnesota, Rochester Regional Center, Rochester, MN 55904-4915, Assistant Extension Professor, University of Minnesota, Rochester Regional Center, Rochester, MN 55904-4915, Associate Extension Professor, University of Minnesota, Rochester Regional Center, Rochester, MN 55904-4915, and Professor, Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55108-6026.

Field research was conducted at Rochester, MN in 2007 to investigate the effect of BMP rates of atrazine, 0.56 to 0.86 kg ai ha⁻¹, tank mixed with several broadleaf herbicides, on weed control and grain yield in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 7.0 and soil test P and K levels of 16 ppm and 160 ppm, respectively. The field was spring disked twice and field cultivated once prior to planting. The corn hybrid, Pioneer 38H65, was planted on April 27, 2007 at a depth of 3.8 cm in 76-cm rows at 79,073 seeds ha⁻¹. A randomized complete block design was used with four replications. Preemergence and postemergence treatments were applied with a tractor-mounted sprayer delivering 187 l ha⁻¹ at 221 kpa using 11002 flat fan nozzles. A one-half label use rate of s-metolachlor at 1.07 kg ai ha⁻¹ was applied preemergence to the entire plot area and served as a control. In addition, a one-pass preemergence comparison that consisted of a package mixture of atrazine at the BMP rate of 0.86 kg ai ha⁻¹ and s-metolachlor at 1.07 kg ai ha⁻¹ was also applied. Six treatments with s-metolachlor at 1.07 kg ai ha⁻¹ applied preemergence and followed by a postemergence application of mesotrione at 0.105 kg ai ha⁻¹, flumetsulam & clopyralid at 0.039 & 0.105 kg ai ha⁻¹, or dicamba at 0.56 kg ai ha⁻¹, with and without atrazine at 0.56 kg ai ha⁻¹, were evaluated. The addition of soil applied BMP rates of atrazine tank mixed with s-metolachlor had no full-season effect on broadleaf weed control or corn grain yield. Postemergence BMP rates of atrazine had a significant effect on giant ragweed weed control with all paired comparisons. Common lambsquarters and common waterhemp control were similar for mesotrione and mesotrione plus atrazine treatments. Common lambsquarters and common waterhemp control were statistically lower with the flumetsulam & clopyralid and dicamba alone treatments when compared to the flumetsulam & clopyralid plus atrazine and dicamba plus atrazine treatments. Corn grain yields were statistically higher for the mesotrione plus atrazine and flumetsulam & clopyralid plus atrazine treatments when compared to their non-atrazine partners. The dicamba and dicamba plus atrazine comparison was not statistically different.