

CONTRIBUTION OF THIENCARBAZONE-METHYL FOR GRASS WEED MANAGEMENT IN CORN. Dan K. Tiedemann, Bryan G. Young, Ronald F. Krausz, and Joseph L. Matthews, Graduate Research Assistant, Professor, and Researchers, Department of Plant, Soil, and Agricultural Systems, Southern Illinois University, Carbondale, IL 62901.

Thiencarbazone-methyl (TCM) is an ALS-inhibiting herbicide under development for foliar and residual control of grasses and broadleaves in corn. Currently, all commercial plans would use TCM in combination with other herbicides and TCM would not be available as a single active ingredient. However, a basic understanding of the efficacy that TCM provides in these herbicide combinations would be beneficial in efforts to optimize foliar adjuvant systems or as a foundation for building best management practices for herbicide-resistant weeds. Therefore, the objectives of this research were 1) to assess the grass efficacy from TCM and tembotrione independently and as a formulated premix of TCM:tembotrione and 2) to compare TCM with competitive standards for postemergence grass control including topramezone, nicosulfuron, and glyphosate.

A field experiment in field corn was conducted in 2008 at Southern Illinois University research farms in Carbondale, and Belleville IL. The experiment was a factorial of herbicide treatment and application timing arranged in randomized complete block with three replications. The herbicide treatments were TCM (15 g ai/ha), tembotrione (75 g ai/ha), the premix of TCM:tembotrione (15:75 g/ha), topramezone (17 g ai/ha), nicosulfuron (35 g ai/ha), and glyphosate (860 g ae/ha) applied at an early postemergence (EPOST), mid-postemergence (MPOST), and a late postemergence (LPOST) timing. The height of grass plants ranged from 0 to 7.5, 8 to 15 and 16 to 22.5 cm for the EPOST, MPOST, and LPOST timings respectively. Visual estimates of corn injury and weed control at various intervals after application were performed along with weed plant densities.

All treatments containing TCM resulted in an initial corn response in the form of shortened internodes at 7 days after treatment (DAT). Corn injury was no longer visible by 14 DAT. Significant corn injury was not observed with any other herbicide at any application timing. The herbicide treatments of TCM, TCM:tembotrione, topramezone, and nicosulfuron resulted in the greatest control of fall panicum at 14 DAT when applied at the EPOST and MPOST timings (83% or greater) compared with the LPOST timing. Tembotrione applied alone provided the least overall control of fall panicum (40 to 55%) at 14 DAT compared with any other treatment. Glyphosate efficacy was similar across all three application timings for control of fall panicum (84 to 95%). Thiencarbazone applied alone resulted in 93, 83, 63% control of fall panicum at the EPOST, MPOST, and LPOST timings respectively. The combination of TCM:tembotrione was similar in activity on fall panicum to TCM alone at the EPOST and MPOST timing. At the LPOST the addition of tembotrione to TCM did increase control of fall panicum from 63 to 78% at 14 DAT compared to TCM applied alone. The treatment trends for control of fall panicum at 56 DAT was similar to 14 DAT.