

HERBICIDE COMBINATIONS FOR WEED CONTROL IN GLYPHOSATE-RESISTANT ALFALFA. Alexander J. Lindsey*, Wesley J. Everman, Andrew J. Chomas and Steven A. Gower, Graduate Research Assistant, Assistant Professor and Research Technician, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824, Technical Development Representative, The Monsanto Company, St. Louis, MO 63101.

Current herbicides used for weed control in alfalfa, such as imazamox and imazethapyr, tend to control a narrow range of weeds. Glyphosate has been shown to control a broad spectrum of weeds, including many grasses and broadleaves. Additionally, the use of glyphosate allows greater flexibility in herbicide application timing. The objective of this study was to investigate the effect of eighteen herbicide treatments on alfalfa injury, growth, and dandelion control. Three treatments were applied 0 days after the initial cutting (DAC), fourteen treatments were applied 14 DAC, and one plot was left non-treated. Alfalfa stunting, chlorosis, and dandelion control were evaluated for the 0 DAC application timing at 14, and all treatments were evaluated 21, 28, and 35 DAC. Alfalfa yields were determined at 39 DAC and 70 DAC.

Applications of 2,4-DB alone, 2,4-DB plus glyphosate in the form of Roundup WeatherMAX[®] (WM), and 2,4-DB plus glyphosate in the form of Roundup Original Max[®] (OM) were made 0 DAC. Initial stunting 14 DAC caused by 2,4-DB, 2,4-DB + WM, and 2,4-DB + OM was 17.5, 18.5, and 20.5%, respectively. Dandelion control with 2,4-DB alone was 80% with the addition of glyphosate improving control to greater than 92%. Injury was observed 21 DAC following applications of 2,4-DB + WM, 2,4-DB + OM, imazethapyr + OM, 2,4-DB, and imazethapyr + WM caused stunting of 15, 15, 15, 11, and 11%, respectively. All other treatments stunted alfalfa less than 5% at 21 DAC. Imazethapyr + WM and imazethapyr + OM applications resulted in chlorosis of 16 and 13%, respectively, 21 DAC which was significantly higher than all other treatments. Dandelion control 21 DAC was highest with 2,4-DB, 2,4-DB + WM, 2,4-DB + OM, and 2,4-DB, 90, 95, and 100%, respectively. All other treatments exhibited 40% control or less at 21 DAC. Imazethapyr + OM, imazethapyr + WM, imazamox + WM, and clethodim + WM treated alfalfa displayed the most stunting 35 DAC with levels of 12, 10, 10, and 9%, respectively. Chlorosis 35 DAC was not significant with all treatments and was less than 3%. Dandelion control was highest with 2,4-DB + WM, 2,4-DB + OM, and imazamox + WM applications at 95, 90, and 88%, respectively. Pure alfalfa yield 39 DAC was greatest following clethodim, imazamox, non-treated, imazethapyr, sethoxydim, 2,4-DB + WM treatments with 2.3, 2.3, 2.3, 2.2, 2.2, and 2.2 ton/A, respectively. The imazamox + OM treatment yielded the lowest 39 DAC resulting in 1.5 ton/A.

Stunting and chlorosis were seen primarily in initial ratings with severity decreasing over time. Treatment impacts on alfalfa yield may have been exacerbated by cold July temperatures (average high of 75.4° F), resulting in reduced alfalfa growth. The yields at 70 DAC indicate alfalfa had recovered from initial injury due to herbicide application. Herbicide treatments examined in this experiment should be further evaluated to observe the effect of temperature and moisture on alfalfa injury and time of recovery.