

INFLUENCE OF SPRING AND SUMMER HERBICIDE APPLICATIONS ON WEED CONTROL, TOTAL FORAGE YIELD AND TOTAL FORAGE QUALITY IN TALL FESCUE PASTURES IN MISSOURI. Kristin K. Payne*, Eric B. Riley, Jimmy D. Wait, Kevin W. Bradley, Graduate Research Assistant, Research Specialist, Research Associate and Assistant Professor, University of Missouri, Columbia, MO 65211.

Field experiments were conducted in 2007 and 2008 at two pasture sites in Boone and Moniteau County, Missouri to evaluate the effect of various herbicides and herbicide combinations on weed control, total forage yield and total forage quality. Both sites consisted of tall fescue (*Festuca arundinacea* Schreb.) pastures that contained natural infestations of common ragweed (*Ambrosia artemisiifolia* L.) and tall ironweed (*Vernonia gigantea* (Walt.) Trel). At both locations, 2,4-D, metsulfuron, aminopyralid, 2,4-D plus dicamba, 2,4-D plus picloram, aminopyralid plus 2,4-D, and 2,4-D plus dicamba plus metsulfuron were applied at a spring and summer application timing and evaluated for tall fescue injury and visual weed control. One month after the spring application timing, metsulfuron and 2,4-D plus dicamba plus metsulfuron resulted in 18 to 48% tall fescue injury, while all other herbicide treatments caused less than 10% tall fescue injury. One month after the summer application timing, all treatments caused less than 5% tall fescue injury. Application timing influenced common ragweed density one year after treatment (1YAT) at the Moniteau County but not the Boone County location. At the Boone County site, common ragweed density 1YAT ranged from 59 to 77 plants/m² and was similar among herbicide-treated and untreated plots. At the Moniteau County location, spring applications of metsulfuron and aminopyralid plus 2,4-D resulted in highest common ragweed densities 1YAT while no herbicide treatment decreased common ragweed density compared to the untreated control at the summer application timing. Application timing did not influence tall ironweed density 1YAT at either location. All herbicide treatments except metsulfuron and 2,4-D plus dicamba plus metsulfuron reduced tall ironweed density 1YAT compared to the untreated control at the Moniteau County research location. At the Boone County location, 2,4-D was the only treatment that decreased tall ironweed density 1YAT compared to the untreated control.

When averaged across all herbicide treatments applied in the spring, total annual forage yields at the Moniteau County location were greater than the untreated control. However, when averaged across all treatments applied in the summer, total annual forage yields were less than the untreated control. At the Boone County location, there were no differences in total annual forage yields between herbicide-treated and untreated plots, regardless of application timing. Few differences in total forage quality were observed at either the Boone or Moniteau County location in response to herbicide applications. One YAT, crude protein (CP) content was higher and acid detergent fiber (ADF) and neutral detergent fiber (NDF) content was lower in untreated compared to herbicide-treated forage at the Moniteau County location. ADF and NDF content was also lower in untreated compared to herbicide-treated forage 1YAT at the Boone County location, but CP content was similar between herbicide-treated and untreated forage. Pure samples of common ragweed and tall ironweed collected at the time of the spring 2007 and 2008 forage harvests were higher in forage quality than pure samples of tall fescue. Therefore, the poorer forage quality in herbicide-treated compared to untreated forage may be at least partially explained by the removal of common ragweed or tall ironweed with herbicide treatments. Results from these experiments indicate that the removal of common ragweed and tall ironweed with herbicides may increase total forage yields but is not likely to increase total forage quality.