EFFECT OF SEEDING RATE ON GLYPHOSATE RESISTANT ALFALFA ESTABLISHMENT. S. Ann McCordick, James J. Kells, and Richard H. Leep, Graduate Student, Professor, and Professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824.

Recommendations for alfalfa seeding rates are based on conventional varieties. The introduction of glyphosate resistant alfalfa offers a new management system for establishing alfalfa. Determining optimum seeding rates will provide forage producers with the information to maximize yield, quality, and profitability with this new technology. Field experiments were conducted in 2005 to determine the effect of weed control on forage production, forage quality and alfalfa stand establishment at varying seeding rates in glyphosate resistant alfalfa. Seeding rates of 4.5, 9.0, and 17.9 kg ha^{-1} were evaluated. Weed control methods included no herbicide, glyphosate applied once before the first harvest, and glyphosate applied once before the first harvest and then 7-10 days following each harvest. No injury was observed from glyphosate. The greatest differences in alfalfa, forage and weed yields were observed at the first and second harvests. There were no differences in forage, alfalfa or weed yields across seeding rates and weed control methods at the third and fourth harvests. Alfalfa yield increased with increasing seeding rate. Glyphosate applications increased alfalfa yield at the 9.0 and 4.5 kg ha^{-1}seeding rates. At the 17.9 kg ha^{-1} seeding rate, weed control did not affect alfalfa yield. Multiple glyphosate applications reduced weed biomass at the 4.5 kg ha^{-1}seeding rate but not at the higher seeding rates. Multiple applications of glyphsate did not increase alfalfa or total forage yield compared to a single application at any of the seeding rates. Glyphosate applications increased forage quality at the first harvest in all seeding rates. Seeding rates did not affect forage quality, regardless of weed control system. Alfalfa stand density was the highest at the 17.9 kg ha^{-1} seeding rate in the spring and fall. Alfalfa crowns thinned out significantly more at the 17.9 kg ha^{-1} seeding rate than at the lower seeding rates.

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