GLYPHOSATE RESISTANT ALFALFA ESTABLISHMENT SYSTEMS. 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.

Glyphosate resistant alfalfa offers new weed control options for alfalfa establishment. Field studies were conducted in 2004 and 2005 in East Lansing, MI to determine the effect of establishment method and weed control method on forage production, forage quality and alfalfa stand establishment. Seeding methods included clear seeding and companion seeding with oats. Herbicide treatments included glyphosate, imazamox or imazamox + clethodim, and no herbicide. Glyphosate injury was minimal, short-lived and no longer evident at the first harvest in 2004. No glyphosate injury was observed in 2005. Weed control with glyphosate was more consistent than imazamox or imazamox + clethodim. In 2004, total seasonal forage yield was the highest where no herbicide was applied in the oat companion crop and was reduced where a herbicide was applied in both establishment systems. In 2005, seeding method or weed control method did not affect total seasonal forage production. Glyphosate resistant alfalfa established by clear seeding methods yielded the highest alfalfa dry matter in both years. Imazamox injury at the first harvest reduced alfalfa yield in the clear seeded system in both years. When no herbicide was applied, alfalfa yield was higher in the clear seeded system. The oat companion crop suppressed alfalfa yield significantly in both years. Alfalfa established with an oat companion crop had a lower weed biomass than the clear seeded system where no herbicide was applied in both years. In 2004, forage quality in the first harvest was reduced where an oat companion crop was used. In 2005, forage quality was lower where a herbicide was not applied in both establishment systems. At the final harvest of the establishment year, forage quality was similar where a herbicide had been applied. Alfalfa plant density in the fall of the establishment year was not affected by establishment method or weed control method in either year. Weed biomass was reduced in the year following establishment where a herbicide was applied in the 2004 establishment year. However, there were no significant differences in alfalfa yield, forage quality and alfalfa stand density observed in the year after establishment.

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