QUACKGRASS CONVERSION TO NATIVE WARM SEASON GRASSES. Thomas G. Barnes and Brian Washburn, Extension Professor and Graduate Research Assistant, Department of Forestry, University of Kentucky, Lexington, KY 40546-0073

We implemented field research near Elkhart, IN during the spring 2001 to determine the efficacy of converting quackgrass (Elytrigia repens (L.) Nevski) to native warm season grasses (NWSG). The randomized-block experiment was designed to evaluate which herbicides would effectively kill quackgrass and the amount of imazapic herbicide required for residual weed control for the successful establishment of NWSG. The following treatments were applied in 0.1 ha treatment plots: Glyphosate at 2.2 kg ai/ha; Clethodim at 0.2 kg ai/ha; Imazapic at 0.06, 0.1, 1.6 kg ai/ha; Glyphostate at 2.2 kg ai/ha plus 0.03, 0.06, and 0.1 kg ai/ha and a non-treated control. A methylated seed oil surfactant at 2.3L/ha and 28-0-0 liquid fertilizer were including with all herbicides following manufacturer's recommendations. All herbicides were sprayed with a Demco™ spray unit delivering a spray volume of 187 L.ha at 414 kPa through Tee-Jet 8003 flat fan nozzles attached to an all-terrain vehicle driven at a constant speed of 2 - 3 kph. We planted a NWSG mixture at a rate of 6.9 kg pure live seed in the plots using a truax no-till drill. The seed mixture contained equal amounts of little bluestem (*Schizachryrium scoparium*), big bluestem (*Andropogon gerardii*), and indiangrass (*Sorghastrum nutans*). The control plots averaged 96 to 99% total vegetative cover and the quackgrass component increased from 84.7 to 90% during the two year study. There was an average of 2.7% NWSG in the plots that had an average of 2.7 plant species per plot. Bare ground increased from 9 to 12% by the end of the second growing season. The percent quackgrass in the Clethodim plots was reduced to 61.8% by the end of the second growing season and the NWSG increased from 10 to 17%. While this treatment did not effectively control the quackgrass, it did inhibit further growth during the initial growing season and prevented seed heads from forming. The plots treated with various rates of imazapic responded similar to the Clethodim treated plots in that the percent quackgrass was slightly reduced by the end of the second growing season to 80%, 70.5%, and 68.3% in the 0.06, 0.1, and 1.6 kg ai/ha treatments respectively. These treatments did inhibit further growth during the initial growing season and prevented seed heads from forming. The percent NWSG in these plots increased to 12%, 5%, and 23% in the 0.06, 0.1, and 1.6 kg ai/ha treatment plots respectively. The Glyphosate plots treated at 2.2 kg ai/ha provided the best control of quackgrass reducing the percent cover to approximately 12% at the end of the second growing season. The percent cover by NWSG in this treatment increased from 11 to 25% by the end of the second growing season. The plots where glyphosate was used to burn down the quackgrass followed by the application of imazapic at seeding NWSG showed great promise as the percent quackgrass was reduced to 14.9%, 10%, and 14.9% by the end of the first growing season in the 0.03, 0.06, and 0.1 kg ai/ha Imazapic plots. The increase in the percent quackgrass increased slightly during the second year to 16,8%, 21.2%, and 18% in the 0.03, 0.06, and 0.1 kg ai/ha plots respectively. These plots showed the greatest promise for establishing the NWSG as percent cover by these grasses at the end of the first growing season was 21%, 25,9% and 39.2% respectively. At the end of the second growing season the precent NWSG increased in all the plots where imazapic was used for weed control to 44.4%, 61.1%, and 57.2%. The results of this study confirm that the successful establishment of NWSG requires a good kill of the existing vegetation and that Imazapic aids in a quicker establishment.

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