

WEED SPECIES DYNAMICS IN GLYPHOSATE-RESISTANT CROPPING SYSTEMS. Shannon M. Oltmans and Richard K. Zollinger, Graduate Research Fellow and Associate Professor, Plant Sciences Department, North Dakota State University, Fargo, ND 58105.

Glyphosate-resistant crops, such as canola, corn, and soybean, are grown extensively throughout North Dakota and northwestern Minnesota. Glyphosate-resistant wheat may be available to North Dakota producers as early as 2005. A field experiment was conducted to evaluate volunteer glyphosate-resistant wheat control, weed species dynamics, and selection of glyphosate-resistant weed species with four herbicide sequences (i.e., glyphosate applied once/yr, glyphosate applied twice/yr, conventional herbicide, and a two-yr sequence of glyphosate applied twice/yr followed by conventional herbicide the subsequent yr) in a glyphosate-resistant soybean-wheat cropping sequence.

Volunteer glyphosate-resistant wheat was controlled with quizalofop-P in glyphosate-resistant soybean. Volunteer glyphosate-resistant wheat densities present at harvest ranged from 0 to 0.3 plants/m<sup>2</sup>. Losses from competition were minimal because of small plant size. Most glyphosate-resistant wheat plants were in the one- to two-leaf stages. Conventional herbicide may favor an increase in kochia and wild buckwheat, while glyphosate applied once/yr may favor an increase in foxtail species, pigweed species, and common lambsquarters. The inability to control late-season weed emergence with one glyphosate application may have contributed to an increase in densities. The increase in weed species densities when glyphosate was applied once/yr appears to be a mechanism of avoidance. There were no glyphosate-resistant weeds observed following 3 yr of glyphosate applied twice/yr. Continued monitoring of weed species dynamics and selection of glyphosate-resistant weeds is necessary in glyphosate-resistant cropping systems.