IMIDAZOLINONE-RESISTANT SUNFLOWER IN KANSAS. Phillip W. Stahlman, Patrick W. Geier, Gregory W. Kerr, and Troy M. Price, Professor, Assistant Scientist, Assistant Scientist, and Assistant Scientist, Kansas State University Agricultural Research Center, Hays KS 67601, and Northwest Research-Extension Center, Colby KS 67701.

Field experiments were conducted in 1999, 2001, and 2002 at Hay and in 2002 at Colby, Kansas to evaluate weed control and crop tolerance with imazamox-based treatments in imidazolinone-resistant sunflowers. Some experiments included an adjuvant comparison between methylated seed soil (MSO) and nonionic surfactant (NIS). In 1999, imazamox at 0.032 lb/A or higher plus NIS and UAN at 0.25% v/v and 2 qt/A, respectively, controlled tumble pigweed, redroot pigweed, and green foxtail by 100% at 26 DAT. Control of hophornbeam copperleaf increased from 82 to 92% as imazamox rate increased from 0.032 to 0.096 lb/A. All imazamox treatments caused 10% or less chlorosis at 6 DAT but plants recovered within a few days and seed yields were not affected. At 4 WAT in 2001, imazamox at 0.032 lb/A or higher plus MSO and UAN at 1% + 2.5% v/v controlled tumble pigweed as tall as 12 inches by 90% or more; however, control declined 15 to 25% within the next 2 wk. Conversely, puncturevine control at 4 WAT ranged from 45% to 85% with imazamox at 0.032 to 0.128 lb/A and increased to 85 to 100%, respectively, at 6 WAT. Leaf chlorosis at 6 DAT increased from 10 to 25% with increasing rate up to 0.128 lb/A. However, plants recovered completely within 3 wk and sunflower seed yields did not differ within or among growth stages. In 2002, tank mixing imazamox and imazapyr at 0.032 + 0.01 lb/A plus NIS at 0.25% and UAN at 1% v/v compared to imazamox + NIS + UAN enhanced control of redroot pigweed and puncturevine in one of two experiments, and Russian thistle, large crabgrass and prairie cupgrass in single experiments by as much as 56%; both treatments controlled tumble pigweed 100%. In two of three experiments, imazamox was more efficacious when applied with MSO than NIS, and both with UAN. Sunflower chlorosis also was greater with MSO, but injured plants in all experiments recovered completely within 3 wk.