

CLEARFIELD SUNFLOWER RESPONSE AND WEED MANAGEMENT WITH HERBICIDES

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Clearfield™ (imidazolinone-resistant) sunflower response and weed control with selected herbicide treatments were investigated in field trials conducted at Carrington in 2001 and 2002. Beyond (imazamox) herbicide is expected to be labeled for Clearfield sunflower in 2003. The trials were conducted on loam soil with 8.0 pH and 2.5 percent organic matter in 2001, and 6.2 pH and 3.9 percent organic matter in 2002. USDA and Mycogen experimental imidazolinone-resistant sunflower lines were planted in 30-inch rows on June 1, 2001, and May 22, 2002. Herbicide treatments included PRE (preemergence) Prowl, Spartan, Prowl + Spartan; and POST (post emergence) Beyond + various adjuvants. Herbicide treatments were applied to 10 by 30 ft. plots with a CO₂ pressurized hand-held plot sprayer. PRE treatments were applied one day after planting. A total of 2.15 inches of rainfall occurred during the 10-day period following PRE treatments in 2001. In 2002, rainfall did not occur until 16 days following PRE treatments (1.15 inches). POST treatments were applied to 4-leaf or 8-leaf sunflower in 2001 and 10-leaf sunflower in 2002. Weed species in 2001 included green and yellow foxtail, common lambsquarters, redroot and prostrate pigweed, wild mustard, wild buckwheat, and eastern black nightshade, and in 2002 the weed species included green and yellow foxtail and marshelder. Weed control was visually evaluated four and eight weeks, and sunflower response two and four weeks after herbicide application.

In 2001, Spartan at 2.7 to 3.5 oz/acre provided 70 to 99 percent control of common lambsquarters, pigweed, wild buckwheat, and eastern black nightshade and Prowl at 3 pt/acre + Spartan provided 82 to 99 percent control. Foxtail and marshelder control in 2002 was poor with PRE treatments due to the extended delay in rainfall after herbicide application. Weed control was generally good to excellent (78 to 99%) with PRE treatments followed by POST Beyond at 4 fl oz/acre + NIS (nonionic surfactant) at 0.25% + 28% N at 1%. Without a PRE treatment, Beyond provided 76 to 90 percent control of foxtail and 91 to 99 percent control of pigweed, marshelder, wild mustard, and eastern black nightshade. Beyond + methylated seed oil at 1.25 percent generally did not improve weed control compared to Beyond + NIS. In 2001, Clearfield sunflower height generally was reduced with Beyond, but the effect lessened as plants developed. Sunflower tolerance to Beyond was excellent in 2002. Sunflower tolerance to six selected POST sulfonylurea herbicides was variable and the presence of injury ranged from 38 to 90 percent.