

RANSOM, COREY V.<sup>1\*</sup>, JOEY ISHIDA<sup>1</sup>, AND DON MORISHITA<sup>2</sup>, <sup>1</sup> Malheur Experiment Station, Oregon State University, 595 Onion Ave, Ontario, OR 97914, and <sup>2</sup> Twin Falls R&E Center, P.O. Box 1827, Twin Falls, ID 83303. **Sugar beet tolerance and weed control with BAS 65607.**

#### ABSTRACT

BAS 656 07 H is a soil-active herbicide that has potential for weed control in sugar beets. Trials were conducted at two locations to evaluate BAS 656 07 H for sugar beet tolerance and weed control efficacy. At Ontario and Kimberly, 'WS PM9' sugar beets were planted in 22 inch rows May 15 and May 22. Herbicide applications at Ontario were broadcast with a CO<sub>2</sub>-pressurized backpack sprayer delivering 20 gpa at 30 psi. At Kimberly, herbicides were applied in a 10 inch band with a bicycle sprayer delivering 20 gpa at 40 psi. At both locations, plots were 4 rows wide by 30 feet long. At Kimberly, treatments were replicated 4 times in both the tolerance and the weed control trial. At Ontario, treatments were replicated 4 times in the tolerance trial and 3 times in the weed control trial. At Kimberly, an error in the BAS 656 07 H formulation that was used for the initial application resulted in a second application being made to adjust the herbicide rates to those specified in the protocol. The center two rows were harvested from each plot to determine sugar beet root yield. For the tolerance trials, weeds were controlled with standard herbicides and by hand labor. Sugar beet injury and yield was evaluated in response to postemergence applications of BAS 656 07 H at a typical use rate (0.64 lb ai/A) and at rates 2 (1.28 lb ai/A) and 4 (2.56 lb ai/A) times the typical use rate. Combinations of BAS 656 07 H with phenmedipham/desmedipham (phen./desm.) and phen./desm. plus triflusaluron were also evaluated. In Ontario, the combinations were with the 1X rate of BAS 656 07 H applied to 4-5 leaf sugar beets, while at Kimberly they were applied with the 4X rate to 2 leaf beets. The weed control trials consisted of treatments of BAS 656 07 H (0.64 lb ai/A), phen./desm.(0.25 lb ai/A), and phen./desm. plus triflusaluron (0.0156 lb ai/A) alone and in combinations applied to 2 leaf sugar beets. All plots received phen./desm.(0.25 lb ai/A) when sugar beets were in the cotyledon stage.

In the tolerance trial, BAS 656 07 H injured sugar beets at the 2 and 4X rates in Kimberly, but only at the 4X rate in Ontario. At Kimberly, the combination of BAS 656 07 H (4X) with phen./desm. plus triflusaluron reduced sugar beet yield by 25% compared to BAS 656 07 H alone at the 1X rate. At Ontario, BAS 656 07 H at the 4X rate reduced yield 9% compared to the hand-weeded check. Weed control with BAS 656 07 H was comparable to standard treatments if weeds were controlled prior to its application. At Kimberly, all treatments provided greater than 91% control of redroot pigweed, common lambsquarters, and hairy nightshade, and at least doubled the yield of the untreated. At Ontario, the addition of phen./desm. to BAS 656 07 H increased control of redroot pigweed, common lambsquarters, and hairy nightshade. BAS 656 07 H and dimethenamid alone on 2 leaf sugar beets were not effective in Ontario, but were in Kimberly. This may have been due to differences in weed emergence at the two sites. Late season barnyardgrass control was greater with treatments containing BAS 656 07 H in comparison to sequential applications of phen./desm. and phen./desm. plus triflusaluron. All treatments in Ontario increased yields compared to the untreated plots, but yields with BAS 656 07 H and dimethenamid alone were lower than the other treatments due to poor weed control.