

TOLERANCE OF POTATO MINI-TUBERS TO PRE AND POST HERBICIDE APPLICATIONS.

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Demand for disease free potato seed in Michigan is high due to a large economic return upon planting disease and virus free seed potatoes. Using aseptically grown plants produced from tissue culture, potato mini-tubers can be planted as a clean seed source. However, many generally accepted cultural practices for managing mini-tubers are adopted from cut seed piece, including weed management programs. In 2007, growers observed injury from different herbicides treatments on particular potato cultivars grown from mini-tubers. Field trials were conducted at the Montcalm Research Farm in Lakeview Michigan in 2008, to evaluate the effect of labeled herbicide programs on three cultivars of potato mini-tubers. Potato cultivars; Atlantic, Frito Lay (FL) 1867 and FL 1922 were planted in 34-inch rows, 2.5 inches deep at 8 inch spacing and hilled at planting. Fifteen treatments were arranged in a strip plot design with four replications. Treatments were, 1) S-metolachlor (1.27 lb ai/A), 2) pendimethalin (0.71 lb ai/A), 3) metribuzin (0.5 lb ai/A). 4) linuron (0.5 lb ai/A), 5) rimsulfuron (.023 lb ai/A), 6) dimethenamid (0.66 lb ai/A), 7) imazosulfuron (0.4 lb ai/A), 8) linuron (0.5 lb ai/A) plus S-metolachlor (1.27 lb ai/A), 9) linuron (0.5 lb ai/A) plus S-metolachlor (1.27 lb ai/A) plus metribuzin (0.09 lb ai/A), 10) metribuzin (0.09 lb ai/A) plus S-metolachlor (1.27 lb ai/A) plus pendimethalin (0.24 lb ai/A), 11) metribuzin (0.09 lb ai/A) plus S-metolachlor (1.27 lb ai/A) plus pendimethalin (0.24 lb ai/A) plus glyphosate (0.77 lb ai/A) plus ammonium sulfate (3.4 lb/A), 12) linuron (0.5 lb ai/A) plus S-metolachlor (1.27 lb ai/A) followed by rimsulfuron (0.016 lb ai/A) plus non-ionic surfactant (.05 gal/A), 13) linuron (0.5 lb ai/A) plus S-metolachlor(1.27 lb ai/A) followed by rimsulfuron (0.016 lb ai/A) plus metribuzin (0.25 lb ai/A) plus non-ionic surfactant (.05 gal/A), 14) KIH-485 (1.26 lb ai/A) 15) non-treated. Plots were grown following practices similar to those used in commercial seed production in Michigan, with plots maintained weed free by hand. Visual injury was rated throughout the season on a 0-100% scale and at yield data was collected at the end of the season for, tuber count and tuber defects. Visual ratings show differences in cultivar response to treatments with greater injury observed in FL1867 and FL1922. Treatments displaying visual injury in both cultivars contained S-metolachlor, metribuzin, linuron alone or in combination. Treatments that caused yield reductions in all cultivars were V-10142 and treatments containing POST applications of rimsulfuron. Purposed herbicide programs are suggested for safe application to potato mini-tubers based on results.