STIMULATION OF GERMINATION OF EASTERN BLACK NIGHTSHADE, SMOOTH GROUNDCHERRY AND CLAMMY GROUNDCHERRY SEEDS WITH SULFONYLUREA HERBICIDES. Robert E. Uhlig and Bernard H. Zandstra, Research Assistant and Professor, Department of Horticulture, Michigan State University, East Lansing, MI 48824-1325.

Greenhouse and laboratory studies were conducted to evaluate germination response of eastern black nightshade (*Solanum ptycanthum*) [EBN], smooth groundcherry (*Physalis subglabrata*) [SG], and clammy groundcherry (*Physalis heterophylla*) [CG] seeds to halosulfuron, trifloxysulfuron, rimsulfuron, metolachlor and metribuzin. Weed fruits were collected from different fields in Michigan in 2002. Seeds were extracted from the fruit and stored at -20 C for 2 months and maintained at 5 C until planting. Prior to planting, EBN seeds were treated with hypochlorite (1% v/v) for 8 min. and then rinsed with water for 24 h. In the greenhouse studies, fifty seeds of EBN, SG, and CG were planted in a 4 inch container filled with loamy sand soil. Halosulfuron (0.05 and 0.1 kg/ha), trifloxyuslfuron (0.005 and 0.01 kg/ha), rimsulfuron (0.035 and 0.07 kg/ha) and metribuzin (0.28 kg/ha) were sprayed one day after planting in a spray chamber at 172 kPa with an output of 187 L/ha. Eastern black nightshade percent germination was calculated ((# of plants per pot / # of seed planted)*100) at 5, 14, and 28 days after treatment (DAT); then plants were clipped at the soil surface, dried and weighed. SG and CG plants were counted, at 7, 14, and 40 DAT; then plants were cut, dried and weighed. Trifloxysulfuron at 0.005 and 0.01 kg/ha, and rimsulfuron at 0.07 kg/ha had higher EBN germination rates than control at 14 DAT; however they were not different at 28 DAT. All treatments resulted in lower EBN dry weight, except halosulfuron (0.05 kg/ha) and trifloxysulfuron (0.005 kg/ha) which were not different from the control. SG germination was not affected by any of the sulfonylurea herbicides at 14 DAT, but rimsulfuron [0.07 kg/ha] treated seeds had higher germination (67%) at 40 DAT compared to the control (46%). Results for CG differed between trials. In the first trial, trifloxysulfuron at 0.01 kg/ha had the highest germination at 14 and 40 DAT. In the second trial, none of the treated seeds differed from the control, except trifloxysulfuron (0.21 kg/ha) which had the lowest percent germination.

In the laboratory, EBN seeds were treated with halosulfuron, trifloxysulfuron, rimsulfuron, and metolachlor and SG seeds were treated with rimsulfuron and metolachlor and grown in petri dishes at 30 C. Laboratory results were variable. In the first trial, halosulfuron had the highest EBN seed germination at 3 and 5 DAT. No differences were observed in the second trial, whereas, the third trial control had higher germination than halosulfuron. Trifloxysulfuron [0.005, 0.01, and 0.02 kg/ha] treated EBN seeds were not different from the control and EBN seeds treated with rimsulfuron [0.03 and 0.14 kg/ha] had higher germination in one trial at 15 DAT. Similar to the greenhouse results, SG seed germination was greater with seeds sprayed with rimsulfuron at 0.03 kg/ha at 25 DAT.

These studies suggest that some of the sulfonylurea herbicides could influence SG and EBN seed germination. The germination response to these herbicides, especially halosulfuron, changed over time suggesting other factors are involved. Further studies are needed on temperature and light effects on sulfonylurea herbicide treated weed seeds.