# WSSA Abstracts

## 2004 Meeting of the Weed Science Society of America

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plant stage. Control of the resistant population was < 90% even at the 17.8 kg/ha rate, regardless of horseweed stage. Averaged over the growth stage, there was a linear response to glyphosate rate. At 1.1 or 2.2 kg/ha rate, control was better with the pre-bolt stage than the other growth stages. The second study was conducted in four fields naturally infested with glyphosate-resistant horseweed. The treatments were a factorial arrangement of glyphosate rates (1.1, 2.2, or 4.4 kg ai/ha) applied at different timings (soybean planting or four weeks later [in-crop], or sequential applications [at planting application of 1.6 kg/ha followed by an in-crop application]). Horseweed control with the at-planting application was better than the in-crop application. The sequential applications were better than at-planting application two out of the four locations. The two locations where resistant biotypes were a greater percentage of the population, the sequential application did not provide additional weed control over the at-planting application alone. (19)

**Cyhalofop POST-flood combinations in rice.** Scott, R.C.[1,*], Dillon, T.W.[1] and Smith, K.[2] [1]University of Arkansas, Lonoke, AR, [2]University of Arkansas, Monticello, AR. Cyhalofop is a new post applied herbicide for grass control in rice *Oryza sativa*. Current labeling permits applications of cyhalofop to rice after the establishment of permanent flood. Experiments were conducted to evaluate various tank mixtures and timings of cyhalofop for the control of barnyardgrass *Echinochloa crus-galli* and other summer annual grass weeds. POST-flood tank mixtures of cyhalofop and several broadleaf herbicides including: 2,4-D, halosulfuron, and triclopyr all resulted in a reduction in grass control. POST-flood treatments applied up to 7 days after flood performed better than those applied 14 and 21 days after flood. In general, POST flood treatments controlled barnyardgrass and other annual grasses better than treatments applied pre-flood. These data idicate the need for good moisture and smaller weed size at the time of application. (20)

**Herbicide placement site affects small broomrape (*Orobanche minor*) control in red clover.** Eizenberg, H.[1], Colquhoun, J.B.[1] and Mallory-Smith, C.A.[1] [1]Oregon State University, Corvallis, Oregon. In Oregon, small broomrape causes severe damage to red clover. In recent studies, imazamox controlled small broomrape in red clover. The objective of this study was to determine whether imazamox is translocated through the plant or through the soil. Experiments were conducted in a greenhouse under temperature-controlled conditions. Red clover plants were planted in small broomrape inoculated pots. Imazamox was applied at rates of 10, 20, 30, and 40 g $ha^{-1}$, 1200 growing degree-days after planting. Non-treated plants served as a control. Herbicide applications included: (a) soil only; (b) foliar plus soil; (c) foliar only with charcoal protected soil; and (d) foliar alone to one plant with a protected plant in the same pot with charcoal protected soil. The red clover roots were washed two weeks after herbicide application and inspected for small broomrape attachments and aborted attachments, and red clover biomass was measured. Foliar application was more effective than soil application. Small broomrape control was greatest when imazamox was applied to the foliage regardless of the presence of charcoal. Small broomrape control was excellent at all herbicides rates and the red clover was not injured. In application (d), small broomrape was partially controlled on the untreated protected red clover plants. Imazamox from the treated plants appears to move to the rhizosphere, which may reduce infection in the neighboring non-treated red clover plant. eizenber@volcani.agri.gov.il. (21)

**Herbicides and desiccants for managing cuphea: a new oilseed crop.** Forcella, F.[1,*] and Gesch, R.[1] [1]USDA-ARS Soils Lab, Morris, MN. Cuphea is a partially domesticated potential new crop that produces seeds with high levels of medium chain length fatty acids (primarily capric acid, but also lauric acid). The variety currently grown, PSR-23, is a cross between two annual species: *Cuphea viscosissima* and *C. lanceolata*. The plant grows best in Minnesota and adjacent states under conditions analogous to those of soybean. At this stage of domestication, cuphea produces up to 1000 kg/ha of seeds. Very slow growth in spring and indeterminate growth in late summer necessitates the use of herbicides for weed control and desiccants for harvest aids. However, no chemicals have been labeled for use in cuphea at this time. Consequently, we undertook basic agronomic research to find herbicides that cuphea tolerates, and desiccants that facilitate harvesting of this shatter-prone crop. Cuphea adequately tolerates the following soil-applied herbicides: ethalfluralin, isoxaflutole, mesotrione, and trifluralin. It also has some tolerance to POST applications of imazethapyr, imazamox, and mesotrione. Useful harvest aids include paraquat, sodium chlorate, and tanks mixes of both. Swathing and windrowing also are useful for harvesting cuphea. Approximately 40 ha of cuphea will be grown in 2004 under the sponsorship of a large international company. More extensive acreage is anticipated in 2005. (22)

**New Herbicides for Weed Control in Pearl Millet (*Pennisetum glaucum*).** Vencill, W.K.[1,*] [1]Department of Crop & Soil Sciences, Athens, GA. Field studies were established to examine pearl millet tolerance to several herbicides with the potential to provide grass weed control. Mesotrione, sulfosulfuron, sulfosulfuron plus a safener (MON 13900), carfentrazone, quinclorac, foramsulfuron plus mefenapyr, nicosulfuron plus naphthalic anhydride and cloquintocet were examined. All herbicides examined except for mesotrione and sulfosulfuron caused >80% injury to pearl millet. Sulfosulfuron applied POST at 32 g ai/ha and mesotrione applied PRE and POST at 100 g ai/ha caused <10% injury 7 and 14 days after treatment. The addition of a safener MON 13900 to sulfosulfuron did not improve crop tolerance. Pearl millet yield followed a similar trend. A second study examined the tolerance of pearl millet to a rate range of mesotrione applied PRE and POST at 100, 200, and 400 g/ha and sulfosulfuron applied POST at 32, 64, and 128 g/ha. Injury from mesotrione applied PRE was greatest at 400 g/ha at 15%. Pearl millet injury from mesotrione applied POST increased with rate with a maximum of 80% at 400 g/ha. These two herbicides have potential to provide grass weed control in pearl millet. (23)