

RESPONSE OF POISON HEMLOCK TO HERBICIDES. Carl A. Woodard and Reid J. Smeda, Graduate Research Assistant and Associate Professor, Division of Plant Sciences University of Missouri. Columbia, MO. 65211.

Poison hemlock (*Conium maculatum* L.) is an invasive, biennial plant that has become a significant problem weed along roadsides and in right-of-way areas across the central U.S. Poison hemlock is considered noxious in eight states, yet limited information is available on herbicidal control of this plant. The objectives of this research were to determine the initial response of poison hemlock with selected herbicides and to identify residual activity of selected herbicides. Studies were established in 2006 and 2007 at 2 locations, with 14 treatments and 4 replications in a RCB design. Applications were made 15-March in 2006 and 12-April or 27-April in 2007. In 2007, Missouri experienced unusually low night temperatures (3 nights of < -3 C) in early April, which damaged much of the plant tissue. Visual evaluations of herbicide activity were made 2, 4 and 8 weeks after treatment (WAT). Emerged seedlings were also counted in treated plots at 2, 4, 8, 12, and 24 WAT to monitor seedling suppression. Initial herbicide activity (4 WAT) was lower than the 8 WAT evaluations due to cool conditions during and shortly after herbicide application. By 8 WAT, imazapic, imazapic + glyphosate, chlorsulfuron, metsulfuron-methyl, and metsulfuron-methyl + 2, 4-D + dicamba all resulted in 80% or greater control of poison hemlock for all four site years. Triclopyr + clopyralid, triclopyr, and picloram + 2, 4-D resulted in 80% or greater control for 3 of the 4 site years. Dicamba and 2, 4-D activity were unacceptable (maximum of 68% control) for control of poison hemlock across all four site years, even at a rate of 0.12 and 2.11 Kg ai ha⁻¹, respectively. However, stronger growth regulators such as triclopyr and clopyralid were effective. The new herbicide aminopyralid resulted in less than 50% control of poison hemlock at 3 of 4 site years. Poison hemlock control was more consistent in 2007 than 2006, likely the result of frost damage in 2007. In the absence of herbicides, emergence of poison hemlock seedlings declined naturally because of increasing air temperature. However the ALS herbicides, chlorsulfuron, imazapic, and metsulfuron-methyl reduced poison hemlock emergence up to 42% by 2 WAT, 23% by 4 WAT, 71% by 8WAT, 48% by 12 WAT, and 71% by 24 WAT compared to areas treated with glyphosate (non-residual). Glyphosate and 2, 4-D were not effective at suppressing newly emerging seedlings of poison hemlock. Growth regulators triplopyr + clopyralid, aminopyralid, and picloram + 2, 4-D, at 2 WAT reduced seedling emergence by 70% compared to glyphosate alone. By 24 WAT, overall suppression of emergence had decreased. An effective season-long management program for poison hemlock may necessitate repeated application of herbicides.