SEED ECOLOGY AND BIOMASS PRODUCTION OF POISON HEMLOCK. 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 weed that is native to Europe. Considered noxious in eight states, poison hemlock has been recognized as a newer problem weed in pastures and roadside right-of-ways. Seed production and seed dormancy data are limited, with the most documented aspect of poison hemlock concerning its toxicity. The objectives of this research were: 1) to determine the amount of poison hemlock seed produced by plants; 2) identify if seed dormancy limits the establishment time for seedlings; and 3) estimate the amount of above ground biomass plants produce during early spring. Seed production studies included 3 locations in central Missouri in 2006 and 2007. Sixteen fully mature plants were harvested from each location, 6-July-2006 and 6-July-2007, and categorized into 4 height ranges (1.2 to 3.4 m) with 4 plants per range. Seed was collected from the plants and quantified. Poison hemlock was capable of producing between 1,700 and 39,000 seeds per plant. Plants from 2006 yielded dramatically more seed than plants from 2007, likely the result of extremely low nightly temperatures during early-April. Taller plants produced the greatest amount of seed for all 6 site years. Seed for the dormancy study was collected from senescing plants at 2 locations 6-July-2007 and stored in nylon mesh bags and placed on the ground at the respective locations. At 0, 18, 36, 54 and 72 days after collection, seed germination was estimated in a growth chamber (14 hour day period; constant temperature of 24 C). Freshly mature seed germinated, indicating a lack of dormancy. Percent germination of seeds collected 72 days after maturity increased 60 to 85% compared to seeds collected 0 days after. Percent germination was greatest for seed collected 72 days after senescing (approximately 46%). Plant biomass studies consisted of 2 locations, with 4 poison hemlock densities (1, 3, 9, and 27 plants per square meter) and 5 harvest dates (15-March, 1-April, 15-April, 1-May, and 15-May). Total plant fresh and dry weights were recorded upon harvest. Plant biomass produced 15-May increased 93 to 98% compared to biomass produced 15-March. At high densities (9 and 27 plants per square meter), poison hemlock produced up to 2,600 Kg ha^{-1} of dry plant material, while lower densities (1 and 3 plants per square meter) produced up to 1,900 Kg ha^{-1} of dry plant material. The amount of dry matter produced in given area is important when considering poisoning of livestock. Poison hemlock is prolific in both seed and biomass production. Seed readily germinates at maturity enabling seedlings to become established in new areas.

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