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## **Effects of glyphosate and *Alternaria angustiovoidea* on *Euphorbia esula***

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*Alternaria angustiovoidea* isolates were collected on leafy spurge (*Euphorbia esula*) in Nebraska and North Dakota. These isolates were cultured at Frederick, MD, and evaluated in a series of greenhouse experiments in 1991 to determine control potential on leafy spurge alone, with an invert oil carrier, or following a pretreatment of glyphosate at .05 and .1 lb/Acre (0.056 and 0.11 kg/ha). The Nebraska and North Dakota isolates alone caused 96% and 98% injury to leafy spurge following 48 hours in a high humidity dew chamber. These isolates also reduced the height of leafy spurge by 40% and 80% respectively 28 days after treatment. The Nebraska isolate reduced dry weight of stems and roots slightly but at 120 days the North Dakota isolate reduced the dry weight of stems and roots 70% and 77% respectively. Field experiments were conducted in 1991 and 1992 using the Nebraska isolate at subirrigated meadow and sand hills pasture sites in Nebraska. Selected sites received applications of glyphosate at 1 lb/acre (1.1) prior to pathogen treatment. The 1991 field experiments also included an invert oil emulsion carrier for *A. angustiovoidea*. In the 1992 field experiment, the isolate was applied alone with a nonionic surfactant in water or in a crop oil and water solution. Glyphosate alone at 1 lb/A reduced leafy spurge cover 65% and 60% in the subirrigated meadow and sand hills pastures respectively. Flowering of leafy spurge was reduced 60% and 70% at the same sites. Glyphosate at 1 lb/A as a pretreatment followed by two applications of *A. angustiovoidea* in an invert emulsion reduced leafy spurge cover 70% in the subirrigated meadow. This combination reduced flowering 80% at both locations. In 1992, glyphosate alone or combined with *A. angustiovoidea* caused 50% injury to leafy spurge evaluated at four weeks after application.