

PRODIAMINE APPLICATION TIMING FOR LARGE CRABGRASS AND JAPANESE STILTGRASS CONTROL. Jeffrey F. Derr, Professor, Virginia Tech, Hampton Roads Agricultural Research and Extension Center, 1444 Diamond Springs Road, Virginia Beach, VA 23455.

Large crabgrass is a common and troublesome summer annual weed in turf. Japanese stiltgrass [*Microstegium vimineum* (Trin.) A. Camus] is a summer annual grass that has aggressively invaded shaded areas in turf, ornamentals, and noncrop areas in Virginia and other mid-Atlantic states. Experiments were conducted in 2003 and 2004 to determine the onset of germination for Japanese stiltgrass and evaluate herbicide application timing for control of this invasive species. The effectiveness of prodiamine applied in winter or early spring for Japanese stiltgrass control was compared to that seen with large crabgrass. Winter applications of prodiamine have utility for large crabgrass control due to its longevity in soil and may also be useful for control of Japanese stiltgrass.

All experiments utilized a randomized complete block design with 4 replications. Japanese stiltgrass and large crabgrass plants were transplanted in summer of 2002 and 2003 and allowed to set seed in bare ground plots for the germination trials. Seedling counts were taken daily, starting with the first indication of emergence the following March.

An established stand of 'Shenandoah' tall fescue was used for the large crabgrass control trials. A wooded site was used for the Japanese stiltgrass control experiments. Prodiamine was applied once in December or March at 0.84 kg ai/ha, twice at 0.42 kg ai/ha in December plus March, December plus May, or March plus May, or three times at 0.42 kg ai/ha in December plus March plus May. March applications were made prior to the germination of either weed species.

Japanese stiltgrass emergence was first observed on March 14 in 2003 and March 19 in 2004. Large crabgrass first emerged on March 21 in 2003 and April 15 in 2004.

Numerically highest control of large crabgrass occurred in plots treated in December plus March plus May, with 95% control seen in July of 2003 and 99% control in July of 2004. Prodiamine applied once at 0.84 kg/ha in December controlled large crabgrass 75% and 84%, respectively in 2003 and 2004. Prodiamine applied once at 0.84 kg/ha in March controlled large crabgrass 65% in 2003 and 79% in 2004. All multiple application treatments of prodiamine controlled large crabgrass 80% or higher in both years when evaluated in July.

All prodiamine treatments significantly reduced Japanese stiltgrass stand when evaluated in late April of each year. However, no treatment provided acceptable control of Japanese stiltgrass when evaluated in July of 2004. Three applications of prodiamine controlled Japanese stiltgrass 83% in May of 2003 but only 60% in May of 2004. Three applications of prodiamine reduced large crabgrass ground cover in August by 92% in 2003 and 96% in 2004. This treatment reduced Japanese stiltgrass ground cover in August by 82% in 2003 but only 44% in 2004. The lower control of Japanese stiltgrass is primarily due to the growth of tillers during the summer, allowing the species to fill in bare areas between plants. There was little competing vegetation in the wooded site. The higher organic matter content in the Japanese stiltgrass site may have caused greater adsorption of prodiamine, resulting in lower control of this species compared to large crabgrass.

Japanese stiltgrass germinates earlier in spring than large crabgrass. Winter applications of prodiamine provide acceptable large crabgrass control the following July. Multiple applications provide improved large crabgrass control. Prodiamine applied in winter or early spring reduces stand of Japanese stiltgrass but does not provide as high a level of control compared to that seen in large crabgrass.