

Evaluation of foliar and subsurface applications of metsulfuron-methyl for control of giant salvinia

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Giant salvinia (*Salvinia molesta* D.S. Mitchell) is an invasive floating aquatic fern that has rapidly spread throughout Louisiana and Texas since the late 1990s. Management is difficult due to the limited number of efficacious herbicides. Recently a Section 24(c) registration [Special Local Need (SLN) label] was granted in Louisiana and Texas for the use of metsulfuron-methyl (MSM), but studies are lacking to determine the optimum use patterns for selective control of giant salvinia in public waterbodies. Metsulfuron applied to the foliage of giant salvinia at 2.6, 5.3, 10.5, 21.1, 42.1, 84.1, and 168.2 g ha⁻¹ resulted in growth cessation and necrosis 1 wk after treatment (WAT) with gradual stunting and decline throughout the 8-wk trial. Based on dry weight biomass, the calculated foliar lethal dose required to control 90% of the test population (LD₉₀) of MSM when applied to the foliage of giant salvinia was 3.83 g ha⁻¹, which is less than one-tenth of the max use rate (42.1 g ha⁻¹). Additional trials evaluating foliar applications of MSM (42 g ha⁻¹) in combination with currently registered aquatic herbicides found that >99% control was achieved when MSM was mixed with carfentrazone, diquat, flumioxazin, or glyphosate. Combination treatments provided faster visual injury compared to MSM alone but resulted in no differences among treatments at the conclusion of the trial. Subsurface static applications of MSM at 10 to 80 µg L⁻¹ provided >98% control (10 WAT), and the calculated EC₉₀ (effective concentration required to control 90% of the test population) based on dry weight was 1.87 µg L⁻¹. The results of these experiments demonstrate that metsulfuron is highly efficacious on giant salvinia when applied to the foliage and subsurface.