

American frogbit response to herbicides

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ABSTRACT

Limnobium spongia (frogbit) is a free-floating aquatic plant that can produce extensive floating mats causing negative ecological, social, and economic impacts that can harm aquatic fauna (i.e., dissolved oxygen depletion) and restrict human uses of water. Literature describing effective control measures for frogbit is minimal. Efficacy of high and low doses of seven foliar-applied herbicides (2,4-D, florypyrauxifen-benzyl, flumioxazin, glyphosate, imazamox, imazapyr, and triclopyr) were evaluated in a mesocosm setting in the summers of 2018, 2020, and 2021. Both emergent and submersed frogbit biomass were reduced at least 99% by imazamox (0.56 and 1.11 kg ai ha⁻¹) and imazapyr (0.42 and 0.84 kg ae ha⁻¹) 8 wk after treatment (WAT) compared with nontreated reference plants. Triclopyr (6.71 kg ae ha⁻¹) reduced frogbit biomass 92% and flumioxazin (0.42 kg ai ha⁻¹) reduced biomass 87 to 93% compared with reference plants. 2,4-D (2.12 and 4.24 kg ae ha⁻¹), glyphosate (2.83 and 5.67 kg ai ha⁻¹), triclopyr (3.36 kg ae ha⁻¹), florypyrauxifen-benzyl (0.02 and 0.05 kg ai ha⁻¹), and flumioxazin (0.21 kg ai ha⁻¹) did not reduce frogbit biomass 8 WAT compared with reference plants. Future research should consider the efficacy of different herbicide combinations to control frogbit, as well as the role of diluent volume per unit area, especially with imazamox and imazapyr. Field studies also will be useful in determining whether the results observed in this study will translate to management of frogbit in natural settings.

Key words: aquatic plant control, foliar herbicide application, *Limnobium spongia*, native nuisance species.

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