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Large-scale mesocosm evaluation of floryprauxifen-benzyl, a novel arylpicolinate herbicide, on Eurasian and hybrid watermilfoil and seven native submersed plants.

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Eurasian watermilfoil (*Myriophyllum spicatum* L.; EWM) and hybrid Eurasian watermilfoil (*Myriophyllum spicatum* L. X *Myriophyllum sibiricum* Kom.; HWM) are problematic invasive submerged plants often managed with selective-use patterns of various aquatic herbicides. Since its confirmation HWM has been a concern due to reports of reduced herbicide efficacy across several modes of action, including those of synthetic auxins. For the auxin-mimic herbicides, it is not clear whether the reduced efficacy is herbicide- or class-specific or whether it affects entire modes of action. The arylpicolinate herbicide floryprauxifen-benzyl has shown promise for control of several invasive aquatic plant species, including water-milfoils, at lower use rates than currently used herbicides. A study was designed to evaluate concentration–exposure-time (CET) scenarios using floryprauxifen-benzyl on well-established EWM and HWM, as well as on seven native species grown in 6,700-L tanks at the Lewisville Aquatic Ecosystem Research Facility in Lewisville, TX. The inclusion of native species allowed for insight on the selectivity of floryprauxifen-benzyl. Floryprauxifen-benzyl treatments were applied at three concentrations (3, 9, and 27 $\mu\text{g ai L}^{-1}$) for 6- and 24-h half-lives, as well as two concentrations (3 and 9 $\mu\text{g L}^{-1}$) as a static exposure. Eight CET scenarios were tested and biomass harvests were performed 30 and 60 d after treatment. Results indicated that all CET scenarios resulted in significant control of EWM and HWM, with HWM showing a lower sensitivity to floryprauxifen-benzyl. Additionally, native species showed lower sensitivity to floryprauxifen-benzyl and the new herbicide should provide selectivity when used for EWM or HWM control under the rate and exposure scenarios tested.