

## Journal of Aquatic Plant Management – Volume 56, January 2018

### Can low rates of imazapyr or glyphosate improve graminicide activity on torpedograss?

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Invasive grass control remains one of the greatest challenges in aquatic plant management. High rates of glyphosate or imazapyr are commonly used but lack the selectivity desired by many aquatic managers. Recent progress with graminicides has demonstrated marked efficacy on torpedograss and excellent selectivity for many nontarget aquatic plants. However, torpedograss control has yet to be maximized with any graminicides, and regrowth can be considerable. To this end, tank mixes of reduced rates of glyphosate or imazapyr could be useful to both increase efficacy and maintain selectivity. Unfortunately, graminicides also have a long history of antagonism with several other classes of herbicides including acetolactate synthase inhibitors. The potential interactions between graminicides and glyphosate and imazapyr are unknown in aquatic settings. To address these issues, greenhouse studies were conducted to evaluate the performance of sethoxydim applied at  $0.53 \text{ kg ha}^{-1}$  and fluazifop-p-butyl applied at  $0.42 \text{ kg ha}^{-1}$  when tank mixed with glyphosate (applied at 0.84 or  $1.68 \text{ kg ae ha}^{-1}$ ) or imazapyr (applied at 0.07 or  $0.14 \text{ kg ai ha}^{-1}$ ). At 60 d after treatment, we found no benefit to tank mixing glyphosate or imazapyr with either graminicide because biomass reductions were not improved compared to the graminicides alone. No antagonism was found between the graminicides and imazapyr, and limited antagonism was found between glyphosate and both graminicides. This antagonism was observed as a reduced impact of the tank mix on belowground biomass when compared to the expected reduction of the tank mix. Overall, these studies indicate that reduced rates of the two most commonly used herbicides for aquatic invasive grass control do not improve graminicide activity on torpedograss.