

The suppressive effects of aquatic foliar herbicide prescriptions on nontarget panicgrass (*Paspalidium geminatum*)

Jens Beets, Dean Jones, Mike Netherland, Candice Prince, and James Leary

Panicgrass [*Paspalidium geminatum* (Forssk.) Stapf] is a wetland habitat species native to Florida. A mass decline of this grass species was observed starting in 2010 with the cause unknown. Invasive plants, namely water hyacinth [*Eichhornia crassipes* (Mart.) Solms] and water lettuce (*Pistia stratiotes* L.), colonize these grass beds and are controlled year-round as part of a preemptive maintenance program to protect these panicgrass habitats from being displaced. Out of concern that collateral herbicide injury may be a potential cause for this decline, a series of mesocosm and field trials tested the sensitivity of panicgrass to prescriptive foliar herbicide treatments applied with a single dose or multiple, sequential doses. Mesocosm trials measured sublethal growth suppression on panicgrass with diquat and the combination of 2,4-D + flumioxazin with both single and sequential applications, while the imazamox þ carfentrazone combination measured no suppression in the mesocosm. In the field trial, single and sequential applications of all three herbicide treatments measured reduction in green canopy at 7 d after treatment (DAT), followed by full recovery within 40 DAT. All trials were initiated in late summer into fall, where seasonality may have elicited phenological traits in panicgrass reducing susceptibility to herbicide. Therefore, timing of a prescriptive herbicide treatment may have important consequences on nontarget sensitivity. Overall, the results of these trials demonstrated operational aquatic herbicide prescriptions to yield transitory, suppressive effects on nontarget panicgrass, followed by rapid posttreatment recovery. This highlights how discriminant management against invasive species is being deployed to select for panicgrass habitat. However, it is advised that in order to maintain this selectivity, applicators should become more aware of their retreatment schedules in order to mitigate collateral suppression that could increase vulnerability of panicgrass to other stressors.