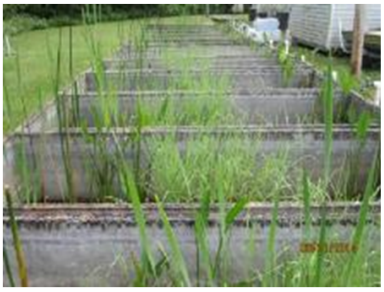
APCRP: Evaluating Grass-Specific Herbicides to Enhance Aquatic Restoration Projects

Capability

Invasive aquatic grasses such as torpedo grass (shown here on Lake Okeechobee) can dominate habitats and reduce diversity. Current management options are generally non-selective. Given management directives to enhance or conserve aquatic habitat through management, a new strategy is needed to target these invasive grasses with minimal damage to non-target plants (Photo Credit Mike Bodle SFWMD).

Invasive aquatic grasses represent both a long-term and an emerging problem for resource managers. Torpedo grass, Phragmites, and reed canarygrass have been recognized as major weeds and complex management problems for decades. Newer introductions such West Indian Marsh grass (Hymenachne amplexicaulis) and luziola (Luziola subintegra) represent aquatic grasses with the demonstrated potential for causing significant damage to native habitats in Florida. Current management strategies for control of invasive grasses rely almost exclusively on non-selective herbicides such as glyphosate or imazapyr (or a combination of the two). While this approach can provide effective grass control, selectivity can be quite poor, and conservation or restoration of native habitat can be significantly delayed, or never occur. Given the limited selectivity of current tools, some public agencies have essentially abandoned recommending management of torpedo grass in public lands when habitat restoration is the primary goal. Invasive grasses can negatively impact Corps of Engineer projects (e.g., Lake Okeechobee with thousands of acres of torpedo grass and luziola); they can inhibit establishment of native vegetation as part of the Comprehensive Everglades Restoration Plan (CERP); and they can rapidly spread into new aquatic and wetland sites. The difficulty in restoring native vegetation areas infested with invasive grasses will remain a long-term problem given the non-selectivity of current management strategies. In lieu of accepting the inability to achieve selective control of these grasses, we have recommended evaluation of grass-specific herbicides for aquatic use.

The objective of this work is to provide the science necessary to identify and develop grass-specific herbicides that have a good fit in aquatic plant management. The first step in this process is to determine which of the numerous grass-specific herbicides has the best spectrum of activity and potential for aquatic registration. There are many factors that will ultimately drive this selection process (e.g. patent life, toxicity risk cup, aquatic toxicology, proposed use patterns); however, demonstration of efficacy and selectivity is the critical first step in narrowing the list of products. In tandem with this technical approach, we will work with regulators (e.g., U.S. Environmental Protection Agency (USEPA), Florida Department of Agriculture and Consumer Services (FDACS)) to educate them about the need and use patterns required for this type of product.



Multiple scales of field and mesocosm trials are being conducted to determine selectivity and efficacy of grass-specific herbicides on target invasive grasses and non-target plants. This is early stage research and factors such as seasonality, water depth, and number of applications will be evaluated to provide managers with optimal recommendations for restoring sites dominated by invasive grasses.

Applications

The mesocosm and greenhouse work conducted by ERDC provided the data necessary for private industry to seek an Experimental Use Permit (EUP) in Florida in 2015 to allow for full-scale field evaluation of a grass-specific herbicide. This EUP will be renewed in 2016 and will allow for evaluation of this concept across a broader range of aquatic environments. This research represents the first significant effort to change management of grasses, and while the work is still in the early stages, providing resource managers a selective tool to integrate into grass management programs would greatly benefit restoration projects at multiple sites across the country.

Status

This work is being funded by the Aquatic Plant Control Research Control Program. This research is being conducted by ERDC scientists in collaboration with researchers from the University of Florida. This work was initiated in FY13 and is scheduled to run through FY18

Documentation and References

- Florida Experimental Use Permit (EUP) for 500 acres issued in 2015 by the FDACS.
- A Florida EUP has been submitted for approval in 2016.

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Article Sources and Contributors

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