APCRP: Identification of New Pathogen Biological Control Agents

Capability

Biological control is the purposeful introduction by man of parasites, predators, and/or pathogenic microorganisms to reduce or suppress populations of plant or animal pests. Biological control has been and is currently used as a viable management strategy for insect pests, unwanted plants, and the control of nuisance reptiles and mammals. Detection of new pathogenic agents involves detailed, long-term, in-country surveys for indigenous pathogens that induce disease on nuisance aquatic and riparian organisms affecting water movement and quality. The United States Army Corps of Engineers (USACE) Aquatic Plant Control Research Program is funding research to survey and identify pathogens of three emerging nuisance species (monoecious hydrilla, phragmites, and flowering rush). The primary objectives of this work unit are to 1. survey known noxious plant infestations for diseases, 2. isolate pathogens from diseased plant material, and 3. identify any new potential biological control agents.



Figure 1. Flowering rush (Butomus umbellatus).

Applications

To date, this research has yielded one new fungal pathogen each for monoecious hydrilla (Myrothecium roridum), phragmites (Alternaria sp.) and flowering rush (Colletotrichum fioriniae). Once Koch's postulates are confirmed and efficacy is determined for each pathogen on its respective host, the fungus can be further researched as to its feasibility of being developed as a mycoherbicide for application in the field.



Figure 2. Diseased inflorescence of flowering rush.

Status

This phase of the project was initiated in FY12 for monoecious hydrilla and in FY15 for flowering rush and phragmites with anticipated funding through FY17.

Documentation and References

 Harms, N. E., and J. F. Shearer. 2015. Apparent herbivory and indigenous pathogens of invasive flowering rush (Butomus umbellatus L.) in the Pacific Northwest. ERDC/TN APCRP-BC-35. Vicksburg, MS: U.S. Army Engineer Research and Development



Figure 3. Monoecious hydrilla (Hydrilla verticillata).

Engineer Research and Development Center.

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