

## **Wild Taro Demonstration Project 2011-2012 DR-15-01; January 2015**

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### **Background**

Lady Bird Lake, located in the City of Austin, is currently infested with a number of invasive species, including wild taro (*Colocasia esculenta*), an introduced African plant that has invaded many riverine and lacustrine habitats of the United States. Wild taro forms dense monocultures that displace native vegetation and has leaves that contain oxalic acid which, when cut, can cause skin irritation. Lewisville Aquatic Ecosystem Research Facility researchers were funded by the City of Austin to conduct a demonstration project to evaluate the effectiveness of several herbicides and application methods for controlling wild taro, to be followed by evaluation of post-treatment plantings of native species selected to resist reinvasion by the wild taro.

### **Herbicide Test Methods**

The test was initiated on 16 August 2011 and was designed to evaluate efficacies of two herbicides and three application techniques. Treatments included: 1) 1.6% glyphosate (Refuge) foliar spray, 2) 50% glyphosate wick, 3) 100% glyphosate cut and paint, 4) 5% imazamox (Clearcast) foliar spray, 5) 50% imazamox wick and 6) 100% imazamox cut and paint. Foliar glyphosate application included 0.25% nonionic surfactant and foliar imazamox application included 0.5% methylated seed oil. Treatments were applied to 1 m<sup>2</sup> plots and were replicated three times. A buffer zone of 0.5 m was used between each plot. Figure 1 shows the extent of the wild taro to be treated.



**Figure 1. Wild taro pretreatment August 2011 with PVC stakes demarcating treatment plots.**

## Herbicide Test Results

Plots were evaluated on 20 September 2011, 19 October 2011, and 3 April 2012. At the September evaluation, glyphosate treated plants were dead whereas plants treated with imazamox were yellowing. At the October evaluation, regrowth was present in the glyphosate treated plots. Regrowth of wild taro following glyphosate treatments is common and was expected in this demonstration project. As of October 2011, wild taro was controlled 100% in all imazamox treated plots (regardless of application technique) and was also 100% controlled in the buffer zones next to imazamox plots and in two of the three control plots. We believe imazamox was highly mobile within the wild taro rhizomes and was therefore able to move outside of the treatment plot ultimately confounding percent control data in glyphosate plots. No differences were observed between application methods for either herbicide.

The evaluation conducted in April 2012 supported previous observations about control of wild taro, with uncertainty regarding efficacy of glyphosate remaining due to imazamox mobility. Imazamox and glyphosate plots showed no regrowth of wild taro, while control plots showed limited growth. Wild taro growing between the shoreline and control plots indicated that rhizome translocation by either herbicide was likely limited to less than 1 m from treatment points (Figure 2).

## Herbicide Test Conclusions and Recommendations

There were no visual differences among the application techniques for either herbicide. Therefore, we recommend foliar spray application to reduce treatment costs.

Although glyphosate provided faster control than imazamox, regrowth occurred within a month. This regrowth later declined, most likely due to proximity of imazamox treatments. Imazamox activity was slower, but very effective in the longer-term. Although costs are higher per treatment, greater efficacy of imazamox should reduce long-term costs by limiting number of treatments necessary for control. We therefore recommend control of wild taro with foliar application of imazamox (with one caveat---see next section).



**Figure 2. Wild taro was controlled in all treatments, but remained at the backs of control plots and along the shoreline of all plots, April 2012.**

## Native Plant Restoration

Treated areas should be replanted with native emergent vegetation that can resist reinvasion by wild taro and other nuisance species. Imazamox spot treatments of remaining wild taro should be made at the same time of the native plant installations. Native aquatic plants chosen for use for restoration of the demonstration site include pickerelweed (*Pontederia cordata*), delta arrowhead (*Sagittaria platyphylla*), Emory's sedge (*Carex emoryi*), American bulrush (*Schoenoplectus pungens*), and waterwillow (*Justicia americana*). Evaluations should be conducted 4 to 6 weeks later to determine species survival and spread.