

Natural Microsponge Trial on Hydrilla

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Hydrilla (*Hydrilla verticillata*) is an invasive submersed aquatic weed that is known to grow 2-3 inches per day and can clog waterways affecting navigation, fishing, recreation, hydroelectric plants, and irrigation. It is the most abundant aquatic plant in Florida public waters. It is estimated that there are over 100,000 acres of hydrilla in waterways and reservoirs in the southeastern U.S.* Managers need as many tools as possible in their continuing efforts to contain hydrilla in Florida waters and elsewhere in the U.S.

TopFilm™ adjuvant uses cereal grain derived microsponges and is currently employed as a spray tank additive in the ornamental horticulture industry. The product was recently used in a hydrilla control trial in Pinellas County, Florida. The trial was to help determine if the microsponges absorb herbicide and help it stick to the submersed leaves and stems of hydrilla, providing greater contact between the herbicide and the targeted weed. To test whether the microsponge technology had a positive effect on the herbicide's efficacy in controlling hydrilla, the herbicide and microsponge additive were applied in a standard irrigation/drainage canal by applicators in Pinellas County, Florida.

Three aquatic zones of the drainage ditch were separated into buffer areas. The treatment ditch measured 22' wide and 2' deep, as shown below.

First, a 20 foot buffer was set next to a pipe opening in the ditch. Right next to the buffer area, a 75 foot area (Zone #1) was treated with 26 oz of Aquathol K (endothall) with 0.64 oz of TopFilm™ adjuvant. This rate translates to 4 ppm Aquathol K with 16 oz of TopFilm™ per acre.

Second, beside the herbicide/microsponge treatment area, another 25 foot buffer zone was set, followed by a 75 foot section (Zone #2) which was treated with 26 oz of Aquathol K alone (no microsponges). This rate translates to 4 ppm Aquathol K (alone).

Third, another 25 foot buffer zone was set up, which was followed by a 75 foot untreated control area (Zone #3).

The entire treatment area had equal morning shade from trees to the east, equal afternoon sun allowed by an open field to the west, and was uniformly full of Hydrilla (Figure 1). The ditch had minimal flow, but did move from the control section to the Aquathol only section and finally through the Aquathol and Topfilm™ section.

RESULTS

- Six days after treatment (6 DAT), there were no significant differences between Zones #1, #2, and #3.
- Two weeks after treatment (2 WAT), herbicide activity was beginning to show hydrilla control.
- Four weeks after treatment (4 WAT), there were significant differences: Zone #3 (the control with no herbicide) was full of hydrilla or 0% hydrilla control; Zone #2 (herbicide alone with no microsponge) showed 50 - 60% hydrilla control; and Zone #1 (herbicide with microsponge) had no hydrilla, or 90 - 100% hydrilla control.
- Six weeks after treatment (6 WAT), the results showed: Zone #3 was still packed with Hydrilla (0% Hydrilla Control); Zone #2 - hydrilla remained at 50 - 60% hydrilla control; and Zone #1 had no hydrilla present (100% hydrilla control). As shown in the picture in Figure 3, there remained a patch of hygrophila (*Hygrophila polysperma*), which is not controlled with the rate of 4 ppm Aquathol K.
- A few days later, further checking reported a clear and significant difference between #1, #2, and #3 with almost no regrowth in Zone #1, definite regrowth in Zone #2, and packed with hydrilla in Zone #3.

This trial, plus another done at a wider, deeper site with moderate flow, suggests that the microsponge technology improves the efficacy of endothall used to control underwater weeds. Aquathol and TopFilm™ continue to be used in Pinellas County hydrilla control activities with good results. The small scale and lack of

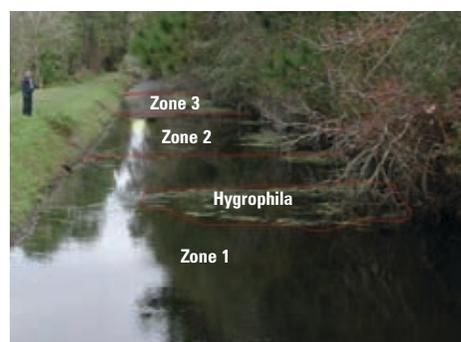


Fig. 1: Rick Swift measuring acre-foot of drainage ditch for user rate determination.

Fig. 2: Hydrilla check (untreated) zone #3

Fig. 3: Summary picture six weeks after treatment (6 WAT) showing the treatment zones and the Hygrophila patch.

replication in this trial means that further study is needed by academic researchers to determine if the product stands up to repeated trials. Different rates and ratios of herbicide and adjuvant also need to be evaluated in order to make conclusive statements.

*http://nas.er.usgs.gov/taxgroup/plants/docs/hy_verti.html

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