

Herbicide Demonstration for Aquatic Vegetation Control

CJ Brinlee, Soil Conservationist, USDA-NRCS

Aquatic vegetation has many benefits for a pond. It is a critical component of fish and wildlife communities by providing cover, nesting areas, and food. Submerged aquatic plants not only provide oxygen in the water, but they also store nutrients that can prevent the growth of more bothersome aquatic vegetation such as filamentous algae, and they provide most of the vital components for fish and wildlife.

However, when aquatic vegetation is overgrown it can become a problem. Overgrown vegetation can inhibit the use of a pond agriculturally, domestically, or recreationally. Excessive plants contribute to summer and winter fish kills due to depleted oxygen. Rotting vegetation can cause a pond to smell, and dense vegetation can attract unwanted wildlife and insects. Thick aquatic vegetation can even impact fish production when it prevents predation of small fish by large fish.

One of the methods of controlling bothersome aquatic vegetation is the application of herbicides. Several herbicides exist that are marked for use on water, and in order to test the effects of some of these herbicides a pond demonstration trial was setup. On June 6, 2007 three locations chosen for the trial in Fannin County, with three different aquatic plants present, were treated with four different herbicides.

On the first location at Melanie Grammar's property, the pond was overgrown with water primrose. Water primrose is an emergent plant, which can grow in thick mats where shallow water is available, and take over a small pond. Grass carp will not affect a stand of water primrose and mechanical control is difficult and labor intensive.

To chemically control water primrose, an area of 30x100 ft. was treated with liquid 2, 4-D mixed with the surfactant Inergy using a pesticide sprayer. On the other side of the pond, an area 30x75 ft. was treated with Imazapyr along with the surfactant Inergy, also using a pesticide sprayer. The water primrose foliage was thoroughly coated with herbicide for best effects. At three days the water primrose treated with 2,4-D was dying back, while the water primrose treated with Imazapyr showed no obvious effects. At ten days the vegetation treated with Imazapyr had completely died back.

2, 4-D is a selective herbicide that kills broadleaf plants by acting as a growth inhibitor. It should be used with caution around cultivated plants. 2, 4-D can be toxic to fish and so it should not be used to treat areas that are clear of vegetation. Treated water cannot be used for irrigation or drinking for a period of three weeks after treatment. Mixing 2, 4-D with a surfactant like Inergy enhances the effects of the herbicide by providing more complete coverage and speeding absorption rates.

Imazapyr is a relatively new product on the market and is effective on most emergent aquatic species. It is a slow acting herbicide which works to disrupt protein synthesis within the plant. Unlike 2, 4-D, Imazapyr must be mixed with a surfactant for reliable results, and also unlike 2, 4-D it is not a selective herbicide and will kill indiscriminately. Water that has been treated with Imazapyr cannot be used for irrigation for up to 120 days after application, and it cannot be applied to potable water unless an alternative water source is available for up to 48 hours after application.

The second location chosen for demonstration at Sam Hocker's lake was overgrown with the algae chara. Chara is similar to coontail in appearance and can be confused with the submerged plant, except that it lacks the coontail shape and any kind of

flower; it also bears a strong musky odor. Because of the variations in treatment, it is important to positively identify target vegetation. While some chara can be beneficial, if left uncontrolled it can cause oxygen depletion. Mechanical control is impractical for removing chara, and biological controls are somewhat limited due to the nature of its growth. Chemical controls were tested with promising results.

Approximately one acre was broadcasted with very fine copper sulfate crystals. Since copper sulfate has been shown to adversely effect fish in alkalinity levels below 50, the alkalinity of the lake was measured and shown to be a safe 76. At two days, the chara in the shallow water was dying back, while the chara in the deeper water hadn't yet been visibly effected, possibly because of dilution. Copper sulfate generally takes 7-10 days to show reliable results and data is pending on the ten day-period.

Very fine copper sulfate, also known as Bluestone, is only used to treat algae and is useless against any other aquatic vegetation. It inhibits rapid reinfestation in a pond or lake, and when used properly, it poses no risk to fish populations. However, if the alkalinity of a treated lake is below 50, it can cause fish kills. To ensure that this does not happen, test the alkalinity of the water prior to treating. It should be applied in the morning when water temperatures are at least 60° F and it should be evenly distributed across the area to be treated. Treatments take 7-10 days before results can show. There are no restrictions on using waters treated with copper sulfate for swimming, fishing, drinking, livestock watering, or irrigation.

At the third location on Bill Griffis's lake, bushy pondweed was becoming a nuisance. Bushy pondweed also grows in dense mats like the water primrose, except that it is a submerged plant that can interfere with the efficiency of a fishing pond. However, bushy pondweed is a desirable plant for waterfowl management and this should be taken into consideration before applying methods of control. Mechanical control is difficult however biological controls are available through grass carp. Herbicides to control bushy pondweed are also available.

For the demonstration, an area of 200 sq. ft. was treated by broadcast with 4 lbs. of granular Aquathol (Endothol). Results are pending on the effectiveness of Aquathol. The active ingredient of this herbicide is Endothol which is used to control submerged vegetation such as bushy pondweed or coontail. It is marginally safe to use around fish, although fish cannot be taken for food or feed use for up to 3 days after the herbicide has been applied. Treated water is also not to be used for irrigation, animal watering, or household uses for 14 days after application.

Remember that when using herbicides to control aquatic vegetation, it is important to read and understand the label and the application rates provided. Purchasing the right product for the right plant is imperative, and so it is also important to positively identify any bothersome aquatic vegetation. Whenever herbicides are applied to aquatic vegetation, decomposition of the dying plants can cause oxygen depletion, so plants should not be treated in the hot summer months when the most oxygen depletion is occurring, and should not be treated all at once. For more information on pond management and aquatic vegetation control, please contact the USDA-NRCS office located at 200 E First Street, or call at 903-583-9531.

For further information an article will be published in the next newsletter with follow-up data on the results of copper sulfate and Aquathol, as well as information on the results of upcoming demonstrations treating other bothersome aquatic plants.



Before and after pictures of the herbicide demonstration to control Water Primrose on the Grammar property East of Whitewright. 24-D and Imazapyr herbicides have proven to be effective chemicals to control Water Primrose.