UNIVERSITY OF GEORGIA
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Photo Credit: Sierra Burke (Hart County ANR Agent)

Controlling Duckweed and Watermeal in Georgia Ponds

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Duckweed (*Lemna sp.*) and Watermeal (*Wolffia sp.*) are floating plants that can be difficult to control in ponds. Both grow rapidly and produce a prolific seed bed in the substrate, especially in ponds with low water exchange and high nutrient inputs. Misidentification as algae or Mosquitofern (*Azolla sp.*) is common and often leads to incorrect treatment recommendations. Dense mats of Duckweed or Watermeal can shade the water column and lead to oxygen depletion and fish kills. In Georgia, chemical methods are the best option for controlling Duckweed or Watermeal.

Figure 1. Examples of Duckweed (left; *Lemna sp.*), Watermeal (center; *Wolffia sp.*), and Mosquitofern (right; *Azolla sp.*). Photo Credits (left to right): Brooklyne Wassel (Pike County ANR Agent), Jeremy Kirchner (Chatham Landscaping), Gabrielle LaTora (Fulton County ANR Agent).

Mechanical Control Methods

Depending on the surface area of the infestation, Duckweed may be harvested from the surface using a seine or other form of net. Floating pond skimmers are also commercially available that collect floating vegetation and pump it to a holding tank outside the pond.

Biological Control Methods

While literature states that Grass Carp have a moderate feeding preference for Duckweed and Watermeal, they will rarely be effective due to preferential feeding on other available vegetation and inability to keep up with prolific growth rates. While other states recommend using Tilapia for biological control of Duckweed and Watermeal, stocking of Tilapia in ponds is **illegal** in Georgia and should be avoided. Tilapia are an exotic species that have the potential to become invasive in Georgia waters and have substantial ecological and economic impacts to native fisheries.

Chemical Control Methods

As with any chemical treatment, all label instructions should be followed exactly with respect to concentration of spray per unit volume and volume per unit of surface area of treatment. Click the name of the chemical in this document to see the product label.

The best chemical control method for Duckweed is dependent on whether it is localized to small areas or has spread across large portions of the pond. For spot-treating small areas of Duckweed, a fast-acting contact herbicide will achieve desirable results if applied properly. Irregularities in the shape of the pond or brushy areas around the edges can make effective treatment with contact herbicides more difficult. Persistence and thoroughness are key when treating Duckweed or Watermeal with contact herbicides, and multiple applications may be needed to achieve full control. The best contact herbicide for controlling Duckweed is Flumioxazin (Clipper), an herbicide that can be mixed and sprayed directly on foliage according to label instructions. Flumioxazin interferes with the ability for plants to produce chlorophyll, causing them to rapidly decompose after treatment. Due to the rapid post-treatment decomposition of plant material, treating large areas of Duckweed simultaneously should be avoided to prevent oxygen depletion events and subsequent fish kills. When treating any floating aquatic vegetation with Flumioxazin, a surfactant must be used to reduce surface tension and increase spray coverage. Flumioxazin has no post-treatment use restrictions for swimming, fish consumption, or livestock watering. The effects of Flumioxazin are more lethal at lower pH, so it is advantageous to schedule application in the early morning when pH is typically lowest. Making treatments in water with a pH greater than 8.5 should be avoided. Adding certain surfactants to a tank mix with Flumioxazin can help avoid issues caused by high pH.

To treat an infestation of Duckweed that covers a much larger percentage of surface area or when the landowner is unable to be persistent with the use of a contact herbicide, a slow-acting systemic herbicide would be a better option. The best systemic herbicide for controlling Duckweed is Fluridone (Sonar or Alligare), which prevents plants from producing the necessary pigments to protect them from breaking down in the sun. Fluridone is often used as a whole-system treatment because of its ability to quickly spread through an entire pond or lake. However, Fluridone requires a very long contact time, so it is not a good option in systems with short residence times that are likely to flush it out before results have been achieved. Fluridone has no post-treatment use restrictions for swimming, fish consumption, or livestock watering.

Nutrient management is essential to long-term management of Duckweed or Watermeal. Reducing incoming nutrients will reduce the likelihood that these plants will re-infest ponds later.