Evaluation of Clipper® (Flumioxazin) Aquatic Herbicide on Watermeal In Local Farm Ponds

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Year - 2010
Harrison County
GPS Coordinates
Latitude - 32◦31'17"
Longitude - 94◦28'1"

Summary:
Recreation plays a huge part in the total agricultural income for Harrison County with recreation contributing 3.6 million dollars toward this figure every year. Farm ponds are an integral part of the recreational picture that many county residents depend on for their recreational needs. Aquatic pond weed infestations are the number one pond problem identified by Texas pondowners because they can interfere with livestock watering and/or recreational fishing. Furthermore, severe infestations of certain species can degrade water quality for aquatic life in local farm ponds by limiting fish production and contributing to reduced oxygen levels.

Watermeal is a very small (approximately than 1 millimeter in diameter) light green, free-floating, rootless plant. In fact, watermeal spp. are the smallest seed-bearing plants in the world. Watermeal tends to grow in dense colonies in quiet water, undisturbed by wave action. It is often described as resembling “green corn meal” floating on the surface of ponds and is often mistaken for tree pollen. Watermeal can be an aggressive invader of ponds and is often mixed in with other floating plants (e.g., duckweed will be associated with colonies of duckweeds. Watermeal can be an aggressive invader of ponds and are often found mixed in with duckweeds or mosquito fern. If colonies cover the surface of the water, then oxygen depletions and fish kills can occur. These plants should be controlled before they cover the entire surface of the pond.

Dense colonies of watermeal often can completely cover the surface of a pond and will cause dissolved oxygen depletions and fish kills These colonies will also eliminate submerged plants by blocking sunlight penetration. Watermeal is considered to be a difficult to control species. The availability of additional herbicides labeled for it’s control will provide pondowners with an increase in flexibility when selecting control options.

Objective:
To evaluate the performance of Clipper® (Flumioxazin) Aquatic Herbicide to control Watermeal, *Wolffia spp.* in local recreational ponds and small lakes. Clipper® (Flumioxazin) is currently under an experimental use permit (EUP) in Texas.

Materials & Methods:

The date of the application was September 9, 2010, the weather was fairly cloudy, low to mid 80 degree air temperature. The water was clear and estimated Watermeal covered 90% or more of the water surface. A water sample was taken on-site and the pond was found to have a pH of 7.0.

Mixing Herbicide with pondwater

The pond was measured prior to the application of the herbicide and found to have a volume of 2.7 acre feet of water (.67 surface acre with 4 foot average depth) and we wanted to have a 200 ppb concentration of Clipper® (Flumioxazin) Aquatic Herbicide, based on rates stated on the product label. The pond water was also tested and found to have a pH of 7.0. The product, which is a DF, product, applied at a total rate of 2.97 pounds, using the rate of 1.1 pounds of product per surface acre, which required the application of 3.0 pounds of total materials.

The pond was treated at approximately 11:30 AM and was applied with a five gallon bucket, mixing the herbicide in each bucket and "sloshing" the solution out over the water surface from the shoreline. This was repeated several times approximately half way around the body of water, walking along the bank. This was repeated 8 to 10 times at 20 to 30 foot intervals halfway around the pond's perimeter.

Application of Herbicide Solution

A follow-up treatment was made on the previously untreated section of the pond on October 11, 2010. A reduced rate application at 8 ounces per surface acre (5.4 ounces of material) was mixed with Induce adjuvant at the rate of 1/4%. The herbicide and surfactant were mixed with 5 gallons of water and sprayed vis a hand held pump-up sprayer. A final evaluation was made on October 19, 2010.

Results & Discussion:

Evaluations were made on ***September 14th*** and ***September 22nd***, 5 days and 13 days after treatment respectfully. The following photos from the demonstration site will show the results of the treatments;

9-9-10 Before Treatment (Control) 100% Coverage of Watermeal

9-14-10 Evaluation, control estimated to be 50% to 75% five days after application

On On ***September 14, 2010***, the evaluation showed an estimated control level of 50 to 75%, with much of the Watermeal still present on the bank that was NOT treated, but showing damage.

On ***September 22, 1010***, the evaluation showed slight improvements over the 9-14-10 evaluation. Watermeal was still present in locations that were not treated by the method we chose to use with the five gallon bucket application. Where treatment was conducted, we are seeing 90 to 100% control of Watermeal with this product. It was determined that an additional follow-up treatment be made using a lower rate and applied along the bank where the initial treatment was not made.

9-22-10 control estimated to be 85% to 90% thirteen days after application

On ***October 11, 2010***, the pond was treated again at a rate of 5.4 ounces of Clipper® (Flumioxazin) Aquatic herbicide, mixed with 3 ounces of surfactant and was applied with a one gallon pump-up sprayer to the areas that were previously un-treated. The herbicide/surfactant solution was mixed in a five gallon bucket and applied using a one gallon sprayer. Harrison County received thundershowers that afternoon and between .5 and 1.0 inches of rainfall was received.

On October 19, 2010 final evaluations were made on the pond, small amounts of watermeal were located across the entire pond surface. It was noted that the banks on the side of the pond that were treated on October 11th were burned back from the application that was made with the pump-up sprayer, but watermeal was still present.

Watermeal surface coverage was reduced by 90%.

October 19th, Watermeal density as reduced was greatly reduced following the two applications.

It has been noted that we expect that if the whole pond had been treated at one time, the watermeal would have had a 100% control rate, with this demonstration and the applications being separated, we see a control rate of about 90%. The watermeal had time to spread and re-grow between treatments.

Pondowners experiencing aquatic weed problems in their farm ponds are advised to obtain positive identification of the species before adopting chemical, biological or mechanical control options. Assistance can be obtained by contacting the Harrison County Extension office and/or by consulting Texas AgriLife Extension's aquatic plant website (Aquaplant) at http://aquaplant.tamu.edu.

Conclusions:

Texas AgriLife Extension Service demonstrations have shown that small farm ponds are capable of producing 1000 pounds of edible size fish per surface acre per year at a retail value of $1.60 per pound live-weight or $1600.00 per acre. Complete watermeal coverage decreases pond unuseable for fish production. However, control could result in fish production of catfish valued at $1072.00 annually (based on the size of this pond).

Valent U.S.A. Corporation has estimated that the cost of the Clipper herbicide will retail for $100.00 per pound, for a total cost for this demonstration of around $300.00. Again, it might be noted that this product is not currently on the market, but should be in the fall of 2010 or spring of 2011. It might also be noted that there are currently no restrictions on this product, such as livestock, fishing, swimming and other recreational use, except for irrigation use.

Acknowledgments:

We would like to thank Dr. Billy Higginbotham, Extension Wildlife & Fisheries Specialist from Overton, Texas for his valuable input and guidance in conduction this demonstration. Also, thank you to Jim Petta, Territory Manager, Aquatic Group with Valent Chemical for suppling the clipper herbicide used in the demonstration and for his help in establishing and evaluation of this project. We would also like to thank Steven Huntsberger for the use of his pond and access to his property and serving as a result demonstration cooperator.

Disclaimer Clause:

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

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