Texas Integrated Program Of Biological And Chemical Control On Noxious Aquatic Vegetation

L. V. GUERRA

Director Statewide Noxious Vegetation Control Program
134 Braniff San Antonio, Texas 78216

INTRODUCTION

We have reached a point in our aquatic weed control work in public lakes and potable water where we are going to have to "put it all together." We no longer have the free hand and permissiveness we used to enjoy. It is human nature to forget the good that has been done, the thousands of aquatic habitat acres that have been reclaimed, the many fishing camps and ski runs that have been preserved, and all the good fishing areas that have been perpetuated. Some people have now joined in a popular cause of "hassling" those in aquatic plant control programs.

Control programs in Texas now involve a process of using various liquids and granular herbicides and biological control agents. The use of the butoxy ethanol ester of (2,4-dichlorophenoxy)acetic acid (2,4-D B.E.E.) has certainly proved itself, in all areas of the state. Work is now being conducted in seven major watersheds, stretching from lower south Texas joining Mexico, to the extreme north east joining the state of Louisiana.

At the present time, most waterhyacinth (*Eichhornia crassipes* [Mart.] Solms) are small, scattered, and elusive. The delayed winter last year has resulted in a late blooming of waterhyacinth plants all over the state. Floods along the Mississippi River Valley and its tributaries have delayed this years crop of flea beetles (*Agasicles hygrophis* Selman and Vogt) for our biological control work of alligator weed (*Alternanthera philoxeroides* [Mart.] Griseb.). Work with the waterhyacinth weevils (*Neochetina eichhorniae* Warner) was nullified by severe freezes in our culture ponds, so all in all, the work to date has not been too encouraging.

However, all of these happenings have not been a total loss. The delay in spring hatches of flea beetles has been utilized to do work with granulated 2,4-D B.E.E. on Caddo Lake.

TREATMENT OF CADDO LAKE

Caddo Lake is a deep Lake in north east Texas partly in Texas and partly in Louisiana. Thirty miles of boat roads and 20 miles of fishing lanes were treated with granulated 2,4-D B.E.E. at the rate of 200 lb total material per surface acre, during the month of May 1973. The average depth of 6.5 ft at the time of treatment was 1.5 ft above the normal level for this lake.

Treatment of the boat roads and fishing access paths was conducted with two specially fabricated pieces of equipment. The main boat roads were treated with a Cyclone 3-bushel seed spreader driven by a 2 hp motor through a flexible shaft. The equipment speed was timed using a tachometer at approximately 600 RPM which spread the herbicide to a width of 32 ft. The fishing lanes or access paths of the main boat roads were treated with a small half-bushel spreader driven by a 12 volt direct current motor. Distribution of this material was controlled by baffles to spread a path of 10 ft. The equipment was calibrated prior to use and adjusted to spread at the proper width; while it was rather unsophisticated, it proved very successful.

Logistics on this particular job were rather difficult, as it is not easy to supply a seed spreader putting out 728 lb to the boat road or 2,400 lb/hr to the fishing access paths. Three supply boats were utilized, one serving as a guide, and the other following behind. When the guideboat, travelling at about 4 mph, was empty, the rear boat supplied the treatment boat and took the lead. By then, another supply boat was at the rear, and the original guide boat went back for more herbicide. This supply system worked out very well.

The results were certainly beneficial, and excellent control was obtained of watermilfoil (*Myriophyllum* sp.), bladderwort (*Uticularia vulgaris* L.), yellow and white waterlillies (*Nymphaea tuberosa* Paine), and naiads (*Najas* spp.). Partial plant chlorosis and decomposition occurred on egeria (*Egeria densa* Planch.) and Cabomba (*Cabomba caroliniana* Gray). Maximum effect of the 2,4-D herbicide occurred during the first 7 to 9 days with maximum control of 90 to 95% taking place after 21 days. Excess water, water currents, and turbidity had a slight adverse effect on the treatment of the boat roads and fishing lanes. However,

a resurvey of treated areas on June 19 (42 days after treatment) showed additional plant decay, epinasty, and a continuation effect of the applied herbicides. A second application of $CuSO_4$ (copper sulfate) crystals was conducted in certain test areas to determine the phytoxicity of copper sulfate on "phenoxy" treated plants. The purpose here was to possibly demonstrate the eradication of most submerged aquatic plants by using two chemicals acceptable for use in potable waters. This particular avenue of research is going to be further explored under a separate study.

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