Control Of Hydrilla By The Strip Method

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INTRODUCTION

The current and potential damage from aquatic weeds to all of our population, and in every water-use category has been clearly shown in this conference during its two and one-half days of discussion.

It is sufficient then to simply affirm that noxious submersed weeds in the waterways of Old Plantation Water Control District must be controlled or else its drainage facilities, developed at great cost for the express purpose of protecting homes and industry from flooding, will be useless.

In past years when Southern Naiad was our number one problem, and before weed control was begun, water stage differentials of three and one-half feet over a reach of one and three quarters miles were observed to continue for nearly two weeks. In such a situation, modern and adequate drainage pumps were idled for lack of water, while nearby lands were flooded.

Now, Hydrilla, a harder to kill plant having phenomenal regenerative capabilities, poses an even greater threat. A typical marginal infestation of Hydrilla, if left unchecked, will cover a canal from bank to bank and from bottom to top. Small canals in remote areas may reasonably be given a full volume herbicide treatment and good control is obtainable with predictable results. However, large volume waterways in urban areas demand completely different management.

STRIP TREATMENT

Although marginal strip treatment is not a new concept in aquatic weed control, it may be helpful to note some of its advantages and disadvantages for those who contemplate its use for the first time.

This method is economical because only a portion of a given waterway is treated to control concentration, and if treatment is begun before weeds cover the entire submerged area, this may be enough to halt their spread. Damage to aquatic organisms is vastly reduced as compared with full volume treatment, and the normal ecological balance is soon restored.

Some faults of the strip method are: There is occasionally poor or no control due to dilution; adverse effects of the variables in weed control tend to be magnified, thus loss of time and material is more frequent; unharmed plant segments provide material for reinfestation; it is more difficult to plan efficient rates, and application procedures because of irregularities in weed stand, depths, flows, cross-sections, etc.

APPLICATION

As an example, the infested margin of a canal was measured and found to average 20 feet in width and 8 feet in depth, thus an imaginary triangle with a cross-section of 80 square feet. Our aim was to treat this section with Acrolein at the rate of 7 p.p.m./v. Treatment was begun on June 25, 1968, with others following periodically and with rates running from 7 to 9 parts per million.

RESULTS

In seven days, plants were de-foliated and limp. Twelve days after treatment, algae was gone and the surface clear of Hydrilla. Acceptable control continued for about six months in nearly all treated margins.

FISH KILL

Fish kill was far lighter than expected. An initial pick-up was made the day after treatment with follow-up as needed.

TECHNIQUE

Since Acrolein is very toxic to fish and this canal had a high fish population, a high fish loss was possible. However, as stated previously, loss was low and the method of application was believed to be an important factor. As the sprayboat advanced in shallow, edge waters, fish were constantly observed darting into deep center waters. Acrolein was injected 2-4 feet from the water's edge and allowed to spread through the Hydrilla stand. Evidently, very few fish returned to this chemical cloud, but rather stayed in fresh center waters thus escaping lethal contact.

A relatively long treatment section does not seem to be detrimental as long as only one margin is treated at a time. An interval of at least a week should be allowed between treatments.

EQUIPMENT

The application pipe was a ten foot length of ½ inch thin wall electrical conduit with three inches of the outer end curved down to aid injection and shed trash.

Chemical was educted into the spray system as opposed to a pressure activated system; metering was accomplished by an orifice plate in the eductor line. Various apertures may be used to accommodate the desired output and boat speed. Gasoline may be used to calibrate the equipment.

MISCELLANEOUS OBSERVATIONS

Herbicidal activity of Acrolein was much slower than was normally observed in full volume treatment even though summer temperatures prevailed.

In several instances, small feeder canals were treated on one margin only. Filamentous algae were removed and the margin remained clear for two to three months while the opposite edge supported the usual heavy growth.

The fact that Acrolein requires a relatively short contact time, and degrades rapidly, makes it useful for marginal strip use.

We hope that research will soon bring a compound into practical use that will be non-toxic to fish as well as an effective control agent, but until then, Acrolein and the strip method can be utilized in many problem situations.