

Objectives And Limitations Of Various Agencies In Aquatic Weed Control

Navigation

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The fundamental aim of the Corps of Engineers' Civil Works program is to participate cooperatively with other elements of the national community in carrying out a coordinated national water-resource policy conceived in terms of the welfare of the nation as a whole.

The long history of the Corps of Engineers' Aquatic Plant Control has been well covered in Volume 1 of the Hyacinth Control Journal.

Maintaining waterways for navigation is one of the main objectives of the Corps of Engineers and through many years of controlling water hyacinth we have found that the best way to control this plant in navigable waters is to treat it at its source before it has a chance to multiply. In this manner, a minimum amount of plants have to be

controlled to produce the maximum results.

Extensive chemical research is being conducted for the Corps of Engineers by the U. S. Department of Agriculture at Ft. Lauderdale, Florida, and on Biological Control of Aquatic Plants in South America and California. A cooperative program with the State of Florida Game and Fresh Water Fish Commission since 1960 has produced very good results in the control of water hyacinth. The Corps of Engineers also cooperates and participates with many local, state and Federal agencies concerned with aquatic plants.

One of the limitations of the Corps of Engineers is that any plant considered for work must be of national importance before public funds can be expended.

The Role Of Aquatic Weeds In Mosquito Control

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Aquatic plants contribute to mosquito production in fresh water areas in several ways. Without aquatic plants many of our mosquito problems can not exist.

In mosquito control we like to see open water with a clean "exposed soil" shoreline. This ecological condition allows "mosquito" fish (minnows) access to larvae that may be present. Each of these minnows is capable of eating fifteen or more full grown mosquito larvae per day.

Open water also allows wave or ripple action on the water surface. Most mosquito larvae breathe by sticking their air tube up through the water surface. Waves or ripples interfere with this method of breathing. Constant ripple action will frequently eliminate mosquito production.

Aquatic plants tend to protect mosquito larvae from these two natural controls. Plants that form mats provide the greatest degree of shelter. We can categorically state that if you see a floating mat of para grass, alligator weed or hyacinths, mosquito larvae will be associated with it. The numbers of larvae present in such a mat will be governed by the degree of pollution or enrichment. The nutrients (N, P, K) present in enrichment act as food for multitudes of micro-organisms. These creatures in turn are fed upon by mosquito larvae. As our ditches, canals, streams, rivers and lakes become more enriched, aquatic plants will play an ever increasing part in fresh water mosquito production.

One of the most effective mosquito control techniques is ditching to drain mosquito producing areas. In fresh

water areas, a newly dug ditch may last 18 months before it is clogged with aquatic weeds. If dragline maintenance is used it then is necessary to clean the ditch annually in order to keep a functional ditch. We try to maintain most of our ditches with chemicals. Preventive spraying is the key to successful chemical control. Chemicals can not clean a ditch that has grown up with emergent weeds.

One of the most interesting groups of mosquitoes that we have in Florida, the genus *Mansonia*, has developed a highly specialized breathing apparatus. In this group the larval air tube has been modified into a saw. This is used to cut slits into certain plant roots, the airtube is then inserted into the root and the insect obtains its oxygen from the plant.

We have three species of this genus in Florida. Two of these are associated with water lettuce. The third species has a wide range of host plants, which include water lettuce, blue flag, arrowhead, cattails, water hyacinth, willows and *Sagittaria*. Almost any emergent aquatic plant may serve as a host if it has white fleshy roots and grows in a soft mucky ooze.

It is impossible to control the larvae of these mosquitoes with the usual oil sprays applied to the water surface. In order to kill these mosquito larvae it is necessary to kill the plants from which they obtain their oxygen.

Aquatic weeds play a major role in the production of mosquitoes in fresh water areas. The control of these plants has to be an integral part of the fresh water mosquito control program.