

# CALIFORNIA CA AQUACULTURE

## AQUATIC WEED CONTROL OBTAINING ASSISTANCE

### Introduction

Aquatic vegetation is essential to a healthy pond or lake, and a natural part of the aquatic environment. Vegetation provides habitat for birds, fish and other aquatic organisms, can provide oxygen to the water, and as it decays it provides nutrients to the system. However, when aquatic plants are growing in excess in a pond or lake they can harm the body of water and the fish in a number of ways. Harmful effects include oxygen depletion caused by rotting vegetation, interference with fishery management by providing excessive cover for prey animals, and even destruction of a body of water by increasing the rate of sedimentation.

Aquatic weed is a term used for any unwanted aquatic plant, and control of aquatic weeds is a major problem to fish farmers, fee fishing operators, and owners of private recreational ponds, lakes and reservoirs. For convenience, in this publication the term pond will include all bodies of water. Methods used for controlling aquatic weeds will include mechanical methods that physically remove the plants, biological control such as a fish that consumes the plant or whose actions inhibit plant growth, and chemical herbicides that destroy the plant. The publication is designed to direct you to some of the available options and where to obtain assistance when employing these methods.

### Mechanical Control of Aquatic Weeds

Mechanical removal of aquatic vegetation is the physical removal of plants using hand tools

or power tools such as backhoe and tractor powered rakes or chain pulls. The mechanical removal of aquatic weeds on private property is not usually subject to government regulations. Exceptions include the status of the targeted area as a registered wetland or if the area is registered as navigable waters. It is always recommended that landowners check with appropriate local and/or regional agencies to assure the status of the body of water in relation to jurisdiction before action is initiated to alter the environment.

### Biological Controls for Aquatic Weeds

California state law is specific as to where and under what circumstances fish species can be introduced into a body of water. This includes water that is on private property. The state has a responsibility to protect natural populations

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and the water drainage which supports these populations. To obtain information about stocking any species of fish, consult with the appropriate regional office of the California Department of Fish & Game (CDFG), or the Inland Fisheries Branch listed at the end of this publication. To obtain sources of fish for stocking, refer to the California Aquaculture Association also listed at the end of this publication.

**Channel Catfish and Carp:** Both the channel catfish and common carp are non-native to California. They are both grown as aquaculture food fish in the state. Pond managers have successfully used common carp and/or catfish in ponds to control aquatic weeds. These species will work the bottom sediments for food, thereby increasing water turbidity and restricting the amount of light available for photosynthesis and aquatic weed growth. Reports of success in weed control are mixed, but success has occurred in some ponds. Once introduced into a large pond, the fish population is almost impossible to remove without resorting to poisoning, draining and drying the impoundment. Unless the fish are to become a permanent resident of the pond, other options should be considered.

Although many areas in the state are appropriate for stocking channel catfish and carp, be sure to check with the Department of fish and game before initiating a stocking program. There are a number of sensitive areas where introduction of these species is prohibited. The concern is related to the surrounding watershed and the potential impact that these species have on other fish if they escaped the impoundment. The appropriate contact is a regional office of the CDFG or the CDFG Inland Fisheries Branch. Sources of fish for stocking are available through the California Aquaculture Association. These listings are found at the end of

this publication.

**Tilapia:** Tilapias are native to Africa. They are used as an aquaculture food species internationally, and some species are grown in California under strict regulations. However, tilapia are not permitted for pond use North of the Tehachapi mountain range. They have been permitted North of the Tehachapi for aquaculture under special conditions using closed, protected systems; and under special permits issued through the Fish and Game Commission.

Only specific tilapia species may be permitted for use in ponds in Southern California.

*Tilapia sparrmanii* is a prohibited species and may not be possessed except for display in a public aquarium. *T. zillii* is a partially prohibited species and may be possessed only in San Bernardino, Los Angeles, Orange, Riverside, San Diego and Imperial Counties, and only in waters approved by CDFG. *T. mossambica* and *T. hornorum* may be stocked only in waters approved by CDFG. No other tilapias may be imported or stocked in California waters without permission of the Fish & Game Commission. Further inquiries can be made through your CDFG regional office.

**Grasscarp:** The Grasscarp, *Ctenopharyngodon idella*, are native to parts of Asia, but have been introduced into parts of the United States for aquatic weed control. Grasscarp are not permitted in California by the Fish & Game Commission because of the fear of establishing reproductive populations in natural waters. The state is conducting research on sterile grasscarp for aquatic weed control, but these studies are confined to specific areas in southern California and at special facilities North of the Tehachapi mountain range. Again, it is recommended that the regional office of the California Department of Fish & Game be

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contacted before introducing any fish species into a pond or lake.

## Chemical Herbicide Control

**Registered Chemical Compounds:** All herbicides used in aquatic weed control must be approved as registered chemical compounds by the Environmental Protection Agency (EPA) and the Federal Food and Drug Administration (FDA). Their means of application are enforced through joint efforts of federal and state agencies. Registered and approved herbicides for treating bodies of water may only be used in accordance with labeled instructions that follow FDA and EPA approved guidelines. This mechanism is designed for public safety, both for the applicator and others who might be impacted by the water if it is discharged or seeps into the ground.

All registered herbicides list the manufacturer, describe application rates, and define tolerance levels. They also provide comments including withdrawal time, how the compound is used, and other special conditions that impact safety and effectiveness. The tolerance level of a chemical compound is defined here as the residue levels of a drug or chemical permitted by regulatory agencies in food eaten by humans

### **Herbicides: Relation to use on Food Fish and Non-Food Fish:**

The presence of food fish and/or non-food fish in a pond determines what herbicides can be used. Non-food fish refers to fish that are not targeted as food, and include bait and ornamental fish such as fat-head minnows, goldfish, and Koi. Food fish are those products used for human consumption and include animals such as trout, channel catfish, bass, bluegill and red-ear sunfish.

More restrictions are placed on the use of chemicals under conditions that potentially impact food fish, and are subjected to a withdrawal time before the fish is considered safe to be consumed. ***Withdrawal time is the period***

***of time that must pass after the last treatment or exposure to the compound, before an animal is considered safe to be eaten.*** This information is important both for public safety and for the applicator to legally use the chemical with food fish.

### Tips When Considering Chemical Herbicides for Aquatic Weeds

Controlling aquatic weeds with chemicals in farm ponds, lakes, or other water impoundment should be planned in advance. The approach should consider the following:

- Potential impact on people applying the treatment and/or consuming aquatic species.
- Potential impacts on the body of water and aquatic species.
- Potential impacts on the plant and animal life in the down stream drainage.

### **Publication: Registered Chemical Compounds:**

The Federal Joint Subcommittee on Aquaculture (JSA), chaired by the U.S. Department of Agriculture, has produced a publication in cooperation with Texas A&M University that lists the approved chemicals for use in fish production systems and for aquatic system management. The publication contains the necessary information for safe and legal application of herbicides and algaecides. It contains information about use of chemicals in aquatic systems containing food fish and non-food fish, and essential information on withdrawal time following application. The publication title and how it may be obtained at no charge is listed below.

***Guide to Drug, Vaccine, and Pesticide Used in Aquaculture.*** TAES-TAMU Publication B-5085. 1994. 68 pp.

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Available from:

**Aquaculture Information Center**

National Agriculture Library

U.S. Department of Agriculture

10301 Baltimore Blvd., Room 304

Beltsville, MD 20705.

Telephone: (305) 504-5558

Internet e-mail: [aic@nalusda.gov](mailto:aic@nalusda.gov)

### Tips on Herbicides

**Primary Concerns:** Human safety is always the primary concern when applying chemicals for weed control. An additional concern should always be the potential secondary impacts. Often neglected are potential problems associated with vegetation and aquatic species that reside in the downstream drainage that become harmed in the event of pond seepage or overflow. Property owners treating their pond are liable for all damage to wild fish populations and private property of land owners that are impacted by a release of chemically treated water. The liability exists even in the event of a natural phenomenon such as a flooding rainfall. These problems can be prevented, and landowners are recommended to obtain assistance from a professional weed control specialist who is trained in chemical applications.

The best protection for aquatic species in the water system is attention to details concerning the establishment of chemical treatment concentrations and timing of application when risk of potential oxygen problems are minimal. If the pond contains fish, the best time to apply chemical aquatic weed control techniques is during periods of moderate water temperature and no rain. In most parts of California this is usually during the spring while temperatures are cool and following the winter rains, or in the fall before the winter rains. It is important that pond overflow due to rain or other runoff does not wash the chemical treatment down-

stream impacting non-targeted areas.

Treatment during hot weather is not recommended for ponds containing fish. When phytoplankton or other plant life is killed, the decomposing plant material consumes oxygen from the water and can deplete oxygen to the extent that the water cannot support fish life. During hot weather or periods following successive cloudy overcast days, the pond water usually does not contain maximum oxygen, and treatment during this period is not recommended. In some cases total pond treatment is not recommended and partial treatment of problem areas can solve the problem. Whenever fish are in the pond, it is advisable to have excess water or equipment available for emergency aeration.

### Obtaining Assistance

**Cooperative Extension in the County:** Information on methods of aquatic weed control can be obtained through the services of the University of California's county Cooperative Extension offices. Extension Advisors in the county office can provide or coordinate assistance in identifying the targeted plant species, special conditions that must be addressed to prevent potential problems, and a weed treatment protocol. If the county office does not have personnel trained in aquatic weed control methods they can coordinate assistance obtained from campus-based, aquatic weed Specialists.

1. Contact the local University of California Cooperative Extension (CE) county office. If the exact identification of the aquatic weed(s) is not known, make arrangements to obtain a sample of the plant to be identified by the local CE Advisor. If the county office does not have the resources to identify the plants, work with the Advisor to have a sample sent to a campus-based, aquatic weed Specialist.

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If larger plants are to be identified, they can be transported in a double plastic bag containing chilled pond water, or sandwiched between wet, chilled newspaper and packed in an insulated container. If the problem is caused by microscopic algae, species identification is not usually required.

2. Provide all relevant information to the Advisor. This information should include the following:
  - a. Provide information on the surface acreage and average depth of the pond. Chemical treatments require a fairly accurate estimation of the volume of water to be treated.
  - b. List all food fish in the pond. List other water uses such as livestock water source, swimming, and irrigation.
  - c. Describe all potential damage to downstream drainage areas in the event of water discharging from the pond during treatment, and identify and describe all sources of water seepage.
  - d. Identify all vegetation that is adjacent to the pond such as a favorite tree that derives its water from the pond.

**U.C. Davis Campus Link**

County extension personnel coordinating assistance through campus sources should have all relevant information in hand before contacting the following:

Aquatic Weed Research Laboratory  
208 Robbins Hall  
University of California, Davis  
Davis, CA 95616  
Telephone: 916-752-7870  
E-mail: [lwanderson@ucdavis.edu](mailto:lwanderson@ucdavis.edu)

**Additional Contacts****Inland Fisheries Branch**

Department of Fish and Game  
1416 Ninth Street  
Sacramento, CA 95814  
Telephone: (916) 653-6194

**California Aquaculture Association**

P.O. Box 1004  
Niland, CA 92257  
Telephone: (619) 359-3474

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