

Managing Aquatic Plant Life



Filamentous algae, *Chladophora sp.*



Common name "Muskgrass," *Chara sp.*

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Aquatic plant growth in and around ponds plays an important role in providing quality habitat for fish and wildlife, increasing aesthetic and recreational benefits. Unfortunately, dense plants and growth can interfere with swimming, boating, aesthetics and fishing. Removal and/or management of some plant species may be necessary to maintain a quality habitat.

Selecting the best treatment or combination of treatments depends on the water plant species, the extent of the problem, economic considerations and pond uses.

First, be certain the pond has an aquatic plant problem. Some plant growth is natural and temporary and does not require treatment. As a general rule of thumb, if the growth is more than 25 percent of the surface area, then treatment may be necessary.

Next, for the most effective control, properly identify and understand the plant species to be treated because each plant type requires a different treatment. For a free of charge identification of aquatic plants and algae, contact the University of Nebraska's Water Quality Extension program at 472-7783.

Once an aquatic plant has been deemed a nuisance, there are some effective and commonly used removal techniques.

Harvesting methods, such as hand pulling and cutting, are the most economical and can be very effective for smaller acreage ponds. Harvesting efforts can be undertaken anytime throughout the growing season, but the success of harvesting depends on the immediate and complete removal of all cut plants. Partial removal of cut plants can increase the problem, since each plant fragment within the pond has the potential to form a new plant. Harvesting is considered a short term solution, as plant growth will continue to come back throughout the growing season.

Although, it is a more expensive treatment option, many acreage owners rely on herbicide applications for pond management. Herbicides are easy to use and, in some cases, the only practical method of control. Timing is important when using herbicides. It is best to treat in the spring season with the first signs of plant growth because there are fewer weeds present to decompose and cause oxygen depletion.

In the summer months, once aquatic weeds become well established, control still can be successful. However, much more effort is required to avoid oxygen depletion. Most fish kills that occur after herbicide treatment are not from the chemical, but are a result of suffocation due to the overabundance of decomposing plant biomass that utilizes oxygen.

Some herbicides require restric-

tions from drinking, livestock watering, swimming, fish consumption and irrigation for a period of time until the active ingredient in the chemical has reached a safe level. Many states require permits to apply aquatic herbicides. In Nebraska, permits are required if working with a restricted use product, such as Magnacide H, a herbicide commonly used in irrigation canals.

Herbicides are classified as either systemic or contact. Systemic products are absorbed by the plants, move throughout the plant and kill the plant from the roots up. A full kill with systemic herbicides generally takes five to 10 weeks. However, the results are long lasting; many times only one treatment per season is required. Contact herbicides only kill the portion of the plant they come in contact with. Contact herbicides show visible results within days and a full kill in one to two weeks. However, multiple treatments may be required throughout the season.

The length of control with herbicides depends on the product used, clarity of the water and the type of plant targeted. Most products do not provide any residual control, so chemical treatment must be completed each year control is desired.

Apply the right herbicide at the correct time, rate and in accordance with label instructions. Not properly following directions can lead to fish kills and damage aquatic life.

Using Animal Manure in the Garden

Animal manure is a secret ingredient which many home gardeners overlook. Manure offers many benefits, the most notable being increased available soil phosphorus and enhanced water infiltration rates. When manure decays, organic phosphates are released and the total phosphorus level available to plants increases. Organic phosphates may persist for many years after manure applications have stopped.

Manure application also increases water infiltration dramatically compared to non-manured plots. In fact, studies indicate manured plots can be properly irrigated five times faster than non-manured plots. Manure also keeps soils from sealing tightly while crops are growing.

There are three problems which can cause manure to be more of a problem than an asset.

First, manures must be handled carefully so potential *E. coli* bacteria or other pathogens are not applied or splashed onto edible portions of plants, nor food contaminated from unwashed hands that touched manure or tools. The best practice is to plow manure into the soil a season or two before planting

food, or to compost it thoroughly before use. Purchased, bagged manure is composted and often tested for viable weeds and excess salt.

Second, one must consider the source of the manure because undigested weed seeds, and weed seeds from hay or straw bedding, cause problems in a garden. Also, large amounts of salts in the manure can kill garden plants if large quantities are used. Saline plant toxicity can also be a problem when using feedlot manure, if cattle are fed high salt rations.

Third, how much manure should be added to a garden? Bag instructions recommend 40 pounds per 100 square feet of garden area. That is a good, safe recommendation; however, some very successful gardeners apply the manure at 80 pounds per 100 square feet (8 pounds per tomato plant located 3 feet apart). Actually, the type of manure determines the rate which can be safely used.

Manure containing bedding such as sawdust or straw can be used in greater quantities because it does not contain as much ammonia. Vapors of ammonia in fresh manure, especially rabbit or



Aged horse manure

poultry manure, can severely damage plants. Thoroughly incorporate all fresh manure into the soil several weeks before planting.

Certain tomato varieties, such as Merced and Surefire, and most peppers respond well to heavy manure applications. However, adding excessive amounts of manure on a yearly basis is not encouraged since nutrient release occurs over a period of time and nutrient toxicity could eventually occur.

Control Garden Insects in a Variety of Ways

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One of the most troublesome problems faced by organic gardeners is insect control. Deciding how much damage can be tolerated will help to pinpoint when control measures are needed.

When insect numbers are high, injury may be reduced but is seldom eliminated by non-chemical methods. Physical barriers, such as collars placed around young plants, will help protect against cutworms.

Trapping methods, such as the use of flat boards or shingles placed on the ground near plants, will attract pests such as slugs, snails and squash bugs in search of darkness, moisture and protection. The pests can then be collected and destroyed.

Reduce spidermite populations on some plants by hosing down the plant with a strong force of water.

Natural populations of predators and parasites are valuable for reducing infestations of garden pests. However, usually some level of pest infestation must be tolerated to attract and maintain natural enemy populations. Should pest control be necessary, select a management strategy that will conserve or minimize injury to beneficial insects, while attaining satisfactory control of the target pest.

Several species of mass-reared beneficial insects can be purchased from commercial suppliers for use in home gardens. However, the artificial introduction of natural enemies usually does little good in the home garden because the insects often die or disperse into areas outside the garden. It usually is more productive to provide good conditions for natural beneficial insect populations to increase than to introduce exotics.

There are a few products that have insecticidal properties that may be acceptable to organic gardeners since they are not synthetically derived. However, most of these materials will kill beneficial insects as well as the target pest.

- *Bacillus thuringiensis*, also known as B.T., is marketed under the trade names Dipel, Thuricide and others. It consists of spores from soil-inhabiting bacteria that kills the larvae of moths and butterflies.
- Rotenone is a non-synthetic insecticide. It is the most effective of the non-synthetic insecticides, but residual activity is very short.
- Finely ground sulfur can be used either as a dust or spray to control spidermites. However, the chemical may burn tender foliage if air temperature is 85 degrees or higher.
- Insecticidal soaps are effective at controlling some soft-bodied insects, such as aphids, mites, leafhoppers and plant bugs. It requires thorough plant coverage and multiple applications. Use soaps with caution, as leaf injury is possible with certain plants.