

# Aquatic Weed Control

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I get a lot of calls for help on aquatic weed control.



It is important to ID the weed because different weeds require different control measures.

Management of the pond to prevent weed take-over.

Controlling weed problems.

# **ID Weeds**

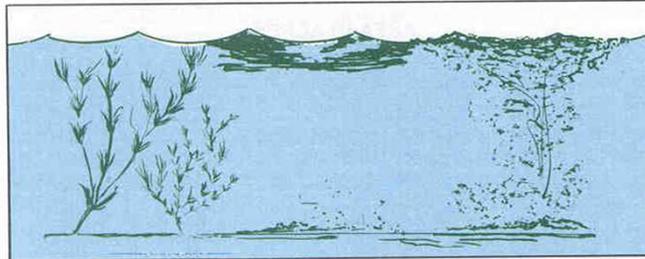
📖 Chemical Controls are listed by type of aquatic weed:

- Algae
- Floating Weeds
- Submerged Weeds
- Emerged Weeds



# ALGAE FORMS

Planktonic



Attached-erect

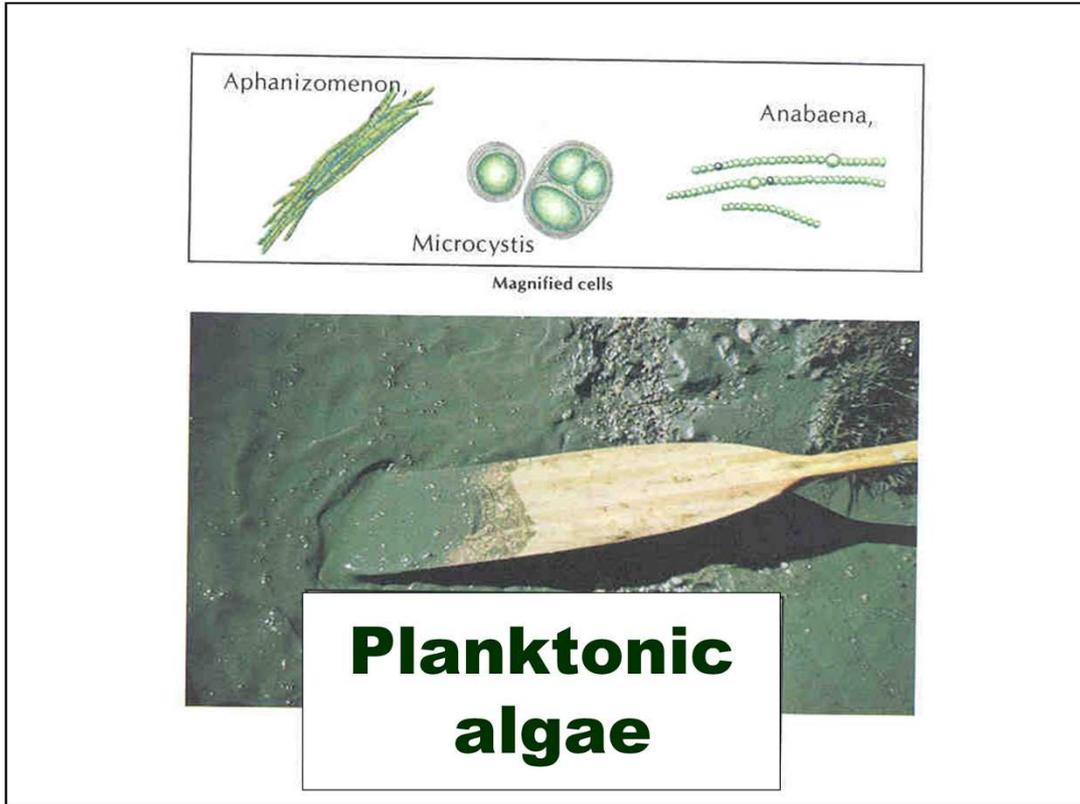
Filamentous

Most of the following pictures were taken from Aquatic Weed Control

Picture top of page 32.

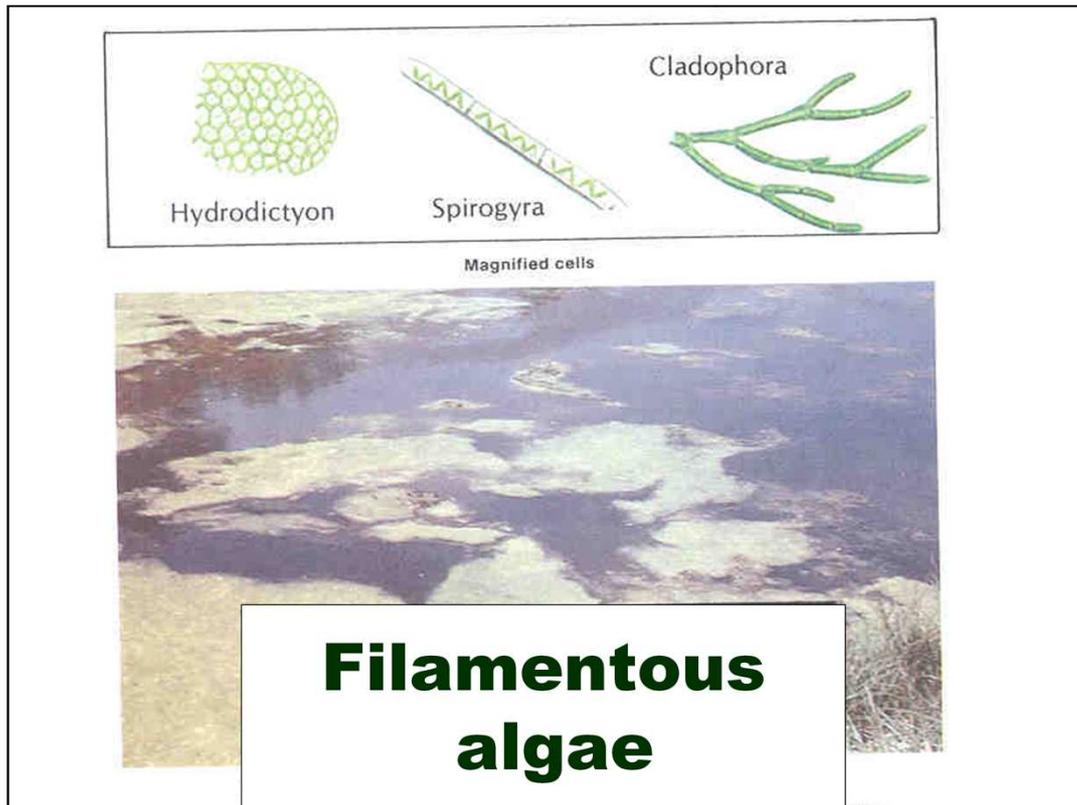
Algae are primitive plants related to fungi.





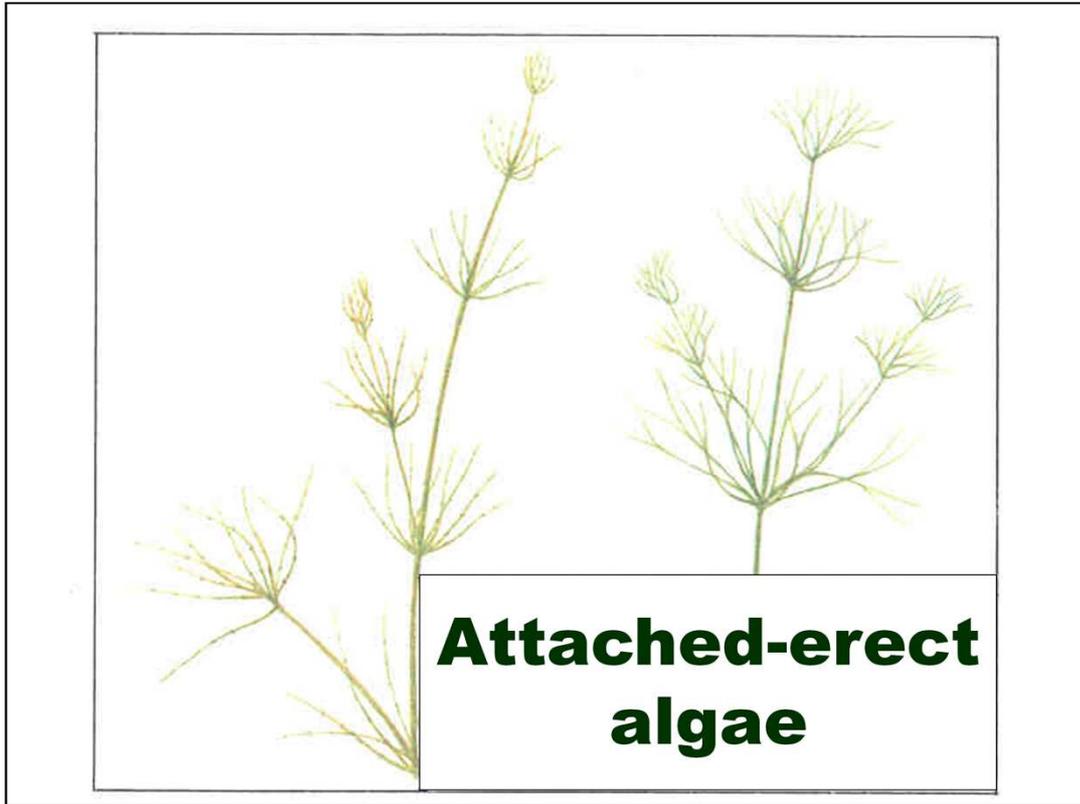
Picture page 33.

Microscopic plants usually suspended in the upper few feet of water often reaching bloom proportions. Water appears pea soup green or brownish.



Picture page 34.

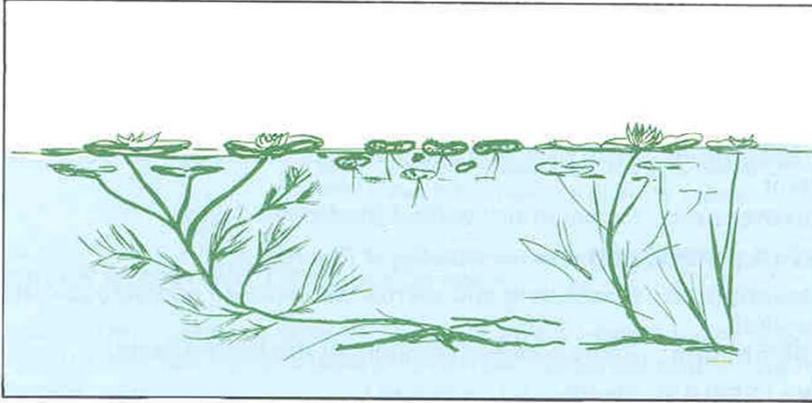
Also known as “pond scum” or “moss” because it forms greenish mats upon the water’s surface. Filamentous algae usually begins its growth along the edges or bottom of the pond and “mushrooms” to the surface, buoyed by the oxygen it has produced. Individual filaments are a series of cells joined end to end which give the thread-like appearance. They also form fir-like growths on bottom logs, rocks, and even backs of turtles. The texture of these growths may be slimy, cottony or coarse. Common names such as frog spittle and water net have been given to a few common forms.



Picture page 35.

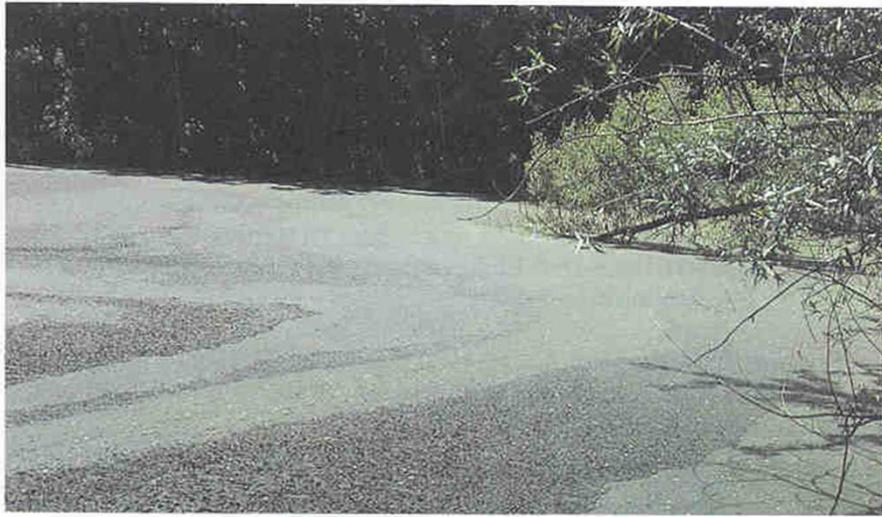
Advanced forms of algae, gray-green or yellow in appearance. They are often mistaken for higher vascular plants. Best way to ID it is by its musky odor and gritty, bristly feel.

# FLOATING WEEDS



Top picture on page 37.

Plants with leaves that float on the surface and are rooted on the bottom are included in this category. Free-floating surface plants too.



Floating weeds

# Duckweed



Photo bottom of p 37. Small, floating green plants that are often mistaken for algae. Reproduce by fragmentation.

Common duckweed, watermeal, and star duckweed.



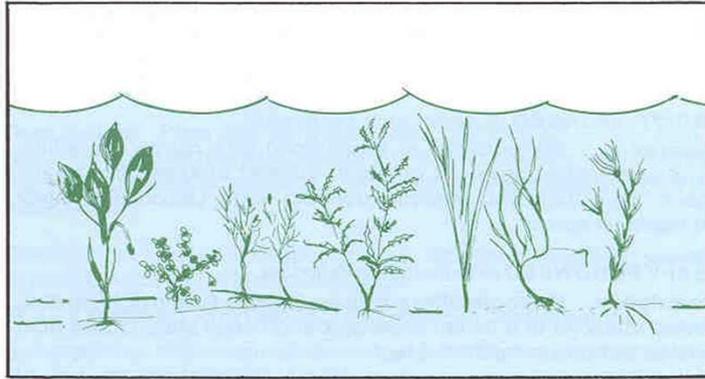
Picture p. 39.

Mature leaves round with broad lobes. Leaves about the size of a half dollar.  
Stalks extend from horizontal root buried in shallow water.



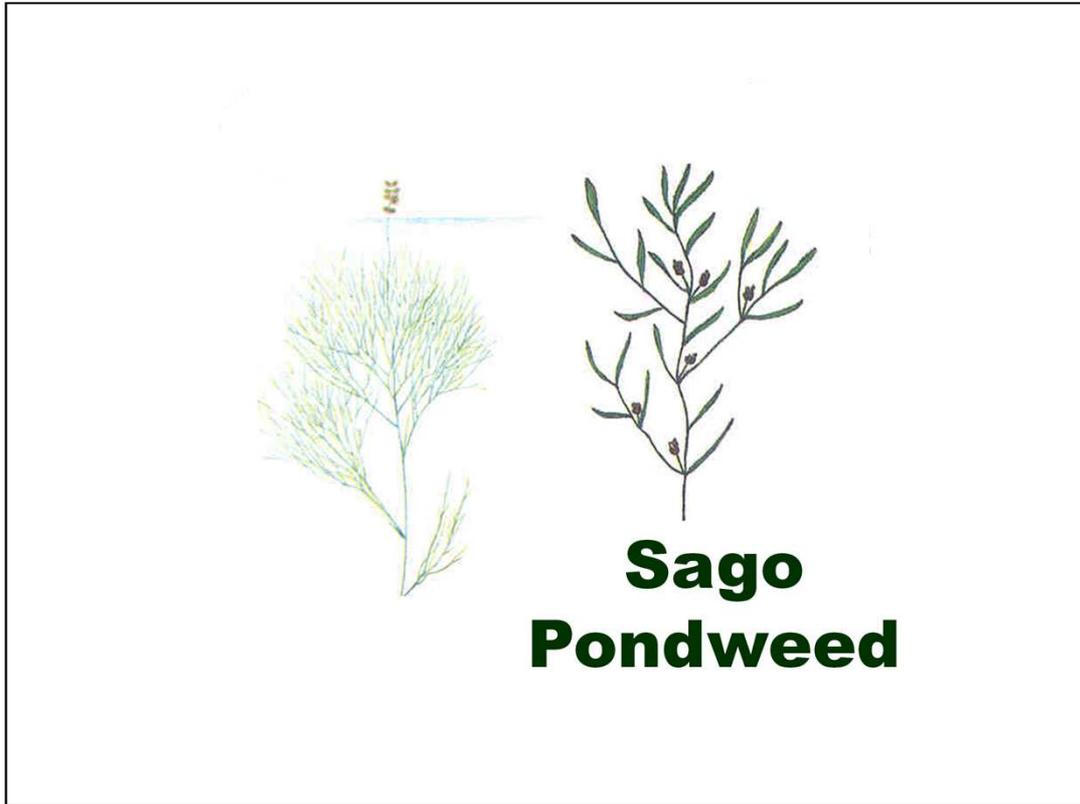
Picture page 40.  
White and yellow.

# **SUBMERGED WEEDS**



MIDDLE PICTURE ON P 43.

Plants which are generally rooted at the bottom and are completely submerged are in this category. Submerged weeds usually lack rigidity and depend on water for support.



Left side of picture on page 44.

Plants bushy in appearance with narrow threadlike leaves alternately arranged on stems. Nutlets arranged like beads spaced on a string and emerging from the water. Leave alternately arranged on stem.



Picture page 46.

Leaves thin and membranous with veins plainly visible.

# Large-leaf Pondweed



Picture p. 47

# Water Buttercup



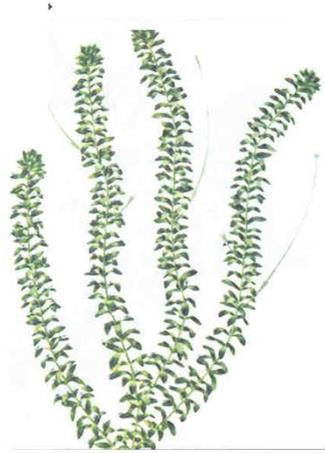
Picture page 51.

Submerge stem erect in water. Don't confuse with chara (algae). Buttercup has petioles (stem connecting leaf to stalk). Chara's leaf-like structures are whorled about the stem and hollow stem.



## **Coontail**

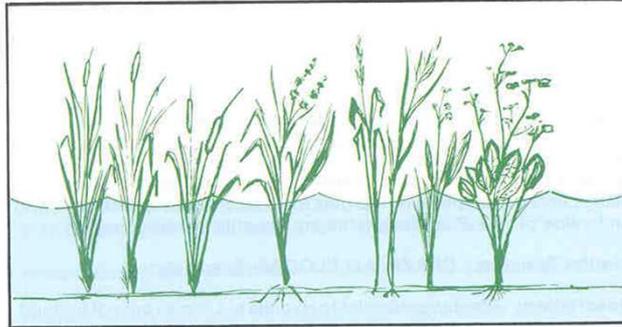
p. 57



**Elodea**

P 58

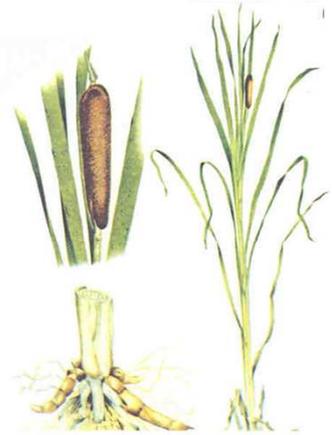
# EMERGENT WEEDS



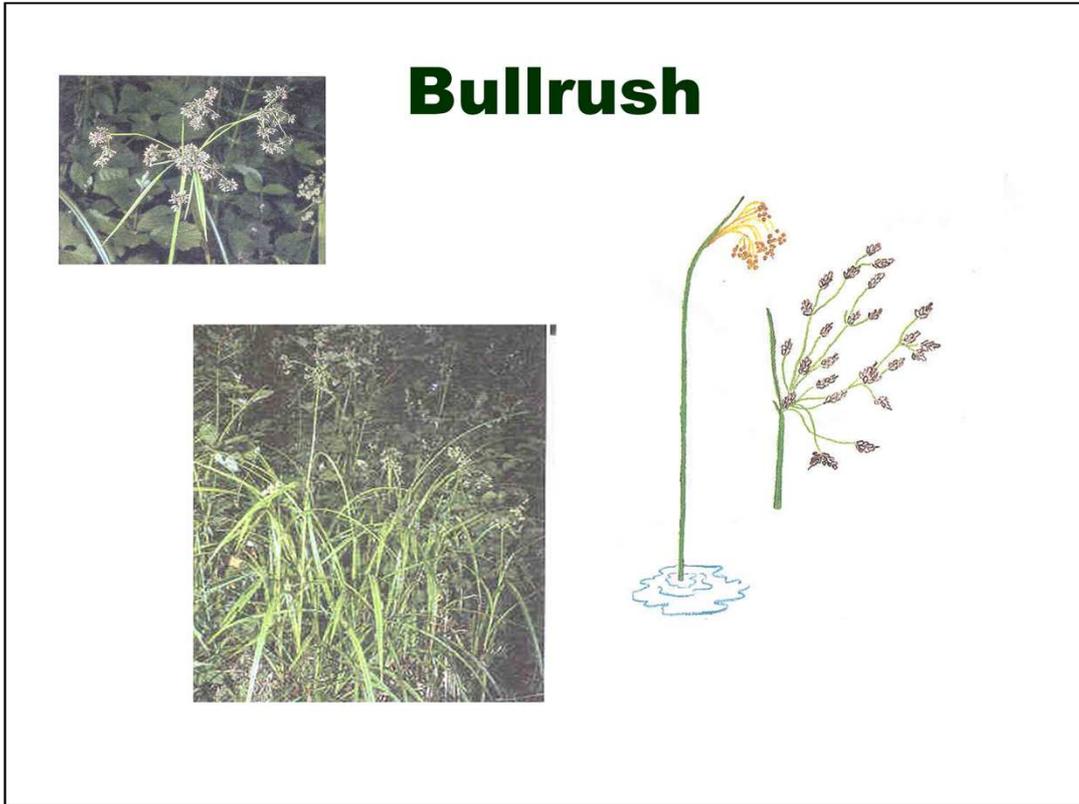
PICTURE MIDDLE OF P 62.

Plants which grow above the water in shallow areas of ponds, lakes, irrigation ditches and rivers. These plants are generally rigid and are not dependent on water for support.

# Cattail



Picture p. 63



Picture p. 66

Long, tall, triangular or round-shaped stem. May or may not have leaves. Cluster of brownish flowers and seeds are located at the end of the stem.

# Sedges



Picture from CD.

Yellow or purple Nutsedge.

# MANAGEMENT

- 📖 Pond construction (SWCD)
  - Engineering help with site, slope, depth
- 📖 Nutrient and silt control
  - No fertilizer
  - Septic integrity
  - No waste products
  - Buffer zone



Make banks steep and pond deep. This keeps water cool and dark, an environment that disfavors weeds.

Keep nutrients out of the pond. Nutrients can come from fertilizer, septic systems, and trees and bushes shedding leaves into the pond. Keep livestock from adding nutrients to the pond by providing a special access point or providing off-site water (For example, a gravity feed line to a tank below the pond). Make a buffer zone around the pond to keep these nutrients out.

# MANAGEMENT

## Shoreline Management

- Native vegetation (wildlife diversity)
- Protect from erosion
- Fence out livestock

## Fish Management

- Stock appropriate fish (ODFW; USFW)
- Keep balanced population
- Don't overfeed fish



# Mechanical Control

📖 Large weed harvesters

📖 Small harvesters for row boats

📖 Cutting, raking, pulling,  
and digging by hand



## Chemical Control

- ☞ Generally, apply during rapid growth
- ☞ May require multiple applications
- ☞ Wind, air temp., water temp. (>60F)
- ☞ ID weed or algae
- ☞ Choose proper chemical & equipment
- ☞ Follow label (label is law)
- ☞ Permits ??



## **Pesticide Application Permits**

- 📖 NPDES requirements
  - Beginning April 9, 2011
  
- 📖 Oregon DEQ with US EPA
  - Permit required under certain circumstances
  - Pesticide General Permits



## Chemical Control

- ☞ Treat small areas at a time. Decaying plants deplete oxygen.
- ☞ Some chemicals are toxic to fish, livestock, people, beneficial plants, ...
- ☞ Follow withdrawal time & site restrictions
- ☞ Fish differ in sensitivity



# Example chemicals

Special formulations & rules for use  
in and around different water area types.

Follow the label!

- 📄 Copper sulfate
- 📄 Endothall (restricted use)
- 📄 Diquat
- 📄 2,4-D
- 📄 Fluridone
- 📄 Glyphosate



## Example chemicals

- 📖 See Weed Control Handbook “Aquatics” section for current chemicals and application guidelines  
<http://pnwhandbooks.org/weed/other-areas/aquatic-weed-control>
- 📖 Use equations and charts for proper dilution (double check calculations)



Pick 2 or 3 chemicals to review and point out rates, timing, restrictions, etc...

# Measuring Areas

- ☞ Acre 43,560 square feet
  - length X width = sq. ft. of surface
  - pond sq.ft./43,560 = surface acres
- ☞ Acre-foot is an acre of water 1' deep



Maximum Depth  
Fig. 1

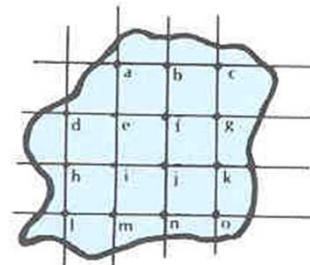
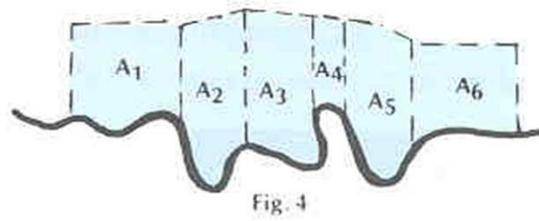
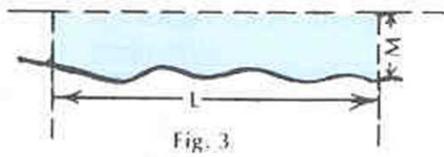


Fig. 2

Picture page

# Measuring Shorelines



# Manual Application

## Granular (hand or burlap bags)



Simple granular application - Photo courtesy MARINE BIOCHEMISTS, INC., Milwaukee, WI

## Backpack Sprayers

Picture p. 19 top

# Power Equipment

- ☞ Large sprayers
- ☞ Subsurface injectors



Picture p 20 bottom.

Subsurface for dense weeds.

## **Barley Straw for algae control**

- 📖 ~ 225 lbs barley straw per surface acre
- 📖 Loosely bound straw in netting suspended in top 3-4 ft surface
- 📖 Decomposition of straw releases a chemical that inhibits algae growth
- 📖 6-8 weeks at 50F; 1-2 weeks at 68F
- 📖 Oxygen depletion; Fish kill if high rate



Get proper info and directions.

## References

- 📖 Aquatics. Pacific Northwest Weed Control Handbook
- 📖 How to Identify and Control Water Weeds and Algae. Applied Biochemists, Inc. Mequon, WI
- 📖 Controlling Pond Algae with Barley Straw. Nebraska Co-op Ext. NF00-429
- 📖 DEQ Rene Nomunra (503) 229-5657



**Thank you!**



Picture from page 29