How to Manage Aquatic Weeds

• Start early
• Get proper identification
• Select proper control
• Apply control effectively
• Repeat control when necessary
Pond Drawdown

• May work for LARGE LAKES
• Need some areas of deep water for fish refuge
• Only draw down in the WINTER time
• Expose bottom for at least ONE MONTH
• Spray exposed weeds when they are green

• Drought drawdown may require frequent treatment or grass carp stocking
Chemical Controls of Aquatics

- Copper – algae (powder or liquid)
- Sodium percarbonate - algae
- Diquat – contact herbicide (Reward)
- Endothal – contact herbicide (Aquathol)
- Floridone (Sonar) – residual herbicide
- Glyphosate (Rodeo) – grasses, shoreline
- 2,4-D – growth regulator
- Triclopyr – brush (Renovate)
- Imazapyr – emergent weeds (Habitat)
- Carfentrazone – floating weeds (Stingray)
- Imazamox (Clearcast) broad spectrum
- Penoxsullam (Galleon) Floating plants
- Aquashade – pond water dye – part of algae control
Planktonic & Filamentous Algae

Lyngbia

Pithophora
Blue-greens and Euglena
Algicides (all are short term)

- Copper sulfate powder
- Copper liquids
- Sodium percarbonate
- Hydrothol 191
- Reward
- Tank mixes of Reward and Copper liquids

- Follow herbicide with dye or grass carp
Duckweed & Water Meal
Water Meal
Often Mixed with Duckweed
Watermeal - The Problem

- Small, fast-growing plants
- Can cover entire pond surface
- Uses structure and standing timber for points of protection
- Hard to control with weed-eating fish
Chemicals for Watermeal

- Sonar (Fluridone)
- Reward (Diquat)
- Reward + Cutrine plus (other liquid Cu)
- Habitat (Imazapyr)
- Stingray (Carfentrazone)
- Galleon (Penoxsulam)
- Clearcast (Imazamox)
- Clipper (Flumioxazin)
## Relative Cost of Chemicals (Labor is not included)

<table>
<thead>
<tr>
<th></th>
<th>Fluridone</th>
<th>Diquat</th>
<th>Diquat and Cutrine plus</th>
<th>Imazapry</th>
<th>Carfentrazone</th>
<th>Penoxsulam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duckweed (Lemna sp.)</td>
<td>0.49 qt/A (4 ft deep)</td>
<td>1-2 gal/A</td>
<td>1 gal and 0.5 gal/A</td>
<td>2-3 pt/A</td>
<td>6.7-13.5 oz/A</td>
<td>2 to 5.6 oz/A</td>
</tr>
<tr>
<td>Watermeal (Wolffia sp.)</td>
<td>0.98 qt/A (4 ft deep)</td>
<td>2 gal/A</td>
<td>1 gal and 0.5 gal/A</td>
<td>Not controlled</td>
<td>Not controlled</td>
<td>75 ppb (1.63 qt/A 4 ft deep) $1,956</td>
</tr>
<tr>
<td>Amount for Minimum Purchase</td>
<td>1 pint</td>
<td>1 gallon</td>
<td>1 gal ea</td>
<td>1 quart</td>
<td>1 quart</td>
<td>1 quart</td>
</tr>
<tr>
<td>Aprox Price /Amt</td>
<td>$620.00/pt</td>
<td>$115.00/gal</td>
<td>$115.00/gal and $30.00/gal</td>
<td>$200/qt</td>
<td>$200/qt</td>
<td>$600/pt</td>
</tr>
</tbody>
</table>
Sonar for Watermeal

• Use at least 90 ppb but 120 ppb is better
• No water inflow or outflow
• Relatively high cost, but treatment lasts longer than contact herbicides
• Easier to apply than contact herbicides
• Not for irrigation ponds (30 day delay)
Reward + Cutrine plus

Cutrine plus label says 2:3, Reward:Cutrine Plus (1:1 ratio works). Then 1 gal/Acre. Also, 1% solution for spot treatment.

• Gives better control with less chemical cost

• Caution: Cutrine plus is toxic to fish at low alklinities. Trout, koi carp.
Reward: Cutrine-plus Effect 1% solution, 7 days post-Appl.

Duckweed and Watermeal, 90% kill
Emergent: Slender spikerush

Submerged

On Shore
Imazamox (Clearcast)

- Absorbed and translocated
- 16 to 173 ounces per acre-foot (liquid)
- 20 to 200 lb of granular per acre
- Or, 50 to 200 ppb for submerged weeds
- Plant-specific rates, see label
- Up to 5% solution for spot treatment

- Works for emergent AND submerged weeds, over about two weeks
Primary weeds for Imazamox

- Alligatorweed
- Cattail
- Common salvinia
- Parrotfeather
- Watershed
- Bladderwort
- Hydrilla
- Milfoils
- Pondweeds
Alligatorweed
Alternanthera philoxerioides
Emergent: Primrose

Grows from shore to deeper water
Submerged: Naiads
Variable-leaf Milfoil
Other milfoils

- Eurasian milfoil
- Parrotfeather milfoil
Precautions with Imazamox

• Avoid spray drift
• Limit of 500 ppb
• Do not irrigate greenhouses, nurseries or hydroponics

• **Stop all irrigation for 24 hours**
• No restrictions for livestock watering, swimming, fishing, domestic use, or for agricultural sprays
• Less than 50 ppb near potable water intakes
Clipper

- Flumioxazin 51%
- 5 day wait for irrigation uses
- Okay for swimming, fishing, livestock
- 6-12 oz per surface acre
- 2.1 to 8.5 pounds per acre if treating 4 feet of water depth for submerged weeds
- Buffer to pH 7.0 or less
Weeds Controlled with Clipper

- Duckweed
- Watermeal
- Hydrilla
- Naiad
- Milfoil
- Alligatorweed
- Filamentous algae
Grass Carp Stocking
Triploids ONLY

- New Pond
  - 5 to 10 per acre

- Existing Weeds
  - 20 to 40 per acre

- Floating mats of algae
  - 50 or more per acre
  - (better to control with chemicals first, then stock 10 per acre)
Grass Carp Size at Stocking

- For new ponds can use 3-5 inch carp ($5.00 each)
- For ponds with large bass and weed infestations use 1 pound carp ($15.00 each)
One Pound and 14 inches
Limits of Grass Carp

- Effective for about 6 years
- Large carp do not eat aggressively
- Grazing is a slow control method
- Heavy grass carp stocking can interfere with bream spawning activity
Spillway Barriers
Keep Carp in the Pond
Keys to Aquatic Plant Management

- Start Early
- Proper Weed Identification
- Select Appropriate Control
- Apply the Control Effectively