Pond Management

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Agriculture & Natural Resource Agent
K-State Research & Extension Johnson County

AUG 21 2007
Pond Management Basics

- Plant ID and Control
- Fish Management
- Wildlife Concerns
- Management Options
Types of Aquatic Plants

- Algae
- Floating
- Submersed
- Emergent
Algae

- Filamentous
- Chara
- Phytoplankton/planktonic
Filamentous Algae
Chara Algae
CHARA (Algae)

COONTAIL (Plant)
Table 1. Response of aquatic weeds to selected herbicides and approximate treatment costs.

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<th>Aquatic Weed Classification</th>
<th>Aquatic Weed</th>
<th>Copper Algaecides (Several)</th>
<th>2,4-D (Reward &amp; WeedtrineD)</th>
<th>Diquat (Aquathol &amp; Hydrotrol)</th>
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**Approximate Cost**

- $2.50-20/acre-ft
- $250-700/acre-ft
- $15-30/surface acre
- $33-133/surface acre
- $80-320/surface acre

1. E = Excellent, G = Good, F = Fair, and P = Poor or none. Refer to product labels for specific recommendations.
2. Hydrothol formulation only.
3. AS formulation only.
4. Herbicide cost varies with application rate, water depth, formulation, geography, and market fluctuations. Contact local supplier for current retail prices.
Floating Plants

- Duckweed
- Watermeal
Duckweed
Watermeal
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Approximate Cost:

- Copper Algaecides: 2.50-20 /
- 2,4-D: 250-700 /
- Diguan: 50-220/Acre-ft
- Endothall: 60-150/Acre-ft
- Fluridone: 15-30 /
- Glyphosate: 33-133 /
- Imazapry: 80-320 /

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2. Hydrothol formulation only.
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4. Herbicide cost varies with application rate, water depth, formulation, geography, and market fluctuations. Contact local supplier for current retail prices.
Submersed Plants

- Pondweed(s)
- Coontail
- Naiads
American Pondweed
Coontail
Southern Naiads
SOUTHERN NAIAAD
(aka Buda Pond Weed)
Nejas guadalupensis (Sprang) Magaur
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- Fluridone: $15-30/acre-ft
- Glyphosate: $33-133/acre-ft
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Emergent Plants

- Arrowhead
- Cattails
- Smartweed(s)
- Water primrose
Arrowhead
Smartweed
Water Primrose
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<td>G</td>
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<td>E</td>
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Approximate Cost:

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<tr>
<th></th>
<th>Copper Algaecides (Several)</th>
<th>2,4-D (Reward &amp; Weedtrine®)</th>
<th>Diquat (Aquatrol &amp; Hydrolone®)</th>
<th>Endothall (Aquatrol &amp; Hydrolone®)</th>
<th>Fluridone (Sonar &amp; Avast)</th>
<th>Glyphosate (Rodeo &amp; Others)</th>
<th>Imazapyr (Habitat)</th>
<th>Triclopyr (Renovate)</th>
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<tr>
<td>Acre-ft</td>
<td>$2.50-20/</td>
<td>$250-700/</td>
<td>$15-30/</td>
<td>$33-133/</td>
<td>$80-320/</td>
<td>$7-65/Acre-ft</td>
<td>$50-220/Acre-ft</td>
<td>$60-150/Acre-ft</td>
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1 = Excellent, G = Good, F = Fair, and P = Poor or none. Refer to product labels for specific recommendations.
1² Hydrothol formulation only.
1³ AS formulation only.
1⁴ Herbicide cost varies with application rate, water depth, formulation, geography, and market fluctuations. Contact local supplier for current retail prices.
Mechanical Removal

- Weed Cutters
- Machines
- Weed Rakes
- Hand
Biological Weed Removal

- Herbivorous Fish
http://aquaplant.tamu.edu/
Pond Management for Fishing

- Stocking Strategy
- Environmental Conditions
- Fish Harvest and Growth
- Successful Fish Reproduction
- Elimination of Unwanted Fish Species
- Vegetation Control
Three Reasons for Poor Fishing Quality

- Wrong Kinds of Fish
- Wrong Size of Fish
- Wrong Number of Fish
Pattern of Fishing in an Unmanaged Pond

• The pond is built and stocked with fish

• Fishing begins one or two years later

• Three to five years after construction, fishing is excellent

• Fishing declines after six or seven years and remains poor
Why Does Fishing Decline?

• Natural progression: increased plant growth is detrimental for large predatory bass because:
  • Makes capturing prey more difficult
  • Increases the chance of fish kills due to plant die-offs
• Selective fishing
What to Stock?
All-purpose Fish Combination

- Largemouth Bass – 100 fingerlings/acre
- Bluegill – 500 fingerlings/acre
- Channel Catfish – 100 fingerlings/acre
- Fathead Minnows – 3 pounds/acre
When to Stock

• Stock minnows in spring
• Catfish in fall
• Largemouth bass next spring
Where to Get Fish

- Kansasaquaculture.com
Bass Harvest Critical

• Do not remove bass \leq 15” for 3 years
• After that have a 12”-15” protected range
• Harvest no more than 20lbs. bass/acre/year
Bluegill

• Usually not harvested adequately

• Try to remove 30 lbs/acre/year
Channel Catfish

- Harvest as many as desired
- Replace with > 8” to avoid bass predation
Typical Stocking Strategy for Small Ponds

- Bluegill
- Largemouth Bass
- Channel Catfish
Problem Fish for Ponds
Pond Fishery Out of Balance

- A few large bluegill
- Many small largemouth bass
Pond Fishery Out of Balance

- Many small bluegill

- Few large largemouth bass
Balanced Pond

- Bluegill
- Largemouth Bass
The Best Monitoring Method Is Fishing
Questions to Ask Yourself

• Is the average size of bluegill declining?
• Is the largest size bluegill you catch getting smaller?
• Do you catch fewer big fish?
• Are bass being caught less frequently?
• Are crappie, carp, or other non-stocked fish being caught?
Record Fish Harvest

- Species
- Size
- Number
- Date
- Water conditions
Pond Management Is A Balancing Act

A balanced pond fishery can be established with the initial stocking.

Maintaining balance requires the pond owner to manage the harvest.
Managing the Harvest

- Bag Limits
- Size Limits
- Catch and Release
- Education
Eradiation of all fish species is recommended if your pond contains a poor mix of fish species or is dominated by overcrowded slow growing bluegill.

Choices:
- Drain Pond
- Chemically Treat
Fish Attractors

• May be used if pond has limited cover
• Will not significantly increases pond productivity, simply concentrate fish
• Recommended materials include brush, Christmas trees or any wood
• Anchor to the bottom
• Place on the ice
Feeding Fish

• Not recommended for most pond owners – not needed in a balanced system
• Not a solution for undersized fish
Panfish Option

Release all bass < 15 inches, this overpopulates the bass and then larger Bluegills will be produced (> 8”
Big Bass Option

- Release all bass under 15” for 4 years after stocking
- Harvest no bass > 15” during that time
- Then overharvest the 8” – 15” bass (30-50/acre)
- Release bass > 15”
Common Causes of Muddy Ponds and Their Solutions

- Soil erosion
- Abundance of common carp and bullheads
- Wave Action
- Livestock
- Suspended clay particles
- Buffer zone
- Eradication: chemical or drain pond
- Riprap or vegetation
- Fencing
- Hay bales
Fish Kills Due to Suffocation

• Excessive snow and ice

• Rapid plant die-off resulting from:
  – Cold rain
  – Several cloudy days
  – Excessive use of herbicides
Preventing Winter Fish Kills

Remove snow from at least 50 percent of the ponds surface

Don’t bother drilling holes in the ice – it won’t help

Artificially aerate water
Preventing Summer Fish Kills

Prevent fertilizer, herbicides, insecticides or organic run-off (silage, manure) from entering the pond

Chemically treat aquatic weeds early in the growing season

Avoid treating large areas at the same time
Nuisance Wildlife
Fig. 5. Proper dam construction can reduce muskrat damage to the structure.
Management Options

What do you want?