

## POND FERTILIZATION

Joe T. Lock\*

Food shortages limit fish growth in most Texas farm ponds. Increasing the growth of microscopic plants (phytoplankton) is the key to increasing fish growth. Microscopic crustaceans (zooplankton) feed on the phytoplankton. When both forms of plankton sink to the bottom, they create an organic ooze which feeds aquatic insects. Small fish feed on the zooplankton and insects. These small fish are then eaten by bass and other predator fish. Applying fertilizers to promote the growth of phytoplankton (the first part of this food chain) will usually increase annual fish production by 100 to 400 percent.

Pond owners should be committed to a long-term management program before fertilization begins. One-time or haphazard fertilization is uneconomical and often causes aquatic weed problems. More importantly, since fertilization increases the food supply which results in more and larger fish, if fertilization is stopped, there is not enough food for the increased weight of fish.

The following step-by-step guide will help pond owners establish a successful pond fertilization program.

### 1. **Study the present condition of your pond.**

#### Is the pond muddy?

Sunlight is necessary for phytoplankton growth. If the water is too muddy to see an object at least 8 inches beneath the surface, see Extension publication L-2161, Clearing Muddy Ponds, for information on how to clear the pond. Neither clearing nor fertilization are necessary for fed catfish ponds.

#### Are the pH and alkalinity satisfactory?

Some ponds are too acidic for good fish growth or survival, and some are too low in bicarbonates for good phytoplankton growth. Check with your county Extension agent on procedures for testing your pond water.

#### Are aquatic weeds present?

Aquatic weeds absorb the added fertilizer, which prevents beneficial phytoplankton from using it, your county Extension agent can provide recommendations for controlling weeds before fertilizing. After rooted aquatic weeds are controlled, shading by phytoplankton hinders their regrowth. If you have excessively large areas of shallow water in your pond, weed control may not be practical.

#### What kinds and sizes of fish are in the pond?

If many undesirable fish, such as bullhead catfish, carp or gar, are in the pond, you should remove them with rotenone and then restock (see Extension publication L-2084, Renovation of Farm Ponds). If you have too many stunted sunfish (bream) and/or bass, see Special Publication No. 2, "Assessment and Corrective Management for Fish Populations in Small Impoundments" (Published by the Texas Chapter, A.F.S.), available from the Texas Cooperative Extension, Natural Resource Conservation Service and Texas Parks and Wildlife

Department. Fertilizing will produce more undesirable fish, if they are already present, and will not correct an unbalanced fish population.

How much water flows through the pond?

Fertilization is not usually successful if a constant flow from springs or creeks flushes the added nutrients and phytoplankton from the pond.

Are you feeding catfish in your pond?

Regularly fed fish ponds usually do not require fertilization, as the added waste products from fish being fed adequately fertilize the water.

2. **Select a fertilizer.**

Inorganic fertilizers are recommended for sport fishing ponds. Granular and liquid forms are available; both give satisfactory results when properly applied. Compare costs, availability and ease of application in your area before selecting either or both forms.

Granular formulations high in nitrogen and phosphorus, such as 20-20-5, 16-20-0 or similar analyses, produce good results in most situations. Ponds that have been heavily fertilized for several years may respond equally well to phosphate alone. Liquid formulations of ammonium polyphosphate (10-34-0 or similar analyses) are easy to apply and usually cost less for the same results.

3. **Fertilize as often as necessary to maintain a plankton bloom throughout the warm months.**

Begin fertilizing when the water temperature reaches 65 degrees F. Earlier application can cause growth of filamentous algae. Fertilize so that the nutrients are dissolved in the top 2 feet of water. Phytoplankton stay near the surface to absorb sunlight.

If granular fertilizer is used, it should be dissolved in shallow water. Never pour fertilizer into deep water. The best method is to pour the fertilizer on a wooden platform placed about 1 foot below the water surface. The platform prevents phosphorus from losing its effectiveness by keeping it from contact with the bottom mud. A platform 4 feet square is adequate for ponds up to 5 acres. An alternative method for small ponds is to slip the fertilizer bag on one side and place the bag in shallow water with the open side up. Pouring fertilizer into shallow water is satisfactory for small ponds, but more will be needed than with the platform or open bag method. Apply 100 pounds of granular fertilizer per surface acre for the first application. Follow with 50-pound applications at 1-month intervals, or more frequently if needed, to maintain the bloom.

If liquid fertilizer is used, mix 1 gallon with 10 gallons of water and slosh the mixture on the surfaces of small ponds. In larger ponds the fertilizer should be mixed into the water with an outboard motor or sprayed on the surface. Liquid fertilizer is heavier than water and will sink to the bottom if applied undiluted. Begin with 1 gallon of fertilizer per surface acre. Follow with 1-gallon applications at monthly intervals, or more frequently if needed, to maintain the bloom.

A light green color in the water indicates successful fertilization (plankton bloom). A white object or cupped hand should disappear at 12 to 15 inches beneath the water surface. Add more fertilizer as necessary to maintain this condition. Do not fertilize when the visibility is less than 12 inches.

Cease fertilizing in the fall when the water temperature drops to 70°F.

Liquid fertilizers containing ortho-phosphates should not be stored in unheated buildings during the winter. Low temperatures cause inactivation of the phosphate. Suspensions containing polyphosphates can be stored satisfactorily at low temperatures.

4. **Record the dates fertilizer is applied, application rates and results to develop a schedule for future management.**

Use the following form or a similar one to provide a basis for continuing fertilization programs, for help in identifying problems, and for estimating the cost of increasing fish production.

5. **Contact your county Extension agent or private fisheries consultants if problems develop without apparent reason.**

Farm ponds are complex systems with many interacting factors, and results can not always be predicted. Some common problems, probably causes and remedies are:

**NO PLANKTON BLOOM:**

Check pH and alkalinity. Make sure fertilizer is applied near the surface of the water and kept off the bottom. Check for aquatic weeds, water clarity and excess water outflow.

**EXCESSIVE FILAMENTOUS ALGAE (SCUM):**

Stop fertilization until scum disappears. Reduce nitrogen in the fertilizer formulation. Tilapia fish will control filamentous algae at high stocking rates.

**EXCESSIVE AQUATIC WEED GROWTH:**

Control weeds before adding more fertilizer. Deepen shallow water areas if problems continue.

**FERTILIZATION RECORD**

(Example)

Date	Fertilizer formulation	Amount applied	Water Clarity (How deep can you see)	Water Color color	Water temperature
April 5	20-20-5	100 lbs.	20 inches	light brown	72 degrees

\*Fisheries Specialist, Texas Cooperative Extension