

## FISHPOND MANAGEMENT TECHNIQUES – LIMING PONDS TO INCREASE PRODUCTIVITY

### WHY LIME?

The pH and alkalinity of pond water is very similar to that of the soils of the pond bottom and the surrounding watershed. The acidic or basic characteristic of the soils/water is very important in determining water quality and potential of the basic productivity in the pond. Waters ranging from a pH of 6.5 to 9.0 at daybreak are most desirable for a productive aquatic habitat. Also alkalinity should be greater than 20 parts per million (ppm) to maintain the buffering capacity of the water.

Ponds on acid soils will be below these levels of pH and alkalinity. These acid waters will be clear, infertile and develop aquatic vegetation problems. Acid waters will not respond to the application of inorganic fertilizers. Therefore lime is needed in many parts of Mississippi to increase soil pH to at least 6.5 and to increase water alkalinity to a minimum of 20 ppm so that that natural production can increase or the addition of inorganic fertilizers can improve production. Do not start a pond fertilization program without first finding out the LIME requirement of the soil on the pond bottom. Application of inorganic fertilizers to ponds with acid soils (low soil pH) or low water alkalinity results in ineffectual fertilization and wastes labor and money.

### WHO SHOULD LIME?

To avoid these problems in **new** ponds, lime can be disked into the soil before filling the pond. To determine the amount of lime needed, have the soil tested immediately after construction. Boxes, information sheets, and shipping instructions are available at your local Mississippi Extension or NRCS offices. Be sure to indicate in the "crop grown?" window on the submission form that this sample is for a farm pond. The sample will be analyzed, and you will receive a report indicating if your pond needs lime and how much to apply. For new ponds or during "drawdowns" of old ponds follow these instructions for sample collection:

- If pond is larger than 3 acres, partition the pond into 3-acre blocks and sample each block separately. (If pond is less than 3 acres, collect 3 samples per acre and treat each acre as a block.)
- Collect about a pint of soil from each of 10 locations per block.
- Thoroughly mix the 10 samples together in a bucket.
- Take one sample from the mixture and air-dry; then place this sample in a soil sample box
- Repeat this procedure for each 3-acre block in the pond.

If it is not possible to get a soil sample during a drawdown in **older** ponds, a soil sample can be taken from the bottom of the pond to determine lime requirements. To do so, collect a bottom mud sample from several places around the edge of the pond, mix it together, take one sample from the mixture and air-dry; then place this sample in a soil sample box.

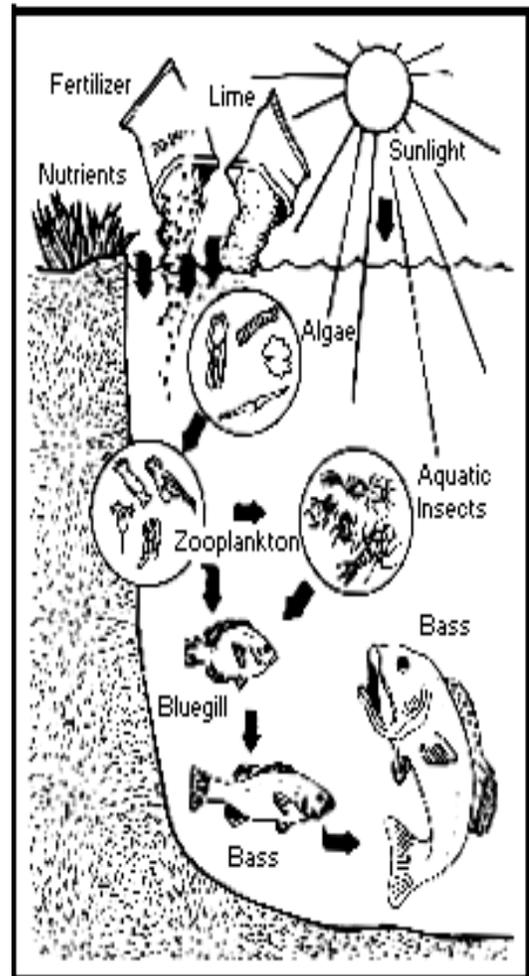
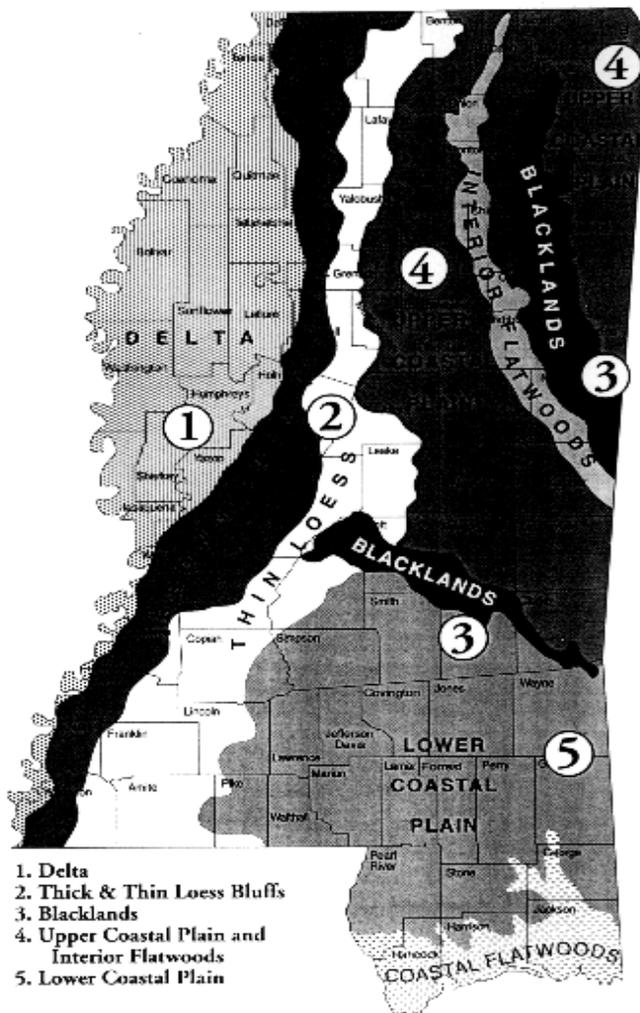
Also, a water testing kit can be used to check for pH or alkalinity. Lime should be added **if the pH is below 6.5 or total alkalinity measures less than 20 ppm**. A common visual indicator for lime is: If the pond has been successfully fertilized in the past and is not currently responding (producing a bloom) to fertilizer applications, tests should be conducted to see if lime is needed.

**How Much Lime Should be Applied?**

To accurately determine the amount of lime needed have a soil test conducted. However, generally the following recommendations will apply based on various soil regions in Mississippi. Ponds in the Delta usually do not need additional lime, and ponds in the Black Belt and thick and thin loess soils need only small amounts. Ponds in the red clay hills of North and Central Mississippi usually need 2 tons of lime per acre, and the sandy soils of South Mississippi usually need from 2 to 3 tons of lime per acre.

**Table 1. General Lime Recommendations for the Various Soil Regions in Mississippi.**

Region	Lime
1. Delta	not needed
2. Thick & Thin Loess Bluff	usually not needed
3. Blacklands	usually not needed
4. Upper Coastal Plain & Interior Flatwoods	2 tons/acre
5. Lower Coastal Plain	Up to 3 tons/acre



**Figure 1. Location of Major Soil Regions** **Figure 2. Liming and/or fertilization increases production by increasing the natural food supply**

### **WHAT KIND OF LIME IS USED?**

The best liming material in Mississippi is agricultural or dolomitic limestone. This is the same form of lime that farmers use on their crop and pasture land and can be purchased in bulk or bag form. **Do not use quicklime, hydrated lime, or other more potent liming agents!**

### **WHAT ARE MY SOURCES FOR THE LIME?**

Lime can be obtained from many agricultural product sources, such as Local Farm Cooperative Stores and individual vendors of farm products.

### **WHEN SHOULD LIME BE PUT OUT?**

Time is needed for the lime to react with the bottom muds and provide the beneficial results; therefore, **add lime in the fall and winter, 2 to 3 months before spring fertilization.** Repeat every 3 to 4 years. A lime treatment will usually last from 2 to 5 years, depending on the amount of water flowing through the pond and the acidity of the bottom muds. A method that usually works well on ponds with high acid soils is to apply the lime the soil testing report calls for; then apply one-fourth of that amount during each following year to be sure the lime requirement is satisfied.

### **WHERE AND HOW SHOULD LIME BE PUT OUT?**

Lime spreader trucks can be used in new pond sites (and those that have been drained) prior to flooding.

On older established ponds, it may be necessary to back the spreader truck to the edge of the water and turn on the spreader. This method works well if there is good vehicular access to the edges of the pond. In some cases, it may be necessary to spread lime evenly along the upper shoreline and allow it to wash by runoff into the pond. Even distribution is preferable since the lime needs to be applied to the bottom muds. In very limited access areas, sometimes a small in-flowing creek is the only way to introduce lime into the pond, but this would be the least beneficial of the methods mentioned.

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