Liming fish ponds

- "Liming" fish ponds refers to the application of various acid-neutralizing compounds of calcium, or calcium and magnesium to acid-soil and/or water of fish ponds. The most common reason for liming is to improve the response to fertilization. In ponds with acidic soils, much of the phosphorus added in fertilizers becomes tightly bound in pond sediment and turns unavailable to support phytoplankton growth. Therefore, proper liming while neutralizing the soil acidity can improve phosphorus availability and greatly enhance pond productivity.
- Liming also helps buffer the wide daily pH fluctuations in low alkaline waters. Alkalinity concentrations below 20 mg/l often lead to large fluctuations in daily pH values, which are considered stressful to aquatic animals.
- Moreover, the quick rise in the pH as a result of specific liming –using hydrated lime- will be desirable when the disinfection is the purpose of liming. In such case, the pH level of 12 or higher is targeted in order to kill most disease agents and/or pests prior to fish/shrimp stocking.

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Applications of lime

Whether carried out prior to pond filling, upon water filling, or in filled pond, efforts should be made to ascertain that lime materials are evenly spread over pond bottom or water surface.

The use of specific liming forms (e.g. hydrated lime) in stocked fish ponds, extreme care should be taken to avoid and monitor the possible rapid increase in pH which is almost always lethal to fish.

Top to bottom photos are from Colombia, Bangladesh and Thailand

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Forms of liming materials

- **Limestone** - CaCO3 - is also known as: Agricultural lime, Ag-lime, Crushed limestone, and Calcium Carbonate.
- **Quicklime**- CaO – is also known as Calcium Oxide, Burnt lime, and Active lime. Often the main criterion associated with this product is its chemical purity.
- **Hydrated Lime (Powder)** Ca(OH)2- is also known as Calcium Hydroxide, Powdered lime, Builders lime, and Slaked Lime. The criteria associated with this product are its particle size and the purity which can be expressed as a percentage of its Calcium Hydroxide component or by its Calcium Oxide (Quicklime) component.
- **Hydrated Lime (Liquid)** - Ca(OH)2 – is also known as Calcium Hydroxide, Calcium Hydroxide slurry, Hydrated Lime slurry, Liquid Lime, Slaked lime, Lime Slurry, and Milk of Lime. The criteria associated with these products are the solid content of the product in the liquid or its chemical equivalent expressed as a percentage of its Calcium Hydroxide component or by its Calcium Oxide (Quicklime) component.

The availability, effectiveness, cost and the status of fish pond will favor the use of materials than others. For example, the use of quick lime (CaO) in liming in the existence of fish may cause a rapid rise in pH to levels that can harm aquatic life.

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Determining the needs of lime

- The first sign for the need for liming could be observed when the fertilization program fails to result in a plankton bloom. If this is the case, sampling for total alkalinity, total hardness, and pH will be required.
- It is easier to sample pond soil prior to filling with water, while water analysis could be done anytime.
- Based on results, quantity and may be type of lime could be determined if liming is found necessary.

Liming Frequency

The effects of adequate liming will usually last several years in ponds with little or no outflow. However, ponds that frequently discharge water may have to be more frequently based on water and soil analysis. Some farmers adopt repeating liming after 10 water changes or 2-4 years while others may repeat liming every 3-5 years.

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