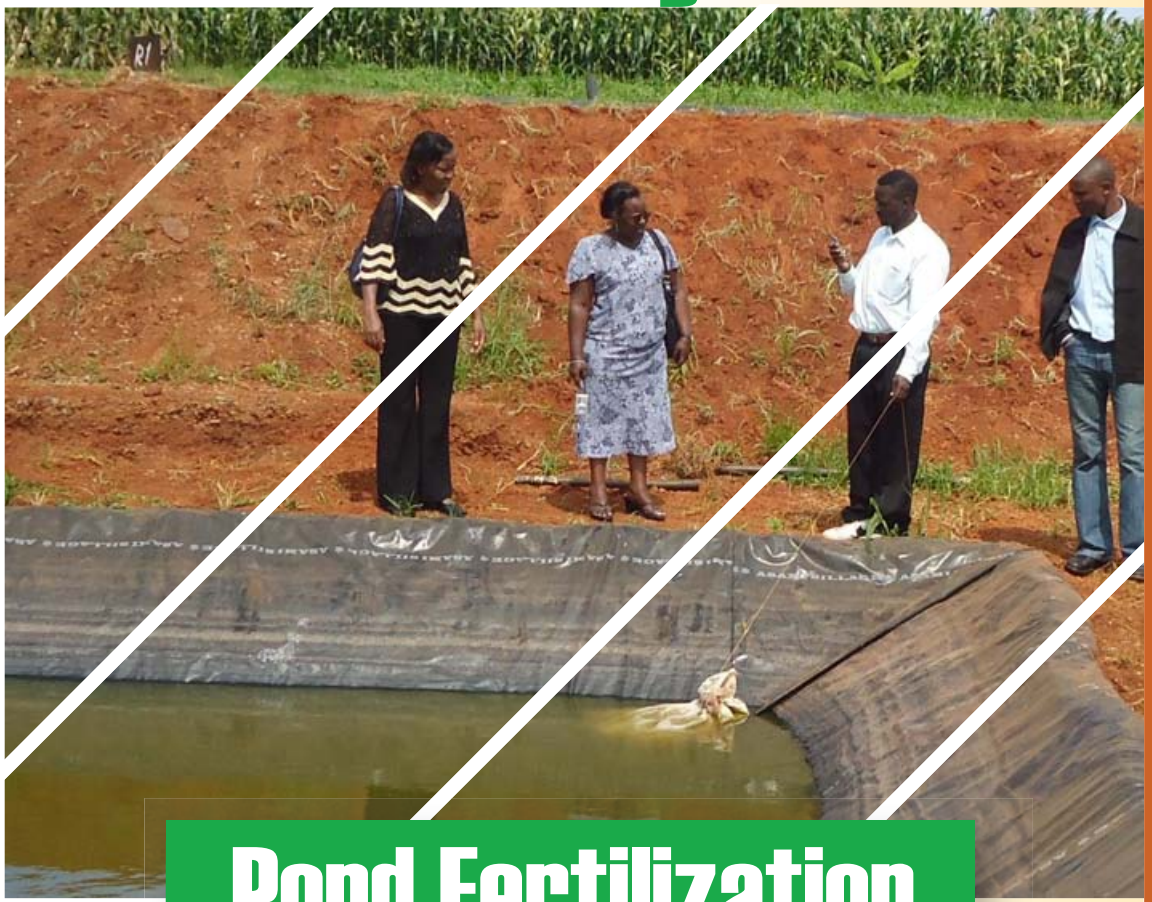
Pond Management



Pond Fertilization

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Pond fertilization

Introduction

Just as fish need good water quality conditions to thrive, they also need an abundant supply of food to grow. We can provide food for our fish in two different ways: We can give them "artificial" feeds that are prepared either commercially i.e. pellets or at home, or we can ensure that they have an abundance of natural foods by using fertilizers to increase pond productivity.

It is important to try to provide them with a diet that is nutritionally complete. This section focuses on fertilizing ponds to enhance their natural fertility and productivity. In both agriculture and aquaculture certain nutrients are of key importance for plant growth.

The nutrients that most often limit the growth of plants (through their absence) in agriculture (land crop production) are nitrogen (N), phosphorus (P), and potassium (K). This is why many commercial (inorganic) fertilizers are sold as "complete" N-P-K fertilizers. The different levels of N, P, and K present in a particular product indicate a mixture that is considered appropriate for a particular crop in a particular region.

In aquaculture (especially for Tilapia ponds) we are interested in the growth of small aquatic plants – algae or phytoplankton - in the water because in many cases we wish to maintain a high population density (a "bloom") of phytoplankton in the pond as the basis for the natural food chain. Phytoplankton are the microscopic plants or algae suspended throughout the water in a pond making the water appear green. There are many kinds of phytoplankton, but it is the green and blue-green phytoplankton that is most common, and that give ponds their "green water" appearance when present in large quantities – a bit like a green soup for the fish to eat!!.

Pond water that is very green indicates a high population of phytoplankton, which in turn indicates that the nutrients needed by phytoplankton for growth and reproduction are sufficiently present; in other words, such a pond would be considered to be highly fertile. Conversely, a pond with very clear water is indicative of low fertility; such a pond will have a relatively poor supply of natural foods in it.

We fertilize a fishpond to:

- Raise the natural food for the fish.
- Increase nutrients which are used by the plankton for growth.

Remember excess fertilizers or manure can cause oxygen problems in the pond and sometimes can kill the fish.

- Always observe the behavior of the fish especially during the morning hours to see if they come up gasping for air.
- If they stop gasping after the sun comes out, they will be okay. If not, add fresh water.
- If water is so green that you cannot see the fingers of your hand when you extend your arm into the water more than 15cm down, then you don't need to fertilize that week as there are enough nutrients.
- Maintaining good green water in ponds is a great skill and with practice you will gradually learn how and when to use fertilizer or livestock manures in order to main tain the green water. Once you can do this your fish especially tilapia will grow well.

How do we add organic fertilizers to the fishpond?

Apply organic fertilizers to your pond before filling it with water. Never fertilize your pond if it is full of weeds. Pull them out first then fertilize afterwards. Shallow waters promote weed growth. Keep pond sides trimmed so the grasses on the pond dikes do not spread out into the pond. This also prevents unwanted pests such as snakes and frogs.

- Determine which organic fertilizers are readily and cheaply available in your area. The most common examples of organic fertilizers are animal manure (e.g., from cattle, poultry, donkeys, rabbits, sheep, goats) and decaying plant matter, such as cut grasses.
- Apply available animal manure to your fishpond at a rate of 50 g of dry matter per m^2 per week. This is equivalent to 5 kg/100m^2/week.

Apply the manure to your pond in one of the following ways:

- Spread dry manure on the pond floor before filling with water.
- Spread (broadcast) dry manure on water surface periodically.
- Place dry manure in a crib in a corner or along the side of the pond.
- Fill a sac bag with manure, tie it to a post, and float within the pond corners. Shake and lift the bagsdaily to allow nutrients to leach out and enhance water fertility.
- Empty and refill bags depending on the colour of your water . If green water then don't add more manure to the bags.
- You can construct poultry houses or pig pens above or adjacent to ponds to facilitate easy movement of the manure to the fishpond by allowing the waste to go directly to the fish pond. However take good advice on doing this before starting and paying money to build houses or pens and paying for new stock pigs or chickens.

There are different types of inorganic fertilizers that you can buy from Aqua shops:

- Phosphorous fertilizers
- Di-ammonium phosphate
- Nitrogen fertilizers
- Calcium nitrate fertilizers
- Super phosphate
- Triple Super phosphate
- Ammonium fertilizers

How do I apply inorganic fertilizers in my fishpond?

Dissolve the fertilizer in a bucket of water by stirring and then sprinkle the solution at different points of the pond. If you throw the fertilizer in dry form, it will sink and some of the nutrients especially phosphorus will be absorbed by the mud.

How much inorganic fertilizer should I use?

You will need to add both Phosphates and Nitrates in your pond to increase nutrients and change the colour of water to green.

- If you use DAP add about 2g/m^2 every week, or 200g per 100m^2 per week. You can also use a table spoon as a measure and add 15 tablespoonfuls every week for every 100m^2
- After adding DAP you need to add UREA to increase Nitrogen. You need to add 3g/m^2 of UREA every week or 300g per 100m^2 per week, or 30 tablespoonfuls every week for a 100m^2. Pond.
- If the fish pond is 300m^2, you will need to add three times the amount.