Construction and management of a fish farm

A fish culturist needs different types of pond for rearing various stages of fish and has layout of farm and the number and sizes of the pond depends on the species of the to be cultured. The primary consideration in construction of fish farm is the site which has to be selected on the basis of soil, water supply and drainage.

Location of fish farm success in fish farming and economy of the construction would depends largely on the selection of a suitable site for the farm. They are

Topography-It means the surface features of the area and its important both from the point of view of construction and for future maintenance. The ideal topography of fish farm site is gently sloping terrain of a wide valley, or a bowl-shaped area with high lands on 3 sides and narrow outlet on the fourth. Such a place can be chosen for constructing the farm, provided the desirable type of soil and suitable water supply available. Such an areas can be easily converted into large pond by erecting an embankment closing the outlet. Dressing up the bottom to bring it to a uniform depth and sealing the bottom to prevent leakage may be necessary. Construction plan should include provision for handling normal flow of water and also for complete drainage.

Soil type-The soil must be impervious so as not to allow any seepage. Rocky sandy as well as lime stone areas are should be avoided. Ordinarily heavy clay and silty clay are suitable and fish ponds constructed in such areas store water for long period as the loss of water is only evaporation. Porous soil is considered unsuitable for constructing stocking ponds although nursery and rearing ponds can be constructed as they are required to store water for short period only.

In case of porous soil also, the bottom can be treated with clay or soil sealant, which is spread over the bottom in several layers. The correct identification of soil is done by soil analysist and good soil would result on a fertile pond.

Water supply- The availability of adequate supply of water is an important requisite for site selection. The dependable sources of water supply are-a**. lake and reservoirs** (b**) springs** (c**) river** (d) **streams** (e) **canals** (f) **surface runoff water** and (g**) canals**.

Big tanks, reservoirs and lakes are perhaps the best source of dams provides the cheapest water for the farm. Good springs do not dry up in summer and form a dependable source of water. Stream, rivulets and canals are also a satisfactory source of water, provided the flow is enough to fill the ponds a constant water level is maintain and only a little silt is carries so that clear water is available even during the rainy season. Small streams that are likely to b over flooded during rain are should be avoided because the water would carry heavy silts reducing the fertility of pond. The water of rivers supplied by canals is also satisfactory and dependable source.

Layout of the fish farm: planning and construction of fish farm:

Before starting the construction, the layout planes have to be drawn for the location design and the number of various types of ponds. The size of the farm. Subsistence fishing, only small size farm is enough but commercial and experimental farms larger area is needed for constructing nursery, rearing, stocking and breeding ponds. various farms buildings such as laboratory, store house, watch man huts, residential quarters etc. are also to be constructed. A fish farm consists of 4 types of ponds-

Hatching pits- small tanks usually 8'x4'x2' are used for hatching fertilized eggs. A continuous but slow flowing water is desi able for aerating the eggs. A smaller cloth tanks called HAPA of fine net cloth is fixed up.

Nursery ponds these are 50'x50'x4' and mat be seasonal so that they dry up during summer season. This helps in eradication of fish enemies and in increasing productivity.

Rearing tanks-they may be seasonal or perineal and are used for rearing advance fry for2-3 months. These ponds are made up of long and narrow gently sloping to facilitate netting.

Stocking ponds- these are large perineal tanks more than 6' deep. They are long and constructed for facilitate netting.

Besides above a few marketing ponds may also be provided in a farm for keeping fish ready for market. For pond breeding species, breeding ponds are necessary and in some cases marketing ponds maybe arranged in one or two rows and with

a space between ponds. Long narrow and deeper ponds are better than smaller ones.

Embankment: for a good fish pond the slope of embankment should be 2:1. The embankment should also have an extra height to prevent the waves for overflowing. Drainage is very important for proper management of ponds. There must be inlets and outlets. The drain pipes should be large enough for quick drainage. The inlet pipes should be above the water level and provided with some kind of screen to prevent entrance of and escape of fish from the ponds. The fencing is necessary to prevent cattle. The swamp can be converted for culture of air breathing fishes

POND MAINTAINANCE AND IMPROVEMENT

The productivity of ponds depends upon its soil base and can be greatly enhanced by **controlling of vegetation, cleaning of pond bottom, liming and fertilization**

All undesirable plants and weeds must be removed regularly by using various methods of **weed control**. The pond should be emptied, dried and cleaned at suitable interval. Ponds that not dried gradually lost their productivity. Lack of proper maintenance causes **siltation of the** ponds. The mud accumulates raising the level of bottom of the ponds. The natural productivity of a pond can be increased by using fertilizer which provide nutrients, vitamins and minerals. Fertilizer may be **organic or inorganic.**

Liming-

The first step in fertilization of a pond is applicable of lime.

Quicklime (CaO) is generally used and it increased the PH of water and

act as an antiparasitic substance. It kills the bacteria and other parasites.

Lime is used when PH is very low, when the soil is too muddy and organic matter is so high a dose of 100-2oo kg/hac of lime is necessary and must be used in every year regularly. It prevents the gill rot disease of fish. Heavy soil needs more lime than sandy soil. Lime is generally spread on pond bottom 10-15 days before stocking the pond with fish. It is better to leave the pond dry for at least two weeks after liming.

Fertilization-

Purpose of fertilization of the pond to increased the productivity by increasing the natural food available various inorganic fertilizer is used, such as **super phosphate** to increase the **production of fish**. Another nitrogenous inorganic fertilizer is **sodium nitrate**, **ammonium sulphates, ammonium nitrate, ammonium carbonate, urea** etc. are used to fertilized the pond. **Ammonium sulphate** helps in **phytoplankton** biomes and heavy growth of **zooplankton** the use of inorganic salts depends upon the soil and the water condition of the ponds.

Organic fertilizer carries almost all nutrients required by the fish. The liquid manure from the stables is very beneficial and stimulates the growth of the **zooplankton, phytoplankton as well as filamentous algae**. Liquid manure is released in small quantity only in deeper parts of the pond and give high yield of fish, use of **guano** also increased productivity. Farm manure considering of **cow dung** and **pig dung** is used in fish culture. Sewage is also considered good fertilizer with **nitrogen and phosphorous**. sewage is first diluted before mixing with pond water. It enhances the production of plankton and growth rate of fish. organic fertilizer increased the fish production, but they may cause oxygen deficiency and infections. It is better to spread them in small quantities and at regular intervals.

Soyabean meal, cotton seed meal, mustard oil cake etc. are also used. Mustard oil cake with cow dung is used as pond fertilizer. In Bengal green grass with dry cow dung, poultry manure and oil cake used for manuaring fish pond (compost after 3 months) a dose of 5000 kg/hac. Compost is rich in growth of plankton.

Artificial feeding.

Fish production can be increased by artificial feeding. This should be simple and cheap. Such type of food is **whole grain, floor, rice bran, oil cake and kitchen waste, fish meal, meat, and blood** are also useful. The food can be kept in basket or spread in the water.

Fishing and harvesting

This is done by draining the pond or netting. By draining, harvesting is complete and predators can be eliminated. Much less labour is required and the pond can be dried cleaned, repaired and soil enrich by fertilization. But all water is loss by draining. However, if the pond is constructed in a row loss of water can be avoided and ponds are drained by turns.

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