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Pond Construction
EARTHEN PONDS



Procedures for Constructing an Earthen Fishpond

What fish farmers need to know about type of soils before constructing ponds

- Most rural ponds are made of soil which must hold water
- Soil is the material that is worked to construct ponds
- Dykes are made of soil — they must remain stable over time
- Pond soils interact directly with pond water and the soil must not affect water quality

Soils Properties

Soil properties determine whether or not it is suitable for constructing a fishpond

A site is suitable for pond construction only if the soil is impermeable enough to retain water and has enough strength for the dykes to retain their shape

The texture of a soil is related to relative amounts of sand, silt and clay present in the soil.

Sand feels gritty when rubbed between fingers, and Silt feels smooth to the touch—like flour.

Clay particles are the smallest of the soil particles and are generally flat and have a very high surface area per unit volume.



Transporting soils to the dikes or away from the pond dykes

Clay particles are sticky, thereby providing cohesiveness to the soil as a whole. This cohesiveness allows us to form small samples of soils containing clays into “ribbons” or “wires,” and helps us determine the suitability of soils for use in pond construction. The textural classes that have been found to be most suitable for pond construction include:

- Sandy clay
- Sandy clay loam
- Clay loam
- Silty clay loam
- Silty clay



Earthen Ponds on black cotton soils

Many methods have been developed for evaluating soils with respect to their suitability for pond construction. In some cases it may be desirable to have the texture of a soil analyzed by a laboratory. However, this often turns out to be difficult, time-consuming, and expensive. One of several simpler methods can often be used instead.

Pit Test

Dig a pit in the land area being evaluated, fill it with water, and observe how well it retains that water (better yet, dig and test a number of pits throughout the area).

Follow these steps:

1. Dig a small pit about 50 cm in diameter to the probable depth of the possible future pond.
2. Fill the pit to the top with water and let it stand.
3. After 12 hours check the water level and pour in additional water to bring the level back to the top
4. If possible, cover the pit to minimize evaporation.
5. Allow the pit to stand undisturbed another 12 hours.
6. After the second 12-hour period check the water level again. If the water level has not decreased more than about 3 cm, this soil is suitable for pond construction. If the water level has decreased more than 5 cm, the soil may be too permeable and therefore not suitable for pond construction.



Good dyke slopes