SNS COLLEGE OF ENGINEERING

Coimbatore-107

An Autonomous Institution

COURSE NAME : TAMILS & TECHNOLOGY

I YEAR/ II SEMESTER

UNIT –4 AGRICULTURE AND IRRIGATION TECHNOLOGY

TOPIC:

DAM, TANK, PONDS, SLUICE SIGNIFICANCE OF KUMIZHI THOOMPU OF CHOLA PERIOD ANIMAL HUSBANDRY

Introduction:

Tamil Nadu has a 2500-year history of building and maintaining water structures like lakes, ponds, dams, and sluices, as mentioned in Sangam literature.

Dams:

Dams are structures built to block river flow, helping in flood control, irrigation, drinking water, industry, aquaculture, and transport.

Examples of Dams:

Ancient texts like Tholkappiam mention stone dams for irrigation. Warriors were compared to dams holding back forces.

1.Kallanai (Grand Anicut)

Built by Karikalan Chola across the Cauvery River around 2nd century CE.

2. Veeranam Dam

built during the Chola period (around 10th century CE) by Rajaditya Chola, son of Parantaka Chola I.

3. Anaikattu (Stone embankments)

Mentioned in Sangam literature; used to regulate and store river water for irrigation purposes.

4. Uyyakondan Canal System

Developed by Early Cholas to divert Cauvery water for irrigation around present-day Tiruchirappalli.

About Kallanai:

Built by Karikalan Chola over 2100 years ago, Kallanai is the oldest functioning dam in Tamil Nadu and a major engineering marvel.

Building Technology of Kallanai:

- Kallanai was built by stacking huge rocks with layers of clay between them.
- Large boulders were placed in the sandy riverbed, and as water eroded the sand, the rocks slowly sank deeper.
- Clay and additional rocks were repeatedly added on top, pressing the lower layers further down.
- This process continued until the rocks reached a solid, hard surface, creating a strong and lasting dam structure.

Pond:

- A pond is a small quiet land-based body of water, either naturally or artificially formed. A pond is smaller than a lake and there are no criteria to differentiate the two.

The size of Pond:

- A pond is less than 5 hectares (12 acres) and less than 5 meters (16 feet) deep. It is different from river and stream because there is no flowing water in it.

Examples:

- Chittrakulam (in Mylapore, Chennai)
- Villianur Temple Pond (Puducherry)
- Thirupullani Temple Pond
- Ulagalantha Perumal Temple Tank (Kanchipuram)

TANKS/LAKES:

- Ancient Tamils built tanks (eri, madus, kotagams) to store rainwater and river water for irrigation, drinking, and daily use.

- These tanks were carefully planned with sluices (channels) to control water flow and avoid wastage.

- Tanks helped in water conservation, agriculture during dry seasons, and recharging groundwater.

- Sangam literature and old inscriptions mention thousands of tanks maintained by local communities and kings.

- Chola, Pandya, and Pallava dynasties expanded tank networks, linking them to rivers through canals.

EXAMPLES:

- Veeranam Tank (Veeranam Eri)
- Kudimaramathu Tanks
- Periyeri (Big Tank) in Kanchipuram
- Maduranthakam Lake

Uses of Lakes / Ponds:

- store water during rainy season and for drinking water and agricultural irrigation during summer.
- Water may come from overland runoff during the rainy season through streams or rivers.

SLUICE:

* Gate to divert water from ponds/lakes for irrigation.

* Sangam period: wood or stone, manually operated (Sarungai, Puthavu, Mathagu, Kumizhi, Thoombu, Madai.

Structure and Function:

* Scientifically constructed: stone box.
* "Neerodi": hole at the top (half a foot diameter) for required water. Covered by stone.
* "Serodi": two or three small holes on the floor for muddy water.
* Pipe system below ground level directs water to Neerodi.
* 80% muddy water exits via Serodi, reducing sedimentation.
* Stone blocks mark sluice location in some lakes.

Conservation of water bodies:

* Sangam Tamils excelled in creating and maintaining water bodies (Nakkannaiyar).

Proof:

Agananooru 252 - Message: Protect large lakes, even at night during heavy rain. Supervisor's role: prevent breaks OR inform authorities to avoid major damage.

Meaning:

* Urgent need for lake protection during heavy rain.
* Prevent damage is key; if not possible, inform authorities.

Protection:

* Sangam period: Formal system for maintenance & protection.
* Included: lake banks, drainage, sluices, water distribution (irrigation).

KUMIZHITHOOMBU OF CHOLA PERIOD

- Scientifically designed system to remove water and silt from lakes.
- Tamils excelled in irrigation management (structures built >1000 years ago).
- Chola Kings' contributions:
- Rajaraja Cholan: Uyyakondan Canal (Cauvery to 1000 lakes).
- Parantaka Cholan: Viranam lake (save Cauvery water).

The Importance of Kumizhithoombu:

* Effective water management system in big Tamil Nadu lakes (~1000 years ago).

* Provided irrigation water.

* Prevented silt formation and loss of lake depth.

The Mechanism of the Kumizhithoombu:

"Bubbles" (Kumuzhi): release water to canals, located 200-300 ft from shore.

Construction:

- Embankment with black stone tank on top.
- Large drain hole into tank, tunnel to canal.
- "Thoombukkal" (stone plug) to open/close the hole (moved by stone frame).
- Three small "Serodi holes" on the tank side.

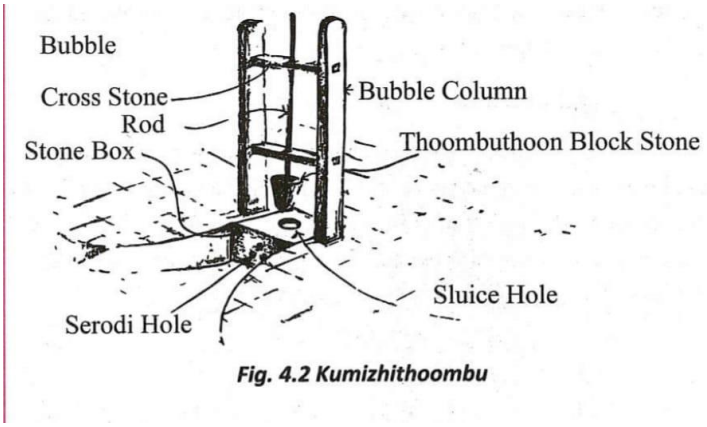

Fig. 4.2 Kumizhithoombu

Operation:

- Lift Thoombukkal to release water.
- Pressure difference drives water flow through Neerodi.
- Silt/slimy water seeps through Serodi holes.
- 80% good water via Neerodi, 20% pulp via Serodi.

- Water flow washes away soil, reducing lake siltation.

ANIMAL HUSBANDRY

- Animal husbandry is the branch of agriculture concerned with the care, breeding, and management of animals such as cattle, sheep, goats, pigs, poultry, and other livestock.
- It involves practices like feeding, sheltering, breeding, healthcare, and overall management to ensure animals are healthy and productive, mainly for purposes like milk, meat, wool, leather, and labor.

ANIMAL CARE:

Raising animals for: meat, fiber, milk.

Livestock Periods:

- God's time: symbolic (shepherd, Krishna).
- Royal (Sangam): cattle = wealth, war trigger.
- Pulling carts: Middle East (4000 BC), increased production.

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Livestock Uses:

- Agriculture: oxen for work (Sangam).
- Food: milk, curd, butter, meat.
- Jallikattu: heroic sport (Sangam).
- Labour: ploughing, transport (surplus milk use)

Domestic Animal Traits:

* Useful, thrives, reproduces easily, easy to raise.

First <u>Domesticated animals:</u>

- Sheep: nomads
- Cattle/Pigs: settled.
- Dog (Sangam): hunting help.
- Hunting animals: early domestication.
- Pigs: ~8500-8000 BC.
- Chicken: N. China (5040 BC), cockfighting origin