Watershed Management

Programme : Five year Integrated M.Sc., Geography / M.Sc., Geography

Course : Watershed Studies

Dr. P. Masilamani
Assistant Professor
Department of Geography
Bharathidasan University
Tamil Nadu
E-mail: masilamani@bdu.ac.in

Problems and Prospects in watershed Management

- Watershed management is the *process of implementing land use practices* and water management practices.
- Aim to improve and protect the *quality of the water and other natural resources within a watershed*

What are the main methods of watershed management?

- Land leveling/smoothening
- Contour bunding
- Percolation ponds
- Waterways
- Diversion drains
- Bench terracing
- Farm ponds
- Check dams
- Gully control structures
- Broad beds and furrows
- Micro catchments for sloping land

Land leveling/Smoothening

- Land leveling is a critical practice in Indian agriculture that can improve crop productivity and sustainability.
- **Increase crop yield:** Land leveling can increase crop yields by up to 66% for cotton, 61% for rice, 42% for sugarcane, and 15% for wheat.
- **Improve water efficiency:** Land leveling can increase water application efficiency by up to 50% and save irrigation water by 35-45%.
- **Improve crop establishment:** Land leveling can help improve crop establishment and uniformity of crop maturity.
- **Control salt-affected patches:** Land leveling can help control the emergence of salt-affected patches in the soil.

Contour bunding

- Is a land management practice for marginal, sloping, and hilly land where the soil productivity is very low.
- It involves the placement of lines of stones along the natural rises of a landscape.
- This technique helps to capture and hold rainfall before it can become runoff

Contour bunding

Percolation ponds

5. Stone Pitching on the face of the earthen bund of a percolation tank under

Diverson drains

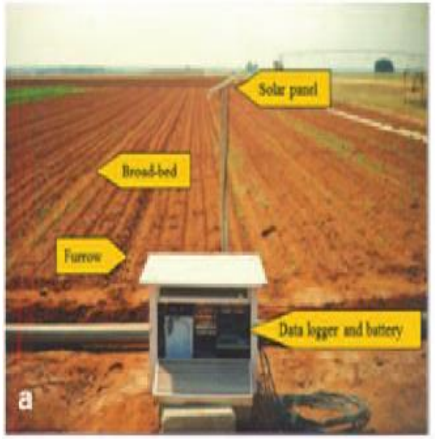
Bench terracing

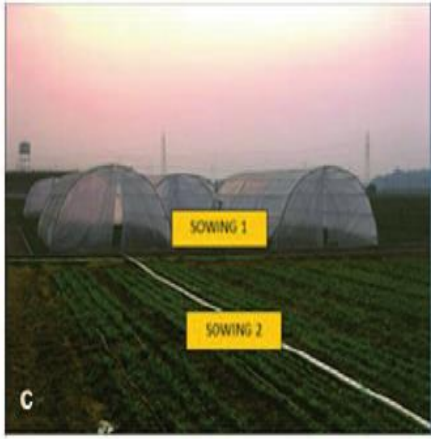
Farm ponds

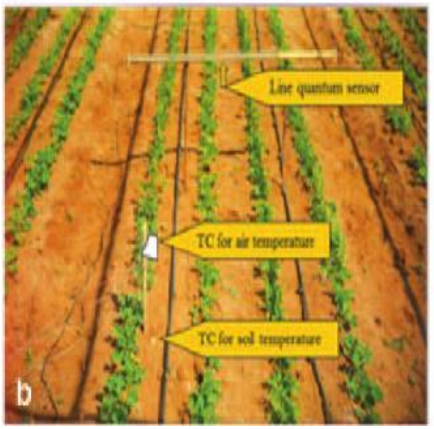
Check dams

Gully control structures

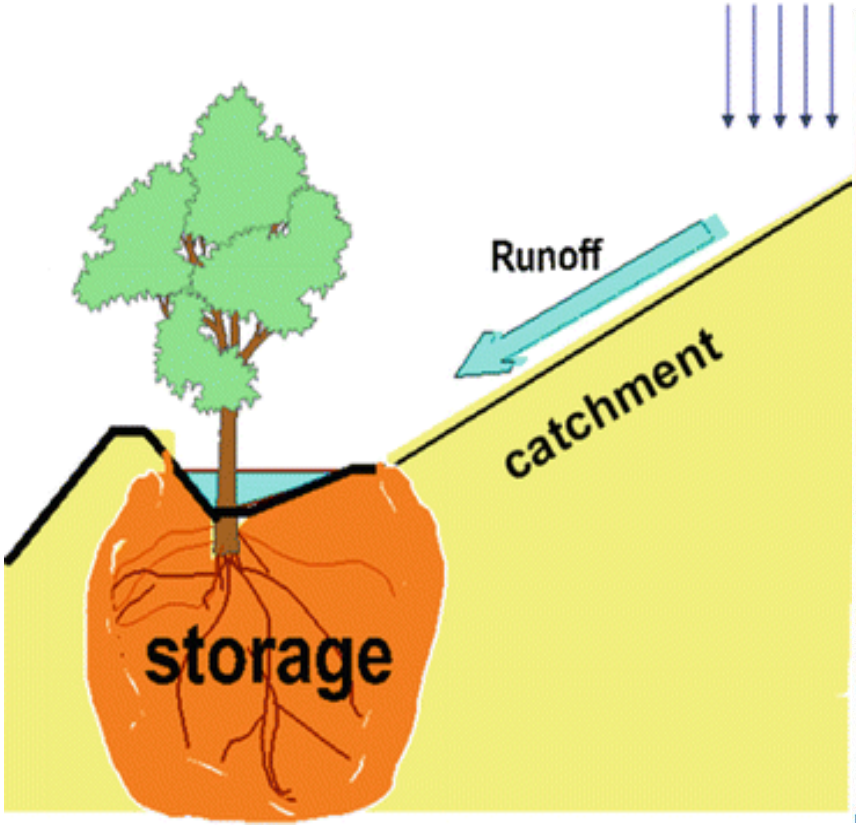
Broad beds and furrows







Micro catchments for sloping land



Problems of Watershed Management

- **Degradation** -This is caused by the unsustainable exploitation of natural resources, leading to the loss of value of the watershed over time.
- Degradation of rain-fed areas is also caused by soil erosion that results from water runoff.

Development of urban centres

- As humans invade natural areas with the aim of converting them into urban centers, several problems arise.

- These include chemical pollution, loss of natural habitat, alteration of water flow, and disposal of harmful and non-biodegradable waste in water resources.

Competition and conflict

- Disagreement between upstream and downstream stakeholders often leads to poor watershed management.
- Stakeholders who live downstream may set goals for watershed management that need to be implemented upstream.
- These goals may however not be compatible with the goals and needs of the stakeholders who live upstream, hence leading to conflict.

Interruption of water flow

- When the natural water flow is interrupted, major losses are observed, including increased soil erosion, blockage of passages for fish, disruption of the ecosystem, loss of habitat, and disruption of the ecosystem.

- Water flow interruptions are a result of development, industry and household use of water, construction of dams, and diversion of water for irrigation.

Development of industries

- The development of industries often affects watershed management even though the same industries bring economic development to a particular area.
- Many industries emit toxic chemicals, metal deposits, and toxic chemicals into the water, leading the increases health risks to both humans and animals who consume this water.