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**FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES**

## Rainfed Agriculture and Watershed Management

### Lecture -11

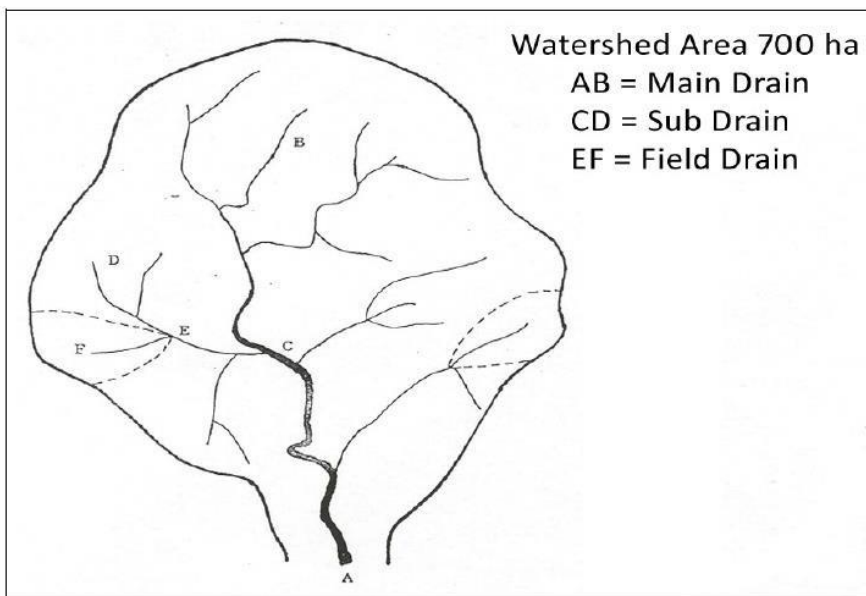
#### Watershed management – objectives and approaches

##### Introduction

- Soil, water and vegetation are the three important natural resources. As these resources are interdependent there is a need to have a unit of management for most effective and useful management of these resources. In this context, watershed is an important unit for the management of the natural resources.

##### Concept of watershed management

- A watershed is defined as any spatial area from which runoff from precipitation is collected and drained through a common point or outlet. In other words, it is a land surface bounded by a divide, which contributes runoff to a common point (Fig.12.1).
- It is defined as unit of area, which covers all the land, which contributes runoff to a common point.



**Fig. 12.1 watershed with main and sub drains**

- As the entire process of Agricultural development depends on status of water resources, watershed with distinct hydrological boundary is considered ideal for planning developmental programmes.
- It is essential to have various developmental programmes on watershed basis in conjunction with basic soil and water conservation measures.

- Watershed management programme in drylands aimed at optimizing the integrated use of land, water and vegetation in an area for providing an answer to alleviate drought, moderate floods, prevent soil erosion, improve water availability and increase food, fodder, fuel and fibre on sustained basis.
- Watershed management implies the wise use of soil and water resources within a given geographical area so as to enable sustainable production and to minimize floods.
- Watershed management is the rational utilization of land and water resources for optimum production with minimum hazard to natural resources.

### **History of watershed management:**

Watershed management has been taken up under different programmes launched by Government of India.

1. In 1962 – RVP (Soil conservation work in catchments of river valley projects) was established.
2. In 1977-78- ministry of rural development started programme “ DDP- Desert Development Programme” for hot areas like Rajasthan, Haryana, J&K.
3. In 1980- ministry of of agriculture started a scheme- Integrated watershed management in catchments of flood prone rivers.
4. In 1982- Water harvesting/ water conservation techniques in rainfed areas were started in 19 locations in India.
5. In 1987 - The Drought Prone Area Development Programme (DPAP) and the Desert Development Programme (DDP) adopted watershed development approach.
6. In 1989- The Integrated Watershed Development Project (IWDP) taken up by the National Wasteland Development Board (NWDB).

### **11.2 Watershed development programmes developed under different departments:**

1. Under Department of Agriculture

NWDPRA- National Watershed Development Project for Rainfed Areas.

RVP- Soil Conservation in Catchments of River Valley Projects

WDPSCA- Watershed Development Project in Shifting Cultivation in Area

WDF- Watershed Development Fund

2. Under Ministry of Rural Development:

DPAP- Drought Prone Area Programme

DDP- Desert Development Programme

IWDP- Integrated Wasteland Development Programme

### 3. Under Ministry of Environment and Forests

#### IAEDP- Integrated Afforestation and Eco development Projects and Schemes

#### 11.3 Based on the size, shape & drainage the watersheds may be classified as

1. Macro watershed - >50,000 ha
2. Sub macro watershed- 10,000-50,000ha
3. Milli watershed- 1000- 10,000ha
4. Micro watershed- 100-1000ha
5. Mini watershed- 1-10ha

#### 11.4 Objectives of watershed management

- The term watershed management is synonymous with soil and water conservation with the difference that emphasis is on flood protection and sediment control besides maximizing crop production.
- The watershed aims ultimately at improving standards of living of common people in the basin by increasing their earning capacity, by offering facilities such as electricity, drinking water, irrigation water, freedom from fear of floods, drought etc.,

The objectives are

- Recognition of watershed as a unit for development and efficient use of land according to land capabilities
- Flood control through small multipurpose reservoirs and other water storage structures at the headwater of streams and problem areas.
- Adequate water supply for domestic, agricultural and industrial needs
- Reduction of organic, inorganic and soil pollution
- Efficient use of natural resources for improving agriculture and allied occupations so as to improve socio- economic conditions of the local residents.
- Expansion of recreation facilities such as picnic and camping sites.

Objectives:

Watershed management programme can also be described in symbolic form by the expression: **POWER**. Here the letters symbolize the following:

P = Production of food-fodder-fuel-fruit-fibre-fish-milk combined on sustained basis

- Pollution control

- Prevention of floods

O = Over exploitation of resources to be minimized by controlling excessive biotic interferences like over grazing

- Operational practicability of all on farm operations and follow up programmes including easy approachability to different locations in watershed

W = Water storage at convenient locations for different purposes

- Wild animal and indigenous plant life conservation at selected places

E = Erosion control

- Ecosystem safety
- Economic stability
- Employment generation

R = Recharge of ground water

- Reduction of drought hazards
- Reduction of siltation in multipurpose reservoirs
- Recreation