

## Objectives and Principles of Watershed Management

**Bankar S. L., Navsare G. J., and Hange R.S.**

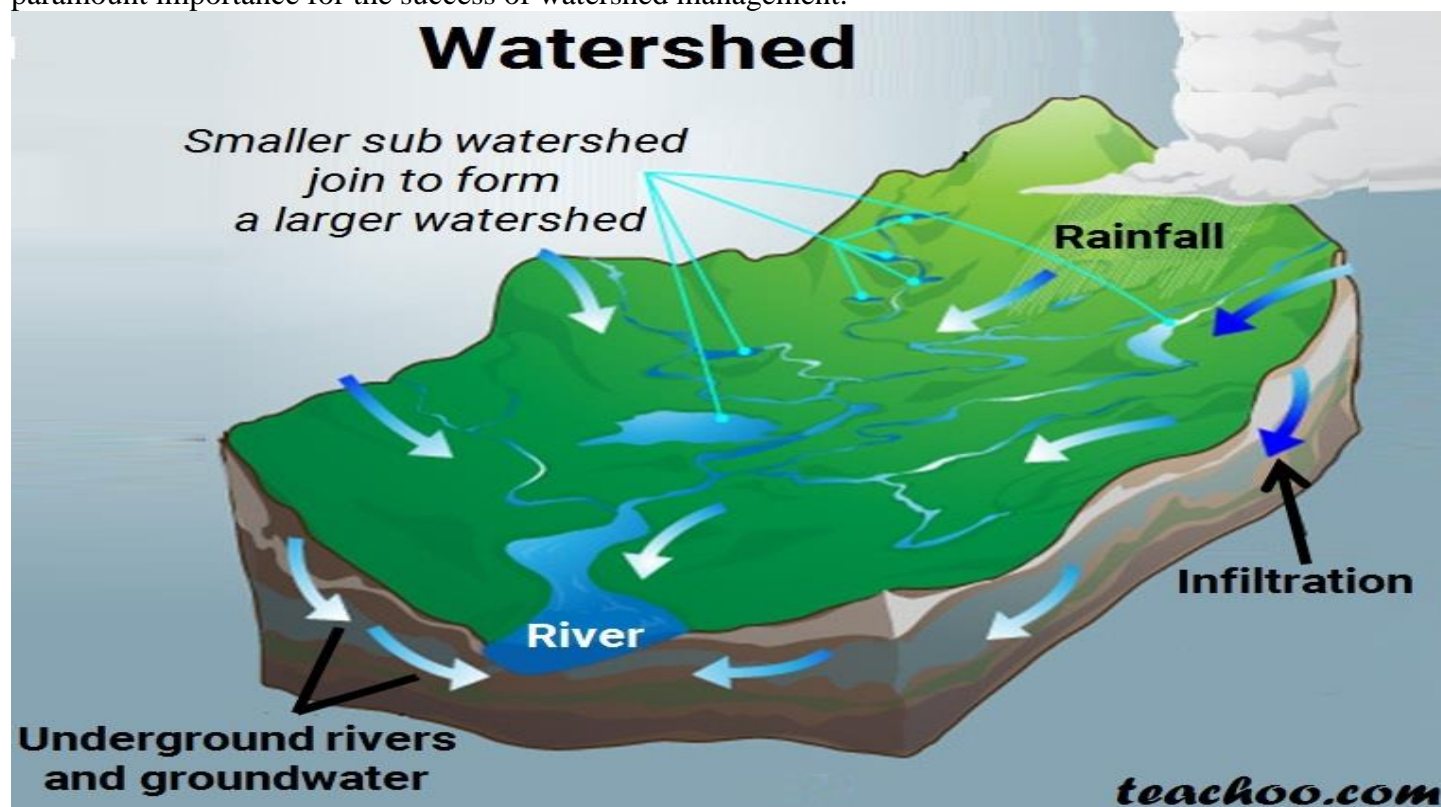
Assistant Professor, Department of Agronomy, S.C. S. P. A. College of Agriculture, Ashti, Beed, (M.S.)

### SUMMARY

A watershed can be defined as a geo- hydrological unit that drains to a common point by a system of drains. All lands on earth are a part of one watershed or another. The terms micro, mini, sub-watershed or any other variation of the terms indicate hierarchical division of the watershed of a stream, river or a drainage line. Watershed is not simply the hydrological unit but also socio-political-ecological entity which plays crucial role in determining food, social, and economical security and provides life support services to rural people. Watersheds sustain life, in more ways than one. According to the Environmental Protection Agency, more than \$450 billion in foods, fibre, manufactured goods and tourism depend on clean, healthy watersheds. Healthy watersheds are also important for the very sustenance of human life

### INTRODUCTION

Scarcity and threats to freshwater resources from pollution, climate change, and overexploitation have made it increasingly important to have sound watershed management. The link between land, water, and people has further made it necessary to widen the scope of watershed management beyond the “water resources.” Overall ecosystem functions as well as the improvement of socioeconomic status of the local communities are of paramount importance for the success of watershed management.



**Fig.1. Diagram of Watershed**

Watershed management is the most important practice in agriculture, especially in dry land agriculture. It plays a greater role in conserving the runoff water from various sources. The rain water harvesting is the major source of water in watershed. That harvested water is used to irrigate the crops under water stress condition in the dry areas. It is also applied to the crops as a supplemental irrigation or as life-saving irrigation to different agricultural crops. Watershed management becomes most important and a necessary thing to save the crops from various stresses occurring during the crop period. Now a days the environment is degrading due to reduction in

forest area, soil erosion has increased, soil ground water table is down, severity of the drought is increasing and degradation of dry land soil.

### Meaning of Watershed Management

The word “watershed” introduced in 1920 was used for the “water parting boundaries”. Watershed is that land area which drains or contributes runoff to a common outlet. Watershed is defined as a geo-hydrological unit draining to a common point by a system of drains. All lands on earth are part of one watershed or other. Watershed is thus the land and water area, which contributes runoff to a common point. A watershed is an area of land and water bounded by a drainage divide within which the surface runoff collects and flows out of the watershed through a single outlet into a larger river or lake. Watershed technology is used in rainfed areas. Watershed management implies an effective conservation of soil and water resources for sustainable production with minimum non-point resources (NPS) pollutant losses. It involves management of land surface and vegetation so as to conserve the soil and water for immediate and long term benefits to the farmers, community and society as a whole. Catchment area is the water collecting area. “All the areas from which water flows out into a river or water pool”.

### Principles of Watershed Management

Based on resource conservation, generation and utilization are:

- Land utilization based on land capability.
- Top soil protection.
- Reducing the silting of water resources.
- Keep vegetative cover whole the year.
- Rain water conservation.
- Proper drainage facility for excess water.
- Inter and sequence cropping.
- Efficient use of marginal lands.
- Water harvesting for life-saving irrigation.
- Maintaining sustainability of ecosystem.
- Increasing farm income through integrated farming system.
- Increase in basic fundamental facilities like transport and agri marketing.
- Practicing the soil conservation measures like waterways etc.
- Construction of check dams.
- Increasing ground water storage.
- Practicing alternate land use systems.
- Establishment of small agro-industries.
- Improving farmer’s status through socio-economic changes.

### Types of Watershed Management

Watershed is classified depending upon the size, drainage, shape and land use pattern.

- Macro watershed: 1000 -10,000 ha
- Mini watershed: 10 -100 ha
- Micro watershed: 100 -1000 ha
- Mille watershed: 1 -10 ha

### Objectives of Watershed Management

- Production of food, fodder, fuel.
- Pollution control.
- Over exploitation of resources should be minimized.
- Water storage, flood control, checking sedimentation.
- Wild life preservation.
- Erosion control and prevention of soil, degradation and conservation of soil and water.
- Employment generation through industrial development dairy fishery production.
- Recharging of ground water to provide regular water supply for consumption and industry as well as irrigation.
- Recreational facility.

### Main Components of Watershed

- Soil and water conservation,
- Water harvesting and water management,

- Alternate land use system.

### **Irrigation Projects**

- Major – Covered > 10,000 ha of catchments command area (CCA)
- Medium-2,000 to 10,000 ha of CCA
- Minor-<2,000 ha of CCA

### **Watershed Management Programmes**

#### **(i) Drought Prone Area Programme (DPAP):**

Year of start: 1970-71

Objectives: Area development programme through restoration of ecological balance and optimum utilization of land, water, livestock and human resources to mitigate the effect of drought.

#### **(ii) Desert Development Programme (DDP):**

Year of start: 1977-78

Objectives: Mitigate the effect of drought in the desert area and restore ecological balance.

#### **(iii) National Watershed Development Programme for rainfed Agriculture (NWDPA):**

Year of start: 1986-87

Objectives: To conserve and utilize rain water from both arable and non arable lands on watershed basis. To increase the productivity of crops and to increase the fuel, fodder and fruit resources through appropriate alternate land use system.

#### **(iv) Control of Shifting Cultivation:**

Year of start: 1986-87

Objectives: Restoring ecological balance in hilly areas and improving socioeconomic conditions.

#### **(v) World Bank Assisted Integrated Watershed Development Project:**

Year of start: 1990

**Objectives:** To arrest the problems of environmental degradation and promote sustainable increase in agriculture production and to enhance vegetative technology of soil and water conservation for rain water conservation and for increasing crop, forage, fuel wood and timber yield of the area.

### **Rainwater Harvesting:**

Rainwater harvesting means collection and storage of rainwater by some mechanism to make water available for future use. An appreciable amount of precipitation, which is generally lost as surface flow, can be harvested and stored for useful purposes like drinking and providing supplemental irrigation to the crops.

### **CONCLUSION**

Watershed is essential in daily life because most of activities are depend on adequate supply of water like agriculture and industry. Therefore to provide all these activities construction of watershed and its management is essential. Watershed is geohydrological unit of land that drains at common point.

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