



Watershed Management: Introduction, Concept, Components, Principles and Objectives

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Watershed management is the most important practice in agriculture, especially in dryland agriculture. It plays a greater role in conserving the runoff water from various sources. Rainwater harvesting is the major source of water in a watershed. That harvested water is used to irrigate the crops under water stress conditions 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. Nowadays, the environment is degrading due to reduction in forest area, soil erosion has increased, soil groundwater table is down, severity of drought is increasing and degradation of dryland soils.

Concept of watershed management: A watershed is the drainage area on the land surface from which runoff or excess water from rainfall reaches at a special point known as a common outlet. It is the common point from which the excess amounts of water are collected and distributed through an outlet to the connecting sources. Or you can say that it is the common method to collect the runoff water. As we know that the agricultural system totally depends upon the water sources, without a proper source of irrigation water, agriculture is not possible in any situation. A watershed is the boundary to collect the runoff water coming from various sources like point sources and non-point sources.

The planning and designing of soil and water conservation structures, likewise water harvesting structures, overflow structures, bunds, waterways etc. Thus, it is essential for the development of various programmes related to watershed basis in conjunction with the fundamentals of soil and water conservation practices. The watershed development programme needs to be taken up from the ridge line to the outlet point. The main purpose of the watershed management programme in dryland areas is the optimum and collective use of agricultural lands, water, and vegetation in a particular area for providing facilities to reduce the drought impacts, moderate floods, reduce soil erosion, increase the availability of water, and increase food, fuel, fodder, and fibre on a sustainability basis.

Basic components: The main components of watershed management programmes are:

- Conservation of water and soil resources
- Harvesting of water like rainwater harvesting
- Management of crops
- Practicing various land use systems

Principles of watershed management: Based on resource conservation, generation and utilisation are:

- Land utilisation based on land capability
- Top soil protection \propto Reducing the silting of water resources
- Keep vegetative cover whole the year
- Rain water conservation
- Proper drainage facility for excess water
- Practicing the soil conservation measures like grassed waterways etc.
- Construction of check dams
- Increasing ground water storage
- 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 agricultural marketing
- Practicing alternate land use systems
- Establishment of small agro-industries
- Improving farmers status through socio-economic changes

Watershed management approaches: There are two approaches

- **Integrated approach:** This approach is related to the integration of technologies within the natural boundaries of a drainage area for optimum development of land, water, and plant resources to meet the basic needs of people and animals in a sustainable manner.
- **Consortium approach:** Consortium approach is related to the collective action and community participation including of primary stakeholders, government and non-government organization and other institutions.

Objectives of watershed management: Watershed management is primarily synonymous with the soil and water conservation with the basic concept is to reduce the floods and sediment control besides increasing agricultural food production.

The basic objective of watershed management is to meeting the problems of land and water use. Not in the sense of single resource but on the basis of all resources are independent and most valuable. The ultimate aims of watershed management is the improvement in the living standard of common person particularly farmers family. It is possible by increasing the earning capacity, by offering facilities likewise rural electrification, water supply for daily use, water for the purpose of irrigation, free from all the abnormalities like floods and drought.

The main objectives of watershed development programmes are:

- Recognition of watershed on unit basis for improvement and proper use of lands by following the land capability classification
- Control of floods by constructing the reservoirs like multi-purpose reservoirs
- Water dams at head water of streams and in problem areas
- Adequate water supply for agriculture
- Proper source water for drinking purpose
- Supply sufficient amount of water for industrial needs
- Management of various agricultural pollutions
- Reducing the environmental pollution
- Abatement of organic and inorganic pollutions

- Efficient use of all non-artificial resources
- Increasing agricultural and allied sector occupations
- Improve socio-economic conditions of the local farmers
- Development or recreation facilities like picnic and camping sites.

Other objectives:

- Environmental
- Economic
- Institutional
- Social
- Equity

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