

A STUDY ON WATER LOGGING AND WATERSHED MANAGEMENT AND IT'S PREVENTIVE MEASURES

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Abstract : In agricultural land when the dirt pores inside the root zone of the yields gets soaked with the subsoil water the air dissemination inside the dirt pores gets absolutely stopped. This marvel is termed as water logging. Because of over the top leakage through water system waterways, and repository, and absence of appropriate waste the water table in the territory increments to such degree that the whole root zone of the harvests gets soaked and the free flow of air in its root zone is cut-off. This influences the efficiency of the dirt and the yield of the product diminishes. The region encased inside the watershed line is known as watershed region. The water shed area may consist of hilly areas and plane areas. In hilly area there is no possibility of water logging, but the sediments carried by the tributaries badly affect the downstream plane areas. In the plane area the rivers, streams etc are silted up by the sediment and the water carrying capacity is reduced .The cultivation becomes impossible and it creates problems for the villagers.

Key Words – Water logging,Water Management,Irrigation System.

I. INTRODUCTION

Irrigation system has its own merits and demerits. If proper provision of drainage for excess irrigation water is not made in irrigated area, it may create serious example of water logging. The depth of ground water table that causes water logging depends upon types the soil, the crops grown and the height of capillary fringe.

When the root zone of the crop is submerged under water, the free supply of air is cut-off .The bacteria present in the soil; prepare food for the crop in the form of nutrients called as nitrates. Bacteria which are living organism also need oxygen for their survival. When the root zone of the crop is submerged under water, the bacteria perish in the absence of free oxygen resulting in the reduced supply of nutrients to the crop and thus the yields gets considerably reduced and the land is said to be water logged.

Again due to heavy rainfall and poor drainage system the water goes on collecting in low lying areas. This stagnant water makes the land marshy. The weeds and aquatic plants gradually cover the whole areas and the area become unsuitable for cultivation.

Table 1 Type of Crop and Depth of ground water table

Sr.No.	Type of Crop	Depth of ground water table
1	Sugarcane	0.9 m
2	Rice	0.6 m
3	Gram	0.6 m
4	Wheat	1.0 m
5	Cotton	1.6 m
6	Fooder Crop	1.2 m

II. CAUSES OF WATER LOGGING

The following are the main causes of water logging:

- a) **High Irrigation:** In immersion water system since there is no controlling arrangement of water supply it might cause over water system. The abundance water permeates and remains put away inside the root zone of the harvest.
- b) **Seepage from Canals:** In unlined canal system the water percolates through the bank of the canal and gets collected in the low lying areas along the course of the canal and thus the water table gets raised.
- c) **Poor surface Drainage:** at the point when the precipitation is substantial and there is no legitimate arrangement for surface seepage the water gets gathered and submerges immense region.
- d) **Soil Type:** The dirt having low penetrability, similar to Black cotton soil, does not enable the water to permeate through it. So if there should be an occurrence of over water system and surge the water hold in this sort of land and cause water logging.

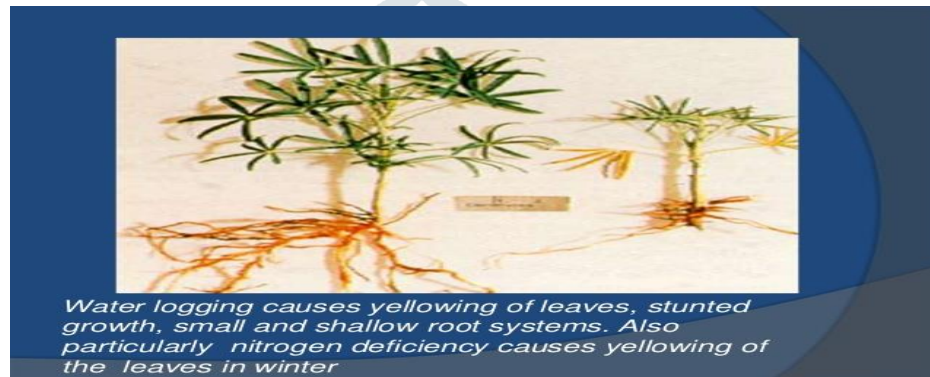


Fig No 1- Water Logging Causes

III. ILL EFFECTS OF WATER LOGGING:

The ill effects of water logging are as follows:

- a) **No Free Aeration:** Water logged soil lacks in free aeration of the root zone resulting in the death of the bacteria that produce food i.e. nutrients for the crop.
- b) **Difficulty in Cultivation:** As the water logged soil will be in the wet condition the normal cultivation operation such as tillage etc. cannot be carried out easily.
- c) **Growth of Unwanted weeds:** Certain weeds like grass etc. grow abundantly in the water logged soil thus preventing the natural growth of the crop.
- d) **Unhealthy climate:** The climate in the water logged region becomes damp, breeding of mosquitoes takes place and the surrounding becomes unhealthy.

IV. CONTROL OF WATER LOGGING (ANTI WATER LOGGING MEASURES):

The following measures may be taken to control water logging.

- a) **Reducing Percolation from irrigation channels:**
 - i. Lining of channels
 - ii. Lowering of Full Supply level of irrigation channels
 - iii. Providing interceptors drain among channel



Fig No 2-Reducing Percolation from Irrigation Channels

- b) Reducing percolation from water courses and fields
 - i. Lining of Water courses
 - ii. Controlling intensity of irrigation

- c) Encouraging economical use of water
 - i. Educating the cultivators to use water economically
 - ii. Changing crop pattern
 - iii. Changing revenue policy

- d) Increasing outflow from the ground water reservoir:
 - i. Providing a drainage system
 - ii. Improving the natural drainage of the area
 - iii. Pumping ground water



Fig No 3- Drainage System

V. WATERSHED MANAGEMENT APPROACHES :

i. Integrated Approach:

This methodology propose the reconciliation of innovations inside the common limits of a waste region for ideal advancement of land, water, and plant assets to meet the essential needs of individuals and creatures in a feasible way. This methodology means to enhance the way of life of everyday citizens by expanding his procuring limit by engineering all offices required for ideal generation (Singh, 2000). So as to accomplish its goal, coordinated watershed the board proposes to receive land and water preservation rehearses, water collecting in lakes and reviving of groundwater for expanding water assets potential and weight on product diversification, utilization of enhanced assortment of seeds, incorporated supplement the executives and incorporated nuisance the board rehearses, and so forth.

ii. Consortium Approach:

Consortium approach underlines on aggregate activity and network support including of essential partners, government and non-government associations, and different organizations. Watershed the board requires multidisciplinary abilities and capabilities. Simple access and convenient counsel to ranchers are

critical drivers for the watched noteworthy effects in the watershed. These lead to upgrade attention to the agriculturists and their capacity to counsel with the correct individuals when issues emerge. It requires multidisciplinary proficiency in field of building, agronomy, ranger service, agriculture, creature cultivation, entomology, sociology, financial aspects and promoting. It isn't constantly conceivable to get all the required help and abilities set in one association. Subsequently, consortium approach unites the aptitude of different zones to extend the effectiveness of the different watershed activities and intercessions.

VI. EXPECTED OUTCOMES:

Integrated Watershed Management is a generally new idea and its application is extremely unpredictable, so strategy of Integrated Watershed Management application ought to be private for every watershed. Speedy outline of the ongoing discoveries and proposals on Integrated Watershed Management exercises; • Sharing encounters and exercises learned Integrated Watershed Management methodologies and systems has been accomplished in various parts of the world and sharing these outcomes and recognizing proper components for dispersing such data are imperative issues so as to profit watershed the board clients/new tasks from encounters learned and to maintain a strategic distance from the duplication of endeavors. • Using the suitable participatory procedures The experience of participatory methodologies is essential and Participatory procedures are perceived as essential at all phases of IWM. Encounters have appeared uneven base up or top-down methodologies don't work. Different methodologies and techniques ought to be logically utilized and balanced by explicit conditions. • Including reasonable and replicable exercises. The help of all the concerned offices, associations, authorities and individuals from the Integrated Watershed Management ought to be requested to support. There ought to be solid help monetarily and in fact (Paleyan and Wacangan, 2008). • Reviewing and building up the institutional/hierarchical and authoritative game plans, for example, decentralization of power, interagency cooperation.

VII. CONCLUSION:

Integrated Watershed Management involves the coordinated use and management of water, land and other biophysical resources within the entire watershed with the objective of ensuring minimal land degradation and erosion and causing minimal impact to water yield and quality and other features of the environment. Therefore, an Integrated Watershed Management strategy must be developed for any watershed for the success of the actions towards achievement of sustainability goals (Baloch, 2008). Increasing populations and higher living standards will requires heavy demands on natural resources in the future. Integrated Watershed Management approaches will be necessary to develop sustainable systems and prevent catastrophes. Much greater local, national, and international efforts, cooperation, and expenditures are needed to meet future vital requirements. In conclusion, Integrated Watershed Management has not only one formulation, management strategies should be formed for each watershed according to its own conditions including Integrated Watershed Management key components (participation, sustainability etc.). Integrated Watershed Management should be flexible enough to accommodate future changes and perspectives.

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