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Conservation of Water In A Drought Area

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Abstract*: Water conservation is becoming an a important global issue as water demand increases but water supply is likely to diminish owing to population growth and climate change. Water conservation in the agricultural sector has been slow and has much space for improvement to save water through educational, economic, and policy incentives. Water conservation in the urban residential sector is highly related to land use and development density. Water conservation in the industrial sector has been the most successful partially because of financial incentives to reduce wastewater. Water conservation at one scale may not necessarily save water at another scale. Conservation of water is a not-for-profit company set up in 2016 by the team of the Satyamev Jayate to fight drought in rural Maharashtra. Water scarcity is largely a man-made condition, and we believe that only people's efforts can solve the crisis. When we first wanted to ascertain the feasibility of the competition and test its effectiveness across different regions of the state 850 villagers were trained in this pilot year, and 116 villages chose to participate in the Water Cup which was held between 20th April and 5th June 2016. Soil, vegetation and water are most important natural resources for the existence of the man and animals. These three interdependent resources can be managed collectively, simultaneously and efficiently on watershed basis (unit of management.) Pani Foundation aims to harness the power of communication to mobilize, motivate and train people in this mission to eradicate drought.*

Keywords*: Watershed development program, Engineering measures, Biological measures, Watershed management techniques, Ground water storage, Social forestry.*

Concepts:

1) Drought area 2) pani foundation 3) structures and solutions

I- INTRODUCTION

Conservation of water is the people oriented supporting process and designed to reach the objectives of conservation management. We will use the following working definition for the process. Conservation management is the process of people guiding , directing and organizing water, land and forest resource use on a watershed in order to provide desired goods and services without adversely affecting water, soil and vegetation resources. In this concept is the recognition of the ecological inter-relationships among land use, soil and water, as well as the ecological, social and economic linkages between upland and downstream areas. Watershed management balances the three dimensions for sustainable development – ecological, economic and social – in a watershed context. Water conservation includes all the policies and activities to sustainably manage the natural resource of fresh water, to protect the hydrosphere and to meet the current and future human demand. Population, household size, and growth and all affect how much water is used. The modern concept of conservation of water management. Over the last 20 years a strong global consensus manmade crises has developed around the nation that the watershed is in fact the logical unit for management of water resources. Now, the countries try to place water management actions in the context of the natural and human systems. Since the 1980's concepts began to emerge that gave more emphasis to all users of water systems and how their activities affect water availability, quantity and quality.

Analytical systems (models) were developed that are capable of revealing the range of intervention impacts within the context of the hydrological cycle as a whole. Management policies began to be based on criteria for assessing alternatives in an objective way with the active participation of all relevant regulatory agencies and civil society. India is one of the major agricultural countries with more than 70% of the population depending on the agriculture. Indian agriculture is dependent on monsoon which is not uniform over the year and year. Nearly three fourths of the cultivable land in India is dependent on monsoon, which is contributing nearly 42% of the total production from agriculture.

The productivity of any crop mainly depends on two natural resources land and water in addition and developed to management practices. Therefore the conservation of these two natural resources is essential for the sustainability of rained agriculture. This could be done using the watershed management process.

II-METHODOLOGY

One strategy in water conservation is rain water harvesting is digging ponds, lakes, canals, expanding the water reservoir, and installing rain water catching ducts and filtration systems on homes are different methods of harvesting rain water. Another technique in water conservation is to protecting groundwater resources. When precipitation occurs, some infiltrates the soil and water goes underground. Water in this saturation zone is called groundwater. Contamination of groundwater causes the groundwater water supply to not be able to be used. A watershed is an area of land that drains rain water or snow into the location such as a stream, lake or wetland and pond. These water bodies supply our drinking water, water for agriculture and manufacturing, offer opportunities for recreation (canoeing and fishing) and provide habitat to numerous plants and animals. Earth is covered in 70% water and unfortunately 40-50% of our nation's waters are impaired or threatened. "Impaired" This could mean that the water is not suitable to drink, swim into it or to consume the fish that was caught there. The leading causes of pollution in our waterways are sediments, bacteria and excess nutrients (such as nitrogen and phosphorus).

- **Soil erosion**

Soil erosion is the displacement or detached the upper layer of soil, one form of soil degradation. This natural process is caused by the dynamic activity of erosive agents, that is, water, ice (glaciers), snow, air (wind), plants, animals, and humans. In accordance with these agents, erosion is sometimes divided into water erosion, glacial erosion, snow erosion, wind (Aeolian) erosion, zoogenic erosion, and anthropogenic erosion. Soil erosion may be a slow process that continues relatively unnoticed causing a serious loss of topsoil. The loss of soil from farmland may be reflected in reduced crop production potential, lower surface water quality and damaged drainage networks.

Types of erosion

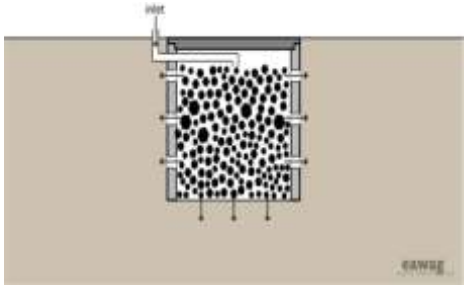
1. Water erosion
2. Sheet and rill erosion
3. Scalding
4. Gully erosion
5. Tunnel erosion
6. Stream bank erosion
7. Wind erosion

Remedial measures for water and soil erosion

III- STRUCTURES IN DROUGHT AREA

1) **1) soak pit :**

A soak pit is a economical pit also known as a soak way or leach pit, is a covered, porous-walled chamber that allows water to slowly soak into the ground . and it contain boulders for the percolation process. Its size 4*4*4 feet



2) **2) Farm pond :**

It is an artificial created surface water body or pond submerging a highly permeable area, so that runoff is made to percolate and recharge the ground water storage its size should be various from 25* 20 feet and below the size 15*15 feet is know as watt.

3) **3) Continuous contour trenches(CCT) :**

Contour trenching is an agriculture technique on the slope that can be easily applied in arid or drought areas to allow for water and soil conservation and to increase agricultural production.

4) **4) Deep continuous contour trenches :**

Deep continuous contour trenches are the structure which is constructed at the non porous land where percolation capacity should be low manually or by using machine which has 1m deep trench.

5) Earthwork canal :

Depending upon the terrain, alignment of canal and the proposed formation/bed level, the nature of earthwork will be either in cutting or in filling or partially in cutting and filling.

6) Loose boulder structure :

It is a structure which is constructed on drain which is constructed by using a small stones and restrict the flow water which is coming so fast and eventually stop the erosion of soil.

7) Gabion structure :

A gabion wall is a retaining wall made of stacked stone-filled gabions tied together with wire which is made by steel with high strength. Gabion walls are usually battered (angled back towards the slope), or stepped back with the slope, rather than stacked vertically.

5)

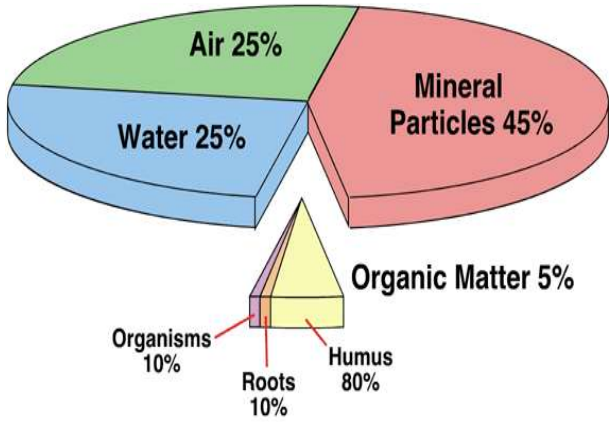
8) Farm bund :

It is constructed in a sloping side of the farm to prevent erosion of soil and increase the productivity of the soil.

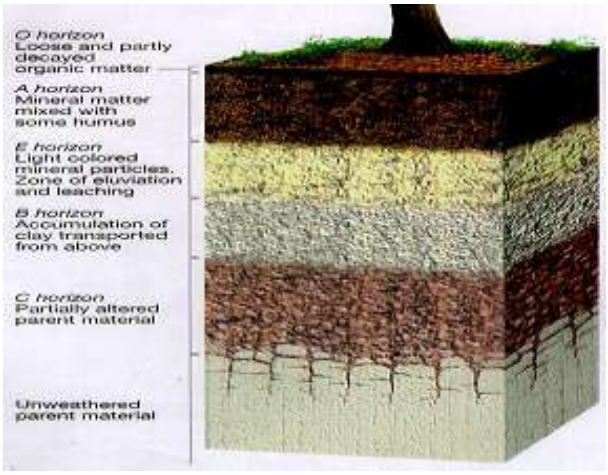
- A watershed is an area of land that drains rain water or snow into location such as a stream, lake or wetland. These water bodies supply our drinking water, water for agriculture and manufacturing, offer opportunities for recreation (canoeing and fishing) and provide habitat to numerous plants and animals. Unfortunately various forms of pollution, including runoff and erosion, can interfere with the health of the watershed. Therefore, it is important to protect the quality of our watershed.
- Earth is covered in 70% water and unfortunately 40-50% of our nation's waters are impaired. "Impaired" means that the water body does not support one or more of its intended uses. This could mean that the water is not suitable to drink, swim in or to consume the fish that was caught there. The causes of pollution in our waterways are germs , sediments, bacteria and excess nutrients (such as nitrogen and phosphorus). Throughout the years, The Nature Conservancy in Indian has done tremendous work to protect and maintain the health of watersheds throughout the state. Although nutrients sound like things that belong in a healthy environment, they can cause big problems in a poorly managed watershed. For instance, sediment can suffocate fish by clogging their gills and the presence of bacteria alone can indicate that other viruses and germs can be found in the water as well. Erosion, runoff of animal waste and overflowing of combined sewers are just a few ways these pollutants reach our waters. Whether it's protecting rare mussel species at Fish Creek, the restoration

of Maumee River or purchasing land around the Lost River cave system, the organization stays true to their mission of preserving plants, animals and natural communities by protecting the lands and waters they need to survive.

contain four basic components: mineral particles, water, air, and organic matter. Organic matter can be further sub-divided into humus, roots, and living organisms. The values given above are for an average soil.

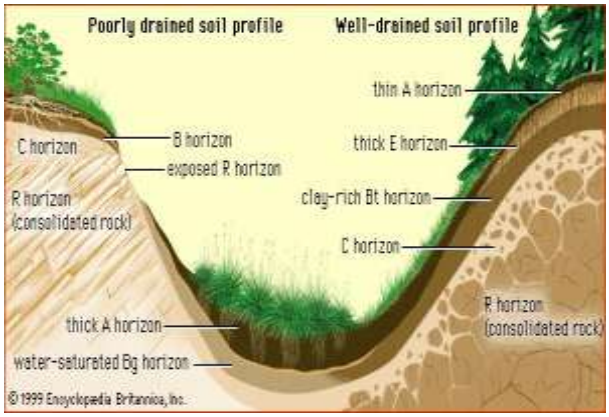


Soil profile



Topography

Landscape relief modifies the effects of organisms and climate on soil development. Effects of topography on soil formation include Effect of slope on soil development. Thinner sola and less mature profile development on steeper slopes in humid region because profile development is retarded by erosion or reduced water infiltration .Effect of shallow water table (approximately parallel to the soil surface) on restricting drainage and therefore soil development . Lower organic matter content and shallower sola on southern slopes due to higher temperature and lower moisture. Effect of topography on depth to shallow ground water table and soil drainage. In humid regions, greater wetness in depressional areas leads to accumulation of organic matter .Time Effects of climate and living organisms modified by topography, on the development of soil from parent material takes time. Effect of time can be seen by looking at chronosequences in Mississippi and Red River alluvium. In arid regions, salt accumulation may occur in depressional areas .Relative elevation and aspect also affects vegetation. For example, trees tend to occurring lower positions of prairie-forest transition zone and species composition is different on southern (prairie) and northern (forest) facing slopes.



IV- CONCLUSION

- Water level increase after developing barrier structure.
- Erosion rate reduced
- Productivity of forming sector increases
- Infiltration rate increases.
- Stability obtains to the village.
- Changes in the method of farming occurred.
- Migration village reduced.
- Per capita demand of villages completed.

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RESULT:

our project result occurred from model preparation and practical on it . Practical processes are as follows:

- We take two type of model.
- Before the structure use in model like this

Model no.1

- After the structure use in model like this

Model no. 2

After the 4 liter of rainfall apply on the each model result are as follows :

Specification	Model 1	Model 2	Difference
Rain fall	4 liter	4 liter	Same
Time of concentration	8 sec	20 sec	12 sec
Flowing water	2.900 l	1.800 l	1.100 l
Erosion of soil	Large	Less	Difference
Percolated water	400 ml	1000 ml	600 ml

REFERENCE

- https://www.paanifoundation.in/water-cup/about-the-water-cup
- https://www.paanifoundation.in/
- https://www.paanifoundation.in/our-work/books/
- https://www.paanifoundation.in/water-cup/training-programme/
- https://www.google.com/search?q=continuous+contour+trenches&client=firefox-b-d&source=lnms&tbm=isch&sa=X&ved=0ahUKEwj_6fnN5fDgAhV