International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 06 Issue: 04 | April - 2022 Impact Factor: 7.185 ISSN: 2582-3930

Different Techniques of Water Conservation in Jalna

Research Paper :by Rupam Sanap

Research Question: Q.What can be the most efficient water conservation system for Jalna?

Abstract

This research observes the increasing water scarcity in the Jalna district and efficiency of water conservation measures that can be taken to ensure that water is not over consumed and preserve with different techniques. The research begins with an explanation of introductionofJalnadistrict
and water consumption to frame the issue of increasing demand due to the drought in these region.

Droughts and Climate Change are briefly discussed to display the scarcity of water and to overcome on these issue, the report has implemented different technique of water conservation and side solutions is given.

Introduction

Water conservation can be defined to put unnecessary water into used. It is practices to be sustainable and manage the natural resource of fresh water. In short, the recycling the used water again. It is also the reduction of water usage achieved by execution of water conservation or water efficiency measures.

The Significance of water

Nowadays, Water has become basic need in all the sectors and plays vital role in the development of the city area. Groundwater has become the key source of drinking water for nearly 90% of rural and around 50% urban simultaneously. Due to less rainfall, demand of water is going high day by day. Due to scarcity of water for household and other activities, it's getting difficult to afford an average life. As you see agriculture is the backbone of our economy, which depends whole and sole on rainfall water. It needs huge amount of water for irrigation and other farming activities. The enlargement of agriculture is totally depends on rain water.

Narrative of study area:

As you see Jalna is one district of Maharashtra State. It was formed on 1st

May 1981. It includes 8 talukas including Jalna talukas respectively. Jalna district falls in the southern plateau. The upstairs and down stairs are found in this district

As they found in other area of the southern plateau. There are no high hills in this district. Small hills are found in2-3 talukas. These hills are narrow and their eastern surface is broad. This region has become levelled gradually.

If we look up to Geographical Area and Administration of this district, The slope of the region goes towards south. The average height of the district is 534 meters from the sea level. The district is situated in the central part of the Maharashtra. The district lies to its north is Jalgaon & Buldhana, towards east is Parbhani, south is Beed and west is Aurangabad district.

The geographical area of the district is 7718 sq. km.The soils here contains black and the land is made of igneous rock and black stone. The total land under cultivation is near about 730 thousand hectors.

When it comes to climatic condition, the climate here you find is hot and dry. Generally, the monsoon every year is uncertain and is recorded in less rainfall category of Maharashtra. The Jalna district contains for dry land agriculture. Whereas, the people in these region mainly depends on monsoon. The average temperature here in summer goes around 38 to 43 degree Celsius.

Godavari River is the one of the main river of the Jalna district. Where you find the water shed rivers like Dudhana and Galhati. The other rivers called Purna, Girja, Khelna, Kundlika, Kalyani, Jivrekha, Jui and Dhamna. Kundlika is the river which flows from the city vein and is very essential for Jalna city residents, the major population of the district.

The district is industrially and agriculturally developing but last five years agricultural production decrease due to erratic rainfall. However, some medium and small scale industries are functioning such as steel plant, sugar factories oil and cotton mills, rolling mills, fertilizer factories and ball bearing, Bidi making is important household industry but majorly all industries depends on agriculture here, whereas has satisfactory rainfall. The economy of this district is based totally on agriculture engaging.

To the other side, Jalna district was hit badly with drought in 2013 summer, the scarcity of water was too low that one could not acquire drinking water easily, The worst drought ever faced by the district. From then onwards the city lies in less rainfall and marked in drought cities of Maharashtra.

Majorly water conversation techniques used in Jalna:

Fundamentally, watershed structures in the Jalna District are classified are as follows:-

- Farm ponds
- Check dams
- Percolation tanks
- Private dug wells

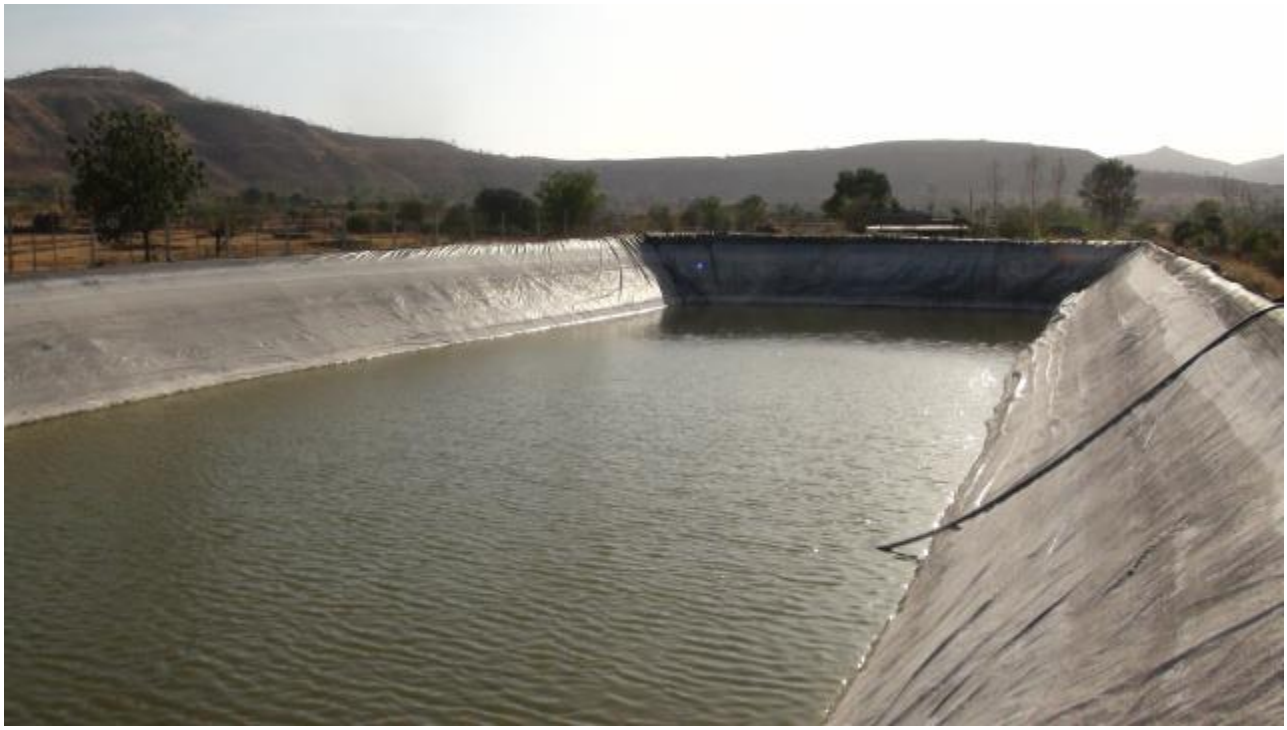
These are the main techniques of water conversation used to recharge groundwater aquifers and enable drinking purposes and other irrigation facilities.

Method of conservation may be identical of preservation against loss or waste. Permanently if we look at it means putting the water resources of the rural and urban for the best convenient use with all the technologies at our facility. Water conservation mainly aims at matching demand and delivery. The strategies for water conservation can be demand oriented or supply oriented. The strategies may be provisional upon the field of water use, local use, irrigation use, household use or industrial purpose.

1) Rainwater harvesting
2) Better Irrigation Practices
3) Use of Saline Water for Irrigation
4) Mulching
5) Fog and dew
6) Contour farming
7) Tippy Tap for water conservation
8) Propagation of Dry Garden / Eco Lawns
9) Smoak pit construction

It is widely known that the Jalna district of Maharashtra, for the last many years, has frequently faced drought and drought-like conditions. To deal with this challenge, a number of policies and interventions have been implemented by the farmers of the district.

One such intervention is the construction of farm ponds. It is also called as shet- tala. The State government has introduced schemes like ‘Magel tyala Shet-tale’, and various others scheme to overcome the drought of the district.



If we look up to the regions of -Jalna that receive very low rainfall and few receive moderate rainfall. Jalna is underlain by hard rock _which has very low porosity; it allows only limited recharge by percolation. It is also important to note that water resources in Jalna are fragile and sensitive to human interventions and climate variability. Negative externalities like increasing rates of evaporation and erratic rainfall events are compounding the problem. Hence, farm ponds become a crucial tool in ensuring farmers have access to water in the periods of low rainfall. In this case study, we take a closer look at farm ponds and their impact, in the context of two selected talukas name called Badnapur and Bhokardhan in jalna district.

Badnapur taluka has near about 288 villages which contains more than 80 farm ponds. One of which located in village called bharadkheda, badnapur whereas bhokardhan has near about 327 village which covers more than 110 farm ponds. One of which located in village called chincoli, Bhoardhan.

	Bharadkheda village farm pond Badnapur	Chincoli village farm pond Bhokardhan
Area geography, population and water resource	Area- 12.5 sq.kms Soil type-Igneous rock, black soil and rich fertile Population- 1467 Water resource intake from the Bharadi river	Area- 16 sq.kms Soil type-Igneous rock, black soil and rich fertile Population- 1945 Water resource from the dug well
Climatic condition and rainfall	32 degree Celsius Hot and dry Receives below average rainfall	30 degree Celsius Hot and dry Receives moderate rainfall
Water capacity and dimensions Of farm pond	35000000 litre water storage Dimensions-151sq/metre	15000000 litre water storage Dimensions-61sq/metre

land under cultivation	3-4 hectors	4-5 hectors
Problem faced	Acquire more irrigated land and need more construction cost.	Acquire sufficient amount of irrigated land and operation cost is more convenient

Conclusion

According to the case study of farm pond and non- farms pond farmers, analysis shows that farm pond farmers are more beneficial than the farmers who do not have farm pond. Farm pond owners can sustain long term and have advantage of Rabi crops which comes in summer, whereas non-farm pond owner face drought in summer season.

As per my study, farm pond plays vital role in agriculture like it Beneficial and crucial for the tough months of summer, it Reduces dependency on rains, it Creates a psychological wellbeing effect, it Can take more crops and improve efficiency , it Helps to get more revenue, it also helps to do the fish farming as your another business. So far what I analyze is small size farm pond is more beneficial than big size farm pond because big size pond need more irrigated land to create water resource whereas, small size need less land and less operation cost. Also big size farm pond water evaporation is very high whereas small size farm pond evaporation is less. In conclusion to make farm pond more operational and effective government should guide the farmers with more details plan and conduct the workshop how it should be construct according to the guidelines. This will would help farmers to make farm ponds more profitable and create a good water resource.

References

1. http://www.krishi.maharashtra.gov.in/Site/Upload/Pdf/Water%20Case%20Studies%20GIPE%20Final%20Report%209%202%202018.pdf

2. file:///C:/Users/Lenovo/Desktop/Research%20Paper/Jalna%20drought%20articles/economic%20profile%20jalna.pdf

3. https://www.researchgate.net/publication/321476604_ROLE_OF_FARM_POND_IN_CHANGING_CROPPING_PATTERN_PRODUCTIVITY_A_CASE_STUDY_OF_LATUR_DISTRICT

4. https://thewotrblog.wordpress.com/2019/07/23/farm-ponds-in-semi-arid-areas-of-maharashtra-a-case-study/

5. file:///C:/Users/Lenovo/Desktop/Research%20Paper/Water%20conservation/case%20study/Water_resources_water_use_and_potential_risks_in_Jalna.pdf

6. file:///C:/Users/Lenovo/Desktop/Research%20Paper/Water%20conservation/case%20study/research%20paper%20rain%20water%20harvesting.pdf

7. file:///C:/Users/Lenovo/Desktop/Research%20Paper/Water%20conservation/case%20study/SUB155106.pdf