iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** II **Month of publication:** February 2020

DOI: http://doi.org/10.22214/ijraset.2020.2020

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 8 Issue II Feb 2020- Available at www.ijraset.com

A Research Paper on Paani Foundation (Water Cup Village-Wagholi)

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Abstract: ***Paani Foundation is a non-benefit, non-legislative association which is dynamic in the territory of drought anticipation and watershed management in the state of Maharashtra, India. The association was established by Indian actor Amir Khan and his wife Kiran Rao.***

The CEO of the foundation is Satyajit Bhatkal.The state of Maharashtra in India has a past filled with repeating droughts and intense water lack all through the most recent quite a few years (for example in 2013). 33% of the state falls under the semi-arid climatic zone.

Rainfall patterns have been progressively sporadic as of late because of impacts of environmental change. The water system in the state is 16% of the territory under development, much lower than the 42% national average. This has led to overuse of bore wells, prompting a precarious fall in groundwater levels. In 2015, the state government formally proclaimed that 60% of its towns were confronting a "drought-like condition".

This implies they announced a harvest yield which was under half of the standard yield in the state. In supreme figures, 23,811 of the state's 39,453 towns come right now. This will bring about an exceptional fall in the state's agricultural yield for the year, authorities said.

Keywords: Paani foundation, watershed management, semi-arid, sporadic, proclaimed, contour nala bund (CNB), closed contour trenches (CCT), earthen nala bund (ENB), Farm pond.

I. INTRODUCTION

Paani Foundation was set up in 2016 by the 'Satyamev Jayate' Television program group, with the strategic making rural Maharashtra without drought and prosperous. Drought is to a great extent man-made, and we accept that lone individuals' endeavors can tackle this emergency.

Their work is towards assembling and preparing residents to lead this battle. From 2016 to 2019, they facilitated the Satyamev Jayate Water Cup, a challenge where a large number of towns contended to do the best and most extreme work in water and soil preservation.

More than four years, their work prompted the making of 550+ billion liters of water stockpiling limit in the state! Supported by this achievement and the vitality on the ground, in 2020, we propelled the Satyamev Jayate Samruddha Gaon Spardha. Going past water preservation, this challenge is planned for changing town nature and economy and making a development on supportable water use.

II. PAANI FOUNDATION

A. Methodology

1) To study and understand whole Paani Foundation process.

2) To assess the location and quality of works done under Paani Foundation. The on-field assessment is intervention-centred. All the soil and water conservation work need to be visited in the village and need to be geo-tagged. The quality of works needs to be assessed (dimensions, construction quality, engineering appropriateness, locational suitability, adherence to watershed principles etc.). The assessment of works on above criteria needs to be done through simple measurements, primary investigation, visual inspection and farmer/resident interviews.

3) To understand the impact of works. Along with the quality check, it is important to assess the utility of the work done and benefits accrued. The benefits can be in terms of increased groundwater availability or reduction in soil erosion or increase in farm incomes or increase in drinking inspection and farmer/resident interviews.

4) To pay special attention to areas which were not addressed and solution for the same.

5) To record suggestions from the stakeholders and recommend suitable alterations in existing processes, if any.

B. Aims and objectives

1) Reaping most extreme water in the encompassing of village Itself.
2) Expanding level of groundwater.
3) Expanding territory under water system in the village – Expanding guaranteed water for cultivating and proficiency of water utilization.
4) Ensuring accessibility of adequate water for all in the village- Expanding water supply by restoring dead water supply conspires in the country region.
5) Executing groundwater act.
6) Making decentralized water stockpiles. Sharpening individuals about water collecting/expanding open support.

III. ON FIELD ASSESSMENT

A. Assessment visit Schedule

The team visited wagholi ,Maharashtra on the days of 17th and 18th January 2020.The Wagholi village has won in Satyamev Jayate Water Cup Competition in 2019. The team composed of Prof. R. S. chougule,Ms.Pooja Devkar,Ms.Vedika Bhat,Mr.Pradymna Sutar,Mr.Akshay Kalkutagi,Mr.Ruturaj Kamble from Dr.JJMCOE Jaysingpur .The arrangements for lunch were made at hotel in Nagaj.

1) Day 1: Meeting was held at Gram Panchayat office. Our team was discussed with Sarpanch Mr. Suresh Gaikwad, Deputy sarpanch Mrs. Anita Shinde, Gram sevak , few residents and the Executive officer of Paani Foundation from village Mr. Kiran Shinde. Meeting was all about strategy and methodology for the assessment, the aims and actual procedure of work done under Paani Foundation, villagers participation and budgets. Also we have visited to sites-closed contour trenches, well recharge, cement nala bund, earthen nala bund.
2) Day 2: On day 2 meeting was started with the few villagers and all GP members. The team told the purpose of survey and process which was being followed. Farmers explained their experiences while working in activities done in Paani Foundation while project was running, how they managed to work for themselves as well as for village, about winning the title of “Satyamev Jayate Water cup” competition. Many farmers was demanding foe more works near their farms which are at top of hilly areas because water is stored at bottom of hills by providing C.C.T and earthen nala bunds but not such storage at hills required for animals, people as well as for farms. We have interacted with villagers belongs from various income group like low income group and medium income group as well as servicemen in village.

B. Structural Soundness and Utility

Every one of the works were seen as of good quality and coordinating appraisals. At times, farm lakes were not maintained and henceforth there was development of superfluous shrubberies and plants. Excavation was not seen as precisely done like finished with utilizing the machine since it was excavated by local villagers and different NGOs. Just as in certain spots additional excavation was done which was unnecessary. It may be because of the absence of guidelines given to residents. At the highest point of slopes like hills there were not arrangements to store water from the downpour. CNBs and ENBs were likewise basically stable. All the CNBs finished the hammer assessment. All CCTs Earthen structures were structurally sound. As indicated by residents of wagholi the well recharging, percolation tanks are helpful. But on the other hand the farmers living at the top of slopes they are experiencing water scarcity again because of the absence of water stockpiling structures at the top. In all structures made by Paani Foundation water is put away at the base of slopes yet not at the top.

C. Impact Assessment

Wagholi is a typical village in the Western Maharashtra region with mountainous region, good clayey soils, and assured kharif crop due to assured rainfall. But there was lack in yield of rubby crops due to deficiency in rainfall. In the last few years there has been uncertainty in the rainfall and from the years 2015 to year 2018, there was not rainfall happened. Due to this problem migration rate was extremely increased in village. The entire economy of the village is only dependent upon yield from agriculture because occupation of more than 85% population of the village is agriculture. Due to insufficient rainfall 10 to 15% population is migrated according to 2011's population and the latest survey done by Gram Panchayat wagholi. Thus, the main problems faced by the village are - I) harvest rubby and cash crops. II) drinking water security, especially at the top of hills where 40% of population stays. Through Paani foundation the problems regarding the scarcity of water in dry period is resolved but the problem of drinking water is not completely resolved by Paani Foundation .The CNB works in the area were effective in retaining soil moisture and increased percolation .due to CNB structure for the first year, Farmers reported increase in yields due to Paani Foundation activities.

Some farmers reported cropping pattern change due to CNB's and Village Lake and they are now able to harvest cash crops like grapes, cucumber, watermelon etc. The runoff generated is arrested in the deepened streams and recharges nearby wells till for next 3-4 months. Thus, farmers are able to provide protective irrigation to ruby crops .the active participation of the villagers was observed according to the statement of an Executive of Paani Foundation, the work of excavation done by villagers and other communities like NGOs was more than 3300 cubic meters.

Due to gravity during rainfall water from hills flows and stored at bottom. There are CCTs, but only erosion of soil is prevented due to CCTs and water is stored for very less time on the either side of the berm because it is allowed to percolate to downward .due to these people living at the top of hills are suffering through water deficiency problem.

The structures were sound and safe. The Officials and the village people asked about the method to construct storage structures at the top of hills to store only rainfall water economically.

IV. DESIGN FOR WATER SUFFICIENT VILLAGE

A. Rainfall

Annual average rainfall of Wagholi village is around 345 mm taken from tehsil office Kawathe Mahankal, Sangli, Maharshtra. According to survey of Gram Panchayat the depth of water table from ground surface in 2009 was 200 feet. but due to continuous decrement in rainfall affected and in 2018 it was 350 feet. According to survey of Gram Panchayat the average annual water requirement for villagers, animals and irrigation purpose was 123.23 crore litters.

B. Water Budget Calculation

Table 1

Sr.no.	Description	Details
1	population	698
2	Geographical area(Ha)	288.28 Ha
3	Average annual rainfall (mm)	345 mm
4	total water requirement in crore litters a)requirement of drinking b) for irrigation purpose	 5.20 cr. lit 53.33 cr. lit
5	Total rainfall in crore litters	100.8 cr. lit
6	Water stored on ground	5.30 cr. lit
7	Water distribution	17.13 cr. lit
8	Water need(5+6+7)	123.23 cr. Lit
9	Water available	59.73 cr. lit
10	Water deficiency(8-9)	63.5 cr. lit

C. Proposed structures in village

1) Gabian structure
2) canal widening
3) Cement nala bunds
4) Farm ponds at the slopes of mountains

V. PROPOSED FARM PONDS

A. General

Generally farm pond is nothing but rectangular or square shaped structure which can hold around 50,000 litters of water in it. It is made by constructing earthen banks in square or rectangular shape by locally available material like soil and stones. Generally height varies between 9 to 10 feet. inlet and outlet is provided to pond for filling by water and irrigation purpose respectively.

B. Necessity of Farm Ponds

1) To use for the irrigation to crops.
2) To improve watershed health.
3) To collect excess runoff during rainy period.
4) To conserves soil and moisture.
5) To provide drinking water for cattles during drought situation.
6) To use while spraying pesticides on crops.

C. Points considered for site selection

1) Type of pond is decided by topography of land
2) Site should away from flood ares as well as low rainfall areas like leeward side of mountain.
3) As we are going to construct farm ponds on slopes of mountain the natural flat terrain is necessary to minimise excavation to make land horizontal or flat.
4) The soil should be loamy, clay loamy and silt clay are most suitable.
5) Biological factors also should taken in account such as the adequate amount of water should required for fish and other species.
6) Social and economical factors should also be considered while selecting site.
7) The land identified for farm pond should be without legal issues.

D. Construction Procedure Of Farm Ponds

1) Before constructing the pond, land is surveyed to find out determine its topography ,soil, water supply and to select type of pond.
2) Contour levels are measured and position of main wall according to natural slope should be decided and design of pond should be made.
3) After the designing it is important to make detailed estimate to know approximate budget required for completion.
4) For construction site should be cleaned from grass, weeds to avoid leakage problem.
5) When the pond area is cleaned, it is necessary to mark the outlines of ponds and dykes.
6) The walls should be at least1-2 feet higher than the water level.
7) Excavation can be done by power shovel or manually and its bottom slope should made as 3-5%.
8) The sides and bottom of ponds should be properly excavated and finished until a good slope for drainage is made.
9) While constructing the pond, the dyke or main wall should be constructed at the low level side.
10) When the pond walls are constructed, the excavated soil can be placed on the top and planted with grass. This fertile top soil will root grass easily and this will help keep the walls from eroding
11) Pure clay soil will crack and leak but A soil which is a mixture of sand and clay is best.
12) Inlets and outlets should e installed carefully and properly to keep integrity of pond.

VI. CONCLUSION

Farmers reported increase in yields due to Paani Foundation activities. Some farmers reported cropping pattern change due to CNBs and they are now able to take cash crops like grapes and horticultural farming. The runoff generated is arrested at the bottom of mountains and recharges nearby wells. Thus, farmers are able to harvest rubby crops. The active participation of the villagers was observed in the activities like excavation, cleaning the site, etc. In some cases, the location of structures was not suitable because lack of guidance gave to villagers and they did. The structures were sound and safe but numbers of structures are lesser especially at mountainous region of the village. The Officials and the village people asked about the place to construct farm ponds at slopes of the mountain. So proper place is to be provided for proposed farm ponds. We interviewed around 15 beneficiary farmers to understand the impact was on different accounts like well recharge, increase in productivity, an increase in crop land, improvement of cropping pattern etc. In some cases, the location of the CNB was not selected properly. The upstream slope was not provided properly. Some of the CNB were located on curves. Various NGOs were actively participated in Paani Foundation such as Vivek Vaahini RIT College, Happy Thoughts Miraj, staff of Tehsil office Kawathe Mahankal and MSEB staff Kundalapur. From 2015 to 2018 water level in bore wells was constant as 350 feet but from last year Water level in the well was increased and now it is 323 feet according to the statement of villagers.

VII. ACKNOWLEDGMENT

We would like to thank several people who helped us directly or indirectly to complete this project work. Especially Mr. Kiran Shinde Executive of Paani Foundation, Wagholi. Success is the outcome of the guidance by experts, hard work and determination right from forming a deal deciding the topics, deciding the scopes and scheduling and managing project. We were encouraged and motivated by our guides. The higher the summit, harder is the climb. The goal was fixed and we began with a determined resolution and put in ceaseless efforts. There were stretches when the goal looked beyond our reach, but all the difficulties were accepted as a Challenge. We are thankful to project guide Prof. R.S.Chougule, Head of the department Prof.J.S.Lambe, Principal Dr. S. H. Sawant who supports and encourages us. We extend our heart full thanks to teaching and nonteaching staff of the department of Civil Engineering, Dr. JJMCOE for their assistance and cooperation throughout the process of project work.

REFERENCES

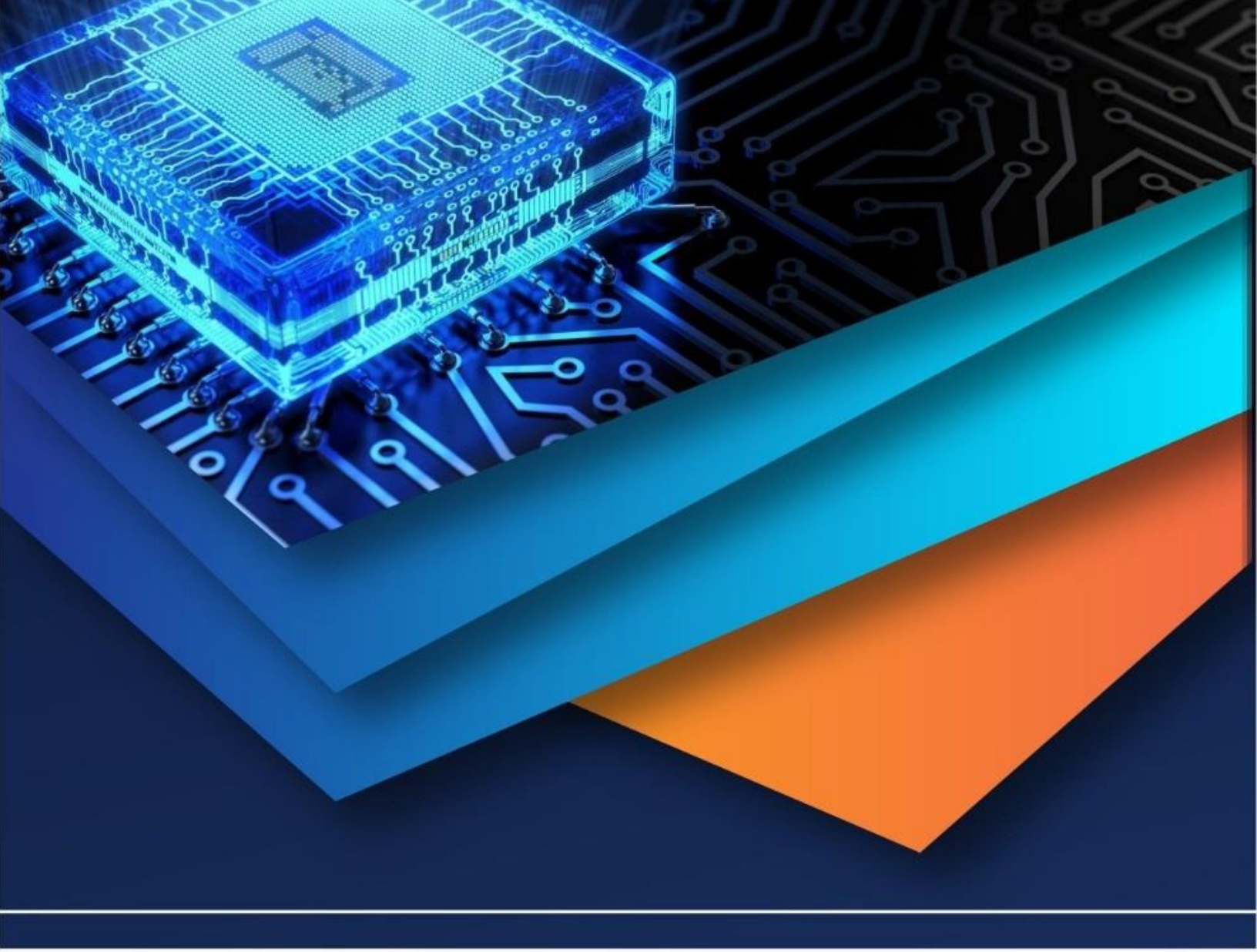
[1] Importance of Continuous Contour Trenches (CCT) in Maharashtra Nitin Bajirao Borse M.V.P.Samaj's, Arts, Science and Commerce College, Ozar (MIG) Affiliated to SP Pune University

[2] Proceedings of International Workshop on Integrated Watershed Management for Sustainable Water Use in a Humid Tropical Region, JSPS-DGHE Joint Research Project, Tsukuba, October 2007. Bull. TERC, Univ.Tsukuba, No.8 Supplement, no. 2, 2008.

[3] Government of Maharashtra Water Conservation Department Government Resolution No. JaLaA-2014/Case No.203/JaLa-7 Mantralaya, Mumbai – 400 032. Date: 5 December, 2014

[4] Third Party Evaluation and Impact Assessment by TDSCIIT Bombay of Jalyukt Shivar Abhiyan in Palghar District. Date:10 Oct 2016

[5] A Research Paper on Jalyukt Shivar Abhiyan Assessment (Sonavade) and Design of Water-Efficient Village(Save) by TKIET students .Date: 6 June 2019.



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