

CHAPTER - VI

FINDINGS AND RECOMONDATION

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6.1 FINDINGS :

- 6.1.1 The study region located in Satara district of Maharashtra, is divided into seven revenue circles. Nira River forms northern boundry between Pune and Satara districts, whereas eastern boarder has been delimited by Solapur district.
- 6.1.2 The Phaltan tahsil has been characterized by the spatial variations in the physical factors which has influenced the development of rain water harvesting potential. The region attains 750 metres height (M.S.L.). The hilly region occupies smaller part with 10 percent of the tahsil in the south. Towards the north of hilly zone, parallel to Nira river, transitional belt has been characterized by various minor landforms. It occupies 35% to total area. This zone is also suitable for rainwater harvesting. Level plains occupying 55% area is confined to the northern border and parallel to Nira river. This zone is better developed as compare to other zones because of the availability of perennial water supply from right bank canal of Nira dam. However, this zone is less suitable for rainwater harvesting.
- 6.1.3 River Nira and Banganga are the main drainage systems in the region. The drainage pattern and slope of the region have provided suitable sites for the construction of many surface water-harvesting structures such as contour bunds, check dams and percolation tanks. The general slope of the region is from south to north.

- 6.1.4 The soils of the study area are derived from the 'Deccan trap'. Medium black fertile soils are observed in Nira river vally. The southern parts of Barad and Girvi revenue circles have shallow black and laterite soils, locally called as 'Murmad'.
- 6.1.5 Climatically the study region is hot and dry throughout the year except July to October. Temperature can be regarded as an important component, which indirectly controls rainfall regime and availability for water harvesting. Month of January is coldest month with low temperature of 10°, whereas highest temperature is observed in May (40°). Most of the rainfall is received in south-west monsoon season (June to sept). It is observed that the average annual rainfall of the region is 460 mm., which declines from west to east.
- 6.1.6 The sources of irrigation in the study region are largely affected by the physical features. The well irrigation is dominant in the tahsil(60.58 %), followed by canal (32.77%) and other sources (6.65%). There are over 9074 working dug wells in the study region, and about 10080 bore wells. Area not available for cultivation is about 4.29 percent to total area. The cultivable land, which includes the net sown area and fallow land share about 85.50 percent to total geographical area.
- 6.1.7 The dry months are characterized by acute shortage of water for drinking & agriculture as they receive insignificant amount of rainfall. In summer season, many villages face the problem of even the drinking water. This has created the need of rainwater harvesting in the affected villages and in Phaltan city also.

- 6.1.8 Day by day over exploitation of ground water is increasing fastly resulting in depleting of ground water level. Hence activating the conjunctive use of surface and ground water resources is an urgent need for over exploited areas in the study region such as Girvi & Barad circles.
- 6.1.9 Phaltan is second populous tahsil in satara district having 313627 total populations, which is 10 percent of district with 262827 rural and 50800 urban population. The average density of population is 238 people per sq.km and literacy rate is 65%. In Phaltan tahsil there are 953 females for every thousand males. Out of the total working force nearly 70 .52 percent are cultivators and agricultural labourers.
- 6.1.10As mentioned earlier, in the study region the rainwater harvesting is not new concept. The methods of 'Collecting and conserving rainwater' are traditional. However, slowly with the advent of tap water, rainwater harvesting has declined its importance. Before the construction of Nira right bank canal, nearly four villages of Phaltan tahsil were practicing traditional rainwater harvesting through village ponds.
- 6.1.11 In rural area out of selected 30 villages, only 6 villages practice the rooftop rainwater harvesting system. In these villages annual rainwater harvesting potential is 3400.15 cubic meters. Whereas in urban water scenario Sanjeevraje nagar of Phaltan city, only 3050.95 cubic meters annual rooftop rainwater harvested is achieved from 7470 sq. meters of built up area.
- 6.1.12 Constructions of a few surface water harvesting structures (Farm ponds, check dams & percolation tanks) in some villages, led to a

remarkable rise in the local water table and as a result, the movement spread all over the region.

6.1.13 The dug wells are the traditional ground water harvesting devices.

The bore wells are relatively modern. In the year of 2005, 41 wells and 20 bore wells were recharged through rooftop and surface rainwater harvesting.

6.1.14 After the construction of Dhaval percolation tank, twenty-four new wells and thirty bore wells are constructed; having an average depth of 30 meters. In case of dug wells, the water level has increased by 1.5 to 4.5 meters and duration of the water in these wells has increased significantly.

6.1.15 After the construction of Dhaval percolation tank, there has been a remarkable change in the respective positions of crops. Among the major crops, the highest decline was in Bajra (9.65%) followed by pulses (7.6%). Various crops which recorded increase are sugarcane (20.65%) and Sunflower (1.13%). The consequential impact on the factors, such as size of holdings, area irrigated, area under cash crops, agricultural implements, education, cosmopolitanism and annual income have been on increasing the socio-economic status of farmers, rise in educational level and positive attitudinal change in the farmers as well.

6.2 RECOMMENDATIONS

In view of the above findings following are some of the viable recommendations made for augmenting the surface and rooftop rainwater harvesting in the region.

- 6.2.1 The analysis regarding the surface rainwater harvesting shows that in smaller catchment areas the micro water harvesting structures like contour bunds, farm ponds, and percolation tanks are more efficient in the runoff collection. Hence, these structures are recommended for the first and second priority zones for rainwater harvesting.
- 6.2.2 It is recommended to develop the small watershed of upper Banganga basin, through constructing recommended to construct the series of check dams. This system will help to harvest runoff generated during rainy season through 10 check dams up to 10 million liters in a year.
- 6.2.3 It is recommended to construct the network of 130 farm ponds in first and second priority zones of study region. Each farm pond will collect about 0.175 million liters rainwater every year. Thus adding about 22.75 million liters of water every year.
- 6.2.4 The construction of contour bunds in different part of study region is also recommended. The conserved water through contour bunds will percolate into the ground, and will enhance the level of water table in adjacent areas. Simultaneously it helps to conserve the soil.
- 6.2.5 Two new percolation tanks sites are recommended which will harvest about 6 million liters of water every year.
- 6.2.6 The sample studies carried out both in rural and urban areas have proved that there is a vast scope for rainwater harvesting and

rooftop rainwater harvesting in the study region. If the recommendations made above will brought in to execution the water need of the region will be fulfilled up to 70 percent. It will help to make the region water tanker free and will full fill the irrigation demand partly. Thus, the implementation of surface rainwater harvesting & rooftop rainwater harvesting will bring bright future in the region and such other areas in the state of Maharashtra.