Use of Harvested Water

Yield of Soybean during Kharif 2017-18:

The annual rainfall received during the year 2017 was deficient by 34%. One protective irrigation during the dry spell from stored water and also groundwater used for 10 soybean demonstration plots have resulted an average 23.56% increase in yield as compared to rainfed condition or without irrigation in the Warkhed - Kajaleshwar micro-watershed.

Yield of Chickpea during Rabi 2017-18:

During rabi season 2017-18, the seed of Chickpea (JAKI – 9218) was distributed among the farmers of the village Kajaleshwar, Tq. Barshitakli, Dist. Akola. Total 10 demonstrations were conducted. Application of one and two protective irrigations from stored water resulted in an average 21.28% and 30.29% increase, respectively in Chickpea yield as compared to without irrigation.

View of soybean demonstration plot

View of Chickpea demonstration plot

Conclusion

Due to adoption of similar type of rainwater harvesting and artificial recharge structures, groundwater resources will be augmented. This will help in development of integrated farming systems which ultimately will be helpful in increasing the yields and water productivity of the area where such woks are being adopted.

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GROUNDWATER DEVELOPMENT THROUGH DRAINAGE LINE TREATMENTS IN VIDARBHA REGION OF MAHARASHTRA

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Introduction

Many regions in the country are characterized by variable and low rainfall and the soils have low productivity. The fragile ecosystems in the dry areas are prone to degradation. Groundwater is one of the major resources necessary for the overall socio-economic development and management of any area and it requires careful investigation and management of groundwater level. The water intake for agriculture, municipal and industrial use is higher than the yearly recharge. Akola district is one of the eleven districts of Vidarbha Region of Maharashtra State. The Kajaleshwar-Warkhed micro-watershed has been selected for Agri-CRP on Water Project under AICRP for Dryland Agriculture, Dr. PDKV, Akola with financial support from ICAR- Indian Institute of Water Management (IIWM) Bhubaneswar.

Study Area:

The micro-watershed is located in Barshitakali taluka of Akola district in Maharashtra state lies between 20°13'59"N latitude and 77° 13'23" E longitude and at an altitude of 337m above M.S.L. with an average annual rainfall of 820 mm.

Topography:

The SRTM (30m) data set of Space Shuttle Endeavor Satellite has been used to create Digital Elevation Model. Contour map of 1m interval was generated from digital elevation model using surface analysis tools in Arc GIS. The contour map is very useful for design of rainwater harvesting structure. The lowest and highest elevation was observed in range of 325 to 337 meters. The contour map of the area is given in Fig.1.

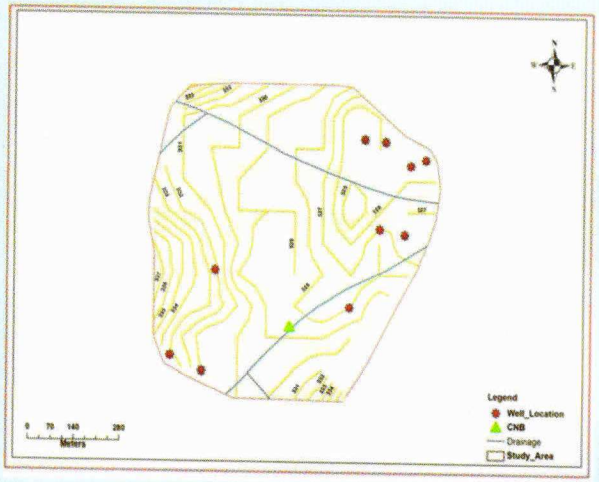

Fig. 1. Contour map of Kajaleshwar - Warkhed Micro-watershed

Rainwater Harvesting and Impact Analysis

The work of nala widening and deepening was done under this project and the existing CNB was repaired. Due to this work the rainwater was stored in the nala. In the vicinity of the deepened and widened nala / CNB, 35 wells have been monitored for ground water levels. Groundwater level fluctuation analysis mainly depends on the variation of water level data during post-monsoon periods which can be directly related to recharge and discharge of groundwater regime. Two years of groundwater level data has been analysed for impact assessment of rainwater harvesting on groundwater regime using IDW method. During post-monsoon period of 2015 and 2017 water level ranged between 3.65 to 9.1 m and 2.2 to 8.3 m. The groundwater level fluctuations during these years are depicted in ground water level map (Fig. 2).

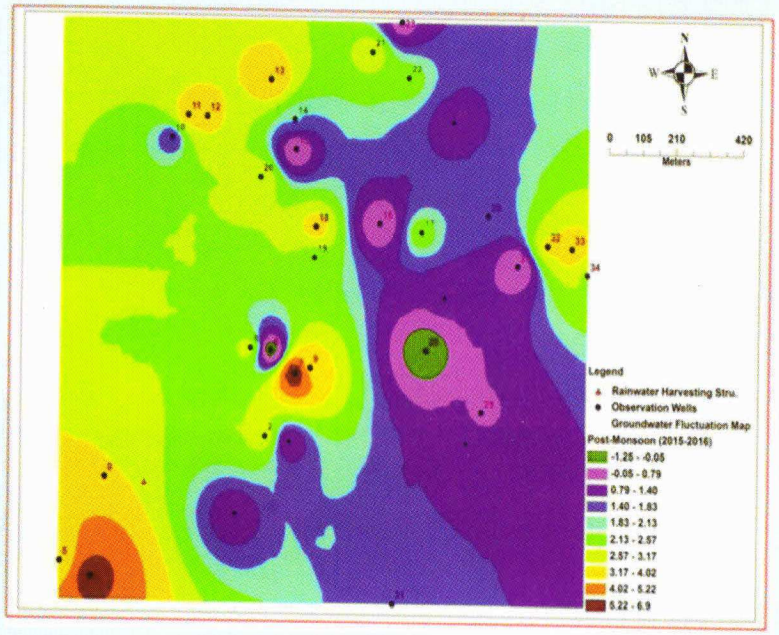

Fig 2 : Ground water Level Fluctuation during Post-Monsoon (2015 - 17)

Impact

Based on the observed data it was inferred that the average groundwater levels in the 35 wells during the year 2017 was increased by 1.12m as compared to the groundwater levels of the year 2015. This is due to the storage of rainwater in the widened and deepened nala for longer duration. It was also possible to utilize the recharged water for protective irrigations to different crops.