



Impact of Rainwater Conservation on Agro-ecosystems in Morena district of Madhya Pradesh

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Rainfed arable systems of India accounts about 55% of the total sown area (Shankar, 2011), while slightly higher parts of the it about 62% is rainfed in Madhya Pradesh state of India. The Madhya Pradesh state has 14.9 M ha cultivated area constitutes almost half of the total geographical area and agriculture is the major source of livelihood for more than 70% human population, production systems should be resilient to risks, be able to ensure food, nutritional security and strengthened livelihood systems with minimum environmental externalities. The Chambal division is consisting of Morena, Sheopur and Bhind district of Madhya Pradesh. Total geographical area (TGA) of Chambal division is 16.054 lakh ha, net crop sown area 7.52 lakh ha and area under ravines is 3.11 lakh ha, which is highly degraded land (Singh *et al.*, 2018). Out of total area under ravines in Chambal division have 1.92 lakh ha in undivided Morena (Morena and Sheopur) district (Tomar *et al.*, 2015). Ravines owe their origin to rill-erosion on highly erodible soils by run-off rain water. Ravines mean not only a loss of non-renewable land-resource but also destruction of rural economy, loss of public property, creation of socioeconomic problems such as dacoit-infestation and unemployment (Singh *et al.*, 2014). Since formation of ravines was a function of uncontrolled run-off, the management of rain-water through storage of rain water in ponds watershed basis was an appropriate approach for

control of ravine and increase of irrigated areas (Verma and Singh, 2009). The groundwater table of the area is approximately 122 feet deep. The over exploitation of underground water through well and tube wells in the district the water table goes downwards to 2 to 5 feet every year and ordinary wells and open well become dry and pose problems of domestic use, animal rearing and agriculture activities in remote areas. In general, the quality of under ground water also deteriorated (salinity and alkalinity) with decreasing of water table in some patches are also seen. Rain water collection in ponds and its recycling is very important component of rainfed as well as in irrigated agriculture system. Runoff collection can be done in several ways depending upon the characteristics and suitability site. Runoff will get stored temporarily against submersible check dams, pond, stop dam, anicut, the construction of which will be very essential for stabilization of gully-bed, etc. Also, selection of suitable sites for construction of farm ponds or tanks is necessary to store runoff.

Hon'ble Prime Minister of the country has urged upon doubling farmers' income by 2022. Therefore, it is essential that farm productivity should increase in irrigated as well as rainfed areas. In Morena district the pearl millet, pigeon-pea, soybean, blackgram, wheat, mustard, chick-pea and vegetables are major existing crops but the productivity of these crops is low from potential yield of crops owing to adoption of local varieties, non-adoption of improved agronomic package, mono-cropping, intensive and repeat tillage, faulty crop establishment method, undulating topography, burning of crop residues and several abiotic and biotic climatic abnormalities.

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