International Conference "Water, Environment, Energy and Society" (WEES–2009)
New Delhi, 12–16 January 2009

Need of Emerging Agriculture and Rainwater Management for Development of Micro-Level Water Resource in Eastern India

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ABSTRACT

Chhattisgarh is one of the most drought-prone states of eastern India even as it receives 1200–1600 mm rainfall annually. Droughts of varying intensity occur once in 2–3 years causing huge losses to its main rice crop and migration of rural poor in search of livelihood elsewhere. Expansion of irrigation, which is the only solution of the problem, has been very slow such that only about 11% additional area could be covered by different sources in last 53 years of planned development after 1950–51. Uncertainty of groundwater availability due to underlying hard rocks has discouraged growth of wells and tube-wells, which serve only 3% of the net sown area against 24% in country as a whole. Small scale water harvesting systems are appropriate and a number of traditional water harvesting systems already exist, but they have been experiencing decline despite efforts made to increase their number under different Govt. programs including watershed management and rural development programs. This is explained by higher rate of decline than growth of traditional pond systems. The community ownership, limited productivity of available water due to non-adoption of improved management practices and associated low economic returns, availability of alternate sources of irrigation and huge funds required for their construction and maintenance (that even Govt. cannot afford perhaps) account for the declining state of traditional systems. In view of this a new approach has been designed and tested under real farming situations under National Agricultural Technology Project in Chhattisgarh. This paper describes results of experiments carried out on farmer's fields. The technology comprised of a very simple intervention of creating On-Farm Reservoirs (OFRs) in series along the slope of the given rice landscape for storage of excess rainfall and runoff with groundwater structures (dug wells and ditches) in recharge areas of OFRs in three villages that constituted replications. The approach not only saved 37 and 45 ha of rice during severe droughts of 2000–01 and 2002–03, but also met critical water need of rice as well as of Rabi crops during the period of experimentation. The additional returns due to increase in yield of rice and cropping intensity over their existing level were sufficiently higher to recover the cost of investment in one to two years. Such returns were very high during years of drought than during normal year.