



TECHNOLOGICAL ASSESSMENT OF UNDERGROUND TAMING OF FLOODS FOR IRRIGATION (UTFI)

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Groundwater depletion has become a major concern among researchers and planners in India. Harvesting excess rainwater through modified recharge ponds or natural structures is a common practice worldwide. To rejuvenate stressed aquifer and moderate flood impacts an innovative research concept named Underground Taming of Floods for Irrigation (UTFI) is being tested in Rampur district of Uttar Pradesh which is located in Ramganga sub basin. To understand the technological practices and benefits at local scale, in 2015 a community owned pond was renovated and ten recharge wells were installed. A minor canal (Pilakhar Minor) was used as source of recharge water during monsoon which is located on the north of the site. It was observed in the first recharge season (2015) that total recharge by the system is on average 5,670 m³ day⁻¹ and for 2016 recharge season the total recharge was 5,455 m³ day⁻¹ for the whole system. For a 100 days of monsoon with an uninterrupted water flow, this system can supplement 1000 mm of water to irrigate 55 ha in dry season. These values are close to a previous research by McDonald et al. (2015) which has estimated that a well density of 0.17 is required for each hectare considering that a single well can recharge 100 m³ day⁻¹. From the water quality perspective it was observed that the source water (canal) has alkaline properties with Mg-CO₃ type characteristics. Additionally, the analyzed water samples showed the presence of heavy metals such as Arsenic (As), Cadmium (Cd), Cobalt (Co), Chromium (Cr) and Copper (Cu) which are below detection level, whereas fluoride was found within the acceptable limit.