

Research Paper :

Impact of soil and water conservation structures on ground water recharge in Darakwadi watershed

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ABSTRACT

Land and water are the most precious heritage and physical base of biomass production of life supporting system. Efficient management and utilization of soil and water are important to increase crop production and productivity per unit area. The main factors for soil erosion in India are excessive deforestation and faulty agricultural practices. The present study was carried out at Darakwadi watershed in Aurangabad district of Maharashtra. The average increase in water level in the wells downstream side of earthen nala bund, composite cement nala bund, and cement check dam and percolation tank was found to be 2.90m, 2.77 m, 2.18m and 2.55m, respectively, in post development period.

Key words : Impact, Soil and water conservation structures, Ground water recharge, Ground water recharge in watershed

Water is most essential input to agricultural production. With the limited scope of development of irrigation potential, rain water management plays an important role to supplement the surface water for domestic, irrigation and industrial uses. Therefore, efficient conservation and scientific management of harvested water is crucial for optimum utilization for crop production. Soil and water conservation structure create temporary storage of water and help in ground water recharge. With the ever growing population, the need of water is also increasing but the chief source of water *i.e.* rainfall is almost constant or decreasing day by day. So, more scientific approach involving various factors that really govern the movement of water resources. For efficient water management, all the structures need to be evaluated for their effect on the ground water recharge in the watershed (Gore *et al.*, 2002).

METHODOLOGY

Darakwadi watershed:

Darakwadi watershed was developed by "Dilasa Janvikas Pratishthan", Aurangabad with support of United Nations Children's Development Fund (UNICEF), Mumbai and Member of Legislative Council (MLA) fund. It was implemented in year 2002-03. Total geographical area of watershed was 479 ha. It is situated at 19°36'15" N latitude and 75°48'45" E longitude and at an altitude of 524m above mean sea level with an average annual rainfall of 600mm. It is 45 km from Aurangabad and 13km from Karmad Railway Station.

Major area (75%) of Darakwadi watershed ranges

from 1-3% in non cultivated area at hilly and elevated degraded land. Maximum slope 15 to 24 per cent was observed. Most of the soils in this region were medium to deep black with some part of degraded land. Topography was flat to undulating.

Soil and water conservation structures:

According to the potential available in the Darakwadi watershed, soil and water conservation structures proposed were six; earthen nala bund two cement nala bund, one composite cement nala bund, two cement nala check dams and one percolation tank. These structures were evaluated for effect on ground water recharge.

Measurement of water table depth:

In Darakwadi watershed, 12 wells were selected to determine the effect of various soil and water conservation structures on ground water recharge. Three wells in influencing area of each structure like earthen nala bund, composite cement nala bund, percolation tank and cement nala check dam were selected. The data on the water table depth was compared with the pre-development data and average increase in water table depth in the wells on the downstream side of each structure were determined /estimated.

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :