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STUDY OF INFILTRATION RATE IN DAL SUB CATCHMENT OF JAMMU AND KASHMIR

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Abstract

The aim of the present study was to estimate the infiltration rate of the Dal sub catchment of District Srinagar in the union territory of Jammu and Kashmir and to assess its relation with the soil characteristics like soil moisture, soil texture and the land cover condition. A double ring infiltrometer was used to assess the infiltration at eight locations in the study area and the same were used in different models namely Horton model, Kostiakov model, Philips model and Green-Ampt model. The results revealed that the initial and the steady state infiltration of 134 and 2.8 cm/h were found maximum for site 3 having forest cover. The experimental study also revealed that the soil texture influences infiltration rate and the minimum time (less than 3 hours) to reach the steady state infiltration was observed at the Site Arbal having silt loam soil texture. The study revealed that the Philips model was considered best for estimating infiltration rates at all the sites with correlation coefficients of 0.978, 0.971 ,0.938, 0.978, 0.976, 0.986, 0.976 for site 1 (SKUAST Kashmir Shalimar), site 2 (Merakh Abad Shalimar), site 3 (Duck Park), site 4 (Upper Tailbal), site 5 (Chandpora), site 6 (Lower Tailbal) and site 8 (Paezal pora). The findings are vital for designing and planning irrigation projects by accurately determining infiltration rate which aids in irrigation scheduling, water resource management, agricultural practices, and understanding the hydrological behavior of various soil types in the humid subtropical climate of Jammu and Kashmir.

Key words: double ring infiltrometer, infiltration, Phillips model, soil moisture

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