

Adaptive surface and groundwater management for vulnerable hydro-ecosystems in the northeastern region of India

U. C. SHARMA¹ & VIKAS SHARMA²

¹ *Centre for Natural Resources Management, V. P. O. Tarore, district Jammu 181133 J & K, India*
ucsharma2@rediffmail.com

² *S. K. University of Agricultural Sciences & Technology, Chatha, Jammu 180009 J & K, India*

Abstract A multidisciplinary, long-term study showed that, on average, 16.2 to 141.1 tonnes of sediment yield per km² and more than 90% of rainwater was retained *in situ* in new land-use systems compared to 3621.3 tonnes of sediment and 64.4% rainwater retention in shifting cultivation. The mean values of base flow and surface flow were 104.6 mm and 31.0 mm in the new land-use systems as against 241.7 mm and 560.1 mm, respectively, in shifting cultivation. The groundwater recharge was maximum in livestock-based land use, followed closely by agriculture, horticulture and forestry land uses, the average being 34.7% of precipitation as against only 8.3% in shifting cultivation. Due to the reduction in runoff flows to river channels, the incidence of floods has reduced. The government has simulated these model land-use systems in different parts of the region for location-specific results so that farmers could adopt these as per agro-climatic situation and requirements.

Key words adaptive management; surface water; groundwater; vulnerable hydro-ecosystem