Prevention and Management of Surface and Subsurface Water Logging

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Abstract

Water logging, either surface or subsurface, in crop fields is major problem in five zones of India such as north-west India, central peninsular India, eastern plains and deltas, coastal area of western India and sodic land of western gangetic plains. Water logging can be due to excess rainfall combined with poor runoff or seepage from irrigation system and it can be mainly due to unfavourable geomorphological, geological and hydrogeological conditions, which restrict natural drainage. Drainage measures are generally location specific and vary according to the complex relationships among different factors such as topography, soils, climate, geo-hydrological conditions, sources and quantities of excess water as well as cropping patterns. The investigation constitutes the first step in the solution of the drainage problem and is a pre-requisite for drainage planning. Different preventative measures for surface and subsurface water logging have been discussed. Methods such as surface drainage system, land modifications, alternate land uses, alkali soil reclamation and groundwater recharge shaft cum drainage structures are recommended to manage surface water logging. Subsurface drainage system, land modifications and subsurface water harvesting structures/ Doruvus are found suitable for waterlogged saline soils, waterlogged sodic soils and coastal sandy aquifers to manage subsurface water logging. Large scale drainage projects designed to control water logging and salinity / sodicity in Haryana, Rajasthan, Maharashtra, Karnataka and Uttar Pradesh show the feasibility of suggested technologies under field conditions.

Key words: surface and subsurface water logging, prevention and management, drainage, land modifications, alternate land uses, subsurface water harvesting structures, Doruvus, alkali soil reclamation, recharge shaft