

Waterlogged area Mapping and Hydrological Data Analysis of Mokama Tal Area

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ABSTRACT

The drainage problems of the agriculture land are basically associated with the stagnation of runoff and the rise of the water table. Generally, the runoff stagnation is a result of intense rain, which produces excessive runoff for which the existing drainage capacity is not adequate or outlet conditions are not favourable. The rise of water table beyond a critical limit or surface ponding results in water logging conditions. Water logging in a low lying land of about 1062 sq. km. (Mokama Group of Tals) in the district Patna, Nalanda and Munger is caused due to excessive rainfall in the catchment, stagnation of water on land surface for long period, inadequate surface drainage, natural and artificial obstruction to surface outflow and poor topography.

A synoptic method of monitoring water logging problem across large area is a valuable tool for many research and management applications. In recent years, remote sensing data have been used for qualitative assessment of water logging and soil moisture conditions. Use of remotely sensed data with landuse, soil and topography information appears to be a useful technique for the delineation of the temporal and spatial extent of water logged area.

To delineate the area of submergence in Mokama group of Tals an attempt has been made to integrate remote sensing data, land use, contours, soil and other relevant information. IRS 1A LISS II data for the year 1989 (Pre & Post monsoon) were utilized to study the dead storage and extent of submergence (lean period in pre-monsoon) and live storage and monsoon submergence (peak flood period/post monsoon) information of Mokama group of Tals corresponding to highest flood levels and other hydrological information (rainfall and runoff).

The study also utilizes the peak flood discharge series at sites to fit various distributions. This gives the values of floods at higher recurrence interval. Such information is useful in deciding any water resources structure in the basin for flood water management purpose. Further, an attempt has also been made to formulate a management model for water logging and drainage congestion problem of Mokama group of Tals. The model outlined in this study requires various hydrological topographical and land use data.