

## Irrigation and Drainage Engineering Division

- Developed hydrologic and water quality data-base of the watershed of Bhopal district for use in design of soil and water conservation measures.
- Surface and sub-surface drainage technology for the crops (soybean, maize and pigeon pea) sensitive to water logging in vertisols have been developed, tested and demonstrated.
- Design software for layout of drip and sprinkler irrigation systems was developed using GUI, which integrates both design procedures and databases. It is available for use with Windows2000 and WindowsXP operating systems.
- Design and development of the mole drain plough and the Pipe Less (Mole) drainage technology using mole plough, and its popularisation through the ORP were done at a total of 21 farmers fields in Raisen, Vidisha and Hoshangabad districts covering 18 ha area.
- Developed a test set up for hydraulic evaluation of drainage envelop material and hydraulic conductivity of soils using upward flow type circular permeameter in laboratory. Developed database on Performance characteristics of the Drain envelop materials (DEM) for vertisols and identification of suitable envelop materials for vertisols.
- An equipment was developed for the collection of the root zone water under drip irrigation system using suction.
- GUI based design software for Subsurface Drip and Micro Sprinkler Irrigation System was developed.
- An automated drip fertigation system adopted for guava and mango orchards that performed a high uniformity without emitter clogging.
- A GUI based software for the design of water harvesting pond and associated structures has been developed. The software has four modules – hydrologic design, hydraulic design and structural design and estimation of cost of components.
- A database for design rainfall values, runoff values and peak flow values for different durations and frequencies for 10 identified districts of Madhya Pradesh was developed. This database may be used in designing of the water harvesting structures in vertisols of MP.
- Database for design of soil moisture based automated sprinkler irrigation system was developed for its use in the DSS for irrigation scheduling of wheat crop in vertisols.
- An out door pump test rig consisting of a variable height stand (different static suction lifts) and water discharge measuring weir was installed for testing monobloc centrifugal pump sets.

