

**THEORY**

Concept of water management. Rainfed areas of Pakistan. Sources of water. Soil as a water reservoir. Available water, water holding capacity, intake rates and movement. Effective rainfall, atmospheric variables affecting soil moisture. Rainfall, pattern and frequency. Appropriate cropping patterns and water budgeting. Water requirement and water use efficiency of crops. Water harvesting and run-off farming. Irrigation systems. *Rodhkohi* system.

**PRACTICALS**

Determination of bulk density and water holding capacity of soil. Measurement of moisture content. Calculation of water-use efficiency. Measurement of rainfall and evapo-transpiration.

**BOOKS RECOMMENDED**

1. G.O.P. 1997. Irrigation AGRomy Manual. Ministry of Food Agriculture and Livestock, Islamabad.
2. Khan, S. R. A. 2001. Crop Management with focus on soil and water. Agric. Deptt. Govt. of Pb., Lahore.
3. Kirkham. M.B. 1999. Water Use in Crop Production. Food Products Press, Binghamton, New York
4. Misra, R.D. and M. Ahmad. 1990. Manual of Irrigation AGRomy. Oxford and IBH Publishing Co. New Delhi.
5. Prihar S.S. 2003. Intensive Cropping, Efficient use of Water, Nutrients, and Tillage. Pak Book Corp. Lahore.
6. Rashid, A. 1994. Soil Science. National Book Foundation Islamabad