

PREFACE

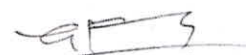
Groundwater sustainability has been in jeopardy as a result of rapid pace of agricultural development, industrialization and urbanization which have resulted in the overdevelopment and contamination of groundwater resources. During the last 4 decades, Punjab state has adept a spectacular increase in agricultural production practicing rice-wheat cropping system with convinced irrigation facilities, leading the country in achieving food-sufficiency. This led to manifold increase in the irrigation water demand which resulted in depletion of groundwater level in the most parts of the state at an alarming rate. Many districts of Punjab show 100% or even greater levels of exploitation and the same is exhibited by a secular decline in pre-monsoon water tables except for extremely wet years.

To some extent the irrigation requirement are fulfilled by introduction of canal irrigation which has led to the development of water logging and subsequent salinization rendering large chunks of fertile land unproductive mainly in the south-western part of Punjab. Other factors such as improper alignment of canals, seepage flow canals and distributaries, drainage congestion, brackish quality of groundwater, nature and properties of soil, faulty irrigation practices and cultivation of water intensive crops etc. have also contributed to the problem of water logging. The problem is further compounded by natural factors such as existence of topographic depression and impervious layer near the land surface, absence of natural drainage and incessant rains.

The water-logging and deteriorating ground water quality of southwest Punjab, India has affected an area exceeding 200 km² (CGWB, 2008). The reasons for this are considered to be due to inadequate drainage system, excess application of irrigation water, non-exploitation of groundwater resource and excessive use of pesticides. The increasing groundwater salinity is reducing the availability of fresh water for drinking and irrigation needs. More than 75 km² area has become saline (CGWB, 2008). This is also affecting the crop production. The origin of salinity in soils and in groundwater in shallow and deeper aquifers and its growth in space and time is not well understood.

Present course was proposed by Department of Water Resources, Punjab and similar concerns were raised by other concerned departments in Punjab such as: Department of Agriculture and Farmers Welfare, Punjab State Farmers Welfare and Farmers Commission. Keeping this in view, training course on the topic "*Groundwater issues of Punjab with special emphasis on groundwater salinity*" is being organized by National Institute of Hydrology, Roorkee under National Hydrology Project. An overwhelming response is received from the participants coming from government departments and academic institutes for this course. As per record 33 participants has been registered and recommended.

The training course is comprised of the lectures by eminent scientists from National Institute of Hydrology, Roorkee; experts from CGWB, North West Region, Chandigarh; CRRID; Punjab Agriculture department covering the subjects agricultural scenario in Punjab state, Hydrogeology and salinity issues of Punjab, Groundwater recharge potential, data requirement and processing; few case studies and use of tools like GIS and Remote Sensing; Isotopes- tracer techniques for assessing these issues. In addition to the 13 lectures, 5 tutorials will be given to participants.



(Gopal Krishan)