

## TEMPORAL SURFACE SALINITY AND LAND UTILIZATION VARIABILITY IN CONTEXT OF DEMOGRAPHIC FLUX AND EMERGING CONJUNCTIVE IRRIGATION USE IN PUNJAB

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### ABSTRACT

*Punjab being the most populous province contributes to 56 % of the country's population. Land and water resources are shrinking with the expanding demographic pressure on land. The area going out of cultivation is not compatible with the one brought under plough. Productive lands are going out of cultivation due to urbanization, industrialization, water scarcity and soil salinization. The area unavailable for cultivation increased to 4.6 % by the year 1997 as compared with that of 1988-89, while the increase in population from 1951 to 1998 was 255 %. Canal water in context of food security, has become inadequate. Farmers have started tapping of groundwater resources. Statistics show that tubewells installed during 1997 were 70.9% higher than the base year (1988-89). Accordingly tubewells irrigated area increased to 11.1 % for the same period. Conjunctive irrigation practice under major crops began to emerge. The area put under rice, wheat and sugarcane for conjunctive irrigation use during 1996-97 elevated to 21.9, 13.7 and 38.5%, respectively compared to that of the base year. Groundwater exploitation to supplement canal water as major agricultural input no doubt, is need of the time. But it is not always a potential solution to our problem because of its objectionable quality and irrational use. Apart from genetic salinity, tubewell induced salinity/sodicity is surfacing up as a major challenge to the irrigated agriculture. Thus salinity is emerging as a water short-water excess dilemma. In the CCA of Punjab salinity covers about  $1057 \times 10^3$  hectares (ha) of land (1997) in contrast to about  $1051 \times 10^3$  ha during 1992-93. Farmers approach to simple mixing of both the resources on the basis of conventional water quality indicators is no more good. The conventional water quality indicators do not consider geochemical processes. Besides highlighting the new water quality concerns and new conjunctive irrigation concepts, it is accentuated to exploit groundwater resource on highly scientific lines. In addition to devising new ways and means for its long-term sustainable agricultural production, it is also recommended to define and fix water rights of the farmers over groundwater.*