

Threshold level of Groundwater use in the Tank Command areas in Tamil Nadu

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Tank irrigation contributes significantly to agricultural production in Tamil Nadu State. Due to the loss in tank storage capacities of 20 to 35 per cent, wells have become an important source of supplementary water. Since farmers initially use tank water for cultivation, the risk associated with getting adequate water, especially late in the season, has encouraged farmers to use wells for supplemental irrigation. Hence supplementary well irrigation is the crucial determinants of rice yield at farm level, through the increase in number of wells is a threat to the collective effort at the tank level. Additional wells would be an alternate solution to satisfy the demand for supplemental irrigation which also has the assurance of water supply during grain filling stage at the later part of the crop. The objective of this study was to find out the optimal number of supplementary irrigations in the Tank with wells typology and the optimum number of wells (threshold level of groundwater use) needed in different typologies of tank irrigation systems in Tamil Nadu state. Three districts were purposively selected in Tamil Nadu, wherein Madurai and Sivagangai districts from southern part represent the tanks only and Tanks with wells typologies and Coimbatore district from north western part of Tamil Nadu represent the wells only typology. In each tank 25 respondents were randomly selected using the list of farmers in each tank. The results revealed that in Tank only typology, Tank with wells typology and wells only typology, the threshold levels are one well for every 10ha, one well for every four ha, and one well for every two ha respectively. The respective threshold level in each typology indicates that the minimum profit would be possible only if one well for 10ha, one well for every four ha and one well for every two ha. The threshold level of wells in different typologies was assumed as optimum level of wells for supplemental irrigation in the respective typologies and it could be used as the basis to find out the additional wells in the tanks which are below optimum in each typology.

Key Words: Groundwater, Supplementary irrigation, Tank management, Threshold level