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Groundwater Management for Agricultural Development in Arsenic Infested Areas - A Case Study

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Abstract

Nadia district covers 3927 sq km of West Bengal State and forms lower part of Indo-Gangetic alluvium of Quaternary age. The district is entirely affected by arsenic contamination in ground water. Population explosion, rapid agricultural growth and inadequate surface water resources has put tremendous thrust on ground water development. 80% of the population is dependent on agriculture. Ground water plays a key role to yield substantial agricultural growth. Irrigational potential of the district is 3356 sq km, of which major contribution belongs to ground water only, i.e., 3100 sq km. Summer season (b*oro*) (lean period crop) paddy cultivation demands huge ground water. Shallow tube wells within 80 metre depth are major in numbers than deep (beyond 100 metre) tube wells. Dynamic ground water resource calculation indicates that net ground water available in the area is 198948 ham, of that for irrigation purposes ground water draft is 167617 ham. Net ground water available for future irrigation development is 34996 ham. Out of 17 blocks of the district, six blocks have already been listed under semi-critical category. Ground water withdrawal and switch over to surface water irrigation is needed with due care. Lifting irrigation from adjacent river Ganga coupled with rain water