

Ground Water Management

Decision Support System with People's Participation

In India the area irrigated through wells and tube wells has increased from 11.9 m ha during 1970-71 to 30.90 m ha in about three decades accounting for more than 50 per cent of irrigated area. In the recent past due to unrestricted digging and populist policies for energisation of bore wells, overexploitation of ground water has become rampant. For instance, in Andhra Pradesh alone the area irrigated by tube wells has increased by over 0.52 m ha in the last decade whereas the increase was only 0.1 m ha in the previous decade (1980-90). As a result, depletion of groundwater levels has become a common phenomenon in semi arid parts of the country making these parts highly vulnerable to drought. This was mainly due to lack of clear-cut ground water policy by both the State and Central Governments. Though a policy has recently been formulated Andhra Pradesh Water, Land and Tree Act, (AP-WALTA) its implementation in true letter and spirit is yet to come forth.

Background

DFID-NRSP Project R8192 "Enabling Rural Poor For Better Livelihood through Improved Natural Resource Management in SAT India" being implemented by CRIDA and BAIF in Mahaboobnagar and Anantapur in Andhra Pradesh and Tumkur district in Karnataka has given top priority to augment the ground water resource and efficient management of available limited water resource through participatory NRM. Through PRA it was identified that all the open wells in the project area had dried up and that the farmers had to leave most of their paddy lands fallow during the last couple of years due to drought and depletion of water level in bore-wells. Farmers were willing to try some thing new that required less water and help conserve more water *in situ* and under ground. The focus group discussions scientists had with the villagers brought out the need for:

- simple technology to augment groundwater
- crop diversification for water-use efficiency

Project Interventions

Under the project the following interventions were taken up through People's (individual and at community) participation.

- Monitoring the water level in bore-wells in different locations of the villages through the use of simple water level indicator (made by ICRISAT) with the help of project staff so as to keep track of groundwater fluctuations over time.
- Diverting runoff to abandoned / dry open wells for recharging groundwater through people's co-operation.
- Contribute for construction and maintenance of soil and water conservation structures like trench-cum-bunds, percolation ponds, check dams, gully control structures etc., as measures to improve groundwater status in the project area.



Ground water level measuring device

- iv) Switch over from high water consuming crops like paddy to irrigated dry crops like groundnut, chickpea, maize and fodder crops like lucerne etc., so that available ground water can be used judiciously resulting in water saving and earning higher income.

Process of Creating Awareness: In the initial stages group discussions were held with the villagers to sensitize them on issues of ground water. Then, Village *Salaha Samithi* (advisory committee) was formed through selection of a few leaders by villagers themselves to help in the implementation of agreed interventions. A few bore-wells owned by cultivators of different locations were identified. The water table level was measured periodically in the presence of the owners to make them see themselves, how fast the water table was depleting and make them to understand the need for ground water conservation. Some of the individual cultivators who were willing to grow alternate crops were identified with the help of Village *Salaha Samithi*. The project facilitated such farmers, through supply of seed of alternative crops like chickpea, groundnut and maize.



Farmer measuring water level in the bore-well using the device

Need for up-scaling: From the experiences of working with the villagers in the project in Mahaboobnagar district, Andhra Pradesh, India it was clear that educating the cultivators about the ill effects and voluntary implementation of crop diversification and interventions by creating proper social mechanism will go a long way to help prevent over exploitation of ground water resources at village levels.

Rationalisation of Groundwater Use: Need for a Farsighted Policy

It was clear from the experience of working with farmers in this project that they do respond to messages of groundwater alert and are willing to adopt more (groundwater) resource-friendly crop options. What is needed is to effect these attitudinal changes on a long-term perspective so that it has a lasting impact on sustainable resource use. Facilitating the communities by providing technical backstopping and networking with developmental agencies, NGOs, village *panchayat* and state line departments is very crucial for scaling-up this kind of approach. Empowering village institutions for regulating the digging of the bore wells and crop choices will help in planning, and use of groundwater consistent with state policies (for eg. the context of AP WALTA). Timely supply of seeds of crops alternative to paddy and other inputs will also determine the sustainability of growing groundwater-friendly crops. Finally and most importantly, the rice-wheat centric pricing policy of the Government of India needs to be thoroughly reviewed to provide a level-playing field to farmers who are prudent enough to adopt a more sustainable cropping system.



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