

Technical Strategies to operate minor and medium irrigation schemes towards improving groundwater system: Vavuniya, Sri Lanka

Problem statement: With increase in abstraction of groundwater resources due to rise in population, the pressure on groundwater resources is increasing. This has led to issues like declining water table and waterlogging.

Intervention: A regional aquifer simulation model was developed for a restricted catchment: 185.23 km² in Vavuniya district, Sri Lanka. This was used to find out operational policy favouring groundwater conservation. It found:

- Case 1: Foregoing cultivation by 25-35% for two consecutive seasons reduced water table loss by 45-65% in 80% of the catchment area.
- Case 2: Peripheral boundary treatment to reduce permeability by 35-45% lead to rise in water table by 0.457-0.838 m in areas closer to treated boundary during recharging season.
- Case 3: Combining 1&2 i.e. peripheral reduction in permeability by 35-45% and foregoing cultivation by 45-55% lead to increase in water table by 1.067 - 1.448 m during discharge season. Similar trend was observed during recharge season but to lesser extent. Overall, 60-70% of loss in water table was reduced between two seasons in 95% of the catchment area.

Envisaged impact: The gain in water table would reduce the cost of energy (fuel/ electricity). This shall increase the degree of economic cultivation per unit irrigation water, thereby increasing economic crop yield. It would also indirectly contribute to GDP and GNP.

(Reference: Sivakumar, 2013; Conjunctive Use of Surface and Groundwater to Improve Food Productivity in Vavuniya District in the Dry Zone Area)