

Groundwater irrigation to enhance the production of rainfed agriculture

Introduction

In areas where surface water is not available, water fee & fee of maintenance of irrigation scheme are too high, groundwater sources can help coping with drought spells during the wet season and allow irrigation during the dry season through small-scale individualistic or collective irrigation schemes.

Example of groundwater options



Deep well irrigation for collective irrigation:

1. Well drilling
2. Storage tank
3. Distribution systems
4. Crops/melon (i.e. green bean, cucumber, etc.,)

Functioning

Farmers operate irrigation by themselves, form a group of water users, and assign management responsibilities: water fee, maintenance cost, operation calendar, and fund raising for sustainable operations.

Risks

Uncertainty in getting safe and clean water (not enough water, saline water) after drilled; and water table might drawdown and imbalance on eco-hydrological systems if groundwater is over exploited

Benefits

Groundwater provides reliable source for domestic use and supplement rain-fed agriculture during drought spells within wet season or at the unpredictable start of rainy season; irrigates large scale; strengthen solidarity among farmers in community; create community fund and make it available for other farmers who need loans.



Shallow well irrigation

1. Shallow well with concrete rings
2. Irrigated home garden by electric pump
3. Irrigated home garden by buckets from well to vegetable

Functioning

This is an individual household irrigation. Average depth of well: 8-12m.

Risks

Possible water shortage during dry season; well without rings require to remove sediments to store more water.

Benefits

Very low cost to drill a shallow well; boosts livelihood and food security, easy to access for domestic use and home garden irrigation (i.e. mint, morning glory, salad, etc.)



Dug well/Pond irrigation

1. Dug well during dry season
2. Pumped water by two wheels tractor
3. Irrigated the crops

Functioning

Private dug wells are normally built on the farm land. Two-wheels tractors are used for pumping to irrigate cash crops (i.e. melon, green bean, cucumber, etc.), and supplemented paddy rice during wet season.

Risks

Need to remove sediments to store more water

Benefits

Low investment cost; irrigates large scale; improves household incomes; boosts livelihood and food security; source for cattles drinking