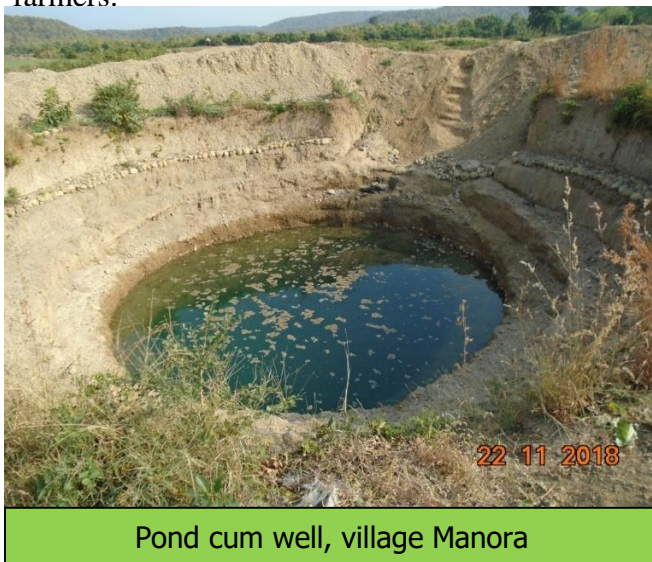


Case Study-2:

Sustainable Small Scale irrigation with farm pond in Vertisol of Vidisha, Madhya Pradesh

Irrigation in a tropical developing country like India has been practised over the centuries. However, the dominant approach in irrigation in India is of large scale irrigation projects and transfer of water. The approach neglects the basic fundamentals of irrigation including the dynamics of used, cropping practices, soil characteristics and the topology. These aspects are extremely crucial for small and marginal farmers keeping in consideration their resources to build irrigation systems.

A continued and easy access to water is a central issues for small and marginal farmers particularly in the semi-arid agro climatic zone. The Vidisha district of Madhya Pradesh is one of such location example. Though the rainfall is sufficient (average rainfall is 1135.50 mm) but due to high intensity of rainfall observed in last decades percolation of rainwater to groundwater is very low, addition to that due to high run off and vertisol, the amount of moisture content in soil is quite low than what is required for crop survival. In such an agro-climatic context, farm pond or pond cum well, a water harvesting structure in the cultivable land could be a potential breakthrough for small and marginal farmers.



Pond cum well, village Manora

Pond Cum well Model in Vidisha

- A water Harvesting structure
- Typical Size 11 m Dia – 5 m depth for pond cum well and 20*20*4 m depth for farm pond
- Located usually on high runoff lands and medium high lands

The Farm pond and well cum pond are excavated to the challenge posed by the scarcity to irrigation in rabi crop. Vidisha district is dominated by black cotton soil and flat land, which results in low percolation and insufficient ground water recharge. The farm pond usually gets excavated in highly runoff area as well as on medium low land and or in the low land to facilitate recharge of ground water as well as the collection of rain water from surface runoff and the seepage from uplands. Thus, the very design of a farm pond and well cum pond ensures to reap the maximum benefit by ensuring and enhancing crop production and maximize land use.

Benefits of the model:

- ❖ In dry and black cotton soil dominant area, Farmers traditionally cultivate rain fed crop (Kharif). The introduction of farm pond allows farmers to grow winter (Rabi) crops as well as pre-kharif crops in a portion of their land which can be irrigated by water from the farm pond.
- ❖ With easy and increased access to water for irrigation, farmers can potentially shift their cropping practice from mono-cropping to multi-cropping. Inter cropping practices with range of crops particularly vegetables allows the farm to produce

enough marketable surplus.

- ❖ The farm pond coupled with integrated farming approach ensures a flow of food from multiple sources including paddy land, nutritional garden, livestock, and pond. This renders increased food security to the farmer's family.
- ❖ A key advantage delivered by the Integrated farming system (IFS model) is all year intake of nutritious and organic food completely devoid of chemical inputs.
- ❖ The most tangible remuneration is in form of higher cash earnings from the marketable surplus coming out of each of the sub-systems.

Small farm pond irrigation model is an investment case for farmers having small lands.

The small farm pond model along with the associated sustainable farming system makes a viable investment model for the farmers. The investment yields an approximate rate of return of 75.58%. The farmers benefits from shifting primarily from a single kharif crop to multi season cropping. The introduction of irrigation option like pond cum well followed by integrated farming system further increases the yield of the farm land.

Investment features

Typical Land Size	<ul style="list-style-type: none">• Average 3.71 ha.• Min 0.30 ha & Max. 10 ha.
Typical Size of Farm Pond	<ul style="list-style-type: none">• 20 m * 20 m * 4 (pond)• Pond cum Well 11 m dia. & 5 m depth
Initial investment in Farm Pond & Pond cum Well	<ul style="list-style-type: none">• INR 82,000 (Average)• Programme Contribution – 70% & Farmer's contribution-30%



Case Studies

Success stories from the field - case studies of farmers who have successfully adopted the farm pond model

Guddibai, aged 45, is a women farmer of Dighora village, took the benefit of farm pond in the FY 2017-18. She had 1 ha of land and earlier she was used to take wheat crop (C-306 variety) in dry land. She has successfully adopted and leveraged the farm pond model

in effectively meeting the water requirement for his rabi crop. Currently she is taking the same variety of wheat but production has been increased from 8 quintal to 25 quintal and earns on an average Rs 62,500 per annum since adoption of farm Pond Model.



Shri Raghuram Raghuvanshi

'My interest in agriculture was from my childhood but when I reached in 11th standard my parent insisted to study hard and get a job in the city. I am happy due to the farm pond mindset of my family is changed and now they allow me to take part in agriculture'

Deepak son of Shreeram

For Shreeram Raghuvanshi of Nolaee village, agriculture was the only option. He has two fields of roughly about 2 ha each. There was scarcity of underground water due to hydro geological factors. There was one bore well in the first field but no means for irrigation in the other. The bore well water could not be drawn continuously; hence it was not a dependable source for irrigation.

His field had no well. Consequently he adopted dry farming and was growing lentil only. Thus, his family was dependent on the Gram and Soya bean produce from the field where there was a bore well. The production was also limited due to the poor soil quality and water shortage. Looking to the state of agriculture, Shreeram used to ask his son, Deepak, to focus more on study and get job somewhere else.

One day when Shreeram was visiting a nearby village he saw an under construction farm pond. He approached the NCHSE team, gathered details and requested them to dig a similar pond of 20x20X 4 meters on his field where there was no irrigation facility.

In the first monsoon after its construction, the pond got full and the water lasted until November. It was sufficient to fulfil irrigation requirement of the Gram, which usually needs less water. Second year in addition to Gram, Shreeram also sowed Wheat in some area. Prior to the intervention productivity of the Wheat from the particular crop field was 10 quintals and he earned about Rs. 21000/-. But after construction of pond, his wheat production increased to 20 quintals fetching him additional 20000/- per Ha. Next year he took another crop of Gram with availability of water, which enabled him to increase his income considerably.

The family has further increased the storage capacity of the pond by itself. Shreeram's son Deepak who is pursuing his graduation in Arts has again started supporting his father

in agriculture and willing to adopt it as his profession.

Similarly like Ms. Guddi Bai and Mr. Shree Ram Raghuvanshi, 312 other small and marginal farmers have adopted the model and benefitted from the project to overcome on the issue of irrigation by excavating and constructing 199 numbers of Water harvesting structures having 2.58 lakh cubic meter water storage capacity in the Gyrapur cluster of vidisha District.