

Recharge of Tube well saline water with rain water and its impact on crop production

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- Ground water emerged as the primary democratic water source and poverty reduction tool in Indian rural areas. On account of its near universal availability dependability and low capital cost it is most preferred source of water to meet requirement.
- It is well known fact that in major part of arid and semi arid, the major irrigation water resource are ground water but due to presence of excess salt in these regions it had adverse effect on crop productivity. Further due to excess exploitation, it decline alarmingly year after year. So far sustaining the agriculture production we have to maintain the ground water quantitatively and qualitatively.

One of the options may be recharging this ground water with run off rain water.

- Keeping above objective in mind the programme is being initiated in Sitara village under "National Initiative on climate Resilient Agriculture (NICRA) project, KVK Kumher, Bharatpur in April, 2011.
- All the 54 tube well of village were selected for recharging. Out of these 10 farmers were selected randomly and 1.0 ha area selected for testing irrigation on each farmers field.
- Low cost technology based on diluting saline ground water through artificial recharge has been designed and constructed (with the help of cement ring, pipe, recharge pit, out let and inlet, filter cost -10000) depth 20-22 ft.
- The wheat crops were sown on 10 selected farmers' field (seed provided by KVK).



Material used:-

Cement Ring - 8-10 Nos. 4.5 Ft. Radius and 2 Ft. Height

Brick - 500 Nos.

Cement - 1 Bag

Pipe - 10 Ft. Long

Perforated pipe - One- 6Ft.

Average Cost- Rs. 10,000/-

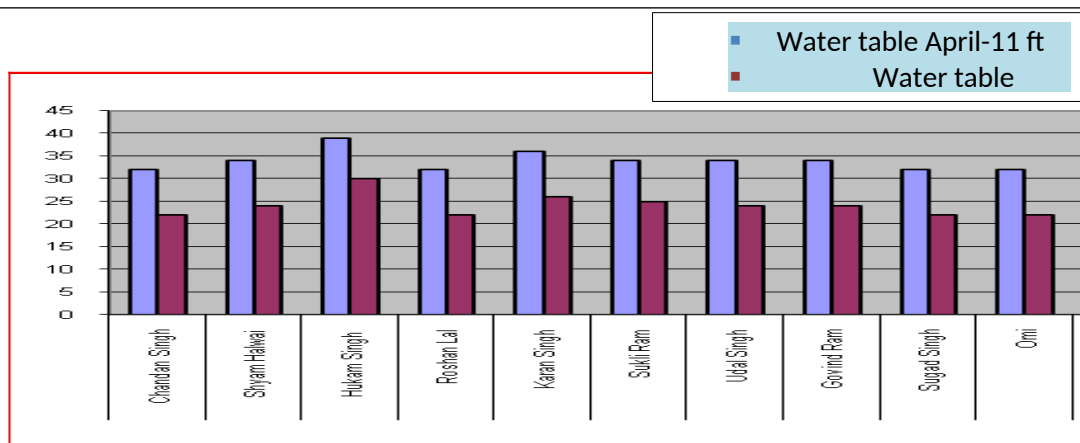
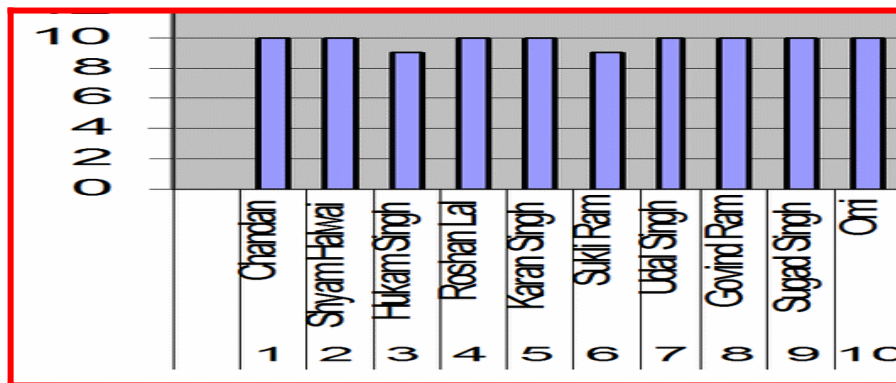
25 per cent of total cost and labour is share by farmer.

Time required for construction

-Two days

Four to five regular irrigation were applied on wheat crop. It is clear at the time of first irrigation i.e. in month of October and November average Eciw (ds/m) was varied from 0.4 to 6.5 at first pre sowing irrigation 5.8 to 9.7, at 2nd irrigation, 7.5 to 14.8 at 3rd irrigation and 8.9 to 16.5 at 4th irrigation.

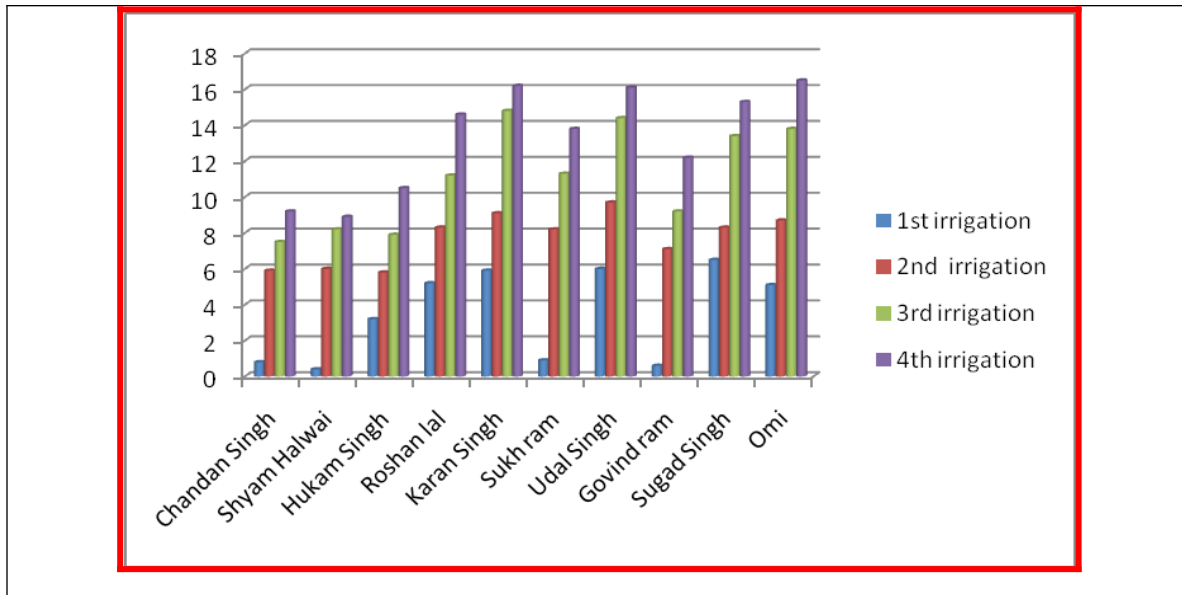
■ Increase over April 2011 Ft.



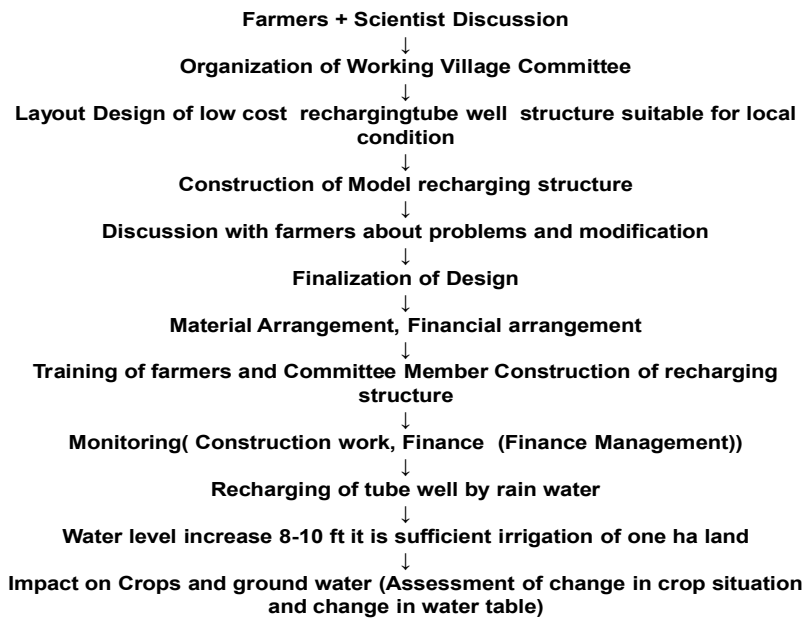
Water salinity fluctuations at different irrigations on recharge site at Sitara (ECiw)

Name	1 st irrigation	1 st irrigation	1 st irrigation	1 st irrigation
Chandan Singh	0.8	5.9	7.5	9.2
Shyam Halwai	0.4	6.0	8.2	8.9
Hukam Singh	3.2	5.8	7.9	10.5
Roshan Lal	5.2	8.3	11.2	14.6
Karan Singh	5.9	9.1	14.8	16.2
Sukh ram	0.9	8.2	11.3	13.8
Udai Singh	6.0	9.7	14.4	16.1
Govind ram	0.6	7.1	9.2	12.2
Sugad Singh	6.5	8.3	13.4	15.3
Omi	5.1	8.7	13.8	16.5

The recharge ground water was used for irrigation safely at early growth stages. Further the water salinity slightly increased at 3rd or 4th irrigation.



MOST SIGNIFICANT INTERVENTION: TUBEWELL RECHARGING



Crop production as compare to previous five year

NICRA National Initiative on Climate Resilient Agriculture



Results and Discussion:

On 10 farmers field wheat yield varied from 45 go 54 quintals/ha. While on other farmers filed (without recharge tube well from near by village) varied from 36 to 48 quintal/ha. The present wheat yield increased by 9.1 on recharge farmers field over other farmers without recharge. The over all result clearly indicate that recharge tube well water used different crop growth stage which enhance the germination and filtering rain water harvesting and artificial recharge have now been accepted, widely as cost effective methods of augmenting ground water resources and for reversing the decline trends of ground water an also helps to inculcate a sense of responsibility among the stake holders.

