

Recommendations:

1. Out of about 144 Mha cultivable land of the country, about 16.6 Mha in UP is cultivable. About 81 percent of the cultivable land of UP is irrigated against 48 percent land of the country. In UP about 78 percent of the irrigation is done by tube wells. There is ample opportunity to detain the rainfall in the agricultural fields as agriculture lands generally constitute more than 60 percent of the village area. The ground water recharge through agricultural field has not been considered suitably. The height of field bunds should be equal to one day maximum expected rainfall of 10 years return period so as to store all the rainfall in the field. If the height of the field bunds of the agricultural lands is equal to about 30 cm, then the rainwater will be stored in the agricultural fields and a part of that will percolate to the ground water. This is 25 cm (80 percent of the areas of the country receive 25 cm rain fall in a day on 10 years return period) plus 20 percent of 25 cm as every irrigated land has some grade of 0.40 to 0.60 percent thus making it 30 cm. **It is therefore recommended** that field bund height should be increased to 30 cm so as to store rain water of the field in the field. This will enhance ground water recharge from larger area. **Action: MNREGA/PMKSY/Atal Bhujal Yojana**
2. The existing ponds/lakes need to be repaired/rejuvenated first as per their original size (as per revenue records) before new ponds are recommended in a Block/Tahsil because existing ponds/lakes were constructed in low lying areas and runoff from the adjoining areas (catchment) comes freely to that location. The concerned authority of the area may give a certificate before recommending construction of new ponds/lakes that all the existing ponds/lakes have been repaired/ rejuvenated. These water bodies will be unlined, with side slope of 2.5:1/2.0:1 depending on soil texture. The depth may not exceed 3.0 m. The inlet and outlet should be properly planned, designed and executed. **Action: MNREGA/PMKSY/ Atal Bhujal Yojana**
3. Construction of new ponds may be taken up only when all the existing ponds/lakes of the area have been repaired/ rejuvenated. The site selection should be such that rainwater naturally flows towards the proposed new ponds/lakes. These water bodies will be unlined, with side slope of 2.5:1 /2.0:1 depending on soil texture. The depth may not exceed 3.0 m. The inlet and outlet should be properly planned, designed and executed. The ponds normally should have rectangular size, if site conditions permit, as harvesting of aqua based crops are then properly done. **Action: MNREGA/PMKSY/ Atal Bhujal Yojana**
4. All the abandoned/defunct open wells in every Block/Tahsil need to be declared as State's/Government assets. The ownership of the open well will be with the person concerned on whose land it exists. These open wells should not be filled/ closed. These open wells should be used for ground water recharge by diverting runoff from nearby areas with suitable water filter tanks. The roof water may be diverted through pipe and

filter in the open well of habituated areas.

5. The micro irrigation (sprinkler/drip/spray) in orchards/ horticultural crops needs to be applied first before extending it to other suitable field crops. It should be made mandatory to all the government owned/funded farms to have micro irrigation so as to serve as demonstration farm. If these government owned/funded farms have micro irrigation then only we can authoritatively recommend it to farmers as the officials/ staff of that farm will have insight information of the system which will be helpful to them to convince the farmers to adapt the system.
6. Though the farmers in the state are conveying the water from tube wells to field through folding canvass pipes, thus minimizing the conveying losses but the micro irrigation system cannot be linked to this as drip irrigation requires minimum of 3.0 m head to operate upon and sprinkler system requires minimum of 10 m head to operate upon. This head cannot be achieved by canvass pipes. Thus underground water pipe lines needs to be used to convey water from tube wells to the field so as to facilitate using micro irrigation.
7. It is recommended to have this rainwater based ground water recharge case study of a block/ Tahsil to finally modify our existing policies.
8. The above recommendations needs to be first applied to the entire government owned/funded farms, before extending it directory to farmers. The officials/ staff of those farms will have insight information of the system which will be useful while disseminating the technology to the end users *i.e.* farmers.