

## Systematic approach to in-situ water harvesting assures irrigation

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Fast changing climatic pattern, untimely rains and prolonged dry spells are creating problems for agriculture.

“While not much change in the total annual rainfall is noticed across the country, the distribution becomes the problem, with more heavy rainy days and prolonged dry spells in several places. Rain water harvesting at the farm level is one of the best solutions today as crops need only soil moisture and not water for growth. An integrated approach for this will help rain-fed farmers to save their crops,” says Dr. G. V. Ramanjaneyulu, Executive Director, Centre for Sustainable Agriculture (CSA) Secunderabad, Andhra Pradesh.

### **Good model**

It would do well for other farmers across the country to try and replicate the rainwater harvesting model of a small farmer, Mr. Subash Sharma from Yavatmal district, Maharashtra.

Mr. Sharma has integrated several approaches to harvest most of the rain received on his farm. One of them is increasing the soil organic matter. The crop residue is converted into a compost called ‘Ko sanjeevani.’

It is made using one tonne of cow dung, half a tonne of tank silt, 50 kg oil cake and 25 kg jaggery solution composted for a month. This can be applied for two hectares and can limit moisture evaporation to about 30 per cent.

During summer, the field is ploughed and furrows (one foot depth) are made. When it rains the water stays back in each of the furrows and sinks into the soil. If there is heavy downpour the furrows are opened for the excess water to flow towards the lower end of the farm where a channel is dug to facilitate it to run into a trench.

Any over flow from the trench leads to a farm pond. For every hectare the farmer has dug a small farm pond

### **Cropping system**

In addition to managing water and soil, appropriate cropping systems with shallow and deep root systems are important to use the available soil moisture judiciously.

During previous season in the farm redgram and soybean were grown. Other cropping systems tried were red gram and bhendi, red gram and sesame.

In case of delayed rains short duration crops like bajra, mung, or leafy vegetables like palak and mung were grown. Fruit trees are also grown on the farm or bunds to help reduce wind speed and provide dry leaf for biomass.

### **Spacing**

Lemon or citrus plants with 6 mt x 6 mt spacing or seethaphal with 4mt x 4 mt spacing between each plant is ideal for dry lands and space in between can be used for intercropping with annual food crops, according to Mr. Sharma.

But the major problem is in planting and rearing the trees during the initial stages, especially for the first 2-3 years. A simple approach evolved by the farmer can help establish a tree to grow well using just 180 litres of water a year.

About six inches distance from the sapling a plastic pipe of one foot length and three inches diameter is buried. Small pebbles are put into it and later the pipe is removed. When water is poured here (on the pebbles) it goes directly to the root zone and help the saplings to survive.

About two litres of water once every four days for two years will help the saplings to establish themselves and later the in situ water harvesting is sufficient for the trees to survive and give sustainable incomes.

### **Study**

"In a study by CSA we have found that when it rains, for every one centimetre of rain received, over a hectare of land it amounts to about 1,00,000 litres of rainwater. Due to temperature and other factors the evaporation could be about 30 per cent which means about 70,000 litres of water would be available. If we can have an effective mechanism for harvesting 80 per cent of it (which comes to about 56,000 lit) even in areas with 500 mm rainfall (driest districts like Jodhpur and Anantapur) rain water can be effectively harvested per hectare which is sufficient to save a single crop of the farmers," says Dr. Ramanjaneyulu.

For information contact

Mr. Subash Sharma

Choti Gujjiri Mohalla

Yavatmal dist

Farm is in Tiwasa village

Yavatmal district. Mobile no. 09422869620 and

Dr. G. V. Ramanjaneyulu

Executive Director, Centre for Sustainable Agriculture

12-13-445, Street no-1, Tarnaka Secunderabad-500 017

ph. 09000699702

email: ramoo.csa@gmail.com