

## ROLE OF NON -CONVENTIONAL WATER SAVING DEVICES IN ARID FRUITS AND VEGETABLE CROPS

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Water is the most abundant natural resource as the three fourth of the earth surface is covered with it. It has been estimated that on the earth 1360 million cubic kilometer which is the 0.25 % of the planet mass and if it is spread only on the surface it will cover the planet to a height of 2.7 km. More that 97 % is in the ocean and seas , 2% is locked in the ice-caps and glaciers and large portion of remaining 1 % lies for too deep in the ground. Thus 0.2 million cubic kilometer is fresh water in rivers, lakes and reservoirs and 23.4 million cubic km water is as under ground water which mostly saline. In India more than 60% population is still dependent directly or indirectly on agriculture. Most of the available water (more than 90%) is used in agriculture. From 1951 to 1997 gross irrigated areas expanded four folds from 23 million ha to over 90 million ha and irrigation continues to be the largest water user. The water availability In India is going to be worse as the agriculture important states like Punjab, Haryana, Tamilnadu and Rajasthan are facing steady fall in under ground water table and per capita availability of water fall down from 3450 cubic meter (1951) to 1250 cubic meter (1999). The very important point occurring is only 1/3 of total rainfall received in the country is used for recharging the water table whereas 2/3 part of it is going to be wasted as surface runoff and evaporation. In rainfed farming it occupies the 67 % of cultivated area and contrite the 44% of food grain production which supports the 40% population of the country. It has been estimated that after realizing the total irrigation potential of the country approximately 50% land still will depend on rainfall.

India receives an annual rainfall equivalent to about 4000 billion cubic meters. The onset of monsoon and its distribution is highly erratic therefore only 1869 billion cubic meter appears as a annual runoff in the various rivers of the country. Due to topographical and geographical limitations only 690 billion cubic meter of surface water can be utilized along with 432 billion cubic meter of replaceable ground water. For better availability of water for different purposes the better management of water resources and rain water harvesting and management systems must be promoted. Due to promotion in allied sector the availability of water for food production (agriculture) will be very low. It has been estimated that in agriculture where the water availability during 1999 was 460 billion cubic meter (83.3% of total) will be available only 72.8% only in 2025.

In Rajasthan the water availability is going to be very worse situation. The states are often suffers from drought and famines. Seeing the situation the year 2000 was the bad situation in which out of 34609 villages , 23500 villages were affected due to drought and approximately 35 million people and 37.5 million cattle's were affected. The ground water availability is poor with 56.83% potential area out of which 45.21% ground water has been over exploited 20.1 % is in critical limit.



The second main problem is India is second largest consumer of water after china and it consumes water about 20.1 % of the world consumption. The per capita water consumption in India is 297.7 cubic meter where as the world average per capita consumption is only 287.3 cubic meter .Keeping all these facts and figures the demand and availability of water in future will have a long gap which can be lessened through mass adoption of water saving techniques in all the sectors not even in the agriculture but in the domestic and industries also.

## **WATER SAVING DEVICES:**

Different water saving devices and water saver polymers have been developed which are capable of saving the water from 30-70%. The some Non-traditional water saving devices has been discussed as under.

### **1. Eco Bag Tree Waterer**

The device prevents evaporation loss of water and waters trees and plants for up to 1 month continuously (Fig. 1). Trees and Shrubs need never be thirsty during the period. The main benefits are as under.

- Stops weeds, covers half a metre square.
- Fertilizer can be added to water in the bag.
- Saves time, easily refilled or multiple refilling.
- Laminated UV treated vinyl for outdoor use.
- Invented by an Australian farmer.
- Fully Guaranteed against faulty workmanship.

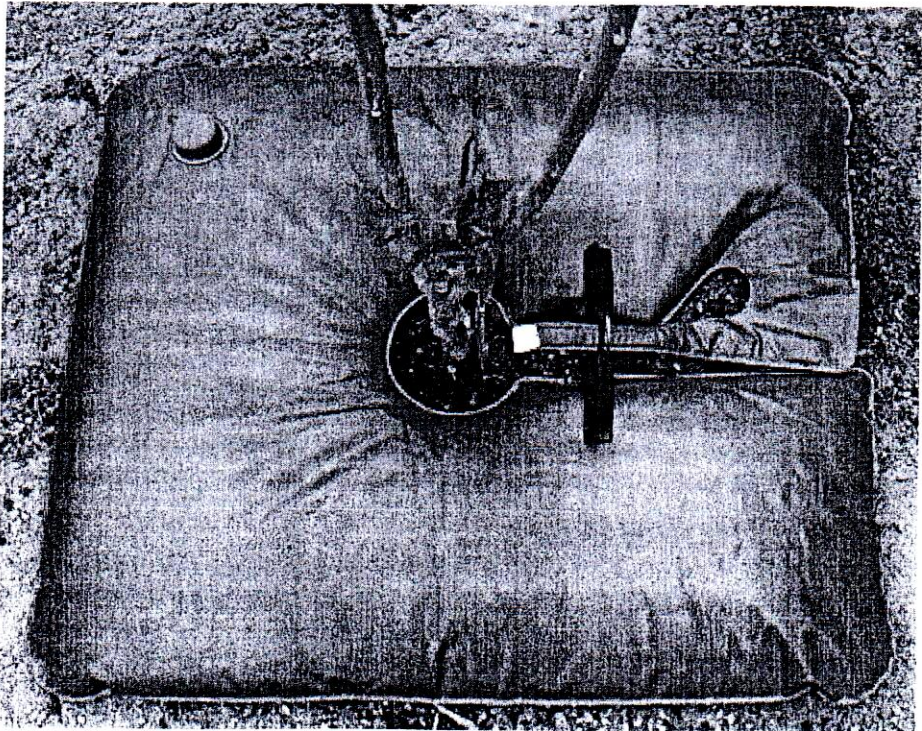


Fig 1: Eco Bag Tree Waterer