



RAINWATER STORAGE WITH MINIMUM INVESTMENT

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Storage of rainwater through construction of large pits lined with polythene sheets inside is described as the cheapest method of rain water storage. The experiments and observations of farmers on this novel method for the storage of rainwater is examined in this paper.

INTRODUCTION

Kerala state in the traditional belt of rubber cultivation in India receives both southwest and north east monsoons. The average annual rainfall is 3000 mm. Based on the physiography, the land is divided into highland, midland and lowland. Due to the physiography and the unscientific and indiscriminate use of land the major share of the rainwater received through the monsoons runs off and is lost in no time. In spite of the very high rainfall, there is shortage of water in Kerala. The water shortage is felt immediately with the onset of summer.

Most of the crop plants cultivated in the hilly tracts require life saving irrigation. Crops like rubber demand large quantity of water for its processing. Approximately 20 litres of water is required per kg of rubber processed in to ribbed smoked sheets. Prophylactic spraying of Bordeaux mixture against abnormal leaf fall disease of rubber also require large quantity of water. In hilly tracts it is a routine feature for the common people to travel long distance for collecting and carrying the water and lot of time and energy is spent for the same. The water received through monsoons and summer

showers if effectively stored can be used in the summer months. Rainwater can be stored through a novel method developed by farmers in Mundakayam region which is on the foot hills of the Western Ghats.

METHODOLOGY

Construction of artificial pond

Pits of required size is prepared by digging the soil and the sides of the pits are levelled. Used plastic sacks are opened and joined together by stitching them. Such joined plastic sack of the required size is spread on the bottom of the pit as a lining material. Then polythene sheet (uv stabilized and cross laminated) of the required dimension is spread inside the pit. Rainwater received from the terraces of the houses and that flows through channels are properly guided and collected into the pond. Once the pit gets filled up the polythene sheet gets closely adhered to the pit and the artificial pond is ready.

While constructing the pond some points are to be considered for efficacy and economy. As far as possible the pond should be constructed on level and compact soil. On slope lands the pits should be positioned at vantage points. The desired storage capacity



Table 1. Cost of construction of water storage tanks

Inputs	On ordinary soil		On hard soil	
	25000L (25m ³)	250000L (250m ³)	25000L (25m ³)	250000L (250m ³)
Labour charges for digging the pit	25m ³ x Rs.65 = 1625.00	250m ³ x Rs.65 = 9000.00	25 x Rs.140 = 3500.00	250 x Rs.140 = 35,000.00
Cost of joined plastic sacks UV stabilized and cross laminated polythene sheet (90 gauge)	20Nos x 3 = 60.00	120Nos x 3 = 360.00	20 x Rs.3 = 60.00	120 x Rs.3 = 360.00
	11mx5.4m = 1300.00	50mx7.2m = 9000.00	1300.00	9000.00
Total cost	2985.00	25610.00	4860.00	44360.00
Cost per litre of water stored	12 paise	10 paise	19 paise	18 paise

of each period should be fixed in advance based on the water availability and requirement and the pits should be constructed accordingly. This will avoid unnecessary expenditure on maintenance of the pond afterwards. While taking the pit the stones and soil can be kept on all the sides by constructing stone pitched walls (*iruvakayyalas*), which will be helpful in disposing the stones and soil. This also provides space above the soil surface.

Polythene sheets with a minimum of 90 gauge thickness should be used for spreading inside the pits. Used plastic sacks can be reused for lining the base of the pits. This costs only about Rs.3/- for a dimension of 220 cm length and 130 cm width.

RESULTS AND DISCUSSION

The cost of construction of storage pond based on the type of soil are presented in Table 1. The labour cost varies with the type of soil. The cost for digging one cubic meter pit on ordinary soil is Rs.65/- and on hard compact soil with layer stones or laterite is Rs.140/-.

The common methods of water storage adopted where in phero cement tanks are

constructed is costly when compared to the storage method outlined in the paper. For phero cement tanks constructed underground the cost of storage is 75p per litre and for tanks constructed above ground the cost of storage is Rs 1/- per litre. Fibre tanks are expensive and the cost is Rs. 2 to 4 per litre of water stored.

The method of storing rain water by constructing pits is economical and cheap and can be done by the farmer himself. Maintenance cost is low. These storage tanks can be used to grow fish without any additional expenditure. Storage ponds of any size and shape can be constructed depending on land availability. The water stored in the tanks can be used for irrigation of rubber plants in the summer months. The stored water can also be used for preparing good quality sheets in the summer months when water availability is limited.

CONCLUSION

Rainwater received through the monsoons can be stored effectively using polythene sheets lined pits, which is very cheap and can be constructed by the farmer himself with locally available materials. ■