



# WICK IRRIGATION

## Mitraniketan Core Support Project



**CORE** Grant to Mitraniketan,  
No: SEED/TIASN-2/011/2013(G)  
Long Term Core Support Programme  
Technology Advancement for Rural Areas  
(TARA)



Department of Science & Technology  
Division: Science for Equity, Empowerment and  
Development (SEED),  
Ministry of Science & Technology,  
Technology Bhavan, New Delhi – 110 016

Wick Irrigation (termed Thiri Nana in Malayalam) is a low cost irrigation technology which reduces the water consumption for agriculture in great extent. It is specifically designed for terrace cultivation of vegetables in grow bags.

### What is Wick Irrigation?

The main component of the irrigation system is the wick, it is a folded glass wool in a piece of plastic net of 30 cm length and 2 cm width which is inserted through a hole at the bottom of the grow bag. About 3/4<sup>th</sup> of its length goes up to the surface of the soil while the rest is inserted into the pipe containing water. The wick sucks up only the amount which is necessary for the plant under the scientific principle of capillary action.

### Materials Required

1. Grow bags
2. Potting mixture,
3. PVC (Poly Vinyl Chloride) pipes
4. Wick

### How to implement?

The filled-in grow bag containing the plant will be kept on two bricks so that the load pressure of grow bag will not affect the structure of water carrying pipe. The spacing between each hole in pipe is about 60 cm. The measured quantity of water can supplied through the elbow valve fixed at one end of the pipe. The wick would absorb water through capillary force into the grow bag without wasting a drop.



**A.** Pipe layout for wick irrigation **B.** Grow bags with wick fitted in pipe **C.** Grow bags with wick fitted on bottle

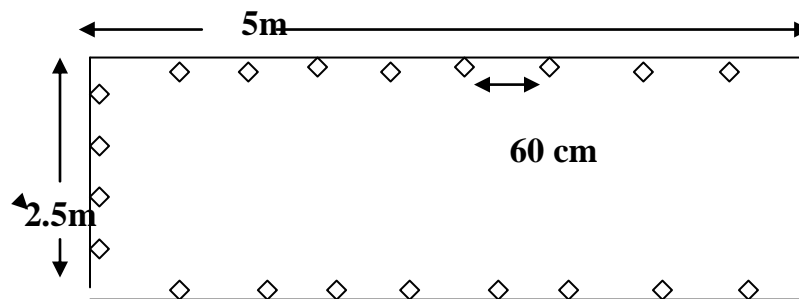
Instead of pipes, we can also use bottles of minimum 2L capacity. In this case, water is poured through the second hole at the extreme end of the tightly closed bottle. But it needs to irrigate each plant separately and also structure durability is less compared to pipe systems.



Wick

Pipe fixing

**Design of wick irrigation structure for 20 grow bags**



**Comparison between wick irrigated crops and normally grown crops in grow bags**

Observation Parameters	Wick irrigated crops	Normally grown crops	Savings
1.Number of grow bags	20	20	
2.Quantity of water required for 1 day at seedling stage	6.4 L	20 L	13.6

3.Quantity of water required at fruting stage	10 L	25 L	15 L
5.Irrigation intervals	1 week	daily	6 days

### **Beneficial crops for wick Irrigation**

All crops which can grow in grow bags

Example : Tomato, Brinjal, Lady's finger, Chilli, Beans etc

### **Advantages**

- It is very helpful for farmers to raise vegetable crops during summer season
- Water loss due to evaporation, deep percolation and wind drift is negligible compared to other surface irrigational systems
- All crops get equal amount of water which ensures the augmented crop growth.
- No electric power is required
- Water soluble fertilizers can be applied through irrigational water which confirms 100 % water use efficiency as well as fertilizer use efficiency
- Low cost compared to other irrigational systems
- Method can be adopted by poor, rich and old peoples
- Gender equity, Financial equity and social equity can be ensured