

Application of new and low-cost methods for watering trees in the desert

As the world's population increases, desert agriculture has become more important than ever. Countries and regions that do not have water security are not exempted from the increase in population and as a result the demand for food. The Middle East and North Africa are perhaps the biggest examples of developing countries struggling with little or no water and food security. It is estimated that by 2025, 1.8 billion people will live in countries or regions with severe water scarcity.

Desert agriculture is a type of agricultural development in the desert. Since agriculture is dependent on irrigation and water resources, agriculture in arid regions where water is scarce is classified as a major challenge. However, desert agriculture has been practiced by humans for thousands of years. In the Negev desert, there are evidences showing the existence of desert agriculture around 5000 years before Christ. Today, examples of modern desert agriculture are being practiced in the Imperial Valley of Southern California, Australia, Saudi Arabia, and more. Water efficiency is very important for plant growth in desert agriculture. Water recycling, desalination and drip irrigation are all modern methods that these regions and countries have used to expand their agriculture despite being in a dry climate.

Here are three new and low-cost methods. Of course, there are many methods for it, but I think the suggested methods will be affordable and cheap.

1- Irrigation by absorbing soil moisture, like the method of plastic crops such as watermelon, cucumber, and tomato.

Here the greenhouse method is used. Due to the sunlight, soil moisture collects under the plastic and falls as water droplets on the soil surface. Its cost is very cheap; you only need a very thin 0.5 square meter plastic. Implement it by creating one or two 25 cm holes around each tree. (Picture No. 1)

2- Irrigation method with a dropper attached to water bottles

A- By connecting a drip head that has the ability to regulate and control water, trees can be watered.

B-In this method, you can use a plastic bottle. For this purpose, you should first make a hole in the bottle cap and then install a cork there and fasten it with glue to act like a dropper and deliver the required water to the plant. (Pictures No. 2-A and B)

3- Irrigation with small clay jars

In this method, which I think is very appropriate and practical, it is done by Osmosis method of watering trees. You can prepare a small clay jar for each tree. The required equipment can include clay jar, narrow hose, 10 or 20-liter water source. With a 10-liter tank, you can supply the water needed by a tree for 1 month. (Pictures No. 3)

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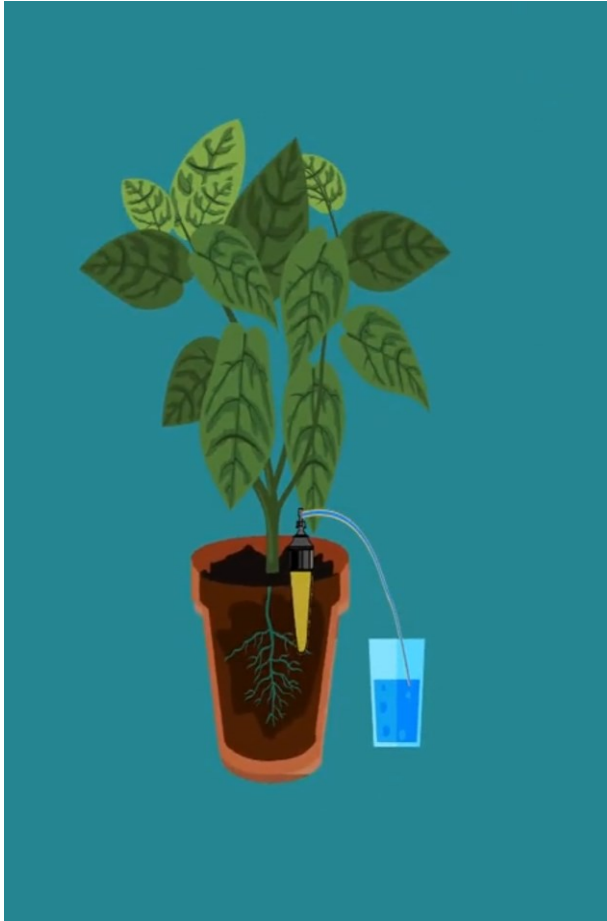
Picture 1: Irrigation by the method of plastic crops



Picture 2: Method A- Irrigation with dripper method



Picture 2: Method B- Irrigation with dripper method



Pictures 3- Irrigation with small clay pots