Wick Irrigation Model

To understand how roots of a tree absorb water as per their need.

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**INTRODUCTION**

Grow plants using a wick system, that does not require regular watering. Observe differences between plants grown using the conventional watering system and the wick system.

<table>
<thead>
<tr>
<th><strong>TOOLS:</strong></th>
<th><strong>PARTS:</strong></th>
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</thead>
<tbody>
<tr>
<td>Scissors (1)</td>
<td>Gel Beads (1)</td>
</tr>
<tr>
<td>Paper Cutter (1)</td>
<td>20 - 25</td>
</tr>
<tr>
<td>Plastic Bottle (1)</td>
<td>500 ml</td>
</tr>
<tr>
<td>Cloth (1)</td>
<td>Cotton (water absorbing)</td>
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<tr>
<td>15 cm x 10 cm long</td>
<td>Seed (10)</td>
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<tr>
<td>Any bean/pulse</td>
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— Precautions

⚠️ Handle the scissors/paper cutter with care.

— Step 1 - Prepare the Container

- Cut the bottle, about two-thirds from the bottom of the bottle, using scissors or paper cutter.
- Invert the upper part of the bottle and place it on the lower part, as shown in the picture.

— Step 2 - Holes for the Wick

- Mark five points on the bottle cap using a sketch pen or a pen.
- Using a pair of scissors, pierce through the points to make holes, each of 3-4 mm in diameter.
- Holes should not be too small to avoid compressing of the cloth pieces, when inserted into the holes.
— Step 3 - Cutting the Cloth

- Take 15 cm x 10 cm piece of cotton cloth. Using chalk/sketch pen make a mark at every 2 cm on the width side of the cloth.
- Draw a line straight to the mark using scale as shown in the picture. Repeat this to the remaining marks.
- Cut the cloth along the lines using scissors. This will give 5 pieces each of size 15 cm x 2 cm.

— Step 4 - Installing the Wick

- Insert each piece of cotton cloth into each of the holes in the bottle cap hole such that longer portion (about 10 cm) of the cloth is suspended from the outer side of the cap.
- Invert the top part of the bottle, and place it on the bottom part (look at the picture for reference).
— Step 5 - Preparing the Medium (Gel Beads)

- Take water in a container and soak some 20-25 of gel beads for 5-6 hours.

- Gel beads expand significantly after soaking in water. Each dry gel bead of 0.4 mm diameter will become 6.5 mm after soaking in water.

- Put the bulged gel beads into the inverted upper part of the bottle.

- Ensure that the cloth wicks are interspersed between the gel beads.

- The gel beads need to be in contact with the wick to remain hydrated.
— Step 6 - Sowing the Seeds

- Take some seeds and put them in between the gel beads.
- You can use seeds such as chick pea, green gram, cow peas or any other pulses/beans.
- Ensure that the seeds are covered with gel beads.
- Pour the water into the lower part of the bottle.
- Ensure that the water level is below the bottle cap.
- Observe the set-up every day for a period of 15-20 days.

— Step 7 - Observe!

- Check the set-up every 4 days.
- Though unlikely, if the water level in the container reduced to less than half, please top it up to the original level.
— Troubleshooting

⚠️ If the cotton cloth pieces are not submerged in water because they are not long enough, then cut the bottom portion of the bottle to make it shorter or use new cotton cloth pieces.

⚠️ If the material of the cloth isn't absorbent, then use a different material of cloth.

⚠️ Make sure to plant adequate number of seeds (4-6) so that at least a couple of them germinate.