

Simple hydroponic system for leafy vegetables

TROUGH hydroponics is a simple method of growing vegetables without soil. It uses water and dissolved nutrients in a plastic trough or container. This method requires simple equipment and little maintenance.

Trough hydroponics is recommended for city dwellers or hobbyists, as well as farmers. It is a simple, low-cost technology, and is suitable for growing vegetables in areas where land is limited.

The technology

For trough hydroponics, you need a trough, a trough cover, small baskets, and planting media for vegetable seeds or seedlings (Fig. 1).

The plastic trough and cover

A trough made of plastic or some other opaque material which does not absorb heat and does not rust can be used as a container. The length and width of the trough do not matter, but the height should be 10 - 15 cm. For convenience, the recommended size of the trough is 15 cm high, 52 cm long and 26 cm wide.

The trough cover is made from polystyrene, thick paper or plastic. Its function is to protect the nutrient solution from the sunlight and the rain. It has eight holes into which the small seedling baskets are placed. Each trough can accommodate eight leafy vegetable seedlings (Fig. 2 and Fig. 3). The distance between the holes depends on the type of vegetables being grown.

The baskets and planting media

The small basket contains lumps of thread, or small pieces of cloth or cotton. The seeds are sown in these baskets, and the soaked thread or cotton act as germination media. The baskets are then placed in the holes of the trough cover. The medium is kept moist by pushing some of the thread or cloth through the bottom hole of the basket to absorb the solution.

Preparation of the nutrient solution

Use a soluble fertilizer specified for hydroponics to prepare the nutrient solution, at the ratio recommended on the label.

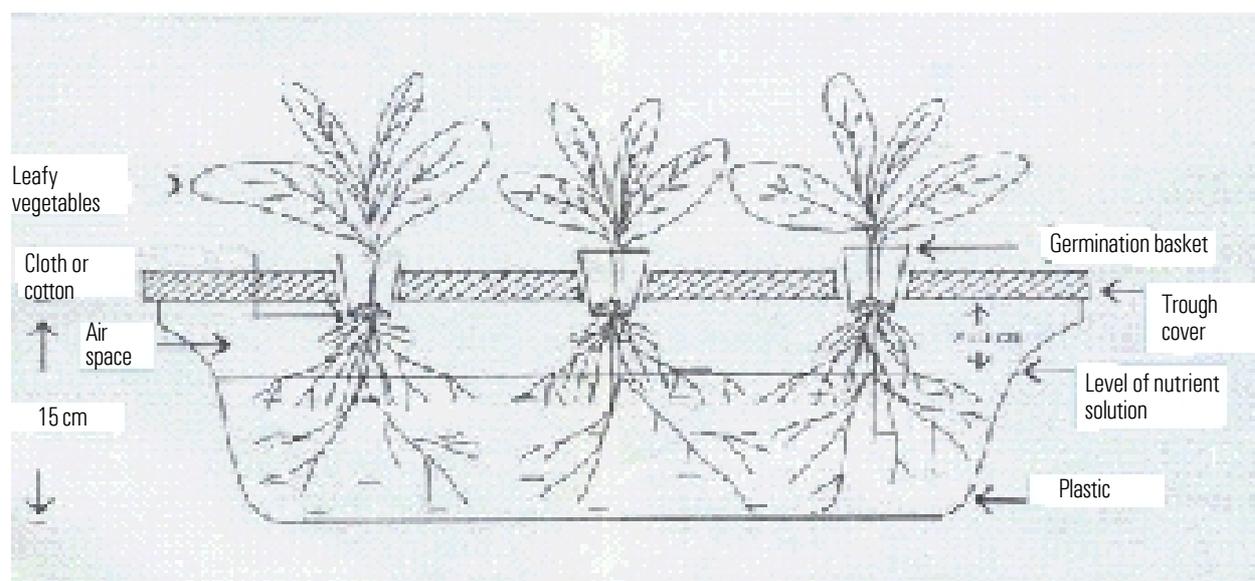


Fig. 1. Cross-section of a trough for hydroponics

If you use tap water or water from a tank to prepare the solution, you should leave it to stand for some time to get rid of the chlorine. Rainwater collected in the middle of a rainfall can also be used, and can be used immediately.

Germination of seeds

Sow 2 - 4 seeds into each basket. A week after germination, thin the seedlings to leave only 1 - 2 seedlings per basket. Take care that the seeds are not soaked in the water.

Maintenance

Place the hydroponic tank on a balcony or patio. It should be in full sunshine at least half of the day. Make sure rainwater does not get inside the trough. This is to prevent the solution from being diluted too much.

Control pests and diseases manually, by removing

any damaged leaves and by catching any insects. Spray insecticide only if necessary. Avoid spraying with insecticides during the week before harvest.

Allow an air space between the base of the stem and the water surface, to allow oxygen to reach the roots (Fig. 2).

When you have harvested your crop, wash the trough cover and the basket thoroughly before you plant a new crop. Use new media and solution for the new crop.

Merits of the technology

It is low cost, and does not need extra work such as hoeing, weeding and watering. High-quality vegetables are produced within a limited space. Minimum protection is needed from pests and diseases. In hydroponics, a low dosage of pesticides is used so there is less risk of toxic residues. Planting can be done at any time of the year, provided the weather is warm enough.



Fig. 2. Chinese mustard grown by trough hydroponics

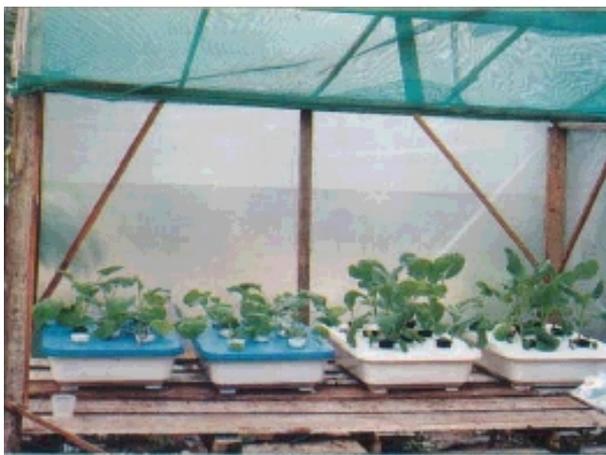


Fig. 3. Trough hydroponics is suitable for small areas

Fig. 4. Trough hydroponics for small-scale production of vegetables