



## A Simple Hydroponic Growing Kit for Short-Term Vegetables

*B. A. Kratky, Department of Tropical Plant and Soil Sciences*

**L**eafy and semi-head lettuce and other short-term crops can be grown with a simple, inexpensive hydroponic kit that does not require electricity or a pump. Once the materials are on hand, the kit takes only about 10 minutes to prepare, and then it requires little attention for the next 5–6 weeks, at which time the lettuce (or other crop) is harvested. There is no need to add additional fertilizer or water—the 1-gallon hydroponic system contains enough plant nutrients and water to grow a short-term crop to maturity. The method is not suitable for long-term crops such as cucumbers and tomatoes, which require large amounts of water.

Gardeners can use this method to grow plants in areas such as lanais, porches, and under the overhangs of buildings. Educators may use this inexpensive method to teach students about plant growth concepts. The kits can be prepared in one class period and require no additional maintenance, so there is no need to worry about weekend watering. Researchers and farmers may use the hydroponic kit to conduct nutritional studies, test pesticides, and produce seed.

### Materials needed

- 1-gallon plastic cranberry juice bottle or equivalent with 1½-inch opening
- 1 teaspoon of hydroponic fertilizer (Chem-Gro® 10-8-22 or equivalent)
- 1 net pot (1½-inch diameter x 3 inches long)
- Growing medium (may contain at least two of the following: peat, perlite, vermiculite, coir)
- Seed of the short-term crop (such as lettuce or kai choy)

The plastic, slotted container shown at right is called a “net pot” in the hydroponic supply trade. These inexpensive pots can be obtained from hydroponic supply companies in Hawaii and perhaps from some garden shops. As an alternative, a suitably sized plastic vessel



**Lettuce plants ready for harvest.**



**“Net pot” to contain the growing medium.**

can be pierced with holes, or a bag can be made with plastic window screen. The main requirements of the pot are to

- contain the growing medium
- be long enough to be submerged at planting time to cause wetting of the medium by capillary action, and
- have sufficient slots or openings for the roots to pass through to reach down into the bottle.

## Instructions

Rinse the plastic bottle with water twice. Do not use bleach. If dish soap is used, rinse several times to remove the soap.

Add a teaspoon of hydroponic fertilizer (such as Chem-Gro® 10-8-22) to the bottle.

Add about 1 quart of water to the bottle and swirl the bottle to dissolve some of the fertilizer. The nutrient solution (water plus fertilizer) will turn a cloudy, light yellow-green color. Some of the fertilizer will settle to the bottom.

Fill the bottle with water to about 1½ inches from the top. The nutrient solution will still appear cloudy, and some fertilizer will remain undissolved on the bottom.

Fill the net pot with growing medium. Tap the net pot to help settle the growing medium, but do not pack it too tightly.

Place the net pot containing the growing medium into the bottle. The net pot should fit snugly in the top of the bottle. If there is a gap between the net pot and the bottle, mosquitoes could enter and multiply in the nutrient solution. A small amount of growing medium may fall into the nutrient solution—that's normal. The bottom half of the net pot should be immersed in the nutrient solution.

The growing medium becomes moist as the nutrient solution wets it by capillary action. If the growing me-

dium remains dry, slowly add 1 or 2 teaspoons of water to the medium in the net pot.

Make a ¼-inch deep hole in the moist growing medium. Plant 1 or 2 seeds of lettuce or kai choy. (Kai choy is a type of mustard cabbage adapted to warm areas.) Cover the seeds lightly. If the growing medium is still dry, slowly add another teaspoon of water. The seed should germinate in 2–4 days. If the seed does not germinate, you may have poor quality seed. Heat and high humidity destroy seed viability, so keep the seed in the refrigerator from the time it is purchased. (Alternatively, you may wish to transplant a 1–2-week-old seedling into the net pot).

Place the bottle in a location that receives plenty of light but is protected from wind and rain. Good locations include under the overhang of a house, on a porch or lanai, or in a greenhouse. You may wish to paint the bottle or place a bag around it to exclude light from the clear bottle. Otherwise, green algae may form in the bottle and slow the growth of the crop.

Leave the bottle alone for the next 5–6 weeks. Do not pull the net pot from the bottle—the roots will be damaged. Do not add any more water or fertilizer.

Harvest the crop. Congratulations! You have just successfully grown a crop by a hydroponic method.

Remove the root mass and growing medium from the net pot. Wash the bottle. You are ready start over and begin the next crop.

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