

Hydroponics

UC Master Gardeners of Orange County



Sally Richards (UCMG OC Hydroponics co-lead) shows the roots of Kratky lettuce at the OC Fair.



Sally Richards (left) and Alvin Lam (center), UCMG OC Hydroponics co-leads, answer questions after the Centennial Farm hydroponics class.

Introduction

Hydroponics is a method of growing plants in a water-based nutrient solution rather than soil, as defined by the USDA. Although the concept dates back to the Hanging Gardens of Babylon (600 BC), it is still often perceived as a modern practice primarily associated with commercial greenhouse agriculture.

Despite its relevance, hydroponics is not currently included in the core Master Gardener curriculum. In response, our hydroponics project—initiated in June 2024 and drawing on research from other university and state extension programs—was created to address this gap in local gardening education.

This project presents hydroponics as a practical, accessible food-growing method for renters, apartment residents, college students, and others with limited or no access to traditional garden space, while also highlighting its role as a complement to traditional soil-based gardening for all growers. By introducing soilless growing techniques, our goal is to empower more people to grow their own produce and to expand the reach of the Master Gardener program into high-density urban communities.

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Goals

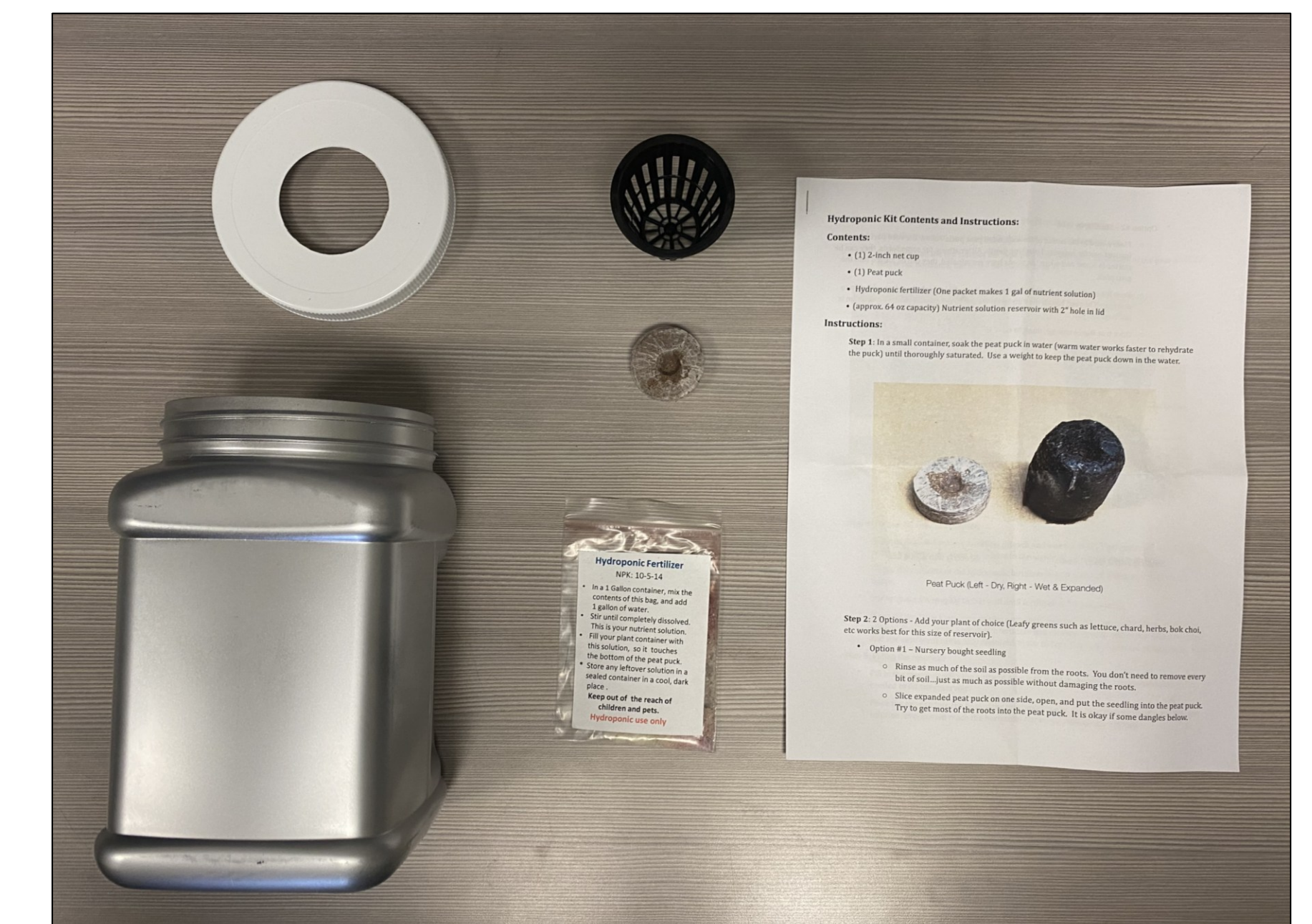
- Educate residents on hydroponic fundamentals, emphasizing accessibility, affordability, and ease of use.
- Demonstrate a simple, low-cost hydroponic method that minimizes barriers to getting started and empowers individuals to grow their own produce using soilless systems.
- Promote sustainable practices through repurposed household plastic containers and efficient water use.
- Encourage use of trusted resources, including the UC ANR IPM website for pest management and the UCMG OC hotline for ongoing support.

Strategies

- Focus on the simple, passive Kratky hydroponic method, as developed by Professor B.A. Kratky (University of Hawaii).
- Build and train a dedicated hydroponics team through internal Master Gardener classes (in-person and Zoom) and hands-on workshops.
- Develop and distribute low-cost, user-friendly starter kits coupled with free seedlings to enable immediate startup.
- Partner with local UCCE Agriculture Technology Advisor Grant Johnson to create a one-page Kratky Hydroponics handout for use in classes and at public events.
- Deliver public education through classes, demonstrations, and printed resources, leveraging partnerships with Centennial Farm and OC Farm + Food Lab to expand reach.
- Increase program visibility through participation in major UCMG OC community events throughout the county.
- Evaluate project effectiveness through post-class surveys and follow-up assessments to measure long-term adoption and identify challenges.



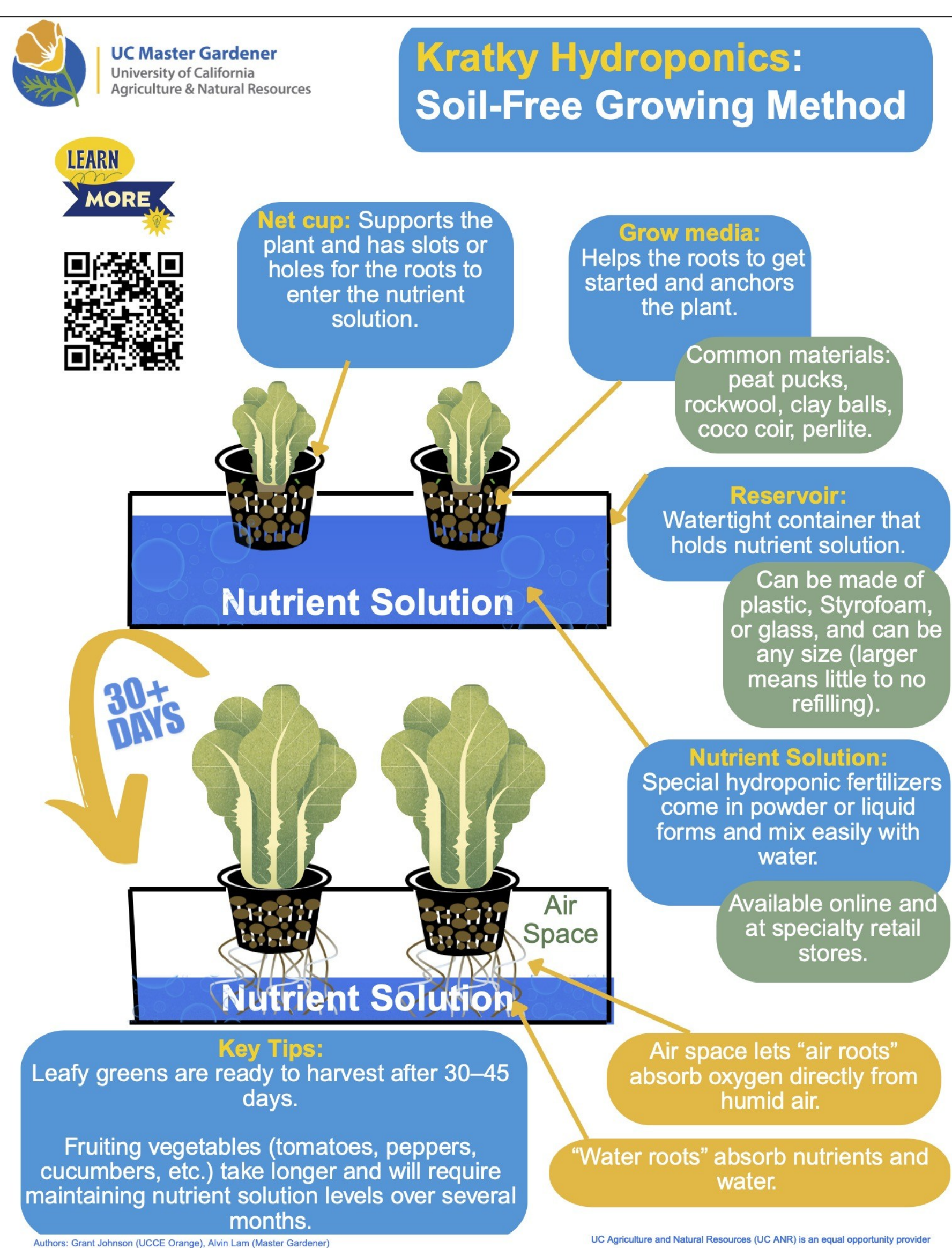
Setup for Centennial Farm hydroponics class.



Hydroponic starter kit includes everything needed to get started except the plant and water.

Results (2024-2025)

- Reached 1,300 people through 16 events; distributed 990 handouts; engaged 111 class participants; sold 207 starter kits; 45 UCMG OC team members contributed 546 volunteer hours.
- More than 200 residents signed up for email notifications about future classes.
- Immediately after class (results from 98 surveys): 56% had no prior hydroponics knowledge; 82% were very motivated to start; 27% were new to gardening.
- After 3+ months (results from 10 surveys): 75% growing in previously unavailable locations; 50% added or built additional systems; 63% invested in lights, nutrients, or equipment; 38% growing vegetables indoors.
- Participant feedback:
 - ❖ "I learned about the process of hydroponics, necessary equipment (including recycled items), [and] possibilities of growing indoor and outdoor."
 - ❖ "[I learned] Advantages & disadvantages of hydroponic. Lighting info - indoor vs outdoor. Different hydroponic systems. Kratky is probably best for easy to intermediate plants. Where to obtain food grade buckets."
 - ❖ "I'm really pleased with my systems so far. Plants are growing really well. I would love a future session to teach me how to set up a wicking system for beets, carrots, etc."
 - ❖ "Loved learning how this type of gardening is possible and looking forward to expanding my garden!"
 - ❖ "Very rewarding and provided a good project for my son and I."



One-page Kratky Hydroponics handout developed by Grant Johnson (UCCE Orange) and Alvin Lam (UCMG OC Hydroponics co-lead) for use at events and classes.

