

# GARDEN FRESH & SOIL FREE



Staff photo by E.J. Harris  
Beefsteak tomatoes starts are grown in perlite until large enough to transfer to the large tubs.



Staff photo by E.J. Harris  
Pendleton master gardener Richard Bertram employs the Kratky method of hydroponic farming to grow vegetables in his basement year round.

## Pendleton master gardener embraces hydroponics

By **GEORGE PLAVEN**  
*East Oregonian*

Spring is finally here, and local gardens are just about ready to bloom back to life.

Yet despite this year's long and especially harsh winter, Pendleton master gardener Richard Bertram is already set to begin harvesting fresh, homegrown veggies.

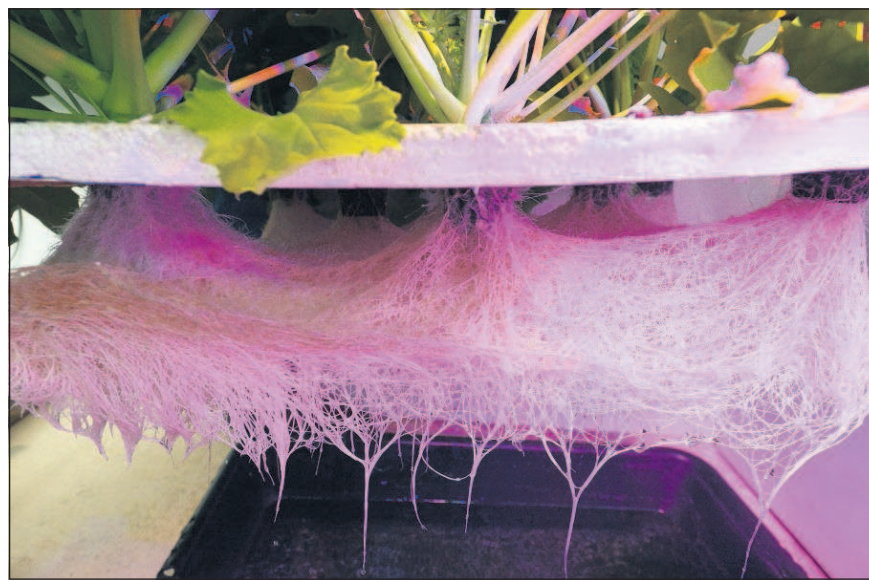
Bertram heads to the back of his basement and pulls back a silver space blanket to reveal Portuguese kale, collard greens and Swiss chard illuminated by a low-hanging grow light. Not only are the plants thriving indoors, but without a speck of soil in Bertram's hydroponic setup.

"You can get your crop all year 'round," he said. "And the flavor is just awesome."

Bertram, 72, serves as vice president of the Umatilla County Master Gardeners, a program through Oregon State University Extension Service. He began experimenting with hydroponic gardening about four years ago, and has successfully grown everything from leafy greens and basil to tomatoes and cantaloupe.

"I get the earliest tomatoes in Pendleton. Nobody else comes close," Bertram said.

Hydroponics is a method of growing produce without actually planting seeds



Staff photo by E.J. Harris  
Roots of plants hang freely into a nutrient bath in this hydroponic system.

in the ground. Instead, the plant gets all the nourishment it needs from a solution of nutrients in water.

With the right equipment, Bertram said hydroponics can be used year-round and require minimal hassle.

"I just can't believe I get these types of results," he said while sampling a few leaves of kale. "There's nothing shabby about the quality of this (produce)."

Bertram initially tried growing peas and leafy greens outside his home on North Main Street using hydroponics,

but the crop was quickly overwhelmed by pests including white flies and aphids. That's when he decided to move indoors, and ended up with a bumper crop of lettuce.

"The nutrients are the trick," he said.

For leafy greens, Bertram subscribes to the Kratky method of hydroponics, developed by University of Hawaii horticulturist B.A. Kratky. The design is essentially rigged to suspend plants over the water solution, allowing the roots to take in nutrients without being drowned.

First, Bertram must stir the solution together in a large plastic bucket. He dumps nine gallons of water, and then measures out just a few tablespoons of calcium nitrate, magnesium sulfate and a blended fertilizer containing nitrogen, potash and phosphate.

"What's truly amazing is that's everything the plant needs to grow," Bertram said.

The solution is poured into concrete mixing tubs, while the seedlings are placed into small 2-inch net cups and held in place with perlite — a pebbly, grainy material that Bertram describes as "volcano rock popcorn." As the plant grows bigger and new roots emerge from the bottom of the cups, Bertram will cut holes into a thick piece of Styrofoam that can hold the plants over the solution, submerging just the lower portion of the stringy roots.

Fluorescent grow lights provide the final ingredient for photosynthesis, and after eight or nine weeks, Bertram



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Staff photo by E.J. Harris  
Bertram uses only three ingredients in his nutrient bath for his hydroponic garden.

is ready to harvest. And it's all done without pumps or gadgets.

"With this system, what you're limited by is your liquid," he said. "Sure enough, anything that's green and leafy does great."

Larger plants such as tomatoes require a lot more water, Bertram said — up to one gallon per plant per day. For those crops, he recommends a Dutch Bucket system that requires a bit more assembly, but is better suited to feeding those nutrient hogs.

Bertram will teach a class on building the Dutch Bucket system on Saturday, April 9 from 9-11 a.m. at the Pendleton Center for the Arts. He keeps the blueprints in his basement, which call for a small electric pump in a reservoir of the same water-nutrient solution, feeding into a drip irrigation line that runs directly over the plants.

Enrolling in the class will cost \$15 for Arts Center members and \$20 for non-members, along with a \$15 materials fee.

Bertram said he is dedicating to teaching hydroponics to anybody who is interested. The taste and nutritional content is exactly the same as produce grown in a traditional garden, he said, and allows people to grow their own food throughout the year, even if they don't have space for a full garden.

"I love it," he said. "You can make really good greens, and good veggies. They're very healthy, and they taste good."

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Staff photo by E.J. Harris  
Richard Bertram harvests Portuguese kale from his indoor, hydroponic garden in the basement of his home in Pendleton.