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Unlocking a backyard permaculture powerhouse — keyhole gardens



Kathryn Scott, The Denver Post

Megan Keefe's low-maintenance keyhole garden, in the backyard of her home in Lafayette. The garden was easy to assemble and can be taken apart — if needed — when the season is over.

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Keyhole gardens, which originated in Africa and [now are available in kits from Costco](#), could unlock an efficient, Earth-friendly new way of gardening for Coloradans.

Simply put, keyhole gardens are circular or square raised beds that conserve water, create nutrient-rich compost and deliver compost tea directly to plants. A “keyhole” to the center gives easier access for gardeners who are older or disabled, or want to avoid having a sore back. They also withstand weather extremes from flood to drought.

Sheila Taylor, a farming systems coordinator in Uganda for the international development charity Send a Cow, has hands-on experience with keyhole gardening. She’s seen these gardens continue to produce, even in African droughts and Asian monsoons.

“These gardens have been around in East Africa for 15 to 20 years now for sustainable ways of growing vegetables,” Taylor said via email. “The concept of a water-efficient garden made with locally available materials for family vegetables could be useful for anyone, anywhere.”

Keyhole gardens work on a set of principles, not exact methodology, Taylor said.

The name “keyhole garden” derives from the basic shape — a circle with a wedge-shaped opening that gives access to a compost mound at the center and simplifies watering and harvesting.

“The specific designs vary, which is the beauty of these gardens,” Taylor said. “They are adaptable.”

Jennifer Verprauskus, a landscape architect at UpBeet Landscapes, discovered keyhole gardens in Argentina and embraced the permaculture principles — rich garden soil piled on top of layers of composting material. She described keyhole gardens as “a glorified nutrient distribution system.”

“It’s not rocket science,” she said. “It’s a planter with a focal compost area.”

Sarah Marcogliese, owner of Native Earth Landscape, learned about keyhole gardens from her mother, a devotee of permaculture.

“The whole concept is amazing, an all-around great thing,” Marcogliese said. “I’d like to see Denver catch on to this trend, because our next drought is right around the corner. We get lulled into a false sense of having more rainfall than we do.”

But to get started, here are some keyhole garden basics:



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Megan Keefe tends to her keyhole garden in the backyard of her home in Lafayette. The garden's shape makes everything accessible — both for the gardener and the compost tea that seeps out from the center. (Photo by Kathryn Scott/The Denver Post)

Where to put a keyhole garden

To grow herbs or vegetables, situate the keyhole garden in full sun.

Keyhole gardens ideally connect directly with underlying earth, but they can be built atop a non-permeable surface, in which case they're essentially giant container gardens with built-in composting.

"I have a client with a side yard, unusual space, so we've talked about a keyhole garden," Verprauskus said. "But a keyhole garden if done right could be a focal point that can fit well in any landscape. We really need to embrace keyhole gardens as something beautiful for our landscape and use elements of good landscape design so it's not thrown on the back 40. A keyhole garden can be a destination. We can be creative with how we build them so they look nice."

Keep it small

Keyhole gardens are small for a reason. To keep plants within arm's reach, the ideal size is no wider than 6 feet.

For a round garden constructed at the recommended size: Place a stake in the center of a circle, and using a 3-foot long piece of string, mark a circle as the outer boundary for the garden.

Though square keyhole gardens work well, too, the round shape is efficient both for the plants and the gardener. “You can grow more food in a circle than square,” Marcogliese said.



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Megan Keefe tends to her keyhole garden in her backyard in Lafayette.

Shore up edges

Form the outer walls of the garden to about 3-feet high by stacking rocks, bricks or cinderblocks. Some keyhole gardens use corrugated metal or wood for the outer frame. Leave a wedge-shaped opening 2- to 3-feet wide at the outer edge, tapering to the center.

Trap moisture and nutrients

To keep compost and moisture inside, line the garden. “You could line the whole thing with rock or stone, cardboard, or you could use bamboo to regulate moisture and make the garden drought tolerant,” Marcogliese said.

Compost at the core

In the center of the garden, form a composting basket by creating a 1-foot diameter cylinder using chicken wire, rabbit fencing or similar material. In Africa, people often use woven reeds or sticks and banana leaves. The compost basket extends from the top of the garden to the ground. The garden gets watered at the center, so nutrient-rich compost tea leaches from the compost basket into the surrounding soil.

“The basket needs to let water pass through the compost and into the surrounding soil,” Taylor said.



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Megan Keefe adds food scraps to the compost bin at the center of her keyhole garden.

Start at the bottom

“The compost also needs to be able to properly decompose,” Taylor said.

“To keep it aerobic, we always put some rough sticks or stones at the bottom to allow air and prevent waterlogging.”

You don’t want the bottom foot “to break down into nothingness,” Marcogliese said.

Materials you already have on hand can help aerate the base layer, she added.

“You can line the bottom with ash from fireplaces, old cans and rocks to help drainage, sawdust, bigger sticks, cardboard, scraps from the garden — any material that will decompose,” she said. “You won’t see it, but you don’t want the bottom foot or so to break down into nothingness.”

Make the grade

Use sheet composting technique to layer in brown (carbon sources) and green (nitrogen) materials, adding topsoil to the upper 12 to 15 inches. Mound soil 6- to 8-inches higher around the compost basket. Slope soil down from center to about 2 or 3 inches from the top of the outer frame.

“It’s super important to taper the soil on an angle from the center compost ring down the sides,” Marcogliese said. “Soil is heaped up like an ant hill to draw water down from top of the compost into the root systems.”

Just add worms

To begin the composting process, add red wiggler worms and kitchen scraps to the center basket.

“The biggest problem I foresee is people not understanding compost,” Verprauskus said. “It’s like baking: the pan doesn’t matter, what matters is the recipe,” she said. “If you don’t follow the recipe well, it could get stinky and not be the most appealing, but if you maintain the compost, it will be wonderful.”



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Megan Keefe picks banana peppers from her keyhole garden.

What to plant

“Squash is a great plant to grow in keyhole gardens. It will cover the soil, needs only low water and is very tough,” Verprauskus said. “Anything heat-loving will work. I would avoid sensitive stuff that will bolt in a full-sun environment.”

“Add a few fun flowers to bring in pollinators for vegetables,” she said. “I love calendula or zinnias.”

Plants from the umbel family, such as carrots and onions, and herbs such as parsley, dill and fennel, do well in keyhole gardens, and attract beneficial insects, she said.

Water the center

Use recycled gray water to irrigate the center, adding water to the compost basket. Fresh water can be used to water the surface when needed.



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Megan Keefe planted herbs such as oregano and rosemary in one section of the garden.

Put a lid on it

To keep compost at the ideal consistency of a wrung-out sponge, place an easily removable lid atop the compost ring.

Rotate crops

“We encourage rotations for both improving soil fertility and health, and avoiding disease and pest-transfer wipeouts,” Taylor said. “We advise that roots, leaves, fruits and legumes are rotated or intercropped on the gardens.”

Winter cover

“I recommend a cover crop like rye seed on the whole top layer going into winter, and you can continue to compost,” Marcogliese said. “We have so many warm days in Denver that if you build some sort of hoop house, a circular cover, you could grown tender greens in winter.”



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Megan Keefe's keyhole garden is square, but many of them are round.

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