

## 5 PHASES OF A KEYHOLE GARDEN



#### **STEP-BY-STEP INSTRUCTIONS**

#### Keyhole gardens were first developed in Africa to easily grow nutrient-rich vegetables in harsh environments.

The design has become popular in other parts of the world because they are a relatively easy way to grow nutrient-rich vegetables. Food for the Hungry has helped hundreds of people improve their health and livelihoods through the use of keyhole gardens.

The garden is six-feet in diameter, with a near-waist-high wall that has a pie-shaped wedge cut-out for easy access to your plants and a center composting bin – a one-foot in diameter wire cylinder that uses your kitchen scraps to moisten and nourish the soil.

Following are instructions for the five phases of building, filling and maintaining your own keyhole garden.



Since Food for the Hungry taught Dieuseul Petit – who lives in Haiti – to build a keyhole garden, he is better able to feed his 12 children. Read his story.

### PHASE 1: PLANNING



In developing countries, keyhole gardens are made from whatever is readily available, such as rocks. You may want to follow that example, or you could choose materials that match your landscaping. The instructions below are a hybrid of the traditional design with the kinds of materials Americans typically use in landscaping.

#### Choose a location.

- Must easily accommodate a 6-foot diameter round structure
- Flat ground, not too close to trees that will suck up your garden's water
- Near your kitchen; easy to access
- Plenty of sun; not too shaded will determine what you can grow
- Room for you to get around it

#### Gather your materials.

- Twine, stake, and sturdy twig to mark the perimeter wall
- Sturdy materials for waist-high (2-3 feet) perimeter wall (stone, brick, blocks, wood, old tires, etc.) For cinder blocks, it will take about 43
- Optional mortar to hold the pieces together and keep the wall from collapsing
- Chicken wire or hardware cloth for a 1-foot x 4-foot compost bin
- Optional cover for the compost bin
- Optional paver stones for entry to and standing in the access area
- Hardware cloth for the ground if the garden is close to a tree
- A base layer for drainage (stones, broken pottery, etc.)

#### Gather your materials (Continued)

- A 3:1 mixture of "brown" and "green" material:
  - "Brown" material (providing carbon) cardboard (about a dumpster-full); perhaps ask Lowe's or Home Depot for appliance boxes), petroleum-free newspaper (the local newspaper might have stacks of old issues to give you), phone books, junk mail, brown and yellow dried leaves, even 100% cotton clothing
  - "Green" material (providing nitrogen) freshly-cut green leaves and grass, coffee grounds, food scraps, manure; it is important not to use any meat, bones or dairy scraps
- Organic soil, whether from your yard or purchased potting soil (6 inches deep at the center)
- Optional materials for a frame to go over the garden area (PVC pipe), along with fabric (for shade) and plastic (to protect from frost) to cover the frame

### PHASE 2: BUILDING



#### Mark the different parts of your garden.

- Hammer a stake into the ground where you want the center of a 6-foot diameter circle to be.
- Cut a 4-foot long piece of twine.
- Tie a sturdy twig to one end of the twine.
- Tie the other end of the twine to the stake, reducing the length to 3 feet.
- Pull the string taut (you will be standing 3 feet from the stake).
- With the twig, draw a circle in the ground to mark the garden's perimeter wall.
- Shorten the twine to 6 inches.
- With the twig, draw a circle to mark the location of the compost bin.
- Draw the access area a pie-shaped cut-out that extends 2 feet into the garden area, is
  3-feet wide at the wall perimeter and 2-feet wide near the compost bin.



10

Your drawing will look something like this.

#### **Construct the wall perimeter.**

- Dig a 6-inch trench where you marked the wall perimeter, remembering to leave a gap at the wedge you marked for the access area.
- Dig a 6-inch trench where you marked the side and back walls for the access area.
- Arrange the first layer of wall material in the trench, optionally using mortar between rocks, bricks, or block, and leaving a gap where you marked the access area.
- Continue building up the wall, staggering the bricks for each layer, using mortar between layers. It should be around waist high (about 2-3 feet, whatever is comfortable for you).
- Optionally, construct a frame (with PVC pipe) on which you will drape fabric to shade your garden from the sun if necessary; it can also hold plastic to develop a "greenhouse" that could extend your growing season into cold weather. (Not shown.)

#### Construct the compost bin.

- Cut a 4-foot x 1.5-foot piece of chicken wire or hardware cloth.
- Roll the chicken wire or hardware cloth into a 1-foot diameter cylinder. The ends will overlap.
- Attach the sides of the cylinder together with wire.
- Optionally, make a protective shade to cover the bin during times of intense heat or rain. (Not shown.)
- The height of this will later be cut down to extend 1 foot above your perimeter wall.

#### Construct the access floor and entry.

- Give yourself something to stand on (paver stones, pebbles, wood chips).
- Make sure the entryway to the access area is clear and easy to walk on.



This keyhole garden belongs to Freddy Hill, who lives in Oklahoma and learned that she had located her garden too close to an apple tree – it stole the keyhole's water.

### PHASE 3: FILLING



14

These instructions for filling the garden came from **Deb Tolman**, a Ph.D. environmental scientist who teaches people to make their own soil (in as little as 4 weeks) by layering cardboard and greens.

#### Line the wall and floor.

- If your garden is near a tree, put down hardware cloth on the garden floor.
- Soak cardboard from broken-down boxes in water to make them pliable.
- Line the inside of the garden wall with soaked cardboard.
- Line the floor of the garden with soaked cardboard.

# Fill the growing area with brown and green material.

- Think about how lasagna is layered when putting down these materials.
- Your layers should be 1 part green material (kitchen scraps from vegetables, melon rinds, eggshells, and fruit; coffee grinds and tea bags; freshly cut green leaves and grass clippings; manure) to 3 parts brown material (dry, yellow or brown leaves and brown grass; dead, woody stalks or plants; any paper and wood products: chopped twigs, shredded newspaper, well-soaked phone books, programs (a little slick paper is okay); sawdust; dryer lint; vacuum cleaner waste; straw; wood ash from fireplaces (not a lot); lots of cardboard; a little 100% cotton, wool, or silk).
- Cover the first layer with another layer of soaked-cardboard.
- Stomp on it to press out any gaps. It will settle, and you want to minimize the amount of settling.
- The last layer should be topsoil or potting soil. Make it six inches deep in the center near the compost bin, and slope it away from the compost bin.
- Water deeply.



#### **Keyhole Garden Cross-section A-A**

### PHASE 4: PLANTING



18

#### Plants to use and how to place them.

- Include at least 4 different types of vegetables to maintain fertility and resist pests. Research what grows best in your area and how to group them so that they benefit each other. Onions and garlic will help resist pests. If you need help deciding what to grow, consult your local nursery, gardening club or agricultural extension service.
- Contrary to what you may be used to in traditional gardening, place the plants close together so they can shade each other in the heat of the sun.
- Plant the tallest and sun-loving plants on the west-facing side of your garden so they can help shade delicate herbs and veggies from the more intense afternoon and evening sun.
- Put leafy greens (lettuce, kale, spinach, herbs) next to root vegetables (carrots, beets, radishes).
- Tomatoes can be planted near the center so the compost bin can provide support.

#### PHASE 5: MAINTAINING



20

#### Keep out pests naturally.

- Talk to local experts about what kinds of pests are in your area, and take their advice on how to control them naturally. Things like garlic, onion, marigolds, mint can dissuade everything from aphids to deer from nibbling on your veggies.
- A solution of 1 part dish soap to 10 parts water sprayed on the plants could keep also help aphids away (spray in the morning to avoid cooking your plants when it's hot). This small amount of dish soap will not harm your plants or anyone who eats them.
- Sprinkling ground cinnamon or cayenne pepper around the base of plants and around the perimeter will help ward off ants.
- Inspect leaves for pests and get rid of them. Water the leaves to get rid of aphids and spider mites. Trim off dead, diseased or pest-infested leaves. Wash hands and scissors to keep from spreading what you eliminate.

#### Water frequently.

- This design is meant for arid and hot conditions, but it will only thrive by frequent deep watering, especially in the hot summer. You can test for the need to water by burying your finger to the first knuckle. If it comes out dry, it's time to water.
- You could use "grey" water (from washing hands, etc.) for the compost bin, but only fresh water for the growing area.

#### Maintain the compost bin.

- Add kitchen scraps to your compost bin daily, but no less than weekly.
- Water it every few days. This will add moisture and nutrients to the garden area.
- Use a cover to keep it from drying out in the hot sun.

# 23

#### Maintain the growing area.

- Keep debris and dead leaves cleared.
- Clip off any dead, diseased, or pest-infected leaves.
- Wash away spiders.
- Replenish the soil with green and brown material along with topsoil as it settles.
- Harvest and enjoy the fruits of your labor!



This family in Guatemala is now thriving because of the nutrient-rich vegetables that Food for the Hungry taught them to grow in their keyhole garden. Read about them.

#### It only takes a simple step.

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