CAES
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How to Construct a Plastic Wading Pool Garden

Why Grow in Plastic Wading Pools?

There are many challenges to growing food in urban areas, including at schools and in backyards. Often individuals may wish to grow food, but don't have access to land with soil. Many people devote part of their patio, or even convert unused parking spaces into gardens to grow food. Even when soil is present, contamination in urban soils with heavy metals and other contaminants is common. In these cases, food can be grown in containers. Containers vary widely in size (volume of soil held and growing area), materials that they are made from (plastic, resin, wood barrels, and other found objects), and how much they cost. Small plastic wading pools are readily available during the growing season, are relatively inexpensive, and have a lower cost per growing area than many other containers of similar size.

With the recent increase in home vegetable growing, small plastic pool gardens have gained some attention on social media. There has, however, been little research on how to best handle drainage or plant spacing in the relatively shallow container in order to optimize growing. CAES has begun research using small plastic pools as containers to start to answer some of these questions. One focus of this research is comparing two different drainage strategies; drainage holes in the bottom and sides of the pool, or drainage holes only in the sides to create a water reservoir. The following are instructions used in the experiment for how to construct plastic wading pool gardens using these two strategies. The pools used at CAES are 42" in diameter. Pools are often available in other sizes, including 36, 45, or 54" in diameter. The size pool you choose will affect how many drainage holes you can drill in the bottom or sides, how much growing media you need, and how many vegetables you can grow.

Drainage Strategy 1: Drainage Holes in the Bottom and Sides of the Pool.

Materials:
Small plastic wading pool
Tape measure
Marker
Drill and bits: 1/2" and 5/8" sizes, spade bits recommended
Landscape fabric: 6-foot-wide fabric is recommended.
Scissors
Growing media

1. Drill drainage holes in the bottom of the pool. (Figure 1)

a. Mark the center of the bottom of the pool.
b. Measure out from the center 4” (10 cm), make marks for 4 holes 90 degrees apart.
c. Measure 4.5” (12 cm) in from the edge of the pool for the second row of drainage holes. Mark 8 holes equidistant from each other.
d. Drill these holes using the 5/8” drill bit.

2. Drill drainage holes in the sides of the pool. (Figure 2)
   a. Measure up from the bottom of the pool 1/2” and make the first mark
   b. Measure 12” (30 cm) away from that mark in either direction and ½” up from the bottom of the pool for the second mark.
   c. Repeat until you are about 12” (30 cm) from the first mark. The last hole is about 10” (25 cm) from the second to last and first holes.
   d. Drill these holes using the 1/2” drill bit.
3. Add landscape fabric to the pool
   a. Cut a 6-foot length of landscape fabric.
   b. Place this in the bottom of the pool. Excess fabric will be trimmed off after the growing media have been added.

Figure 1. Drainage holes drilled in the bottom of the wading pool. An additional row of holes can be seen in our pools for the trellis poles. See Figure 3 for their placement in the filled pools.

Figure 2. Holes drilled ½” up the side of the pool for additional drainage.

4. Add the growing media. (Figure 3)
    a. Fill the pools as full as possible with growing media
    b. Be sure that the landscape fabric is flush with the bottom and sides of the pool as you go.
5. Trim the landscape fabric so that it does not hang over the sides of the pool much. (Figure 4)
6. Fertilize as appropriate for your vegetables and plant.
7. Add your preferred form of irrigation.


Figure 3. Pools filled with growing media.

Drainage Strategy 2: No Holes in the Bottom of the Pool

Materials:
Small plastic wading pool
Tape measure
Marker
Drill and bits: 1/2” and 5/8” sizes, spade bits recommended
Landscape fabric: 6-foot-wide fabric is recommended.
Scissors
Pine bark mulch
Growing media


Figure 4. Pool after the landscape fabric has been trimmed.

1. Drill drainage holes in the sides of the pool (Figure 5)
    a. Measure up from the bottom of the pool 2” and make the first mark.
    b. Measure 12” (30 cm) away from that mark in either direction and 2” up from the bottom of the pool for the second mark.
    c. Repeat until you are about 12” (30 cm) from the first mark.
    d. Drill these holes with the 5/8” bit


Figure 5. Pool with drainage holes 2” up the side of the pool.

2. Add landscape fabric to the pool
    a. Cut a 6-foot length of landscape fabric.
    b. Place this in the bottom of the pool. Excess fabric will be trimmed off after the growing media have been added.
3. Add drainage layer media to the pool. (Figure 6)
    a. Fill the pool with pine bark mulch up to 2".
    b. Be sure that the landscape fabric is flush with the bottom and sides of the pool as you go.

Figure 6. Pool with 2" of pine bark mulch drainage layer installed.

4. Add the growing media. (Figure 3)
    a. Fill the pools as full as possible with growing media
    b. Be sure that the landscape fabric is flush with sides of the pool as you go.
5. Trim the landscape fabric so that it does not hang over the sides of the pool much. (Figure 4)
6. Fertilize as appropriate for your vegetables and plant.
7. Add your preferred form of irrigation.

The Irrigation system

The irrigation system we are using in our pools was inspired by the Dribble Ring system made by Dramm (Manitowoc, WI). These are rings of tubing with drip emitters in them and come in variable sizes from 4-13" in diameter with leader tubing lengths in increments of 12". Here we have created a larger diameter ring out of readily available materials.

Materials:
¼" tubing with drip emitters spaced 6" apart- cut to 6 feet (12 emitters) for each pool.
¼" T connectors- 1 per pool
¼" tubing- cut to 24"
¼" barb connector- 1 per pool

1. Cut one 6-foot length of ¼" tubing with drip emitters
2. Connect both ends of the ¼" tubing to the top of the T of the ¼" T connector (Figure 7)

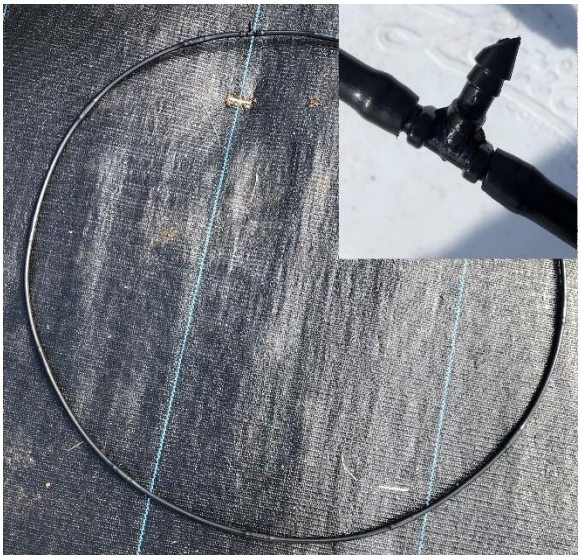

Figure 7. The ring of ¼" tubing with drip emitters connected to the ¼" T connector. Inset shows a close-up of the T connector.

3. Cut one 2-foot length of ¼" tubing and connect it to the bottom of the ½" T connector. (Figure 8)

Figure 8. The 2-foot leader for the irrigation ring made from ¼" tubing.

4. Connect the ¼" barb connector to the other end of the 2-foot section of ¼" tubing (Figure 9).

Figure 9. Close up of the ¼" barb connector on the end of the leader.

5. Connect the ¼" barb connector to your main irrigation line.

The irrigation ring for each pool is connected to ½" main line tubing and a timer so we can automatically irrigate the pools. These pools could easily be irrigated using a sprinkler, soaker hose, drip line, or micro sprinklers.

Additional Guidance Pool Gardens

- Drainage hole spacing: Some guides recommend spacing drainage holes 12" (30 cm) apart. In smaller pools this might only mean one row of drainage holes in the bottom of the pools, in larger pools you could fit two or three. Our holes on the bottoms of the pools were a little closer together than that because of the size and placement of trellis posts. Our holes on the sides of the pools were able to match this at 2" above the bottom and almost match this at 1/2" above the bottom of the pool. The smaller diameter of the pool at 1/2" from the bottom meant that three of our drainage holes were spaced a little closer together.
- Drainage hole size: recommendations for drainage hole size vary from 1/2" in diameter up to 1" in diameter. In our pools we used 5/8" and 1/2" depending on placement of the holes.
- Trellis posts: Our pools have trellis posts in them. These are 7-foot garden posts that we have put through holes in the bottom of the pool so that they are 12" in the ground. Other materials may be used for trellis posts. The size hole in the bottom of the pool should match the size of the post. Trellis posts could also be placed outside of the pools to avoid extra holes in the bottom. We have also cut small holes in the landscape fabric, to fit the fabric over the trellis polls.
- Drainage layer media: In our experiment, we are using pine bark

mulch for the drainage layer. Other media may be appropriate. Gravel and vermiculite have been used by other people in their pool or container gardens. Gravel will not break down over time and should be easy to spread and readily available. Vermiculite will also not break down but may be difficult to spread and may be harder to find in the volume needed. Pine bark mulch is also readily available but may break down over time. This is something we will be watching for over time in our experiment.

- Growing media: Many different growing media are commercially available. Any potting mix, container mix, or one of these mixed with compost could be used in your pool garden. Good growing mix for containers should drain well, but not dry out too quickly and contain plant nutrients. It is recommended that you avoid use of topsoil or garden soil, as it is dense and can compact easily, reducing aeration and drainage and may contain weed seeds or disease. In our experiment we are testing three mixes of Promix growing media with 0, 30 and 60% compost by volume.

Resources

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