See more activities at the Living Sculpture website: www.hort.cornell.edu/livingsculpture

Living Dome

Domes, tunnels, arches, and fencing are all popular methods of employing tree sculpture in a garden or landscape. In addition to being beautiful and/or whimsical, they may also serve a purpose such as providing shade or defining a barrier.

A repeatable and inexpensive example of tree sculpture is a dome of apple trees that was constructed to provide a "hidden" play space for children at a public children's garden. Although this utilizes apple as the plant material, one could easily replace willow cuttings or hornbeam or ash saplings just as successfully.

Objectives

- To create a living structure that combines visual interest with function.
- To employ tree sculpture techniques such as weaving and grafting.

Materials

Basic Supplies

- Saplings
  For this sample project we used apple M-7 rootstocks – the rootstocks themselves, not an apple variety you might generally think of planting, such as McIntosh or Empire. Rootstocks won't provide apples like a typical apple tree but may eventually produce crabapple type fruit. These saplings were available free

of charge, which was the main reason apple was chosen. What material may be readily available or free to your program?

Aside from convenience, the M-7's also possess some desirable

characteristics that matched the needs of our project:

- M-7 is a semi-dwarf rootstock and we wanted height to manageable.
- Because of its genetic selection, the M-7 is very pliable which we needed for shaping the dome.
- M-7 is resistant to fire blight, a common problem on apple trees.

- Shovels
- Water access
- Mulch

Structural Supplies

- Appropriate building materials – wooden posts, tubing, pipes, etc.

Some domes and other living structures will require some non-living support when first constructed, and sometimes throughout its life. In this project we used some scrap lumber and pliable rubber tubing. We used extras that were readily available, but each project is unique. Be sure to look around and see what might work for your project.

- Mallet
- Power screwdriver and screws
- Twine

Design

Domes, just like tunnels or arches, have a basic shape. If you've decided on a dome, you're probably looking at a circular footprint. It's important to ask how big you want the interior of the dome to be and then assessing how big the structure will need to be to accommodate your vision. You may want to take the design process a bit further and think about elements such as entering and exiting the dome and if you'd like to include windows or portals that let you see out or in.

Site Selection

Once you've decided on a dome as your project, the next step is finding the right site for your structure. Some considerations

- How will the dome fit in with the other gardens or elements nearby?
- Is there adequate space for the dome as well as the extra space needed to construct it?
- Does the site get adequate sunlight?
- Does the site have adequate drainage?
- Where is the nearest water source?

After you have assessed your site and determined the final location, it might be helpful to revisit your design. Does your design need to be bigger or smaller to fill the selected space?

Creating the Dome – Site Preparation

1. Cleat sod from one and a half times the planting area.

2. Turn the soil to loosen and then level out.

3. Sometimes the removal of sod leaves a depression. If this happens, spread extra soil over your area to raise the level back to its original height.

Creating the Dome – Infrastructure

For the example show , we used:

- 7 thin wooden posts, approximately 8 feet tall
- Black well piping ½" diameter
- Joining places for pipe
- Power screwdriver and screws
- Twine

1. Mark out the diameter of your dome and determine the center.

2. Secure one of the wooden posts in the center of the dome outline. The saplings will be secured to the top of this post temporarily to help shape the dome.

3. Just inside the diameter you marked, secure four posts in a square pattern.

4. An "X" was made 5-6' up by screwing crossbeams into the posts.

5. Two rings were made or rubber tubing, on two feet less in diameter than the other. The wider one was affixed to the 4 posts at 5.5 feet. It was fit into notches cut into the posts and then tied with twine. The second ring was tied to the crossbeams on foot above the first ring.

Construction the Dome – Planting

1. Gather all the plant materials (it's best to keep them in the shade until you're ready to plant).

2. Lay all the plant material out before planting. By laying all the plants out in the location they will be when planted you can make adjustments prior to planting to ensure saplings are evenly spaced around the dome.

3. Some people prefer to dig individual holes for each of the saplings. Others prefer to dig a circular trench. Either way will work.

4. When placing the saplings in the holes or trench, pay attention to their natural shape and tendency. The trees in this project were planted so that their side branches would point outward. These were used later on to weave and graft giving the "walls" of the dome its fullness.

5. Any large branches pointing inward were pruned to ensure an open interior.

6. The natural tendency of the trees is to lean toward the middle of the dome. Because of this, the tops of the saplings were pushed to the outside of the lower ring and pulled to the inside of the upper ring. This helps provide the dome shape to the roof.

7. Any saplings that deviated significantly from the ring guides were tied with loops of twine to train them without girdling.

8. Once all the trees are planted, water well.

9. It's important to suppress grass and weed growth around the newly planted dome. In this project, landscape fabric was carefully cut to fit around the newly planted trees and secured with 6-inch ground staples. This was covered with a thick layer of mulch. If your resources are slim, an extra thick layer of mulch or wood chips would easily do the trick.

Constructing the Dome - Weaving

In order to create a living wall effect on the sides of the dome, the branches were woven laterally through neighboring tree shoots. A very loose effect is desired at this stage, taking care not to break the branches is more important than achieving a tight weave. Some flexibility must remain if the piece will be able to move with the wind. Simply training the trees to grow through each others is the objective.

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Garden-Based
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Resources for educators, volunteers, and parents working with children and youth.

Cornell Garden-Based Learning Program website: www.hort.cornell.edu/gbl