
WHAT IS THE BREWER PARK COMMUNITY GARDEN BIODOME?

The biodome is an off-grid ecosystem that extends the growing season, making it possible to harvest multiple crops year round. The biodome includes raised beds, solar-powered engineering systems, and an aquaponics system that will be launched in August 2015. Being an engineered domed structure, the biodome can withstand harsh weather conditions such as heavy rain and snow. To date, our biodome is used to full capacity for three seasons with constrained operations December through February due to extreme low temperatures and limited sunlight. Pending further enhancements, funding, and approvals, we strive to be fully operational year-round.

The biodome uses underground piping, solar-powered fans, windows and automatic venting to control hot summer temperatures by circulating hot indoor air and diverting heat to beneath the dome. Even on cold winter days, the inside air is warmed by the sun and circulated through the underground pipes, releasing heat. This system allows the biodome to be cooled during the summer and warmed during the winter.

Two solar panels provide electricity for pumps to pump water and for fans to circulate air. The solar panels also charge batteries so that the systems can run for an estimated two to three days without sunlight.

WHAT IS IT BUILT OUT OF?

The biodome is a geodesic structure which consists of repeating triangles that form pentagons and hexagons. The wood framing is glued and screwed together. The walls are made out of hard polycarbonate plastic and the seams are sealed with caulking and waterproof repair tape. This tape does not lose its grip when wet, offering an effective seal.

The raised beds have many layers to them. On the bottom is chicken wire, followed by Geotextile which lines the whole bed. This prevents soil from coming through the cracks of the bed. The bed then has about 6 inches of sand, with soil filling the rest.

WHY WAS IT BUILT?

In the original BPCG plan, a biodome was included so that the garden could start seedlings and showcase year round gardening. In keeping with the mandate of the garden, the biodome was built “to educate, inspire, promote and raise awareness of sustainable and eco-ethical food producing practices among the greater community”. The biodome acts as a demonstration for food production in an urban setting. It is currently being maintained by a group of 10 volunteers and garden members who water, plant and harvest the crops. The biodome will continue to supply members with starter plants, reducing costs and increasing yields by extending the growing season. We also hope to offer these benefits to other community gardens in future seasons.



WHAT IS AQUAPONICS?

Aquaponics is a method combining hydroponics (growing plants in water) and aquaculture (fish farming). Essentially, the fish will eat food, produce waste, and then the waste water will be cycled through to water the plants. The plants will be in a grow media (this year we are using clay pellets and Growstones). The grow media will help to keep the moisture in the plots while allowing the roots to get oxygen. There will also be worms in the media that help break down the waste into nutrients for the plants. This water will then get filtered back to the fish tank completing the cycle.

Our system will be powered by the two solar panels found on the South side of the biodome. These panels will charge batteries that will provide energy to the water pump to allow the system to work on its own.



WHAT KIND OF FISH WILL YOU HAVE? CAN YOU EAT THEM?

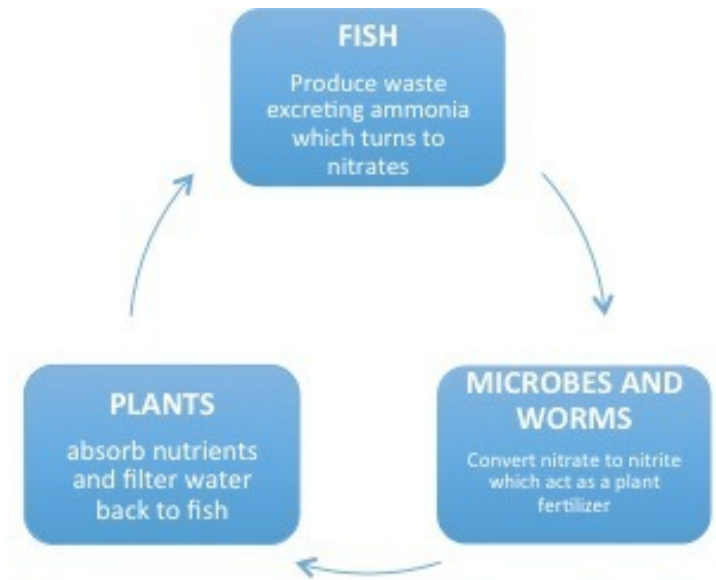
This year we will have tilapia fish in the system. We will have volunteers feeding them twice a day – once in the morning and once in the evening.

Theoretically, the fish can be eaten. However, due to the experimental nature of our system and the many regulations around raising and eating fish, we will not be consuming the fish that are used at this time.

WHEN WILL IT BE COMPLETED?

We expect to have the system built by the middle of August, 2015. At the moment we are waiting on a load charger for the solar panels. This connects the panels to the batteries and it stops the electrical equipment from draining the batteries. It is a very expensive (yet essential!) piece of equipment so we are working on getting it donated or partially donated.

Once the system is finished, we will keep track of a number of things including the size and weight of the fish, the water temperature, how quickly the plants grow compared to those found in the regular plots, and if there are any differences in size or colour to those in the regular plots.



HOW WAS IT FUNDED?

Three funders supported Brewer Park Community Garden to build the biodome. Recommended by Councillor David Chernushenko and following a competitive process in late 2012 and early 2013, the City of Ottawa's Better Neighbourhoods Program contributed \$33,500 for the 2013 design and 2014 build (plus \$6,000 for City-led communications, publicity, two Community Consultations and the video posted at <http://ottawa.ca/en/city-hall/get-know-your-city/improving-your-neighbourhood/brewer-park-biodome-garden-all-seasons>). TD Friends of the Environment Foundation contributed \$6,000; and the Community Garden Network, administered by Just Food, awarded \$3,500.