

Gathering Summary: Peaceful Gardens, March 24, 2010

A Presentation by Paul Renner

Summary by Catherine Haug

(all photos by Paul Renner)

[Urls for all links shown in References section].



Introduction

Tackling Chronic Illness

Paul began with the story of how he came to start this project;. His idea began about 2 years ago when he was quite ill with several serious chronic diseases including obesity, insulin-dependent diabetes, and congestive heart failure. He decided to try the 7-day guided juice fast at the [Wellness Education Center](#) (WEC) in Kalispell, conducted by Jeanette Cheney, in April 2008.

The WEC fast begins with a 2-week pre-fast, in which you prepare your body for the fast by gradually eliminating troublesome or toxic foods from your diet, so that by the time you begin the fast, you are eating only raw fruits and veggies. The fast itself includes daily fresh wheatgrass juice and fresh veggie juices, plus a kidney/bladder flush and a liver flush. After the 7 days of fasting, you gradually introduce solid foods over 6 days.

During the 2-week pre-fast, Paul lost a fair amount of weight and felt better. During the fast he was able to reduce his daily insulin needs; by June 2008 he had lost a total of 80 pounds and had reduced his insulin drastically. Now, 2 years later, all signs of his chronic illness have disappeared, he is no longer on any medications, and his stress level is greatly reduced. And he has dedicated himself to a mostly vegan diet.

A Quest for Truly Locally-Produced Organic Food

Paul's health improvement got him to thinking about a reliable local source of true organic food, and how to prepare delicious vegan meals. He visited the [Tree of Life Rejuvenation Center](#) in Patagonia AZ. There, Gabriel Cousins grows all food for this community on-premise, and serves it in his organic vegan cafe.

Paul was so impressed with Gabriel's method of year-round vegetable production in a geo-dome, that he was inspired to do something similar on his property nestled in the Swan Range east of Bigfork. That is, to create a model of food sufficiency for 15 - 20 people working together, year-round, to grow their own vegan food.

The Tree of Life dome was of very strong construction and had a spiritual feel. Geodesic domes were originally designed by [Buckminster Fuller](#), and used by the US Government to house certain WWII facilities. See also [DesignTechnology.org](#) for more on the development of Fuller's geodesic dome.

Paul's original intent at the Tree of Life was to study to be a vegan chef. But that program had been cancelled, so he enrolled into a 2-year masters program. His Peaceful Gardens project is his Masters' thesis.



Slide Presentation

(photo of Paul and Sam)

Paul then launched into his slide show, first describing his idea, then showing photos of his facility under construction and through the first planting.

He believes the only way we can guarantee our foods are not treated with pesticides, irradiation, herbicides, nor genetically engineered (GMO), is to grow our own food locally. He notes that even foods raised as certified organic from foreign countries are sprayed with pesticides and herbicides by our border patrol personnel, to keep invasive species from entering our country.

The Concept

The main purpose of this project is to demonstrate that a small group of people (7 - 10 families) can produce their own fruits and vegetables year-round, and to mentor others on how to do the same.

Using an outdoor garden and orchard for warm-weather production, and a geo-dome greenhouse for cold-weather production, Paul envisions an alternative-energy-powered, year-round food production and storage system that is at the same time a community teaching and mentoring program. He also intends to document the entire process with photos, videos, and written text, as part of his Masters' thesis and for posterity.

He notes, however, that if the dome is used only to grow cold-weather veggies in winter, no power is required, as passive activity will adequately maintain conditions in the greenhouse for cold-weather veggies, and refrigeration conditions in the root cellar.

They will grow heirloom fruits, vegetables, herbs, sprouts, wheatgrass and edible flowers.

The Facility

His growing system includes the following structures *(photo of seed starting shed)*:

- seed starting shed (his wife's garage)
- 51' diameter geodesic dome greenhouse
- 23' x 20' underground root cellar covered with 8' of soil on top

And will also include, to be added this summer:

- external (outside) garden
- small external orchard.



Dome Construction

(photo of foundation under construction)

Paul's property is on a hillside, which needed to be cleared and leveled in the future dome area. The soil is rock and clay.

After clearing the area, they excavated for the foundation, 4' deep. The foundation was built on top of 10" footing, and surrounded by 2" insulation on both sides. This will ensure that no part of the ground inside the dome will freeze. Above the foundation is a 2' high pony wall to support the dome, with 4" foam insulation on the inside.



Dome support

The foundation and pony wall form a 27-sided shape, with 7° angle between each side. The prefabricated dome is built of 2x6 Douglas fir skeleton, joined with metal gussets, then covered with a poly-carbonate skin that provides an R-factor greater than 3.05.

Heating & Cooling



(photo of reflective skin on N. wall behind ponds)

Primary heating is provided by passive solar radiation through the polycarb skin, and assisted by two ponds inside the dome. The water temperature in the ponds never gets below 52°F.

A “green shade” of vining plants inside the dome wall will provide some cooling (see “Planting” below). An external shade can also be used to cover the dome if needed.

Insulation on the north wall is reflective on the inside, to retain & radiate heat.

Ventilation

(photo of hydraulically-controlled vents in roof)

The dome roof has roof sections that open to provide ventilation within the dome. These vents open/close by passive hydraulic hinges filled with beeswax. This beeswax expands at 75°F; this hydraulic expansion opens the hinges. When temperatures go below the 75° threshold, the vents close.



In addition, thermostatically-controlled air-intake fans draw air from the outside and push stale air out the roof vents, when the dome gets too hot.

Planting Beds Inside the Dome

A 24" high perimeter bed runs around all sides of the dome, meeting at the ponds. The largest bed takes up more than half of the dome's floor space. It is oddly-shaped bed by keyholes for easy access to all parts of the bed.

The beds are of wood structure and lined with pond liner, to protect the wood from moisture damage for 10-12 years of life.

Drainage within the Dome

(photo of drainage pipes amongst the beds)



The rock/clay soil does not provide good drainage, so a drainage system is provided in all growing beds, consisting of 4" flexible corrugated pipe with holes, then covered with a sock to keep the holes from clogging. These pipes converge in the center, then go outside to drip into the future orchard area.

Planting Soil

(photo of radish seedlings in new bed soil)

Soil in the beds consists of top soil amended with compost and perlite (for aeration). A Japanese wheat bran ferment called [Bokashi](#) is used as top-dressing. It includes lacto-bacteria and other micro-organisms important for bringing soil back to life, and can also be used to inoculate compost.



Paul's Bokashi is made from a Bokashi starter (diluted 10:1 as 2 gallons of starter diluted to 20 gallons), with added wheat germ and molasses, then fermented for 4 - 6 weeks before using. It has a pH of 3.4 (acidic).

How to make Bokashi starter:

- [Extreme Bokashi: Make your own inoculant](#) provides several methods
- [How to make Bokashi](#) for a 6-minute YouTube instructional video.

Their compost will be made on-site, but Paul does not know how what method they will use, but is considering lasagna-gardening technique plus Bokashi.

Planting

(photo of transplanting into beds)



Some plants, such as broccoli, kale and cauliflower, will be started in the seed-starting shed, which houses metal shelf racks. Each shelf is lit by a twin-bulb fluorescent fixture. Plastic sheeting on top of each shelf keeps moisture from ruining the lamp under the shelf. When mature enough for transplanting, they are moved to the dome or the external garden.

Other plants such as radishes are direct-seeded into the bed using a mechanical seeder. But before they are seeded, the beds must be firmed-up by the use of a roller, for the mechanical seeder to work properly.

The perimeter bed will be used for vining plants, to provide green shade for cooling during the hot summer days (it got up to 100°F inside the dome, one sunny day this March). Nylon netting is hung above the bed against the dome wall, to 8' above the bed, for the vines to climb, increasing the productivity area of the dome.

Root Cellar

(photo of root cellar foundation in hillside)

Paul provided less information about the root cellar. It is 24' x 20' floor dimension, set upon 10" footing. The cellar is covered with 8' of soil, to provide a constant 40° as a geothermal refrigerator.



Requirements to Join the Co-op

A desired outcome for each member is to become a knowledge expert, and provide documentation and to teach or mentor others.

Each member must spend part of one day each week on site, for nurturing, growing and harvesting of his/her own food; however, they are free to spend more time there.

On a weekly basis (once in full production), each member performs their assignment and harvests their food for the upcoming week.

Members will rotate assignments (including overall management function) every quarter, to gain expertise in all aspects of food production and the facility. Right now, they are doing seed-starting, transplanting and soil amendment activities. And they are starting the "knowledge master" assignment and documentation process.

They hold monthly meetings to discuss greenhouse operations, and to teach and learn from each other, that which we need to further the mission of Peaceful Gardens.

Cost:

\$60/month for a half-share (one person); \$120/month for a full share (family). However, how to determine size/quantity of food for a share is under development. These fees cover operating expenses of the operation, and will be reevaluated after 1 year.

If have excess production, it could be sold at market, and the proceeds used to recover the initial capital investment.

Currently available assignments include (but are not limited to):

(photo of perimeter bed, with cucumber starts)

- organic pest control,
- natural farming with effective micro-organisms,
- organic green composting,
- organic fertilization,
- soil management (pH, mineral content, etc.),
- seed germination & harvesting seeds for future crops,
- work/job schedule management,
- web site development & maintenance,
- photo & film documentation,
- documentation manual including management, orchard management, external garden management, irrigation management, passive & active heating systems.



Peaceful Gardens

If you would like to discuss participation in peaceful Gardens, contact Paul Renner: (406) 212-9793 or paulrenner299(at)gmail.com. [NOTE: email address is disguised].

One of the goals of Peaceful Gardens, is to produce a turnkey teaching program which would include photo and video documentation available to the community.



Q & A Session

(photo of root cellar in foreground, dome shell in background)

What is the water source?

Currently all water is from a 250' well. A water-capture system is not in place yet.

What about seed saving?

This is currently an open position in the group. Initially, all seeds were purchased as heirloom seeds from a seed-saver exchange, so that the new crop of seeds can be saved for future crops.

How pollinate?

(photo of dome with skin being added)

Paul doesn't know yet; some will be by hand.

How harvest the climbing vines?

Can use a step ladder on the frame of the perimeter bed.



Stills & Video Clips from the Event

Flip video still-shots from the event, by Sally Janover:

- [Paul and audience](https://sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029430)
(sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029430)
- [Paul speaking](https://sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029455)
(sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029455)
- [Peaceful Gardens slide: The Mission Statement](https://sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029438)
(sharing.theflip.com/session/oe55cec59d0572dea56ddee226ec3b24/video/12029438)

Sources & References

(photo of mixing soil in the bed)

Books

- *The Winter harvest Handbook - Year-Round Vegetable Production using Deep-Organic Techniques and Unheated Greenhouses*, by Eliot Coleman, Chelsea Green Publishing, March 2009 (see www.amazon.com for sneak-peak inside the book)



Web

- Wellness Education Center, Kalispell: www.juicefast.info
- Tree of Life Rejuvenation Center, Patagonia: www.treeoflife.nu
- Buckminster Fuller and geodesic dome info: en.wikipedia.org/wiki/Buckminster_Fuller & www.design-technology.org/page1.htm
- Bokashi Ferment:
 - Extreme Bokashi: Make your own inoculant: www.wildlifegardeners.org/forum/fertilizing-soil-amendments/1292-extreme-bokashi-make-your-own-inoculant.html
 - How to Make Bokashi (video): www.youtube.com/watch?v=96fSXccQx9Q
 - Wikipedia: Bokashi composting: en.wikipedia.org/wiki/Bokashi_composting



(photo of carting transplants from seed starting shed to dome)