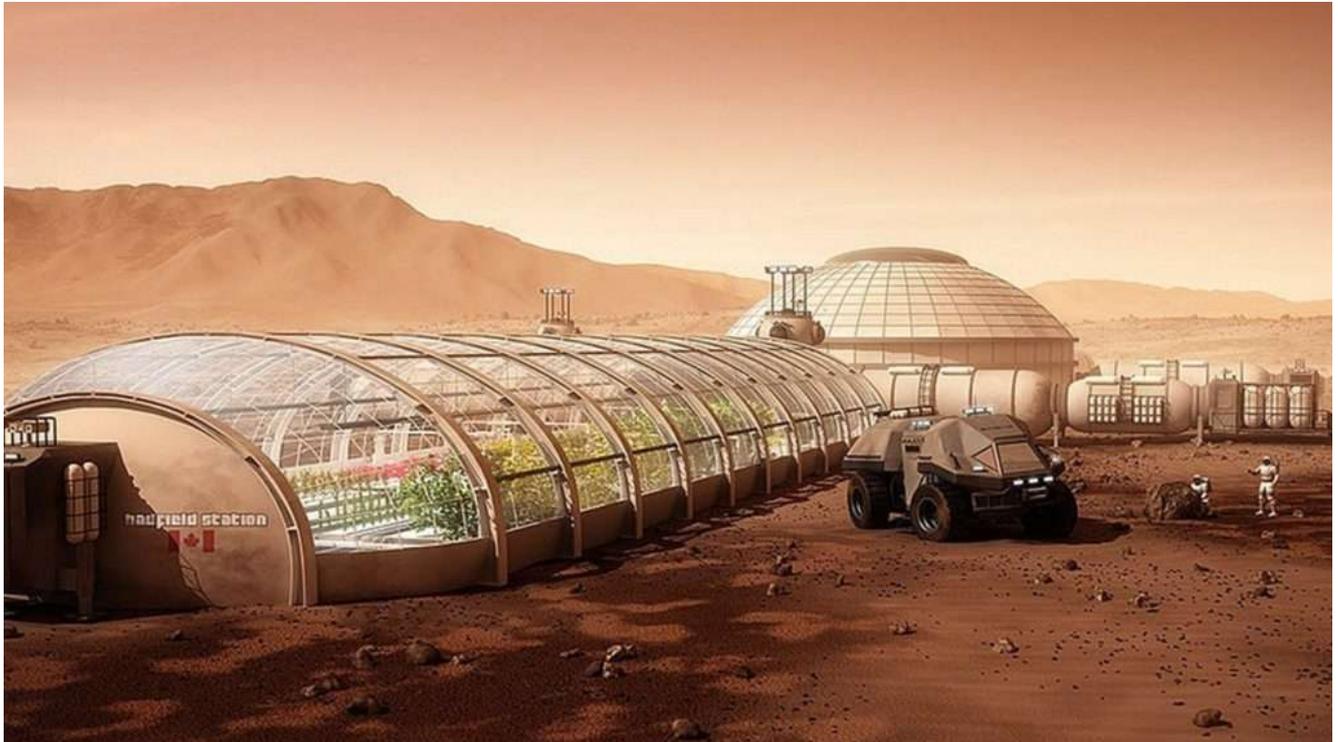


Introducing Project Martian

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Martian Green House concept.

Hey! By now you know that at Mezzacello we are committed to our mission of [Grow, Maintain, Sustain, and Explain](#). This summer I have a remarkable opportunity to push that mission to an unexpected and thrilling new horizon; growing food and creating ecosystems on the Moon and Mars.

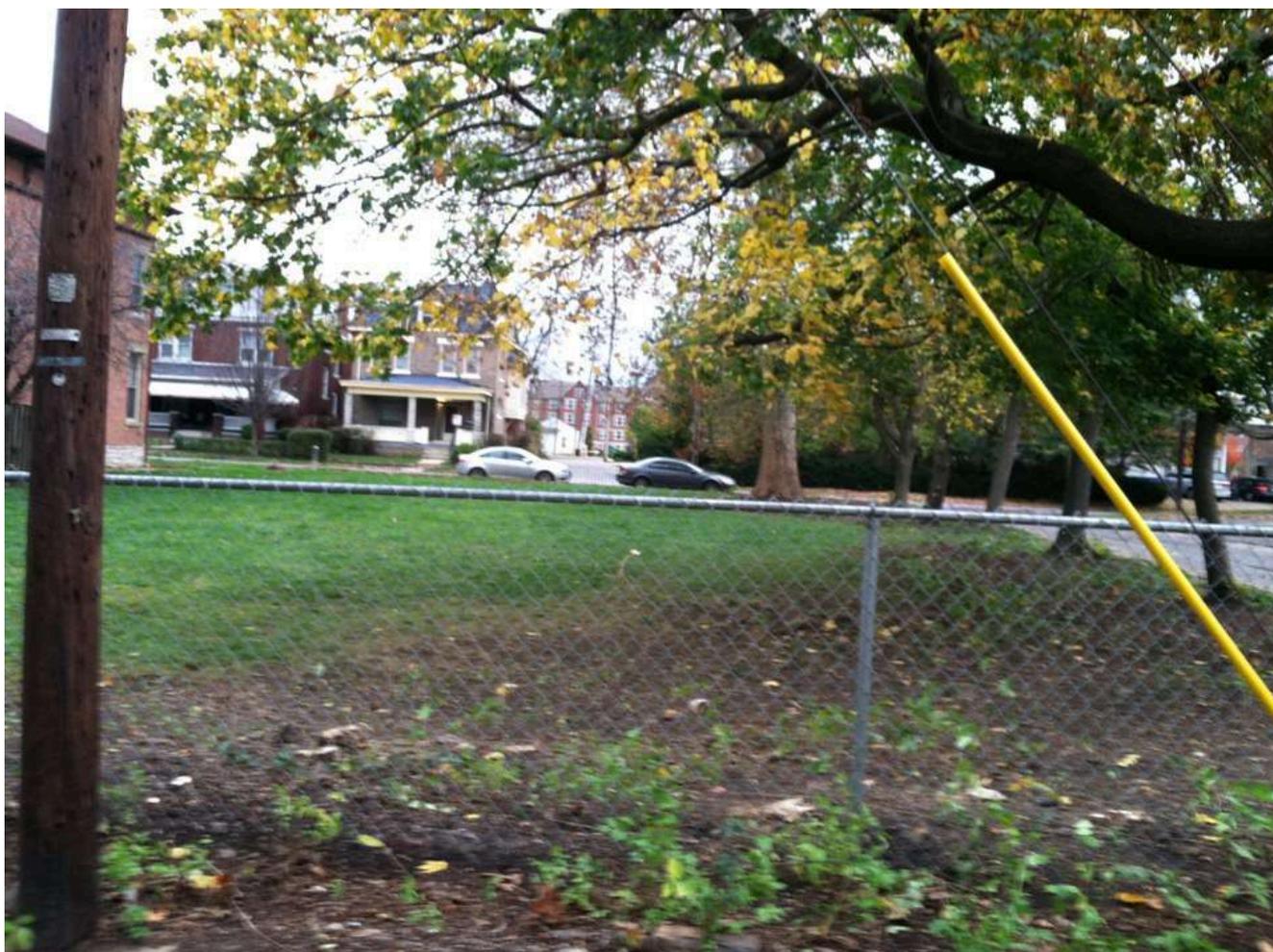
You might think that my work here at Mezzacello has NOTHING to do with growing food on another planet. But that's what I have been thinking about all along. How am I doing to get compacted clay, ignored for 160+ years as an afterthought to grow, sustain, and maintain life?

Substitute a largely sterile built urban environment for the surface of the Moon or Mars and you see the BIGGER picture. I have labored to create an artificial self-enclosed sustainable

ecosystem that produces roughly 80% of its own material, organic, fertilizer, and liquid needs.

These ecosystems incorporate all materials from all of the inhabitants, trees, bushes, grass, garden plants, insect and micro organisms, fish, pond, bio-filters, manure streams, chickens, ducks, rabbits, and humans in this endeavor.

All of them are [interdependent](#) and while it may not yet be completely #ZeroWaste and totally #selfEnclosed it is far more #Sustainable than I had ever imagined. I do sometimes wish it was prettier, but nature parses beauty through different lenses. So must we all.



[Jim Bruner](#) | Mezzacello

The original state of the yard, just after we removed all the overgrown vegetation.



[Jim Bruner](#) | Mezzacello

Recycling grass, leaves, manure, food compost, and peat moss (used to store root vegetables over winter) back into the no-dirt lasagna garden beds.

Self-Enclosed, Sustainable, Multi-stream Ecosystem

Mezzacello has from Day One been committed to creating this self-enclosed, sustainable, multi-stream ecosystem. We have strategically built it out with this multi-prong goal of achieving zero waste, ease of maintenance, and maximum efficiency. Project martian places this mission into a real-world framework to explore how one can create an ecosystem in an environment that is not suitable for life at all.

[I faced a similar obstacle here at Mezzacello starting in 2014.](#) When I started six years ago, the dirt (a result of 165 years of packed clay and pollutants and chemicals) was suitable for supporting nothing but grass, weeds and trash

trees. I have carefully curated the 40cm (18") semi-embedded raised beds to transform what was dirt into soil with copious amounts of organic materials and nutrients derived from those diverse ecosystems at Mezzacello.

After three years of focused effort, there is no longer any "dirt" in the [potager beds at Mezzacello](#). It is a substrate of recycled on-site organic matter from the brown, green, algal, manure, and chemical sources available here at Mezzacello. [Even the burlap that serves as moisture retaining, weed blocking mulch is recycled.](#)



[Jim Bruner](#) | Mezzacello

There is no "dirt" in my fingernails or on my hand. This is pure organic matter that has become soil.

Zero Waste

Zero Waste is a powerful motivator in this project. The more that can be produced and reused onsite the less materials need

to be brought in from the outside. Bringing supplies in from Menards, [Rural King](#), [TSC](#), and Amazon is one thing.

But what if EVERYTHING you needed to create a functional ecosystem capable of growing and supporting food that is easy to process, and maintain is EXACTLY my mission. If you are on the moon, not only are you going to need a habitat capable of containing an atmosphere rich in Nitrogen, Oxygen, moisture and trace minerals, while still allowing visible light, heat, and limiting UV and dangerous Cosmic radiation is already a big and expensive capital expenditure.

Most people do not consider how extraordinarily expensive getting the materials like dirt, soil, fertilizer, seeds, water and people to that location. Yes, robots probably could do a lot of the work. But the “dirt” on Mars and the Moon is actually regolith which is extraordinarily small, sharp and useless in its present form.

Dangerous Dirt

We will need an alternative to using native dirt. That’s not to say we can’t use regolith as a base, but it needs an ecosystem to convert it into a usable form. In place of traditional dirt, I will be using diatomaceous earth, and fine shredded leaf litter and trace minerals to replicate the dirt we find on Earth.

This is the goal of “Project Martian” what will it take to make that extraterrestrial Eden possible? I have already been working on this for years. Now I will be laser-focused on that. Stay tuned.