

Needs Identification and Problem Statement

'GR8 Group'
GNG1103 Group 8

Problem Statement

The indigenous community in Ottawa is in need of a sustainable method of cultivating and growing foods across different locations while being cost-effective and eco-friendly. This issue will be resolved by implementing a greenhouse that is modular, hydroponic, and low-cost.

Background

The indigenous community has been struggling with food sovereignty and are in a need of a solution to this issue. Trudy, a chef, and an advocate for the indigenous community is a passionate individual who wishes for her community to thrive and live an enriched life.

UOttawa partnered with us to design a greenhouse for the indigenous community. The greenhouses will be built to help and provide a feasible and affordable solution as it will give a safe environment to continuously grow vegetables.

Current Knowledge Regarding Needs

After speaking with the client, we have deduced three different scenarios for the greenhouses. Each situation needs extra features, but to maximize the greenhouses' ability we will try and streamline our product.

Farm

Chef Trudy's farm provides food for her specialized indigenous restaurant and is looking to expand the growing season on her farm. As of now, she has crops of rice and apple orchards. Having a greenhouse would allow her to grow smaller vegetables like tomatoes, cucumbers, and many herbs like basil, thyme, and parsley year-round. The farm has access to rain barrels for the hydroponic watering system and full-time workers that can water/monitor the greenhouse.

Community Centre

One of the locations is a community center, a repurposed school, is seen as a possible venue for an indoor grow wall. This essentially means no access to sunlight and could be used all year round. While there are standard 120V wall sockets, there are concerns about power consumption due to the 'unreliable' electricity in the building. Physical dimensions are limited by the size of the walls, and must not be able to be scaled by children.



Furthermore, the growing wall could span from the floor to the ceiling, it must be accessible for persons with an average height of 5 feet. When installing, components must be able to fit through doorways and can be drilled and mounted into the cinder-block walls. Lastly, the client would like to explore educational growing, full-time growing, and beginning seedlings to be transferred to other locations.

Client's Personal Property

Our third location is our client's personal property. This is a beautiful, outdoor, spacious location full of natural light and ready to accommodate a 4' X 8' installation. Furthermore, in this location, we have access to electricity from a standard 120V outlet, as well as running water from a garden hose together with water from rain barrels already on the property. A temporary cement foundation is also available. For it to be as effective as possible, it has to be compatible with most types of vegetables varying from herbs, all the way to ground roots and vines.

Moreover, this greenhouse will be used seasonally, which means during the spring, summer, and fall seasons. Apart from general tending, this greenhouse needs to be easily accessible for kids and teenagers as part of development programs run by community leaders. In addition, there is a possibility that the greenhouse is left alone for months at a time, therefore the greenhouse should be automated.

Streamline

In order to make a greenhouse that accommodates all the scenarios listed above we have decided to include these design factors:

- Modular
- Hydroponics and manual if preferred
- Extendable
- Accessible and automated
- Transportable
- User-friendly
- Eco-friendly
- Secure
- Temperature adjustable

Conclusion

In brief, indigenous communities around Ottawa are in need of greenhouses to grow their food at an affordable price. Our team is dedicated to creating a product that is self-sustaining, easy to use by all age groups, and that is durable. With all the factors considered, we hope to create a product of quality that will truly make a change for the indigenous community.

