TECHNOLOGY AND INNOVATION GRANT:

SMART HYDROPONIC GARDENING

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IMAGINE
HALF HOLLOW HILLS
COMMUNITY LIBRARY

Long Island Library Resources Council


COMMUNITY
GARDEN

COMMUNITY GARDEN

1 – Great place for local produce

2 – Community driven

3 – Educational

4 – Can only be done seasonally.

SMART HYDROPONIC GARDENING

SMART HYDROPONIC GARDEN

REFINING THE CONCEPT OF THE COMMUNITY GARDEN

- Replicate environmental factors for optimal plant/crop growth
  - Lamps with varying kinds of light
  - Water control
  - Allows for yielding crops at any time of day/year, regardless of the season
- Educational purposes for learning the growing process in a technology driven way

PROGRAM OPPORTUNITIES

1 – Experiential learning of the growing process

2 – Integration with cooking programs for teens and adults

3 – Donating fresh produce

FOOD DONATIONS

- Building off our existing framework for food donations
  - Annual food drives
  - COVID-19 food collection
  - Food-donation drop at new building
- Building off this concept, we donate fresh produce to local organizations

PROJECT MOTIVATION

- The COVID-19 pandemic shined light on the problem of food insecurity.
- Since libraries serve as local community centers, we can nourish a community while providing avenues of information to the public.
- Our goal is to use hydroponic smart gardening to turn the standard community garden into a year-round endeavor that continuously appeals to curiosities, educates individuals, and nourishes communities.

PROJECT MOTIVATION

- By forming a year-round smart garden, the library can facilitate a consistent flow of food.
- Help various local community organizations
- Educate the population on how their food is grown
- Offer a modern perspective on agriculture

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SMART HYDROPONIC GARDENING

HOW IT BEGAN…

- **<u>Original Idea: OPCOM Grow Wall</u>**
  - Familiarity for students in the local school district
  - Provides students continuity for potential ideas and projects
  - Start with one Grow Wall, focusing on community engagement and build to food donations
  - Build the project out over time

GRANT OPPORTUNITY

- **<u>LILRC Technology and Innovation Grant:</u>**
  - The grant encouraged us to consider new and exciting ways to engage the community.
    - Taking one Grow Wall and expanded it to a small fleet of hydroponic growers
  - This allows us to eliminate barriers in educating the community and provide food to those in need

SMART GARDENING

What Makes It Smart?

- The ability to control settings and monitor the grower remotely.

GROW TANK

- Perfect for growing tall vine-like plants, such as grapes and tomatoes
- Compact and can fit in spaces where there is not ample light
- Potential for 8 individual plants

HYDROPONIC WALL

(Grow Wall)

- Tall vertical farm that consists long shelves with pods for growing
- Each shelf has a circulating water supply and built-in lighting to offer continuous growth all year-round.
- Potential for over 100 individual plants

HYDROPONIC CUBE

(Grow Cube)

- Perfect for large leafy vegetable
- Small footprint ideal for a table or countertop
- Some units feature a stackable design for more units
- Potential for 10 individual plants

Seeds:

Please purchase the seeds below from local store or Amazon.com.
Local seeds are the best choice since they already met the local environment.

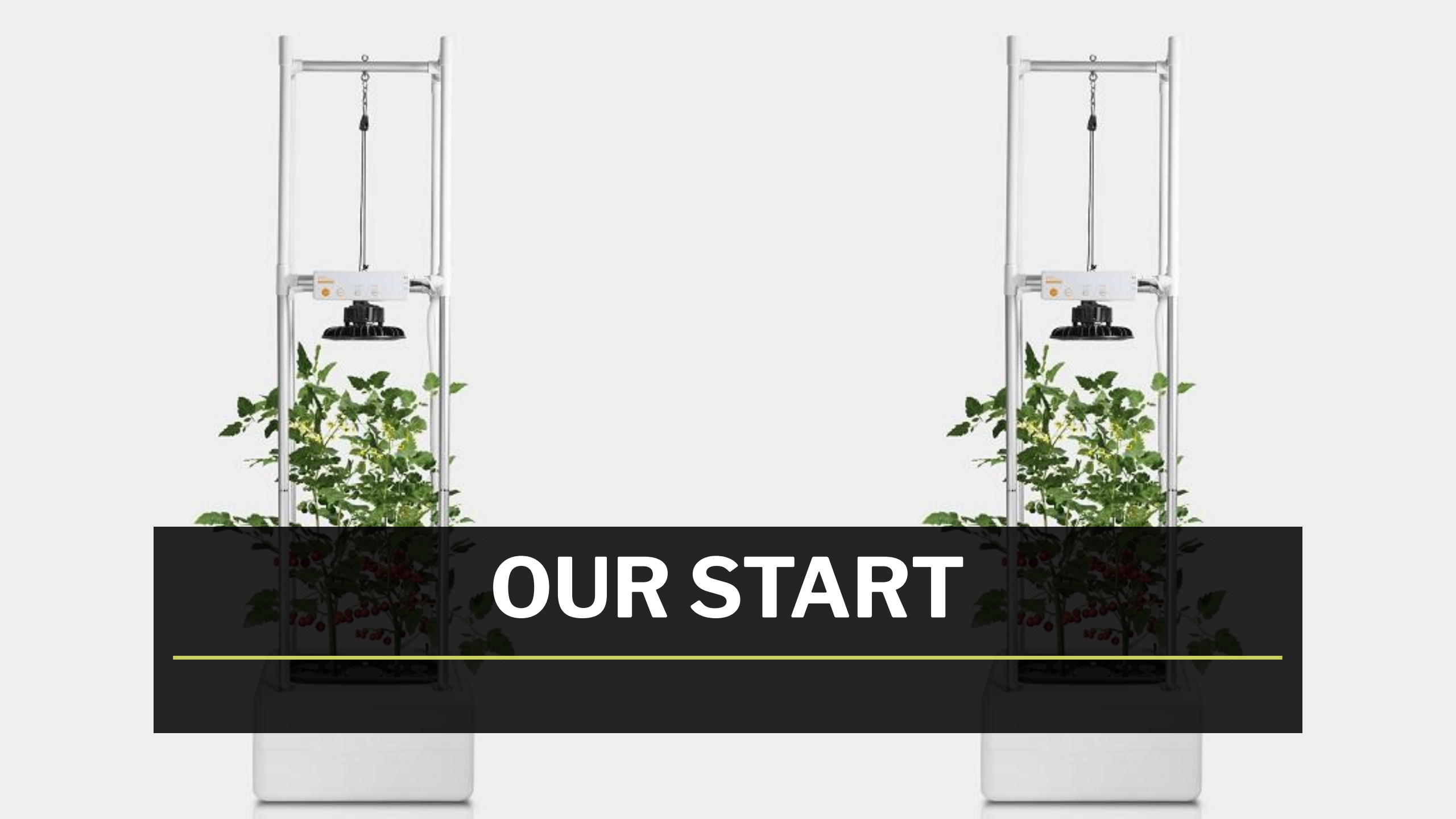
Vegetables:

Herbs:

Microgreens:

Vines:

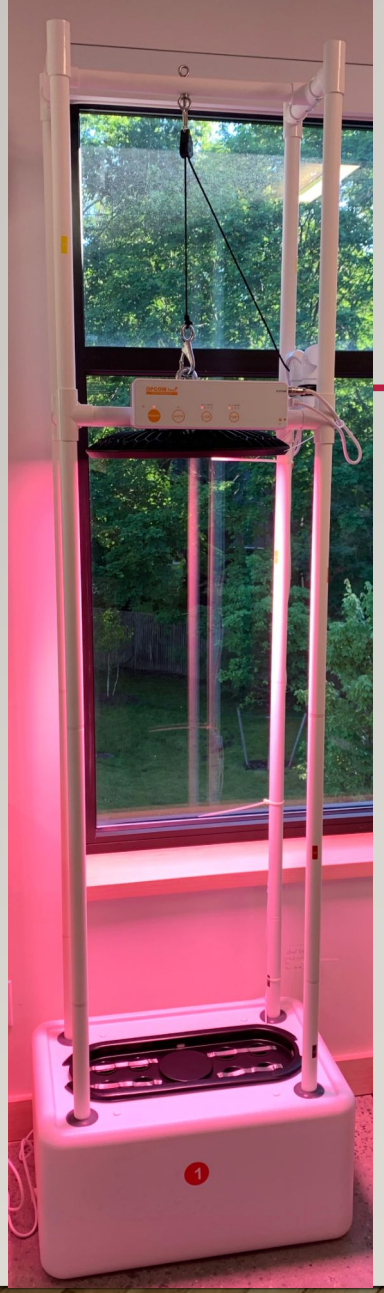
WHAT CAN WE GROW?



OUR START

GROW TANK

- Supply chain issues hit OPCOM hard and more intense than anticipated by the manufacturer and distributor.
- Despite this, we were able to purchase two GrowTank units and start growing in Q2 of 2022.



ASSEMBLING

- Many parts and pieces to put together!
- Launched with the grand opening of our library's Seed Library
- Our first growing was Cherry Tomatoes

OUR FIRST PLANTING

- Sprout Stage
- Keeping a watchful eye to see how many sprouts are successful
- Keeping track of the days for the next stage

Cucumber, Tomato	Time after planting	LED Mode	Pump Mode	Nourishment	Temp	RH	EC	PH
Sprout Stage	Day 3~Day 7	OFF	OFF	-	75.2°F	80%	0.5-1.0	5.5-6.5
Young plant stage	Day 10	ON(*1)	ON	starter	59°F-86°F	45%-70%	1.0-2.0	5.5-6.6
Growing Stage	Day 20~Day 40	Auto(*1)	Auto	80L	59°F-86°F	45%-70%	1.0-2.0	5.5-6.7
Blossom Stage	After Day 20	Auto(*2)	Auto	80L	59°F-86°F	45%-70%	2.0-2.5	5.5-6.8
Fruit Stage	After Day 60	Auto(*2)	Auto	80L	59°F-86°F	45%-70%	2.5-3.0	5.5-6.9

OUR YIELD

- Cherry Tomatoes Yield: 150+
- Each yield was used to educate staff on the project, as well as utilization in select cooking programs done by library staff
- With higher yields and a better understanding of nutrient regulations, we plan to donate yields to local soup kitchens

Cucumber Yield:

12+

String Bean Yield:

15-20 (low yield)

HOW TO GET SMART HYDROPONICS STARTED AT YOUR LIBRARY

1. KNOW YOUR BUDGET

- Consumer level hydroponic growers can range in price from $249 to $1,400
- Consider the additional costs for nutrients, grow sponges, etc.
    - Many hydroponic growers include some to start with, but factor in ongoing costs for maintenance

II. ASSESS WHAT TO GROW

- What crops does your library/community need or benefit from?
  - Seed libraries can help!
- Check to see which grower is specialized for the crops you want.

III. PHYSICAL SPACE

- Consider where you would setup the hydroponic grower
- If space is limited so think about what changes will be made to fit a grower
  - A wide selections of growers available, varying in size

IV. PURCHASE

- Growers can take a long time to be delivered
  - Investigate potential delays in shipping/deliveries vendors may face
  - Anything can happen! Keep constant communication open with the distributor

Past Crops

QUESTIONS?

CONTACT US!

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