

Sustainable Fridge

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Description:

The Sustainable Fridge monitors and maintains four distinct environments within itself. The four environments are each tailored to a specific groupings of produce with specific temperature, humidity, and ethylene gas sensitivities. By using appropriate produce groupings and their corresponding environment the sustainable fridge keeps produce fresh longer than a traditional crisper drawer.

Value to Users:

- Reduction of food waste
- Possible increase in user fruit & vegetable intake
- Monetary savings during grocery shopping

Objectives

- Monitor 4 internal chamber environments
- Control refrigerator blower to deliver cold air as needed
- Control delivery of cold air to a specific chamber.
- Control a humidifier in each chamber to keep humidity at a desired percentage
- Monitor water consumption of all 4 humidifier reservoirs
- Keep produce fresh for longer than possible in a traditional crisper drawer
- Indirectly influence the user to adopt a healthier diet
- Have a positive impact on the environment by reducing food waste

Formulas

$$\text{Water Container Volume} = 946.4 \text{ mL}$$

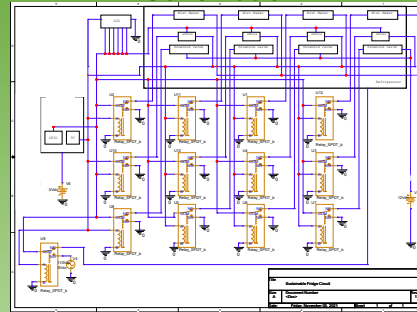
$$\text{Spray Rate of Misters} = 35 \frac{\text{mL}}{\text{hour}} = 0.58 \frac{\text{mL}}{\text{min}}$$

$$\text{Appropriate Amount of Water} = 940 \text{ ml} \geq x \geq 900 \text{ mL}$$

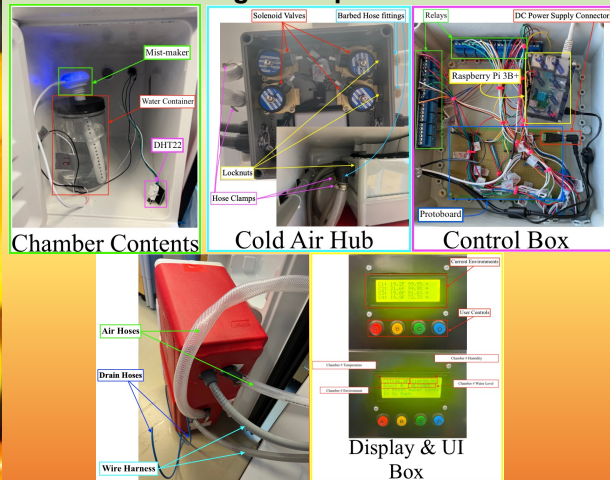
$$\text{Minutes of spraying} = b$$

$$\text{Remaining Water in Jar: } W(b) = x - .58 * b$$

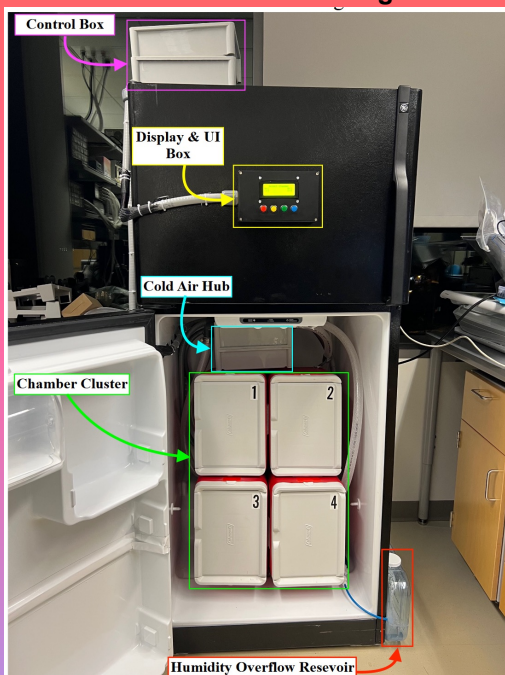
Schematic



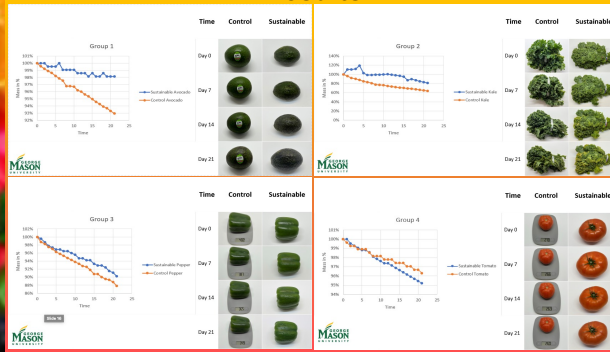
Fridge Components



The Sustainable Fridge



Results



The Team

- Left to Right
- Cameron Flores (PM)
 - Ahmed Jaber
 - Matthew Phillips
 - Nestor Arellano



Special Thanks

- Dr. Margaret Slavin
- Dr. Nathalia Peixoto
- Dr. Peter Pachowicz
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- Theresa Calcagno

