Feedback

* Add covers to top portions of reservoirs to eliminate water loss through evaporation.

Problem Statement

Syrian refugees need a way to get more food in a cheap, water efficient, durable, and reasonably sizeable fashion.

Reasons for selection

* Minimal moving parts.
* Intuitive operating procedure.
* Discontinuous labor requirement.
* Materials are easily acquired.
* Adjustable flow rate.
* Keeps plants away from vermin.

Specifications

* 10 ft x 3 ft x 3 ft
* Composed of steel, wood, styrofoam and a window screen.
* Mass 100lb (without water)
* Recommended flow rate: 0.420 L/min or 0.111 gallons/min

# Design Criteria

Design Criteria from highest importance to lowest:

* Electricity free mechanism(s).
* Water efficient (L/day).
* Must be cheap ($).
* Can survive the harsh effects of sand (durability).
* Maintainability.
* Can be used in any temperature.
* Could be built or assembled locally.
* Capable of providing enough food to help sustain a tent of 6 people. (m^3).
* Easily assembled.
* Can grow a variety of plants.
* Easy/intuitive operating procedures.
* Does not require too much attention.
* Can sit on top of sand/mud without having any effect on the system.
* Has to keep vermin away.
* Made from local material.

Benchmarking

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Home Hydroponic Unit** | **Idealhere Basket** | **Hydroponic Site Grow Kit** | **General Hydroponics GH4720 Farm Controller** | **Proposed Refugee Design** |
| Size  (per unit) | 15.6 x 11.0 cm | 4.8 cm x not specified x not specified. | 62.23cm x 62.23cm x 62.23cm | 88.9 cm x 33.02 cm x 22.86cm | 300cm x 90cm x 90cm |
| Quantity | 12 | 10 | 8 | 1 | 1 |
| Cost (not including shipping | Not specified | $5.25 CDN | $558.71 CND/8 | $129.00 | $302 |
| Volume of water(L) | 100L | Not specified  (very small) | 8 x 49.2L + 1 x 30.3L | 15-20L | 170L |
| Material | PVC | Polyethylene w/ foam inserts | Plastic | PVC | Steel and Wood |
| Weight(kg) | 80 | Not specified | 19.64 | 11.84 | 50? |
| Electricity(W) | 170 | None  (no pump) | yes | yes | No |
| Water consumption (L/day) | 8-10 | Not specified | Not specified | None | None |
| Medium | Water | Water | Water + clay pebbles | Water | Water |

Work Cited

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