Production unit of sweet potato with green soy

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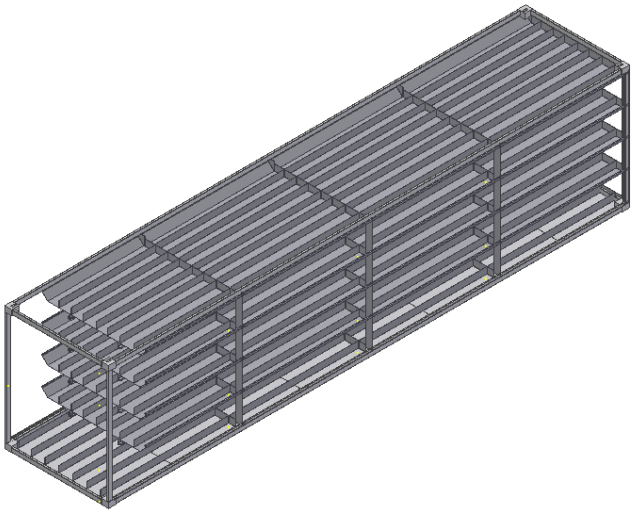


Presentation

The idea

Appeared in desire to do something for a better world in order to give the disadvantaged necessities with best quality.

This project is to the disadvantaged population. At the same time is a project with feasibility for any country whatever the economy in which it is inserted. Being an agricultural charisma project aims to automatism the food production, with the viability of the fact that an automated production unit without maintenance costs after built, is completely ecological and serves up natural resources to operate at full capacity. Economically only have the initial cost of building the entire mechanism inherent in the project.

What is each unit

- Automated system:
    - Cultivation, irrigation, sweet potato and soybean growth. The sweet potato was chosen for its excellent nutritional characteristics, pest resistance and for being the tuber that produces more energy in the same space. Soybeans for its excellent protein fairly complete with essential amino acids to human.
    - Maintenance of irrigation, light management and breathing.
    - Harvest.
    - Sweet potato soup with soy preparation. The sweet potato peel, after being properly removed oxalates, which can remain after 8 hours of soak. Soy green beans ...

Unit advantages

- Invulnerable to weather storms to rather high magnitude.
- Anti poverty, who can not afford have this essential commodity.
- Anti economic crisis, it does not take money to benefit this essential good, the only cost is the production of the machine.
- Maximum utilization gestational age (equivalent to 3 to 4 harvests per year).
- Irregular crop, the crop is individual and is made as needed and readily required.
- Cultivation replica of the traditional.
- Self-maintenance.
- Management optimized to maximize production.
- Direct to the consumer.
- Zero logistics, everything is done on site. The only logistics is to place the machines where it is needed.

Characteristics

Unit structure

Freestanding structure in sheet steel, acrylic, solar panels, with appropriate measures to transport.

Production units are suitable to transport by standard means, in the current measures equivalent to 40-foot hi-cube containers, 12000mm 2896mm by 2500mm, thus being able to go to places where they are most needed. The growing area is approximately 120 square meters, which will be spread over 4 floors in the unit which has 30 square meters.

Each unit contains approximately 10 cubic meters of earth and water tank with 3000 l water, which is retained rain. The water tank holds 100 mm rainfall and is anti evaporation.

It contains solar panels throughout the area at the top, divided into three installments, with the measures 2500mm by 4000mm, in which all contain solar trackers controlled by GPS.

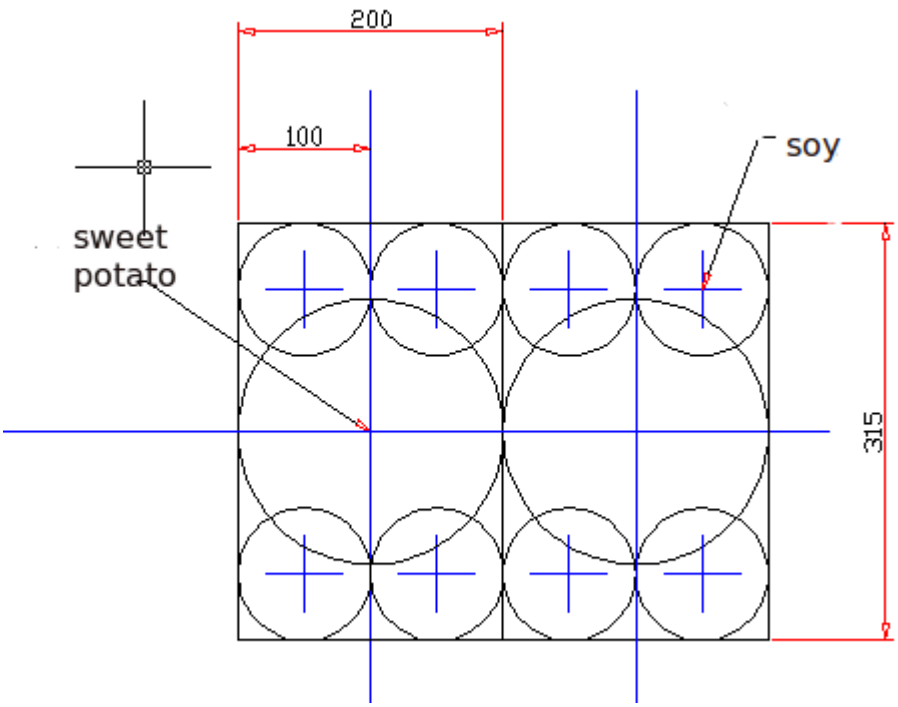
Access is controlled by fingerprint in the system, thus recognizes and provides each person to 3 daily doses.

The dose request button or half dose is incorporated into the fingerprint sensor, in which the press to the middle generates half dose, and press more strongly to the bottom generates full dose.

The whole unit is made such that has the least material and applied as simple as possible.

Production

The output of each unit is continuous and is estimated availability of 15 liters of sweet potato soup with soy daily, more or less dense depending on the grown amount in the respective area for each day, equivalent to about 50 doses with 0,3 liters , ready to eat in each unit. The following image shows two areas of about 1900 that has the machine.



It has a plate led outside where one can see in the distance the number of available doses, which is simply deleted when no longer available doses, this to avoid unnecessary queues.

Are automated production units with minimal maintenance costs after built, fully ecological and served up natural resources sun and rain and running. It has rain catchment tank, which serves areas with rainfall from 100mm annual, at least yet. Go to https://climate-data.org/ to see rainfall in various locations around the planet.

Cultivation Management

The cultivation management is performed by a robot in the top rails of each level, in that its external dimensions do not exceed 300 mm in diameter when moving.

An hour before sunset, the system turns off the restriction of 3 doses per person, until the sweet potato container is empty.

At that time before the solar panel from the spring to position to the next day, the robot will get the potatoes for the next day and place them in a container in which they are allowed to soak overnight to remove oxalates.

At this stage they are placed the seedlings to grow in 15 days, from the previous harvest.

When the robot will get sweet potatoes and soybeans, grown immediately as follows, with the earliest changes already grown 15 days thus making the rotation, and changing the place of sweet potatoes with soy, thus making a rotation farming, which It will benefit both the healthier growth and also minimize the pests, with an excellent soya for this function and can make direct compost layer to sweet potatoes, potatoes since the need earth as loose as possible. It is registered in the database location and date of the cultivation of these. The approximately 120 square meters will be 128 divisions, making the turnover in 128 days, so that the robot know the exact location where the sweet potatoes and more mature soybean, thus making a permanent cycle. So is a row of 3 meters available for each day, which will amount to about 15 liters of sweet potatoes whipped with soy.

Irrigation

Watering is done by the robot around noon when there is more surplus energy from solar panels. Irrigation is needed each 3 days, the robot moves in irrigation in about 30 blocks each day, also making some mechanical control with the possible pests and weeds.

Electrical system

Energy

Renewable energy to power the LEDs, the robot and other components:

- Photovoltaic solar panels, 3 modules, moved by linear actuators ..
- Urban wind low noise.

The machine only works during the day, when the sun rises and begins to be enough energy in the stabilizer.

Solar panels are 2 or 3 modules, each with a solar tracker system, where in the last hour of sun, the east side of the panel is positioned where the sun rises the next day. When it receives energy, others position themselves properly in the sun. This is because the system will not have batteries for which besides being expensive, have reduced durability and the machines are to have the least possible maintenance, as will be enough and are suitable for remote sites.

Illumination

- Done with minimum energy consumption LEDs, with only the wavelength required for plant growth.
- Located in the self-adjustable panel and therefore also the possible shortest maximize energy utilization required by the plant.

Ventilation

It contains two fans with air passages, in which the air flow output is a system that completely closes in the event of fan failure, this to prevent the situation to the maximum the entry of insects. The output fan needs to operate at night in order to circulate the air therefore need an energy accumulator system is an air compressor, because that is what has less wear over other energy storage systems.

Robot functions

- great lighting regulation.
- Realization of cultivation.
- Watering with bucket, reducing pipes, valves and controllers, so there is better management when the water is not abundant.
- Sweet potato and soybean harvest.
- Several maintenance programs.
- Substitution defective LEDs.
- Participation in the construction of the structure.
- Among others, open to constant programming and self-learning depending on what it takes.

Front zone

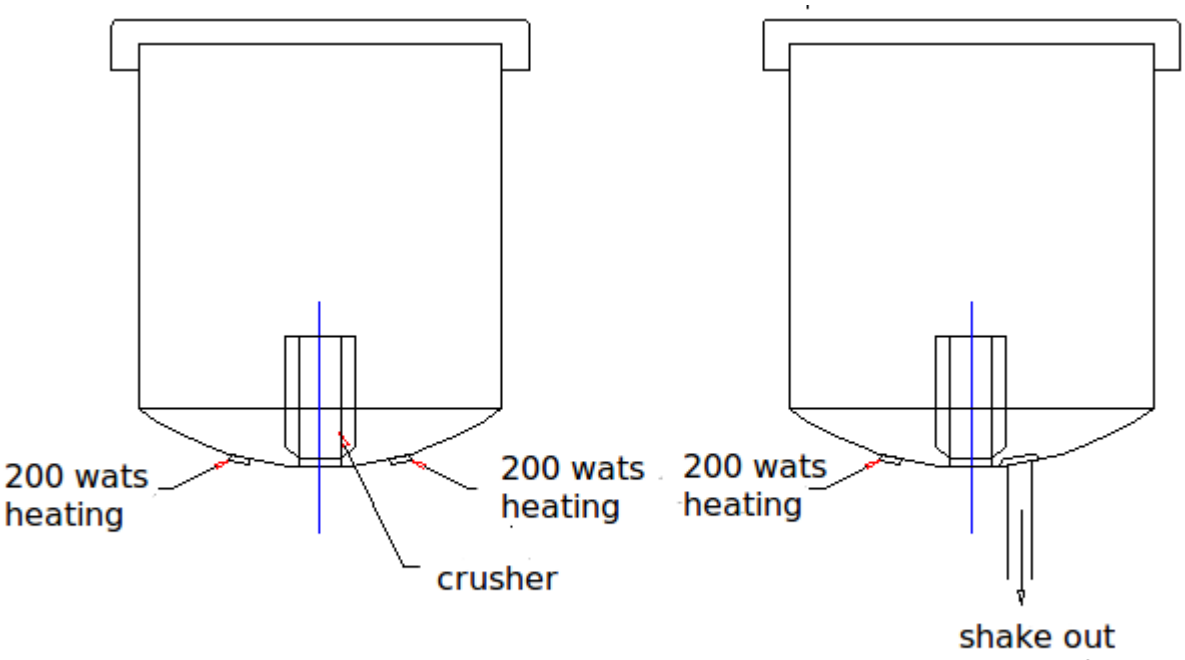
Composting Production

Washing

http://en.wikipedia.org/wiki/Saponaria

Production of soup

At the beginning of the day, the automatic system will put the sweet potatoes in the cooking pressure vessel.



Serve zone

It has a spot cooling system, wherein the frappe being the minimum temperature of 65 degrees to persevere their anti-bacterial quality, is replaced by about minus 20 degrees when served it for serving soup optimum temperature for rapid consumption.

This addition to the advantage of the smoothie served with excellent temperature is implicitly that the glass is returned on time.