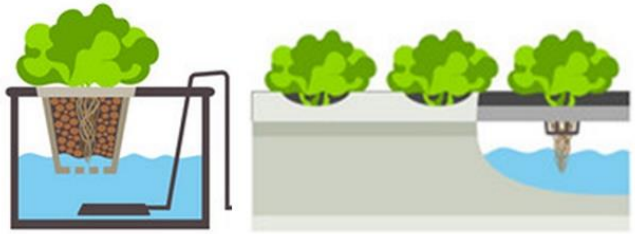
MANAGING THE SYSTEM

- Fill the system with water; run the system to test for leaks
- Maintain the quality of the nutrient solution; three important parameters to maintain are pH, electrical conductivity and temperature. Dissolved oxygen is also crucial.
- pH is a major determinant of nutrient uptake by the plant; pH range-5.8 to 6.8 (6.3 optimal)
- EC is the strength of ionic fertilizer solution; EC-0.5 to 2.0 mS/cm
- Temperature 20-25^{o} C (24^{o}C optimal)
- Always check pumps if functioning normally



URBAN VERTICAL GARDEN

- Applies "one-pump rule" to lift nutrient solution using a low-head submersible pump form the reservoir to the uppermost portion of the NFT system and allow water to cascade by gravity to planting beds and back to the tank
- Grows more than 120 hills of leafy vegetables (lettuce, pechay, mustard, water spinach, sweet potato, etc.) in 1 square meter area
- A therapeutic way of producing your own safe, and healthy food with minimal water and electricity
- Can be attached too solar panel and automatically controlled.

"OH MY GULAY!"

- The Philippines is now a country of meat-eater
- Average daily consumption per person was 110g of vegetable, down from 145g in 1978, and 54g of fruits, down from 104g in 1978 (IRIN, 2012)
- Chronic malnutrition among children is directly related to the country's low vegetable and fruit consumption; an estimated 29 percent of children under five years old and 33 percent of children younger than 10 years were too short for their age groups (IRIN, 2012)
- The declining vegetable consumption is related to production; was among the major factor is illnesses on the country

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Telefax No: (004) 456-5843
Mobile No: 0917-537-9732
E-mail: clsu_hydroponics@yahoo.com
www.clsu.edu.com

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AGRICULTURAL TRAINING INSTITUTE
REGIONAL TRAINING CENTER X
El Salvador City, Misamis Oriental

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SMART FARMING SYSTEM ADDRESSING WATER, FOOD AND ENERGY

HYDROPONICS

HONING TOMORROW'S AGRICULTURE

WHAT IS HYDROPONICS?

Hydroponics is a technology of growing plants in non-soil media. It is derives from two Greek words “hydro” meaning water and “ponos” which means labor; literally it means “water-working”. The heart of hydroponics is the nutrients solution.

CONCEPT OF HYDROPONICS

Soil is no longer crucial for the plant to thrive when the required mineral nutrients are introduced artificially into plant’s water supply and plant roots are able to absorb them. The reserves of nutrients and moisture contained in the soil, and the support the soil renders the plant are critical.

HISTORY

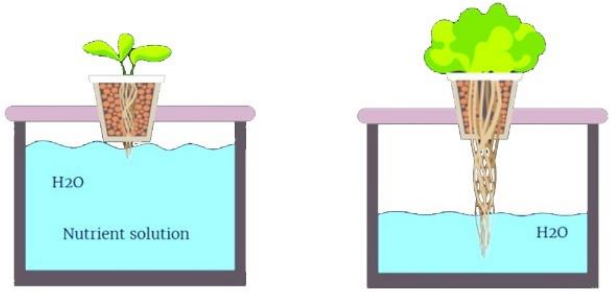
- Aztecs, an American nomadic tribe who were once treated roughly by their neighboring tribe, developed hydroponics
- In search for peace, the Aztecs left their homes, travelled south and settled in lake Tenochtitlan of the central valley of Mexico
- There, they built chinampas or the “floating garden”, which is made of rafts of branches and stems and soil scoured from the bottom of the lake
- As time passed by, vegetables, flowers and even trees grew on those raft. From this. The concept of Hydroponics rose and was considered the first form of sustainable agriculture.
- Later, they defeated the people who once oppressed them but they never abandoned the lake instead made it a huge and magnificent city.

ADVANTAGES

- Empowers household to have direct access to clean foods;
- Can be a source of family income
- Encourages recycling
- Answers government’s efforts to implement smart farming agriculture
- Realizes conservation of limited resources such as water, electricity, space, time, etc.

TYPES OF CULTURE

- Water or solution culture when only fertilizer solution is used; includes Nutrient Film Technique (NFT,) Deep Flow Technique (DFT), Tube culture, Cascade NFT.
- Media or substrate culture when growing media is used; includes gravel, coco peat, pumice, rockwool, perlite, vermiculite.



MANAGEMENT ON PLANTS

- Prepare seedlings; maybe germinated directly in cup using non-soil growing media such as rice hull, coco peat, gravel, scoria, perlite, expanded clay, etc.

- Check the plants growing regularly.
- Harvest vegetable after 30-40 days.