SNAP® Hydroponics

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AGRILINK 2009
World trade Center
Pasay City
Government looks to increase veggie production

According to the World Health Organization, up to 2 billion people do not get enough fruit and vegetable intake, which is among the top 10 selected risk factors for global mortality worldwide.

Early this year, the government and a social organization Gawad Kalang kicked off its two-year bid to put up a total of 2,500 backyard farms in the country.

The demand for vegetables is projected to increase "with the development of new processed products and applications, and uses [such as] salads, side dishes [as well as] medicinal and cosmetic [uses]," Agriculture Assistant Secretary Salvador S. Sallaca said in his presentation.

The Agriculture department projects an 11% increase in the production value for vegetables from P14.2 billion last year.

**House bill promoting hydroponics agriculture filed**

A BILL seeking to top hydroponics agriculture as an alternative way of farming has been filed at the House of Representatives.


Hydroponics agriculture is the method of growing plants and vegetables using mineral nutrient solutions without soil.

Ms. Bonoan-David said that as a low-input, low-input technology to grow food economically, hydroponics should be adopted in the Philippines.

"Hydroponics agriculture offers an alternative production system. It reduces pest problems while maximizing farm yields. Also, it can be utilized considering limited space and energy required by the system," she said in a statement.

Under the bill, all idle government lands owned by either the national or local governments or available land resources in state universities and colleges shall be considered for growing plants and vegetation using hydroponics agriculture.

Reene Rafael R. Espino, director of the high-value commercial crops program at the Department of Agriculture, was not immediately available for comment. — **Jhoanna Frances S. Valdez**
• Growing plants without soil
• An inert medium (coco coir dust or charcoaled rice hull) is used, instead of soil, to anchor plant’s roots
• A nutrient solution containing all the essential nutrients and water is added
Growing vegetables in hydroponics
What do plants get from the soil to grow?

Water

Oxygen

Nutrients:

1. nitrogen
2. phosphorus
3. potassium
4. calcium
5. magnesium
6. sulfur
7. iron
8. boron
9. manganese
10. copper
11. zinc
12. molybdenum
13. chlorine
Why do plants grow in hydroponics?

Water

Oxygen

Nutrients:
1. nitrogen
2. phosphorus
3. potassium
4. calcium
5. magnesium
6. sulfur
7. iron
8. boron
9. manganese
10. copper
11. zinc
12. Molybdenum
13. chlorine
Advantages of hydroponics

- soil preparation: none
- fertilizer: less
- water: less
- pests/diseases: less
- area: less
- labor: less
- energy/C footprint: less
- production cost: less
- production risk: less
- cropping cycles: more

"Using less to produce more "
Disadvantages of hydroponics

- Cost
  - expensive
- Know-how
  - lacking
- Maintenance
  - costly
- Source
  - very limited
1. Automated drip irrigation hydroponics
2. Nutrient film technique (NFT) hydroponics
Non-circulating, actively aerated system
This is SNAP® hydroponics...
SNAP® hydroponics uses no pump...
...and it is as easy as 1-2-3 and...

...the SIMPLEST hydroponics system so far.
Pechay (30 days)

Native pechay (Black Behi)

Pak choi
Mustard (30 days)
Watercress
Celery
Kinchay
Sweet Pepper (65 days)
Pepper
Amaranth (30 days)
Cherry tomato (65 days)
Kinchay (30 days)
Cucumber (45 days)
Ampalaya (45 days)
Upland kangkong (30 days)
Getting started with SNAP® hydroponics
1. Produce the seedlings

Buy from reliable source
- sterilized coir dust
- shallow plastic trays with drain holes
Good seeds emerge as early as 3 days after sowing
2. Making grow boxes

Styrofoam box of imported grapes
The bottom half of the styro box
- Place plastic film liner to prevent leaks of nutrient solution
- This will be the tank or reservoir of nutrient solution
- Punch/drill holes in the cover/lid of the styro box
- This part will hold the seedling plugs in place
3. Prepare the seedling plugs
Ten- to 15-day old seedlings ready for pricking:
Pricking the seedlings
Seedling plugs
4. Prepare the grow boxes in the growing area prior to pouring of nutrient solution.
5. Prepare the nutrient solution

SNAP® hydroponics fertilizer
6. Fill the grow boxes with nutrient solution
7. Put lid in place and put in the seedling plugs
COST of set-up per styro box
Styro box .................. P 10.00
Plastic liner ................. 8.00
Styro cups (8 pHs) ........ 8.00
Seedlings (8 pc) .......... 0.40
SNAP solution (12 L) .... 12.00
TOTAL ..................... P 38.40

YIELD per box (lettuce) = 0.5 – 0.75 kg

Farm gate price ... P 50.00/kg
“Floating roots”
Pest control--

Using tiricide
Using pheromone
“It’s harvest time!”
Putting on a ‘raincoat’ on the growing box makes it possible to do SNAP hydroponics in the open.
Outdoor SNAP® hydroponics
Selecting the right growing area for SNAP® hydroponics
At home

At the sunny side of your house
At the sunny side of an office building
Or under a rain-shelter in the lawn.
As a livelihood project
A chicken house converted into a SNAP® hydroponics
The sustainable production system for physically challenge individuals.
Cost and Return Analysis of SNAP® Hydroponics
## Financial analysis of leaf lettuce production using SNAP hydroponics (12 croppings/year)

### List of Basic Assumptions

| Cropping frequency: | 12 croppings/year |

### Fixed cost:

<table>
<thead>
<tr>
<th></th>
<th>Annual Cost/Revenue (PhP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land</strong></td>
<td></td>
</tr>
<tr>
<td>30 sq.m</td>
<td>0</td>
</tr>
<tr>
<td><strong>Plastic House</strong></td>
<td></td>
</tr>
<tr>
<td>1 unit</td>
<td>5000</td>
</tr>
<tr>
<td><strong>Plastic Drum</strong></td>
<td></td>
</tr>
<tr>
<td>1 pc</td>
<td>700</td>
</tr>
<tr>
<td><strong>Sytro Boxes</strong></td>
<td></td>
</tr>
<tr>
<td>50 pc</td>
<td>250</td>
</tr>
<tr>
<td><strong>Plastic bag liner</strong></td>
<td></td>
</tr>
<tr>
<td>50 pc</td>
<td>400</td>
</tr>
<tr>
<td><strong>Sub-total of Fixed Cost</strong></td>
<td><strong>6,350.00</strong></td>
</tr>
</tbody>
</table>
Financial analysis on Leaf lettuce production using SNAP hydroponics (12croppings/year)

Variable cost: RAW MATERIALS

<p>| | | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>400</td>
<td>1.5 per pc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seedling plugs</td>
<td>per</td>
<td></td>
<td>4,800.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cropping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydroponics Fertilizer</td>
<td>600</td>
<td></td>
<td>7,200.00</td>
<td></td>
</tr>
<tr>
<td>Sub-total of Raw Materials</td>
<td>12,000.00</td>
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</tbody>
</table>
Financial analysis on Leaf lettuce production using SNAP hydroponics (12croppings/year)

Variable cost: LABOR (at P250/man-day)

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Harvesting</th>
<th>Sorting, Cleaning, Packaging</th>
<th>Sub-total of Labor Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap Set-up</td>
<td>0.0625 man-day at 275 per man-day</td>
<td>17.1875</td>
<td>206.25</td>
<td></td>
</tr>
<tr>
<td>Harvesting</td>
<td>0.0625 man-day at 275 per man-day</td>
<td>17.1875</td>
<td>206.25</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub-total of Labor Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>618.75</strong></td>
</tr>
</tbody>
</table>
# Financial analysis on Leaf lettuce production using SNAP hydroponics (10 croppings/year)

## Operating Cost (Utility)

<table>
<thead>
<tr>
<th>Water</th>
<th>P100 /month</th>
<th>12 months</th>
<th>1,200</th>
</tr>
</thead>
</table>

## Sales

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 kg/cropping</td>
<td>75 /kg (ave.)</td>
<td>27,000.00</td>
</tr>
</tbody>
</table>
## Projected income statement

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCOME FROM SALE</td>
<td>27,000.00</td>
<td>27,000.00</td>
<td>27,000.00</td>
<td>27,000.00</td>
<td>27,000.00</td>
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<tr>
<td>TOTAL COST OF SALE</td>
<td>12,618.75</td>
<td>12,618.75</td>
<td>12,618.75</td>
<td>12,618.75</td>
<td>12,618.75</td>
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<tr>
<td>GROSS PROFIT</td>
<td>14,381.25</td>
<td>14,381.25</td>
<td>14,381.25</td>
<td>14,381.25</td>
<td>14,381.25</td>
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<tr>
<td>Less Operating Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>1,200.00</td>
<td>1,200.00</td>
<td>1,200.00</td>
<td>1,200.00</td>
<td>1,200.00</td>
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<tr>
<td>Depreciation</td>
<td>1,039.00</td>
<td>1,039.00</td>
<td>1,039.00</td>
<td>1,039.00</td>
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<tr>
<td>TOTAL OPERATING COST</td>
<td>2,239.00</td>
<td>2,239.00</td>
<td>2,239.00</td>
<td>2,239.00</td>
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<tr>
<td>NET PROFIT</td>
<td>12,142.25</td>
<td>12,142.25</td>
<td>12,142.25</td>
<td>12,142.25</td>
<td>12,142.25</td>
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<tr>
<td>RETURN on INVESTMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>191%</td>
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</table>
## Projected cash flow

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>0</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
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<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td>6,350.00</td>
<td>13,818.75</td>
<td>13,818.75</td>
<td>13,818.75</td>
<td>13,818.75</td>
<td>13,818.75</td>
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<tr>
<td><strong>NET REVENUE</strong></td>
<td>(6,350.00)</td>
<td>13,181.25</td>
<td>13,181.25</td>
<td>13,181.25</td>
<td>13,181.25</td>
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<tr>
<td><strong>IRR</strong></td>
<td>207%</td>
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</table>
Acknowledgment

Bureau of Agricultural Research
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