Grow Veggies in Your Home Garden!

Nutrition Education Module 2

Learning Objectives:

1. Describe the ideal location in selecting sites for growing vegetables;
2. Discuss different cultural practices and innovations in home gardening; and
3. Apply techniques of harvesting, processing and marketing home garden products

Diverse garden at home can ensure households of continuous access to fresh, safe and nutritious vegetables. Vegetables are good sources of micronutrients. Micronutrient deficiencies are a serious nutritional problem that affects poor households in the Philippines.

Bio-intensive Gardening Technology (BIG) offers practices and principles that are appropriate for resource poor families. It utilizes locally available materials to sustain soil productivity and also responds to climate change issues.

Soil productivity condition is important in choosing a site for home gardening.

While BIG can be established in every vacant lots, there are some ideal conditions that must be considered to sustain and maximize its productivity:

1. Good source of water especially during dry months/season
2. A well drained area to allow excess water flow out easily during rainy season.
3. Relatively fertile soil for plants to grow
4. Sufficient sunshine can penetrate the area
5. Good air circulation
Suggested Activity for Starting a Garden:

Methodology: Demonstration and Practicum

1. Start by stating the need to lay out garden beds in east-west direction.
2. Demonstrate proper layout of the garden.
3. Show how to layout a garden bed and how deep-dug raised bed is done.
4. Allow participants to participate. Divide the participants in groups with 5 members each group. Each participant will perform layouting and deep-digging. Mix yard manure, ash, egg shells, and dry leaves with the soil while preparing the bed.
5. Instruct participants to plant borderline crops using 1 meter by 1 meter spacing.

Materials:

- Meter stick
- String
- Sticks
- Spade
- Rake
- Seedlings
- 3 bags ash
- 3 bags farm yard manure, leaves, fertilizer trees

Follow up on garden practicums may be done on subsequent important topics:

1. Show how intensive planting is done.
2. Discuss the different crop management practices and why it’s important to store seeds for the next cropping season.

How to Prepare Deep-dug, Raised Beds:

Raised deep-dug beds: A strategy to lessen the effects of climate change in your garden

A. Deep dug (12” minimum and 24” maximum) raised beds have the following benefits:

1. Excess water during heavy rains is drained out.

2. During drought, more rain water is allowed to enter into the soil and the beds dry-out much later than conventional ones. This results to improved garden microclimate (lower soil and air temperature).

3. Plant roots penetrate deeper in the soil compared to roots that spread superficially in shallow dug beds. This makes plants more resilient to drought and erosion.

4. Soil compaction (from walking) in the growing area is reduced by having permanent pathways between plots.

5. Though initial bed preparation would require long hours of work, subsequent preparation is only 1/3 to 1/4 of the initial time.

6. Soil preparation is done only when the soil is not too wet.
How to Prepare Deep-dug, Raised Beds:

Materials Needed for layout:
- Plastic string or twine
- Bamboo or wooden stake
- Bolo
- Measuring stick

For preparing garden beds/plots:
- Shovel
- Hoe
- ‘Bareta’ or pick muttock
- Rake

1. Once an area is identified, clear it from all debris, weeds and grasses. Use string and wooden/bamboo stake to layout the garden. Make sure to orient the rows in an east-west direction to avoid shading of the crops.

2. Measure the garden bed not more than 1.5 meters wide and 6 meters long (length can vary depending on the availability of land). The prescribed width will permit working on either side of the bed without trampling on it.

3. Remember to leave a space or pathway between garden beds. It should be at least 0.5m.

4. Divide the length of the garden bed temporarily into sections, 75 cm wide using wooden or bamboo stake as guide.

5. Spread evenly an 8 cm or 3 inches thick layer of compost over the bed.

6. Dig a trench 30 cm deep in the first section (75 cm wide divisions done in step 4). Remove the soil of this trench and place them on the end of the bed.

7. Dig the first trench again just to loosen the soil (double digging). Do not remove the soil.

8. Dig a second trench (next 75 cms) adjacent to the first one. Cover the first trench with the soil coming from this (second) trench.

9. Double dig this trench as in the first trench.

10. The process is repeated until it reaches the other end of the bed. Fill the open trench at the other side of the bed with soil previously dug out from the first trench.

11. Apply the following into the bed:
   a. 2.5 cm compost or decomposed manure
   b. 1 kg ashwood
   c. 1 kg bonemeal or dried leaves of trees
   d. 1 kg of any: crushed egg shells, snail shells, etc.

12. Mix the plant foods thoroughly to top 15cm of soil. Level the bed. It is ready for planting.

Page 3 of 8: Start a Home Garden: Grow Your Veggies!
Borderline Fertilizer Trees: Provider of Protection and Food to Crops

Glicidiec septum, a leguminous tree (it fixes nitrogen from the air) is highly recommended as a borderline crop. Any leguminous tree can serve as such. Aside from nitrogen fixation, planting them along the borderlines gives several benefits:

1. Gives easier access to organic fertilizer when it’s needed:
Branches are cut after 9-12 months of planting. Place the branches on the garden plots and allow the leaves to fall off. In 3-4 days’ time, remove the branches and incorporate the leaves in the soil. Wait for 10-14 days before planting.

2. Creates a cooler climate within the garden that favors plant growth and slows down evaporation of soil moisture. As a result, watering is done infrequently.

3. Serves as windbreaker reducing the negative impact of strong wind on crops.

Crop Management

A. Diversification. Grow different kinds of vegetables, trees and other plants in one area. It is very important for various reasons:

1. Combination of short term, annuals and perennials results to availability of vegetable all year round.

2. Diversity in vegetables available in the garden prevents taste fatigue in the family.

B. Crop rotation or the cultivation of different crops in the same part of the bed from season to season has the following benefits:

1. It does not overburden the soil. It allows the soil to “rest” without keeping it idle.

2. The land is allowed to rest from one kind of plant and so the soil can even get richer from the other plant that was put in its place.

C. Tips in Watering

1. Water your plants thoroughly. Watering is one of the most critical factors for successful gardening. As a rule, plants should be watered thoroughly but infrequently. Watering the soil to sufficiently dampen it will promote development of deep root system. This allows plants to absorb moisture from subsoil when the topsoil dries up.

2. Poor practices such as too much watering results to poor development of plant root system and damages the crop.
D. Mulching is a process of spreading a layer of organic materials, such as straw, cut grass, leaves, sawdust, and the like to cover the soil around the plants or between the rows.

Roles and benefits of mulching:

1. Protection from effects of too much rain and soil erosion
2. Serves as cushion, reducing soil compaction by pelting rain, coarse streams or drops of water from irrigation devices
3. Minimizes growth of weeds
4. Aids in maintaining favorable condition of the soil underneath, i.e. uniform soil temperature
5. Increases air circulation and water holding capacity of the soil
6. Upon decomposition, it promotes granulation or clinging together of the soil and serves as fertilizer to the plants
7. Improves earthworm activity and nitrogen-fixing due to improved soil moisture and organic matter content
8. Reduces soil borne diseases

2. On the other hand, fruits that are over mature are not recommended because:
   - they might have already been infected with pests and diseases
   - they are already weak since they are old

3. Select fruits that ripen in the middle of the fruiting season.

4. For fruits with lots of seeds (example: bottle gourd, eggplant), seeds are usually taken from the middle portion of the fruit to ensure that maturity of the seeds is just right and at the same age.

Seed Extraction and Cleaning

The extraction of seeds from the fruit depends on the condition of the fruit and seeds that will be harvested.

For wet seeds from fleshy fruits:

a. Seeds are extracted using hands or knife
b. Fruit may be fermented to remove seeds:
   1. Soak fruits in water for 1-2 days
   2. Separate seeds from flesh, and throw away the flesh together with seeds that float (except when the seeds naturally float).
   3. Wash and dry the sunken seeds.

Examples: eggplant, cucumber, tomato, bitter gourd, squash, sponge gourd, bottle gourd

For dry seeds from dry fruits or pods:

These are extracted by and or pounded collectively while inside a sack or net bag to prevent them from scattering.

Examples: cabbage, cauliflower, mustard, pechay, lettuce, pea, lima bean, yardlong bean

Page 5 of 8: Start a Home Garden: Grow Your Veggies!
Tips:
Do not harvest these seeds when it is raining or early in the morning when there is still dew. Also do not harvest at midday since the pods will break or shatter easily, allowing the seeds to contact with the soil and with microorganisms that lower seed quality

For dry seeds from fleshy fruits: ripe fruit are dried before extracting the seeds. Examples: chili, lady finger

Seed Drying
Dry the seeds before processing and storing. Seeds with high moisture content are:

1. More susceptible to physical damage during processing;
2. Have reduced viability;
3. At risk of formation of molds and insect infestation that destroy the seeds;
4. Have high respiration rate, (consuming the stored food of the seeds) and resulting in weak seedlings;
5. At risk of dying due to heat produced by microorganism infestation and high respiration rate

Things to Remember in Drying of Seeds

1. Do not allow seeds to come in contact with the soil or ground. Dry seeds above the ground by using a wedge.
2. Use drying materials with hole (examples: sack, winnowing basket, mat) to allow the air to pass through, giving fast, even drying.
3. Do not dry the seeds rapidly because it will lower the seed germination. Rapid drying can also harden the seed coat, making the seed impermeable to water when planted.
4. If the moisture content of the seeds is high, air dry the seeds in a shady area for one to two days before sun drying. Do not dry seeds under the sun from 11:00 AM to 2:00 PM when the heat of the sun is intense because it will kill the seeds.
5. Spread the seeds thinly and stir and turn them occasionally (at least 4-5 times) to make drying fast and even.
6. Before it rains or gets dark, cover the seeds and take them indoor to prevent their moisture from increasing

Seed Storage
The length of time that seeds can be stored depends on:

1. seed type
2. its quality; and
3. storage condition

Remember:
For all kinds of seeds, winnowing or removal of contaminants after drying and before storage is recommended to maintain good quality. Contaminants include weed seeds, seeds of other crops, or of different variety of crops, chaff, dust and other inert materials like rock, sand, dirt, twigs and leaves.
Factors that Affect the Longevity of Seeds During Storage:

1. Moisture content of the seeds

Even if the seeds are thoroughly dried; improper storage can still enable them to absorb moisture.

Do the following to avoid damage due to excessive moisture content:

a. Store seeds in air-tight containers (bottle with tightly closed metal cover, tin can, sealed thick plastic bag

b. Keep seeds dry by including desiccants or materials that absorb moisture (examples: dry charcoal, dry ash, toasted rice, lime, silica gel) inside the storage container

c. Replace desiccants, such as dry charcoal, dry ash and toasted white rice, each time the container is opened

d. Sun dry the seeds from time to time

2. Temperature – The life of vegetable seeds during storage is prolonged when the storage temperature is low or cold (but not freezing). If refrigerator or air conditioner is not available, choose a cold place (example: near the river, under trees, underground, inside a clay jar). Ensure that the seeds will not get wet.

3. Pests

Storage weevils, fungi and bacteria shorten life of seeds during storage. To prevent pest infestation, choose only pest-free seeds during storage. Pest problems can also be prevented if the seeds are maintained dry. Some materials that can stop the growth and multiplication of pests are:

a. Dry ash and charcoal

Use one kilo of ash for every kilo of seeds. Use ash which has been cooled for at least 12 hours to prevent the seeds from burning.

b. Sand

Mix the sand with seeds and make sure the container is full so that the weevils cannot move around.

c. Cooking oil

Some seeds can be mixed with cooking oil to prevent increase of weevil. The recommended rate is one teaspoon oil for every one kilo of seeds.

d. Lime

Mixing 15 teaspoons of lime for every kilo of seeds can prevent increase of weevils.

e. Dried and powdered leaves and seeds of different aromatic plants

Weevils are sensitive to odorous plants. It prevents them from increasing and may also kill them. The effect of these plants depend on their preparation, the amount applied and the type of seed and weevils. Some of these plants affect the seeds so it is important to test what is appropriate for a certain kind of seed. Also make sure that the right amount is applied. Examples of aromatic plants are:

i. Neem

Dry the leaves or seeds under the sun and grind them to a powder. Mix 3-4 teaspoons of powdered seeds (double the amount if powdered leaves are used) for every kilo of seeds to be treated.

As a general rule: the life of the seeds doubles when the storage temperature is lowered by 5°C
ii. Hot pepper or chili
Dried and powdered fruits are better than dried whole fruits. Mixed 4-6 teaspoons of dried and powdered chili for every kilo of seeds.

iii. Black pepper
Mix 6 teaspoons of powdered black pepper (double the amount if powdered leaves are used) for every kilo of seeds.

iv. Powdered rhizome of turmeric
Mix 4 teaspoons for every kilo of seeds

v. Powdered leaves of mint
Mix 1-4 teaspoons for every kilo of seeds

vi. Powdered seeds of yambean
Mix 1-2 teaspoons for every kilo of seeds

vii. Powdered leaves of lagundi, mango and tobacco
Mix 1-4 teaspoons for every kilo of seeds

4. Other factors – The storage life of seeds can become shorter if the seeds are over mature, if they come from plants that have been attacked by pests and diseases or if the seeds were damaged during processing.

Post Discussion Activity

Duration: 20 minutes

Methodology: Fill in the blanks

Materials:
✔ Manila paper or bond paper
✔ Laptop or music player
✔ Permanent marker
✔ Masking Tape

1. Prior to the session, prepare set of questions relating to the different practices and techniques in starting a bio-intensive garden. Crumple the papers and put them in a basket or container, add blank papers.

2. Pass the basket around while playing a music, stop the music at anytime and the person holding the basket will pick one and answer the question that is written on the paper. Repeat until the questions run out.

Reference: The Bio-intensive Approach To Small-Scale Household Food Production. IIRR 1993