GRRIPP
Gender Responsive Resilience and Intesectionality in Policy and Practice

GROOTS Perú

PUCP

PROJECT:
GENDER RESPONSIVE COMMUNITY RESILIENCE:
GRASSROOTS WOMEN MANAGING DISASTER RISK
AND THE IMPACT OF CLIMATE CHANGE IN PERU.

ECOLOGICAL BIO-GARDENS

GROOTS PERÚ NETWORK
Project sponsored by GRRIP and PUCP
Peru, June 2023

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INTRODUCTION

What is a bio-garden?

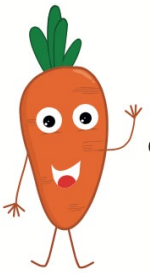
Bio-garden is a small area or plot of land located near home and used to grow produce, such as fruits or vegetables, which will contribute to improving the daily diet or the family's economy through the sale of surplus.

STEPS

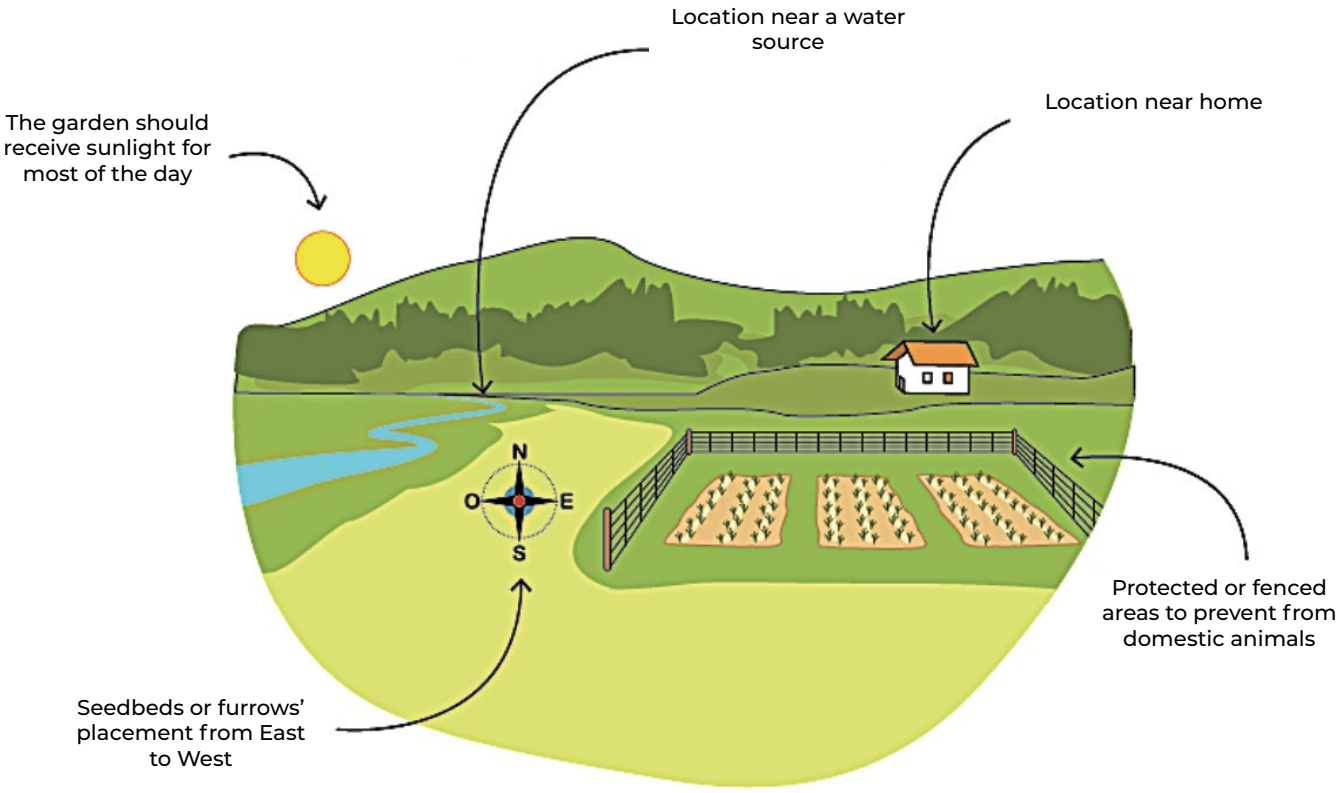
Follow these steps to start your own bio-garden at home or in your community

1.  BIO-GARDEN'S LOCATION
2.  SOIL
3.  FERTILIZER
4.  FURROW SPACING
5.  SCHEDULE
6.  SOWING
7.  WATERING
8.  DISTRIBUTION
9.  TIPS

Vegetables and legumes are particularly important for a family's good feeding and nutrition. Its leaves, flowers, fruits, and roots are consumed to meet the needs of our bodies thanks to their high content of minerals, vitamins, and proteins that contribute to improving and maintaining good health.



What should we consider for creating our bio-garden?

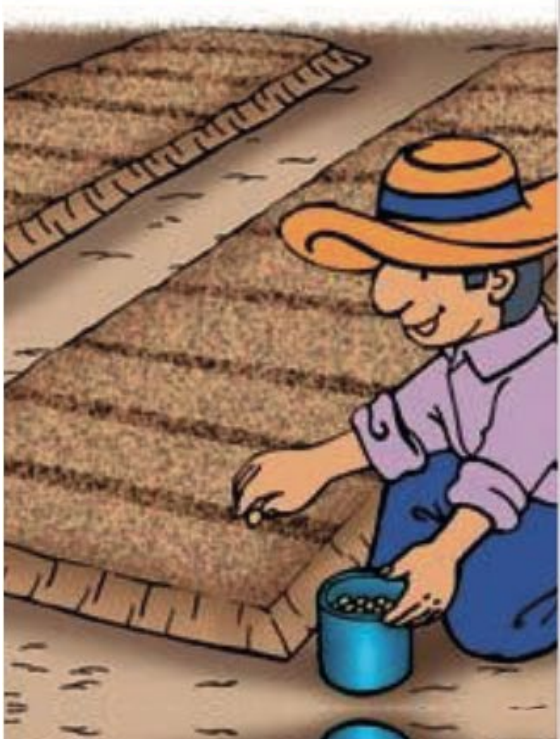


1 BIO-GARDEN'S LOCATION

It should be near home. We must watch over the bio-garden and carry out tasks easily. Place the seedbeds from East to West to capture more sunlight.

Some species need direct sunlight, such as fruiting vegetables, while others, such as aromatic and medicinal plants, can be under the canopy of trees.

2 SOIL



Soil is a mixture of mineral particles of different sizes, ranging from gravel, sand, and smaller particles that can no longer be seen, such as silt and clay.

We must try to ensure that the soil where we are going to grow our produce is loose and aerated with a good water retention capacity, and that it contains all the nutrients that the produce will need.

Keep in mind that the ideal size of the bio-garden depends on the size of the land you have. If the plot is too small, it may not be enough to grow all the produce some families need, but at least it will always help save money and provide some fresh and nutritious legumes and vegetables.

Plants absorb nutrients from the soil, minerals, and organic compounds, taking away many nutrients with each harvest. Therefore, it is necessary to fertilize our bio-garden frequently. The most commonly used organic fertilizers are Biol and compost.

In the composition of each of them, we will find in what proportion nutrients are available (macronutrients and micronutrients), according to what the produce needs.

Macronutrients: nitrogen, phosphorus, potassium (NPK), and magnesium.

SUITABLE FERTILIZERS FOR A BIO-GARDEN

- Compost
- Humus
- Manure
- Biol

COMPOST

It is the product of the decomposition of plant residues, manure, and other organic waste, such as kitchen scraps.

It is also the best organic fertilizer because it contains a large amount of nutrients, and its production is easy and inexpensive.

Supplies:

Use:

-Manure

-Harvest residues (leaves, stems, etc.)

-Garden cutting or pruning waste, mulch, etc.

-Kitchen scraps (peels)

-Water

-Molasses

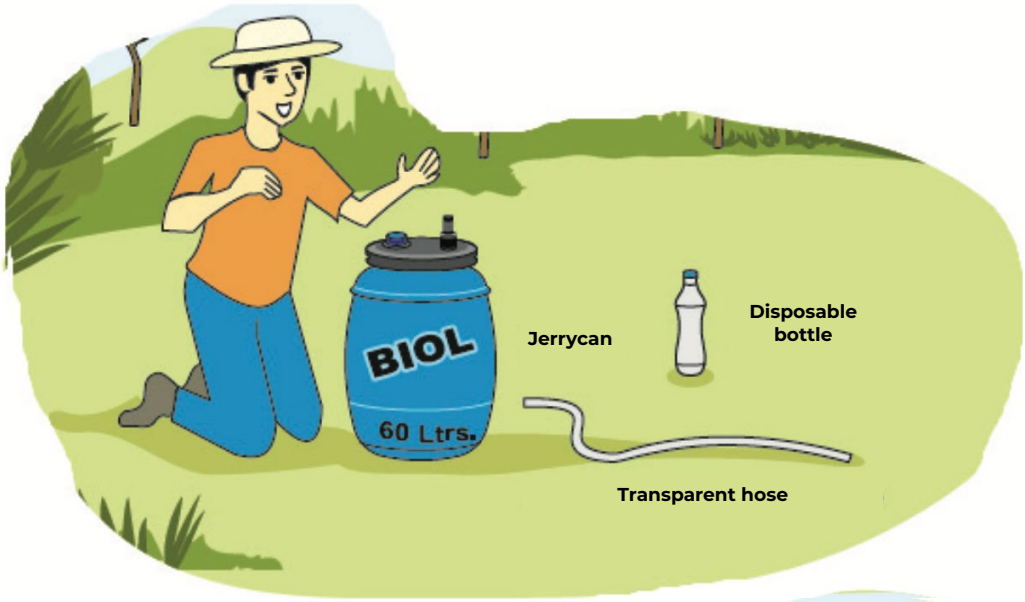
-Lime or ash.

Do not use:

-Waste from diseased plants, meat waste, and any item with grease.

BIOL

It is a liquid organic fertilizer made of ingredients that we often have around, and, when applied to the produce, it improves its growth and development



MATERIALS AND INPUT	QUANTITY
Plastic tank with a capacity of 200 liters with a lid secured with a safety belt or screw cap.	1 unit
Transparent hose, ½ inch	1 meter
2-liter plastic bottle	1 unit
Fresh cattle manure	40kg
Cheese whey or cow's milk	2L
Molasses	2kg
Baker's yeast	150g
Wood ash or clean, chemical-free wood	3kg
Aloe vera leaves (chopped)	4 leaves
Ground eggshells	30 units
Alfalfa (chopped)	4kg
Pepper tree leaves (chopped)	4kg
Materials for making compost	

The application dose consists of 1.5 liters per-15-liter backpack at intervals of 10 days. This should be applied in the morning or afternoon.

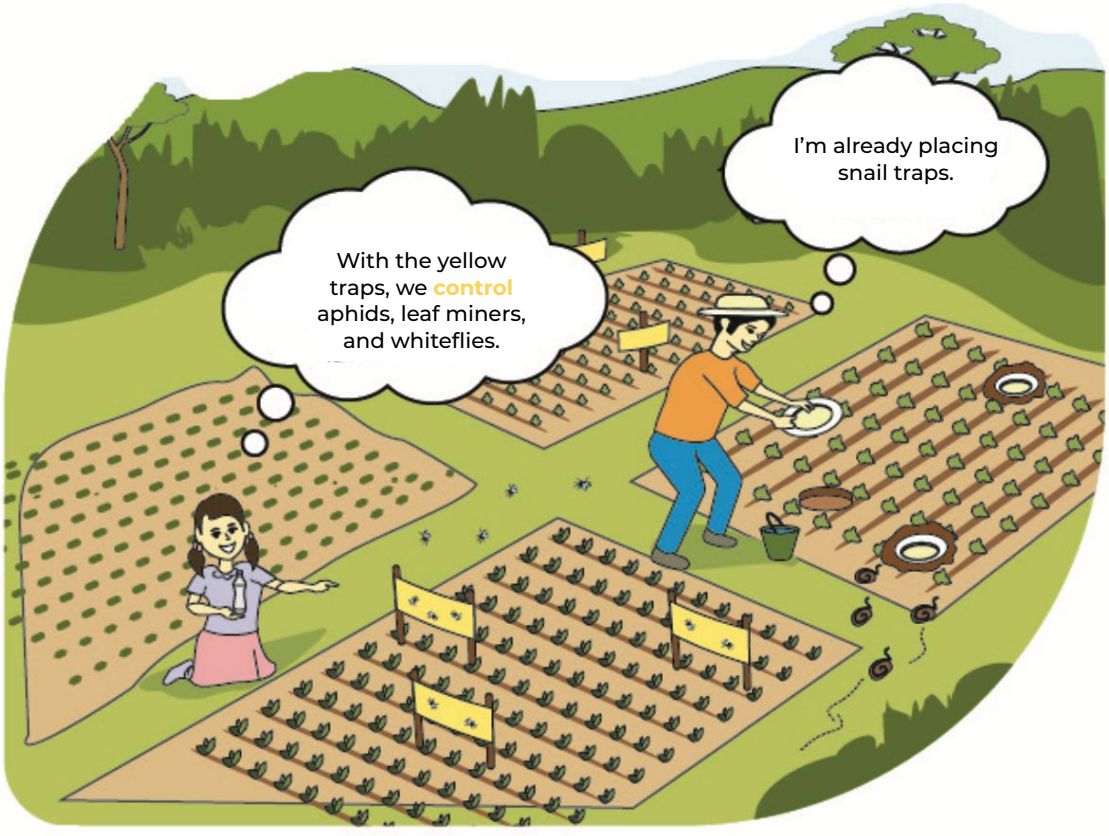
PEST CONTROL

In agriculture, the word “pest” refers to all animals, plants, and microorganisms that have a negative effect on agricultural production.

It is recommended to take advantage of the insecticidal and fungicidal properties of some plants, such as garlic, onion, marigold, oregano, paradise, neem, and Gliricidia sepium.

ECOLOGICAL INSECTICIDE

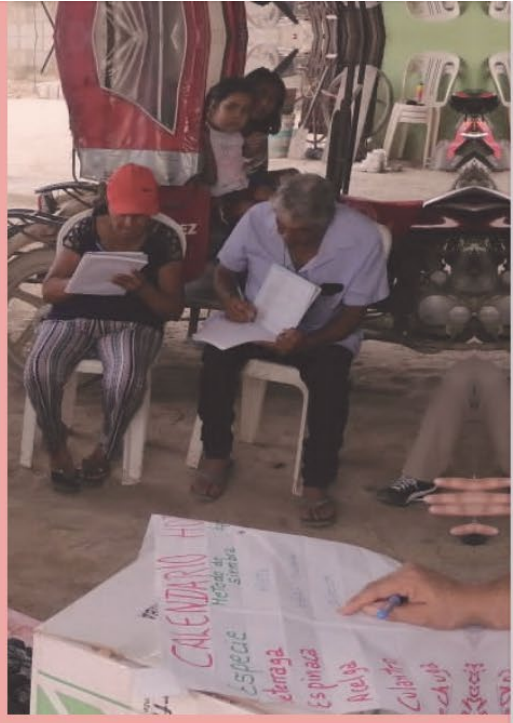
Water:	2 L
Rocoto pepper:	400 g
Onion:	200 g
Garlic:	200 g



In addition, ethological control involves the use of yellow traps for capturing pest insects (leafminer fly, aphid, whitefly, etc.).

4 FURROW SPACING

We should consider getting containers based on the produce we want to grow. A common mistake is sowing seeds next to each other without considering that plants need a minimum space to grow correctly. It is suggested to alternate various plants based on their growth cycles.

5 SCHEDULE

Vegetables to grow	Sowing's method	Plant spacing (Centimeters)	Furrow spacing (Centimeters)	Germination time (days)
Beets	Direct	8	30	10 – 15
Spinach	Direct	5	40	10 – 12
Lettuce	Transplant	20	25	8 – 10
Radish	Direct	5	30	8
Carrot	Direct	5	30	10 – 12
Green onion	Direct	5	10	10 – 12
Broccoli	Direct	15	20	8
"Macre" squash	Direct	40	40	8 – 10
Chard	Direct	5	40	8 – 10
Cilantro	Transplant	20	25	8 – 10

6 SOWING

To carry out the sowing, we will place the seeds in fertile soil at an appropriate depth (according to the seed's size) and at a distance that will depend on the final plant's size.

a. DIRECT SOWING:

This method consists of placing seeds directly in seedbeds or furrows arranged in a line, where they will grow and be harvested. Examples of vegetables: carrots, turnips, green onions, squash, "caigua," beets, spinach, radishes, peppers, cilantro, etc.

b. INDIRECT SOWING:

This method consists of producing seedlings in a special environment called a seedbed, which are then transplanted to the final plot. Vegetables commonly sown in seedbeds are lettuce, chard, onions, cabbage, celery, leek, cauliflower, and broccoli. These vegetables quickly regenerate their roots during transplantation.

7 WATERING

In this step, it is important to consider the following:

- Watering should be light and continuous, i.e., little water, but constantly.
- The water used should not have chlorine. Drinking water contains chlorine, which can be harmful to plants as they quickly assimilate it, becoming toxic over time. To get rid of this chemical, we must let water stand in a container for 24 hours before watering.
- Larger plants can withstand water scarcity better than smaller ones.

8 DISTRIBUTION

When planning the space for our bio-garden, we must consider a series of factors: nutritional, lighting, and compatibility needs among the different plant types.
Apart from the distances that we must maintain between plants, it is convenient to know that not all types of produce can be grown next to each other.

9 CONSEJOS

It is recommended dividing the bio garden into four planting beds and applying one of the different methods of crop rotation. One of the most common methods is that based on botanical families.

Planting bed 1:

Solanaceae (eggplants, bell peppers, and tomatoes).

Planting bed 2:

Liliaceae (garlic, onions, and leeks), and Umbellifer (celery, parsley, and carrots).

Planting bed 3:

Compositae (lettuces, and endive),

Cucurbitaceae (pumpkins, zucchinis, melons, watermelons), and

Chenopodiaceae (chard, and spinach).

Planting bed 4:

Cruciferae (broccoli, cabbages, cauliflowers, and radishes), and

Leguminosae (broad beans, green beans, and peas).

Bio-garden

Harvesting

After all the care and attention we have given to our crops, the time comes to reap the fruits of our labor. This step consists of extracting the part of the plant that will benefit us (root, stem, leaf, flower or fruit). To ensure the quality and freshness of our produce, the following recommendations are suggested

- Wash your hands before harvesting.
- Use clean containers for harvesting.
- Avoid exposing the harvest to the sunlight, keep in a dark and cold place.
- Clean the produce as soon as possible to prevent contamination and infection.
- Know the best time to harvest. For example, in the case of lettuces, it is better to harvest them early, otherwise they may turn out bitter if harvested after noon.

Benefits of Vegetables

“Macre” squash	Rich in potassium and low in sodium, it has a diuretic action that promotes the elimination of excess fluids from the body.
Broccoli	Stands out for its mineral content, particularly potassium and iron, but also contains significant amounts of calcium, magnesium, zinc, and iodine.
Carrot	A diuretic vegetable that prevents fluid retention; it is rich in vitamin A, phosphorus, which invigorates tired minds and bodies.
Green onion	Provides vitamins A, B, and C. It is low in calories and also contains minerals such as calcium and phosphorus.
Radish	Has a higher potassium and iodine content than other vegetables; iodine is essential for the functioning of the thyroid.
Chard	Contains a large number of vitamins, mainly folates, vitamin C, vitamin A, vitamin K, and essential minerals.
Spinach	A source of folates, vitamin C, vitamin A, and vitamin E. Folates contribute to the normal production of blood cells.
Beets	Provide nutrients, such as vitamin B, iron, manganese, copper, magnesium, and potassium, improving blood pressure.
Lettuce	Regulates cholesterol levels in the blood, reducing the risk of atherosclerosis, and maintains fertility.
Cilantro	Provides vitamins C, K, A, B1, and B2. It also contains minerals, such as iron, calcium, phosphorus, and magnesium.

LETTUCE SALAD WITH RADISH AND FETA CHEESE

Ingredients

1 iceberg lettuce
100g of feta cheese
3 radishes
1 small onion
1/2 cup of mayonnaise
1 tablespoon of vinegar
1 tablespoon of lemon juice
1 tablespoon of olive oil
Salt and pepper

Preparation

Mix mayo with vinegar, lemon juice, olive oil, salt, and ground black pepper. Adjust until it suits taste, with a mild spicy touch. If the dressing is too thick, add a little water to lighten it. Cut the lettuce into slices or wedges, and place it in a large bowl, add the radishes cut into very thin slices, the onion into thin strips, and add feta cheese slices. Finally, put dressing on top, and serve.

AJI DE ACELGA (SPICY CHARD STEW)

Ingredients

1kg of chard
1 onion
1kg of potatoes
2 eggs
Peruvian chili pepper paste
Oil to taste
Salt to taste
Garlic to taste

Preparation

Sauté chopped onion, and garlic, with oil and the Peruvian chili pepper paste. Add diced potatoes and enough water. Wash and chop the chard, separating the leaves from the stems. Cook the stems first, and then the leaves for a short time at low temperature. Add the eggs, stirring, and making sure they don't stick. Finally, serve with fluffy rice.

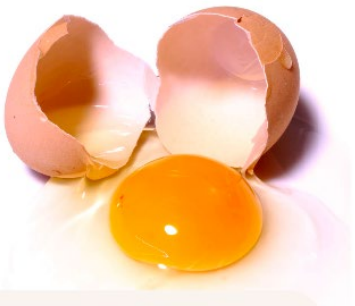
CREAM OF CHARD

Ingredients

½kg of chard
½kg of potatoes
1 cup of milk
Onion
Garlic
Oil
Salt and pepper to taste

Preparation

Chop the onion and sauté it with garlic and some pepper. Add water, salt, and diced potatoes. Boil for 10 to 15 minutes, and then add the chard. Remove from heat and add the milk. Strain the entire preparation or blend it. Finally, serve with some toasted bread.



VEGETABLE OMELETTE

Ingredients

Use some leaves of vegetables from the bio-garden, such as radish, carrot, broccoli, green onion, etc.

Eggs

Salt and pepper to taste

Preparation

Wash the leaves thoroughly, and finely chop them. Then, put them in a bowl, add some beaten eggs, and seasoning. Beat everything before cooking on a pan. Finally, serve with some yuca and with a side of “salsa criolla” (thinly sliced red onions and Peruvian chili pepper with lemon juice).

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