Bio-intensive Gardens (BIG):
A climate & nutrition smart agriculture approach

Acknowledgments

Technical Inputs

Julian Gonsalves
Emilita Monville Oro
Irish Baguilat

International Institute of Rural Reconstruction (IIRR)

Ronnie de Castro
Gabriel Cruz
Christy Tacugue
Kirstein Itliong
Ma. Shiela Anunciado
Ian Curt Sarmiento
Angie Algo
Marjorie Bonghanoy
Kenneth Arceo

Graphic Design

Celso Amutan
Jonna Ellaine Jordan

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Why are BIG climate and water smart?

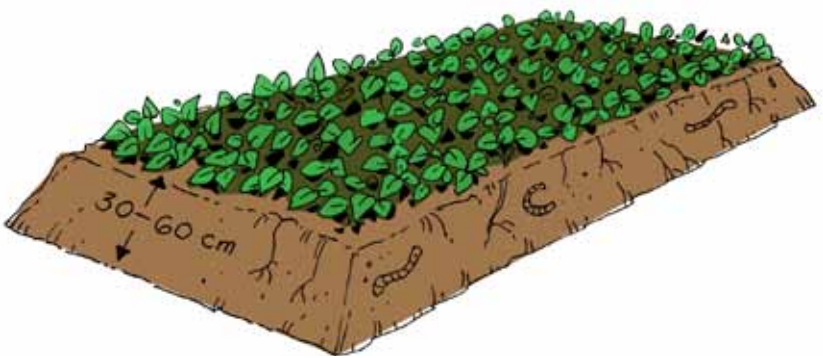
How can we make them more adaptive to climate change?

How can we conserve genetic diversity of nutritional importance?

Bio-intensive Gardens (BIG) is an agro-ecological approach to gardening which makes the best use of available natural resources and does not rely on any chemical inputs.

Bio-intensive Garden (BIG) has a low carbon footprint because very few external resources are used.

BIG relies on locally produced seeds, locally produced fertilizers and it does not use any chemical pesticides. Thus, the carbon footprints of food produced using this approach is small. Moreover, the food products are safe and free of pesticide residues.

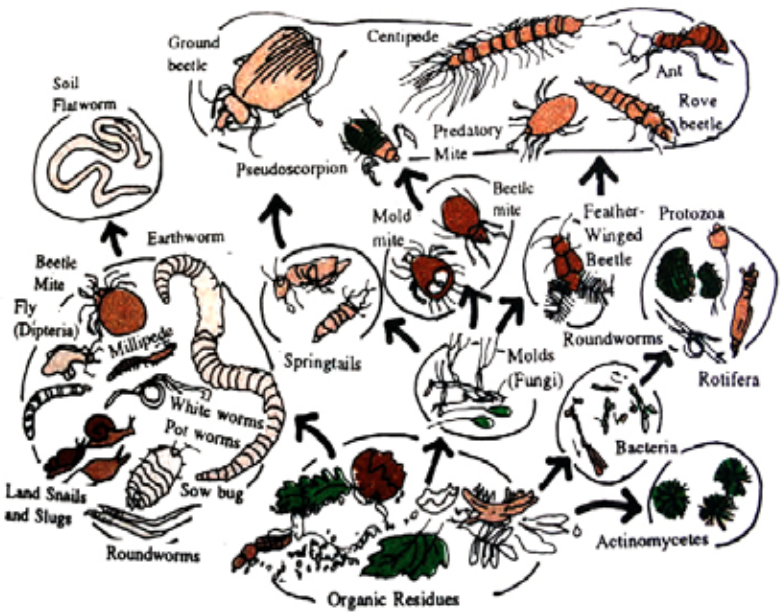


A deep-dug bed is essential when there are frequent droughts or flooding (12 inches deep or more is essential if you want to trap water in the soil).

It conserves rainwater and in times of floods, water is drawn down to the lower part of soil, within reach of the plant roots.

The beds are narrow making it possible to work from the sides to prevent compaction. This leaves the soil always loose.

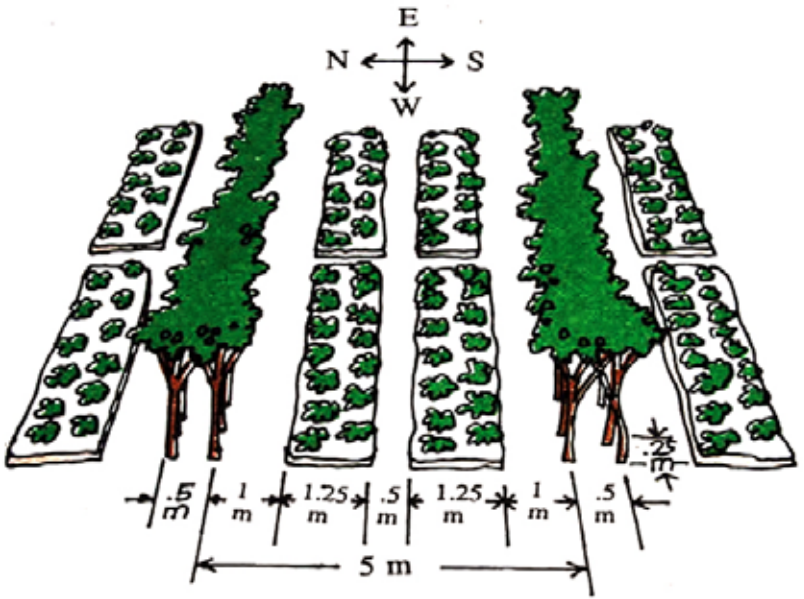
The slightest rain is absorbed and stored in the soil. BIG beds harvest rainwater better and store moisture longer.



Deep-dug beds with loose soil and lots of organic matter help store water, encourage earthworms and beneficial bacteria. This is a living soil and gets better every year (provided you don't let it dry up and compact again in summer).

In summer, when your gardens are generally not actively maintained, the entire garden should go into a cover crop of legumes (i.e. cowpea, rice bean, etc.). This keeps the microbes alive and reduces weed growth and most important of all, it keeps soil temperature low.

The planting of trees around the periphery of the garden (Kakawate or *Gliricidia sepium* or *Cassia siamea*) is an absolutely essential element. Leaves of these nitrogen fixing trees serve as source of green fertilizer. If trees are not planted on all four sides of the plot, then we don't get the advantage of cooling effects of trees. If you don't have trees, the wind tends to dry the soil. Moreover, trees can serve as barriers against strong wind.



Hedgerows Lopped and Incorporated into Beds

Green leaf manure trees are also grown between every two sets of plots to provide sufficient green leaf fertilizer.

The advantage of using green leaves as fertilizer is that it is a way of storing carbon in the soil, unlike when one uses chemicals where we contribute to the greenhouse gases (trees absorb carbon).

Another feature of BIG is that it uses mostly indigenous plant species. These are usually hardy and climate-resilient. Climate-resilient varieties are being lost because they are not popular amongst market-farmers.

These indigenous heritage varieties are still around and passed down from one generation to another. They must be saved because they are hardy and tolerate long dry weather (e.g. patani or lima bean, bataw or hyacinth bean, kadios or pigeon pea).

Every garden should have 70% of its area devoted to indigenous crop varieties. The rest could be acquired from commercial seed sources.

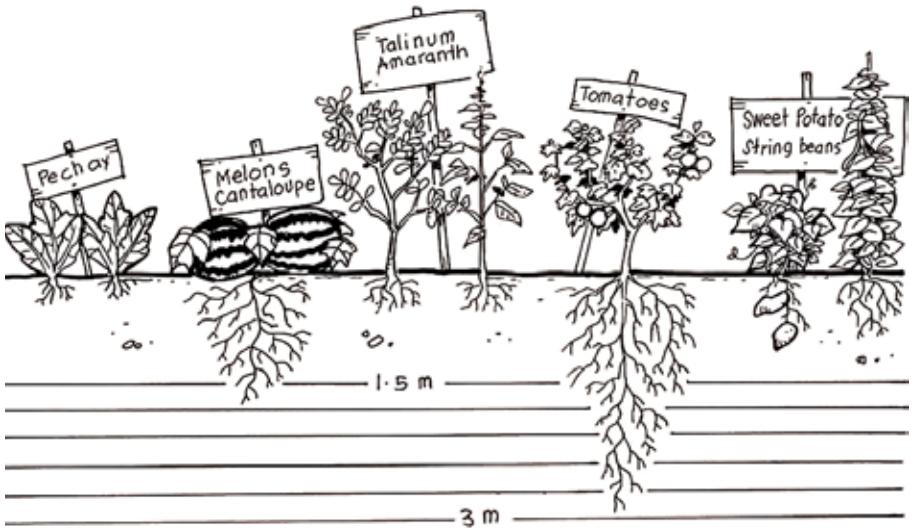
With rising temperatures we can expect more pests and diseases. That is a reality. This is the reason for increasing the intraspecies diversity to reduce risks from crop failure (e.g. different kinds of sweet potato).

… the interspecies diversity is also important. Diverse gardens ensure dietary diversity.

In BIG, we practice minimum tillage. After the first digging and especially in the drier months, we avoid subsequent unnecessary digging. The next crop is planted in the residue of the previous crop. This is a way of conserving soil moisture.

Green or blue net tunnels help reduce temperature and protect the crop from rain and insects.

Another way of conserving moisture and lowering soil temperature is to place mulch on top of the bed and in between plants within the bed.



In BIG, the plants do the digging themselves. When you practice crop rotation you take advantage of the fact that different crops have different rooting depths. So crops are always rotated and never planted in the same area in the same year.

BIG is an excellent example of climate smart agriculture.

Try it out and see for yourself. Enjoy nature and live a healthy lifestyle with chemical free, fiber dense and micronutrient rich foods.

Enjoy dietary diversity by maintaining garden diversity.

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INTERNATIONAL INSTITUTE OF RURAL RECONSTRUCTION

For inquiries:

Emilita Monville Oro
Country Director, Philippine Program
Regional Center for Asia
International Institute of Rural Reconstruction (IIRR)
Km. 39 Aguinaldo Highway, Y.C. James Yen Center
Biga 2, Silang, Cavite 4118, Philippines
Email: philippines@iirr.org
Tel. No: +63 46 430 0016