



# GUAM ENABLED GARDENING: ADAPTIVE GARDENING SERIES

## Types of Gardens

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**I**n the U.S. today, gardening is considered a favorite outdoor activity, right alongside golfing and jogging. Approximately 75% of U.S. households, whether novice or experienced, participate in some type of gardening activity.

However, gardening is not only a recreational hobby. It can also help one's physical and mental well-being, regardless of age. For instance, people affected by health conditions that limit mobility can benefit from increased physical activity. Furthermore, through the activity of nurturing plants to bear vegetables, fruits or flowers, one can experience the product of the effort. Also, decreased stress and an increased sense of well-being are reported as other benefits of gardening activities.

Nevertheless, there are barriers for those who experience physical and mental limitations. For example, people who experience arthritis may be challenged due to joint pain from bending or stooping to tend to the garden. An enabled garden allows an individual with specific challenges to participate. This series of fact sheets explain gardening methods, technique adaptations, and how to create enabled gardens specific to Guam.\*

**T**he type of garden depends on such things as how much space is available, type of soil at the site, as well as vegetables and fruits desired. The type of garden also depends on any limitations of the gardener.

\* The references used for the Introduction of each fact sheet in the Guam Enabled Gardening: Adaptive Gardening Series is listed in the Bibliography of Site Selection.



Example of an in-ground garden.

- **In-ground garden**
  - Plants grown directly in the ground.
  - **Advantages**
    - Works best when soil is suitable for the garden, and soil is properly watered and mulched.
    - Less expensive to begin.
    - Soil does not dry as quickly as a raised bed garden or container garden.
  - **Disadvantages**
    - May be difficult to supply water to adjacent areas that cannot be reached by the gardener.
    - Requires more space than a raised bed garden or container garden.
    - Foot traffic can cause compaction of plants and soil.
    - Management of weeds from the adjacent areas can be challenging.
    - Not well suited for gardeners with limited mobility.
- **Raised bed garden (contained)**



A raised garden bed.

- Garden elevated above ground.
- Planting bed is framed with a barrier, such as concrete blocks, to keep soil mix in place.
- Materials used for constructing the raised bed can include lumber, concrete blocks, or recycled materials. But be aware that wood may become infested with termites and can

rot quickly in our tropical environment.

- Depth is typically 8 to 12 inches.
- Length of bed must be able to fit in available garden site and enable gardeners to move through and around the area.
- Width of bed should allow gardeners to reach plants from both sides. Recommended width is 2 to 4 feet.
- Bed is filled with potting mix or soil amended with compost, manure, or other organic materials.
- Padding is recommended to protect knees.
- **Advantages**
  - Less space is used compared to in-ground gardens.
  - Easier access than in-ground gardens.
  - Conserves water, fertilizer, soil amendments, and organic materials.
  - Can maximize limited space.
  - Protects soil from runoff and erosion.
  - Efficient use of soil amendments.
  - Has well-drained soil, but it depends on the medium used.
  - Minimal time to remove weeds.
  - Less foot traffic and compaction of plants and soil.
  - Provides optimal growing conditions for plants with little or no soil, unsuitable soil, or soil that is contaminated.
  - Increases accessibility for gardeners with physical limitations.
- **Disadvantages**
  - Requires more work when constructing bed.
  - Soil dries faster than plants growing directly in the ground.
  - Soil needs to be added periodically and amended in order to maintain optimal growing conditions.
  - Sprawling plants, such as watermelons, are not suitable for raised beds.



Another example of a raised garden bed.

- **Elevated bed garden (waist-high)**



Elevated bed garden.

- Accommodates those with limited mobility.
- Allows for gardening while in a sitting or standing position
- Construction of an elevated bed requires certain guidelines.
  - A person who uses a mobility device will need a bed base that is 24 to 30 inches raised from the ground and has space under the bed base for wheelchair access.
  - Need adequate, appropriate, and shaded seating for everyone to use the garden area.
- **Advantages**
  - Similar advantages as those for a raised bed, such as conserves water and fertilizer.
  - Can maximize limited space.
  - Easier to harvest.
- **Disadvantages**
  - Can be expensive to construct.
  - Soil dries out faster than plants growing directly in the ground.
  - Soil needs to be added periodically and amended to maintain optimal growing conditions.

- **Container garden**



A container garden.

- Grow plants in pots or repurposed containers.
- Use appropriate container for size of plant. For example, 14 inches in diameter containers is large enough for eggplants and cucumbers.
- Do not use a container that held toxic materials.
  - Can re-use food grade containers found in restaurants and bakeries. The large ones are typically plastic, which is 4.5” deep and have a diameter of 11”. They are sufficient enough for growing crops, such as eggplants and tomatoes.
- Use appropriate potting mixes and fertilizers.
- Most pots are black that absorb more heat compared to light-colored containers, in which the increase in temperature can damage plant roots. Therefore, use white containers, if possible. Containers can be recycled, purchased, or built.
- **Advantages**
  - Useful for homes and apartments with limited space.
  - Their location can be moved, especially if sunlight or temperature does not encourage

growth.

- Suitable for those with limited mobility.
- Very easy to remove weeds.
- Less expensive to begin.
- **Disadvantages**
  - Potting mix in containers can dry out quickly.
  - Frequent watering and fertilization are required.
  - If containers do not have drainage holes, make them on the bottom or along the sides of pots to prevent soil from becoming water-logged, which can cause roots to rot.



More examples of container gardening.

### Some plants that grow well in types of gardens

In-Ground Garden	Raised Bed Garden	Elevated Bed Garden	Container Garden
<ul style="list-style-type: none"> <li>◆ Beans (bush, pole, yardlong, wing)</li> <li>◆ Bittermelon</li> <li>◆ Broccoli</li> <li>◆ Bokchoy</li> <li>◆ Cabbage (Chinese, head)</li> <li>◆ Kale</li> <li>◆ Malabar spinach</li> <li>◆ Leafy lettuce</li> <li>◆ Eggplant</li> <li>◆ Corn (field)</li> <li>◆ Carrot</li> <li>◆ Cucumber</li> <li>◆ Radish (daikon/red)</li> <li>◆ Peppers</li> <li>◆ Okra</li> <li>◆ Onion (bunch, green onions)</li> <li>◆ Tomato</li> <li>◆ Herbs</li> <li>◆ Melons (watermelon, cantaloupe)</li> <li>◆ Calamansi</li> <li>◆ Banana</li> <li>◆ Guava</li> <li>◆ Papaya</li> <li>◆ Mango</li> </ul>	<ul style="list-style-type: none"> <li>◆ Beans</li> <li>◆ Bokchoy</li> <li>◆ Malabar spinach</li> <li>◆ Leafy lettuce</li> <li>◆ Peppers</li> <li>◆ Tomato</li> <li>◆ Potato (sweet)</li> <li>◆ Onion</li> <li>◆ Squash (zucchini, summer)</li> <li>◆ Radish (daikon, red)</li> <li>◆ Eggplant</li> <li>◆ Potato (sweet)</li> <li>◆ Carrot</li> <li>◆ Herbs (including microgreens)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Bokchoy</li> <li>◆ Malabar spinach</li> <li>◆ Green onion</li> <li>◆ Radish (red)</li> <li>◆ Eggplant</li> <li>◆ Carrot</li> <li>◆ Herbs (including microgreens)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Beans</li> <li>◆ Broccoli</li> <li>◆ Leafy lettuce</li> <li>◆ Green onions</li> <li>◆ Herbs (including microgreens)</li> <li>◆ Malabar spinach</li> <li>◆ Radish (daikon, red)</li> <li>◆ Carrot</li> <li>◆ Potato</li> <li>◆ Eggplant</li> <li>◆ Peppers</li> <li>◆ Squash (zucchini, summer)</li> <li>◆ Tomato</li> </ul>

For in-ground and raised bed gardens, all vegetables, root crops, and herbs can be planted. There are special considerations needed for an elevated bed garden, which depends on the soil depth, and for a container garden, depending on crop chosen. Some fruit trees/perennials can be planted in container gardens.

## Glossary:

**Organic materials** - such as organic mulch (i.e., compost, manure, peat moss, etc.); being of or composed of plant or animal matter

## Bibliography:

Berle, D., & Westerfield., R. (2019). *Community and School Gardens Series: Raised Beds vs. In-Ground Gardens*. College of Agricultural and Environmental Sciences, College of Family and Consumer Sciences, The University of Georgia. Cooperative Extension, Circular 1027-3. [https://secure.caes.uga.edu/extension/publications/files/pdf/C%201027-3\\_2.PDF](https://secure.caes.uga.edu/extension/publications/files/pdf/C%201027-3_2.PDF).

Berle, D., & Westerfield, R. (2013). *Community and School Gardens: Raised Garden Bed Dimensions*. College of Agricultural and Environmental Sciences, College of Family and Consumer Sciences, The University of Georgia. Cooperative Extension, Circular 1027-4. [https://secure.caes.uga.edu/extension/publications/files/pdf/C%2010274\\_1.PDF](https://secure.caes.uga.edu/extension/publications/files/pdf/C%2010274_1.PDF).

Butzler, T., Maloney, T., & Dressler, D. (2011). *General Recommendations for Growing Vegetables in Containers*. PennState Extension. <https://extension.psu.edu/general-recommendations-for-growing-vegetables-in-containers>.

Cogger, C. (2017). *Raised Beds: Will They Benefit Your Vegetable Garden?*. Washington State University Extension, FS075E. <http://cru.cahe.wsu.edu/CEPublications/FS075E/FS075E.pdf>.

Gunter, C. (2018). *Chapter 16: Vegetable Gardening*. In K.A. Moore, and L.K. Bradley (eds), North Carolina Extension Gardener Handbook. NC State Extension, AG-831. <https://content.ces.ncsu.edu/extension-gardener-handbook/16-vegetable-gardening>.

Mays, D., Richter, K., Bradley, L., Sherk, J., Kistler, M., & Neal, J. (2018). *Chapter 18: Plants Grown in Containers*. In K.A. Moore, and L.K. Bradley (eds), North Carolina Extension Gardener Handbook. NC State Extension, AG-831. <https://content.ces.ncsu.edu/extension-gardener-handbook/18-plants-grown-in-containers>.

Miles, C., Sterrett, G., Hesnault, L., Benedict, C., & Daniels,

C. (2013). *Home Vegetable Gardening in Washington*. Washington State University Extension, EM057E. <https://s3.wp.wsu.edu/uploads/sites/2071/2014/04/Home-Vegetable-Gardening-in-WA-EM057E.pdf>.

Turner, P., Fox, L., & Parkhurst, J.A. (2013). *Therapeutic Gardening*. Virginia Polytechnic Institute and State University, Virginia Cooperative Extension, HORT-66NP. <https://vtechworks.lib.vt.edu/bitstream/handle/10919/48288/HORT-66-PDF.pdf?sequence=1&isAllowed=y>.