

rebuilding community

Home Gardens

Tsunami survivors are currently dependent on international aid for food. By planting fast growing or salt resistant vegetables on soils that are minimally damaged, families can begin to grow food for themselves and rebuild their communities. Traditional gardening practices can help bring back productivity to the soil.

Soil Classification +
Salt Resistant Plants+
Home Garden Methods+

Soil Zones for Reclamation



Class A Field

Some Class A fields need to be cleaned but this can be done with few problems.

Rapid reclamation and salt leaching is possible through normal rainfall or irrigation. The amount of rain that has fallen will determine the extent of damage. Land could be productive for the April/May cropping season without major interventions.



Class A Field

Five weeks after the disaster some farmers, as seen in this picture, have already replanted on the least damaged paddy field.

Source: www.fao.org/ag/



Class B Field

This type of field requires more work to recover. Time will be needed for cleaning the debris and to allow salt to leach from the soil. The land may need leveling as well. Farmers may need to grow salt tolerant crops during the next season and diversify some of their production.



Class C Field

These fields are severely damaged by erosion, debris, and destroyed structures. One or more cropping seasons will be needed before planting to begin. Methods for reclamation of these fields are currently being tested. Farmers may need to diversify farming activities.

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Agricultural Damage From the Tsunami

- uprooting of crops
- salt poisoning
- flooding
- erosion, scouring, land leveling
- soil fertility lost as soil is washed away
- deposits of salt sediment
- salt infiltration into soil
- trash and debris accumulation

What to do with Salted Sediment

- remove rocks, debris, trash
- integrate soil with deposits
- give thorough watering or rainfall to leach salt from soil
- texture and structure of soil will be changed, making next few seasons' crops difficult to grow

Desalinization of Soil

The simplest way to lower the salt content in soil is to water the soil with clean, unpolluted water. Plant salt resistant plants. Another method is to mix in organic material with the soil until the salt is leached out.

Vegetables that Ripen in about 30 Days

Pak Choi

Salt Resistant Plants

Gourds and Pumpkins:

Curcubita moschata	Pumpkin
Lagenaria siceraria	Bottle gourd
Momordica charantia	Bitter Gourd
Trichosanthes cucumerina	Snake Gourd

Leafy Vegetables:

Portulaca oleracea	Purslane
Brassica oleracea var. alboglabra	Kale
Beta vulgaris L. var. cicla	Swiss Chard
Spinacia oleracea L.	Spinach

Fruit:

Lycopersicon esculentum	Tomato
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Vegetables that Ripen in about 60 Days

Cucumber	Watermelon
Eggplant	Yard-long bean
Cabbage	Yellow Wax Hot Pepper
Kale	Tomato
Edible Rape	

Indicative Planting Seasons of Crops in Aceh

Immediate Crops	Planting Date	Longer term Crops	Comments
Rice, Soybean, Corn, Groundnut	First Season: Aug-Jan	Coconut, Clove, Nutmeg, Cocoa, Coffee, Cinnamon, other spice crops, Bananas	Rainy season from Sept-Apr followed by dry season from May-Aug

Source: www.fao.org/ag/tsunami/assessment/planting-season.html

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Sun Exposure for Gardens

- Place your garden so that it is protected from hot afternoon sun.
- Place your garden so that it is not shaded out by nearby buildings or overhangs
- Plant vegetables, herbs and trees so that taller plantings do not shade out smaller sun loving plants

Garden Preparation

Till the soil to loosen and aerate the soil. Irrigate if necessary if soil was damaged by the tsunami with excessive sodium. Allow soil to become moist but not wet before working the soil. Lay out terraces and ridges if needed. Dig planting holes two times wider than deep. Plant heavily to reduce soil erosion. As many as 1530 plants have been found in 100m square traditional home gardens. Plant in layers with a variety of vegetables, fruit, trees, and shrubs.

Plants For Areas Not Affected by the Tsunami

Avocado	Eggplant	Taro
Banana	Guava	Tomatoes
Cassava	Mango	Yams
Cabbage	Onions	
Coffee	Peppers	
Corn	Potatoes	
Cucumber	Rambutan	
Durian	Squash	

Time Table for Home Gardens



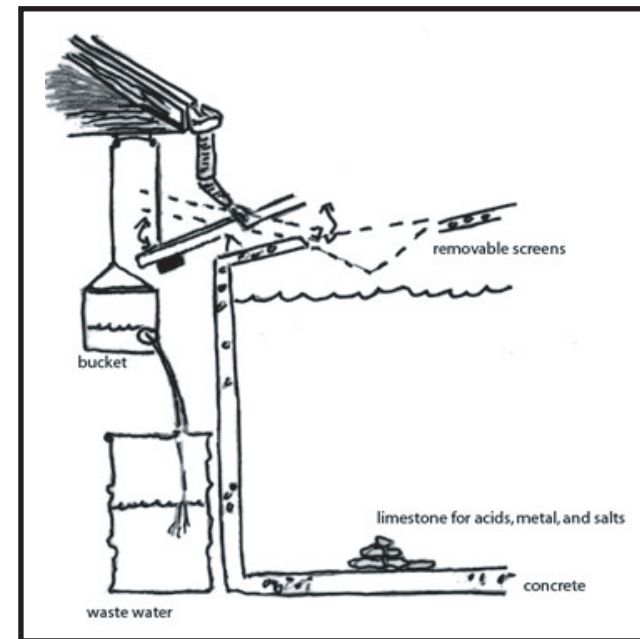
Destroyed
crops

One year
later

Five years
later

Cisterns

Cisterns store rain water that can later be used for watering garden plants. For cisterns that collect rain water from the roof, the first rain fills a hanging bucket. Water from the gutter fills the counterweighted open pipe. Excess water is dumped into the barrel. A bleed hole for the bucket can be set to empty automatically every hour. After this, rain is stored in the cistern. Cisterns can also be open containers that collect rainfall.



Concrete cistern catching water from the roof

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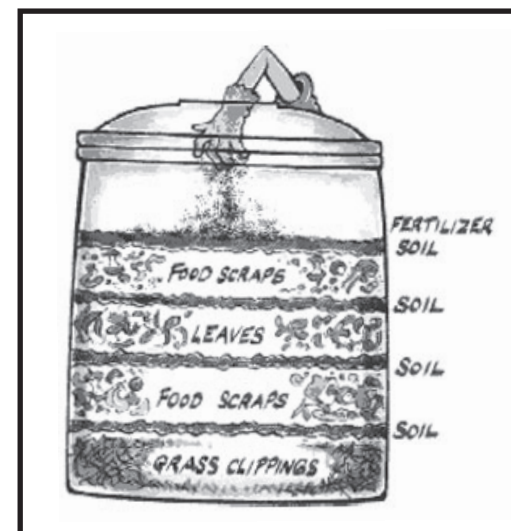
What Is Compost

Compost is a natural fertilizer made up of decomposed leaves, twigs, vegetable and fruit scraps that can be worked into the soil to make it more productive.

How to Make Compost

1. Gather leaves, twigs, vegetable and fruit scraps and spread them in alternating layers in a compost bin.
2. Cover each layer with soil. Keep the compost moist, but not wet. You should not be able to squeeze water out of the compost.
3. Turn the compost heap periodically, to speed up the decomposing time. You should see steam rising from the compost heap.
4. The compost has finished decomposing when turning over the pile produces no more heat or steam. All materials should be of a similar texture and cannot be identified easily. The compost will have an earthy smell. The pile will be half the size of the original pile.

Compost Bin with Many Layers



Source: www.gould.edu.au/waste_stop/act_12.htm

What to ADD

fallen leaves
wood ash
vegetable
fruit scraps
soft stems

What NOT to Add

meat
dairy products
bones
animal manure
large branches

How to Make a Compost Bin

1. The simplest compost bin is a pile in the corner of the garden. The pile must be 3'x3'x3' in order to retain heat and to successfully decompose.
2. Another easy way to make a compost bin is to use pallets or debris that can be made into a compost bin.



Source: mastercomposter.com/equip/buildbin.html

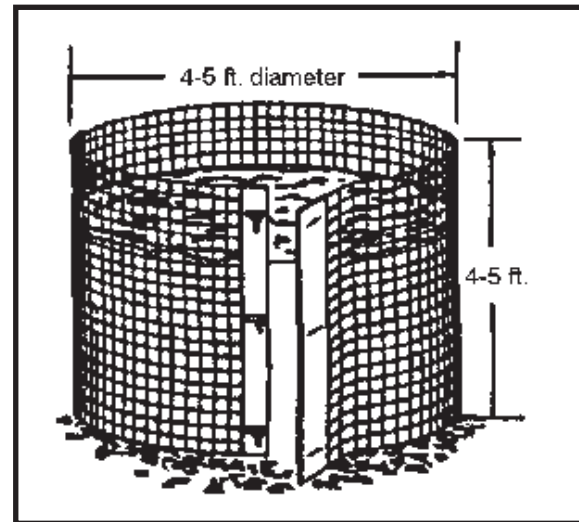
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Source: hflp.sdstate.edu/compost.htm

3. Wire-mesh holding unit

A wire-mesh holding unit is inexpensive and easy to build out of either galvanized chicken wire or hardware cloth. Non-galvanized chicken wire also can be used, but it will not last as long. Posts provide more stability for a chicken-wire bin, but make the bin is easy to lift and provides access to finished compost at the bottom of the pile while the compost at the top of the pile is still decomposing.

Materials

10-foot length of 36-inch-wide 1-inch galvanized chicken wire, or
10-foot length of 1/2-inch-wide hardware cloth (note: This will make a bin with a diameter of 3 feet)
Heavy wire for ties
Three or four 4-foot-tall wooden or metal posts (for

Tools

Heavy-duty wire or tin snips
Pliers
Hammer (for chicken wire bin)
Metal file (for hardware cloth bin)
Work gloves

Source: www.muextension.missouri.edu/xplor/agguide/hort/g06957.htm

To build a wire-mesh unit with chicken wire

Fold back 3 to 4 inches of wire at each end of the cut piece to provide a strong, clean edge that will not poke or snag and that will be easy to latch.

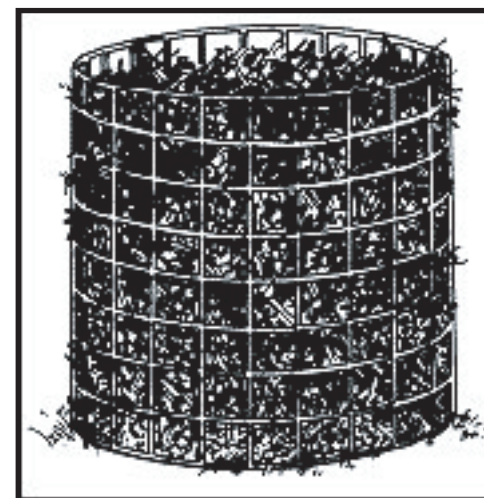
Stand the wire in a circle and set it in place for the compost pile.

Cut the heavy wire into lengths for ties. Attach the ends of the chicken wire together with the wire ties, using pliers.

Space wood or metal posts around the inside of the chicken-wire circle. Holding the posts tightly against the wire, pound them firmly into the ground to provide support. To build a wire-mesh unit with hardware cloth

Trim the ends of the hardware cloth so that the wires are flush with a cross wire to get rid of edges that could poke or scratch hands. Lightly file each wire along the cut edge to ensure safe handling when opening and closing the bin. Bend the hardware cloth into a circle, and stand it in place for the compost pile.

Cut the heavy wire into lengths for ties. Attach the ends of the hardware cloth together with the wire ties, using pliers.



Source: npcr.org/reports/npcr1185/npcr1185.html

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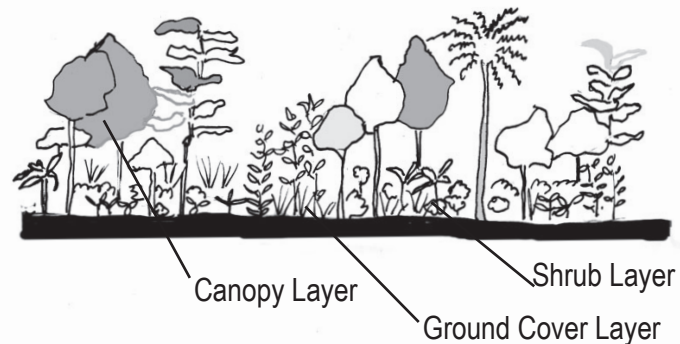
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Traditional Home Gardens



Traditional home gardens are filled with vegetables, fruits, vines, medicinal plants, flowering perennial plants and trees. Even the edges of paths can be planted with herbs and annuals.

In the city, home gardens are found in vacant lots, at the end of dead end streets, in unused alleys or even a in a window box. In the villages, garden space can be near the house or in some nearby location.

The garden plot is layered with trees, shrubs, and ground-cover plants so that during a downpour rain drips from plants onto the soil. A home garden is not a tidy place. Leaves fall from the trees to make new soil. Chickens scratch the ground.

The garden plot has compost bins for vegetable scraps to decompose before becoming part of the garden. After a while home garden soil can become rich and productive and a home to amphibians, reptiles, birds and insects.



Village Home Garden



City Home Garden

Time Table for Home Gardens



Destroyed
crops

One year
later

Five years
later

With regular watering, good garden soil that is salt free or planted with salt resistant plants and fertilized by using compost as garden mulch, will provide an environment for plants to grow quickly.

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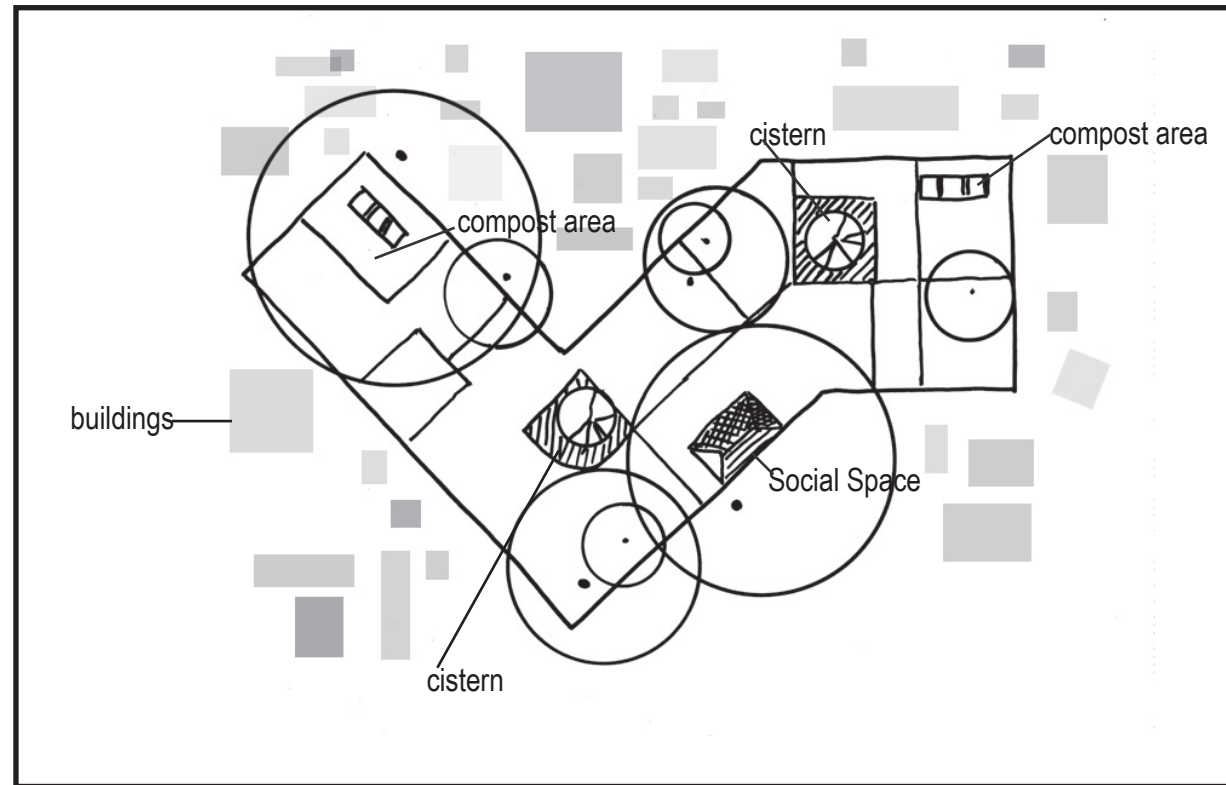
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Home Gardens

City Gardens



Garden space is set between buildings, in alleys, or in a grouping of containers. Home gardens in cities are places for people to gather, to share and sell food.

Traditional Home Garden Plants

Starchy Plants

Yams
Potatoes

Herbs and Spicy Plants

Clove
Cinammon
Nutmeg
Turmeric
Hot Peppers

Trees/Fruit

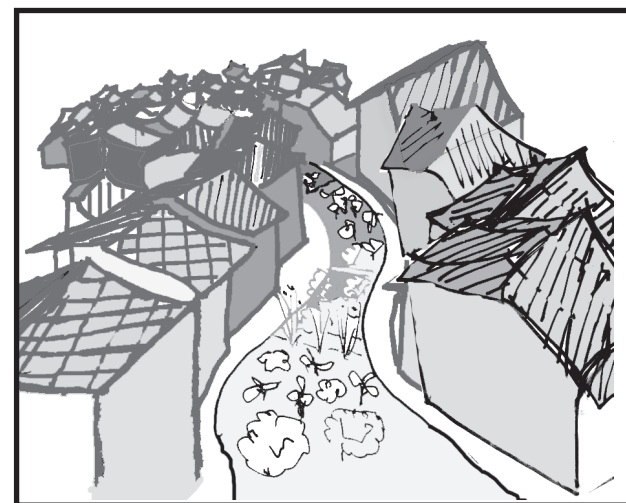
Durian
Avocado
Mango
Rambutan
Banana
Coconut
Coffee
Papaya
Watermelon

Medicinal Plants

Vegetables

Eggplant
Onions
Peppers
Cucumbers
Cabbage
Beets
Carrots
Cassava
Taro
Tomato
Kale
Squash

Gardening in the City



Alleys are left over spaces that can take on new functions in an urban kampung where streets are more for people than vehicles.

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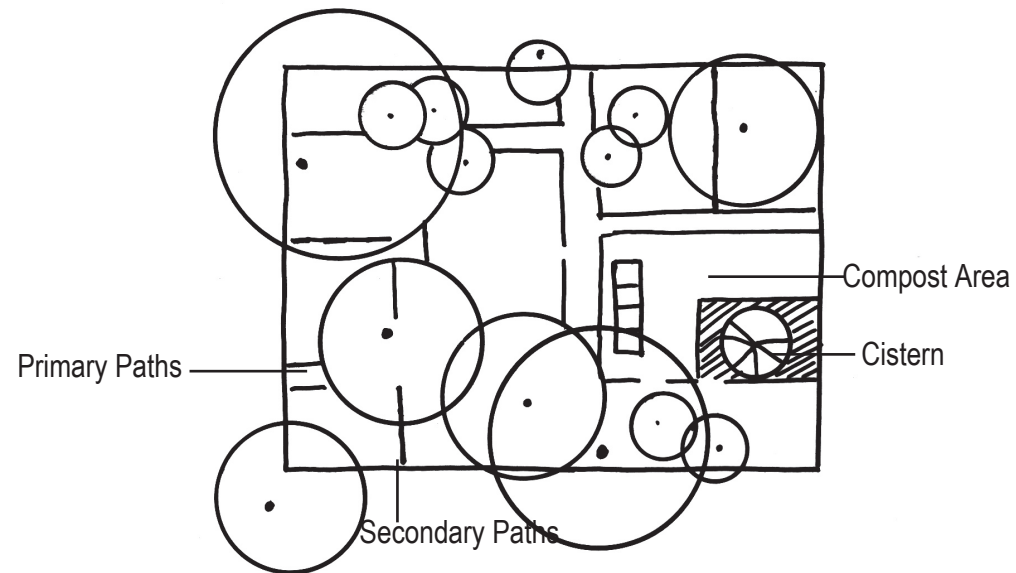
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Village Gardens



In villages individual gardens are found behind the house and in front of the house. The community garden is within walking distance of the village. The gardens are small, usually square and are adapted to the terrain. In contrast to the urban garden, the village garden is a more private place. The paths through the garden are places to gather and talk.

Example of layered home garden



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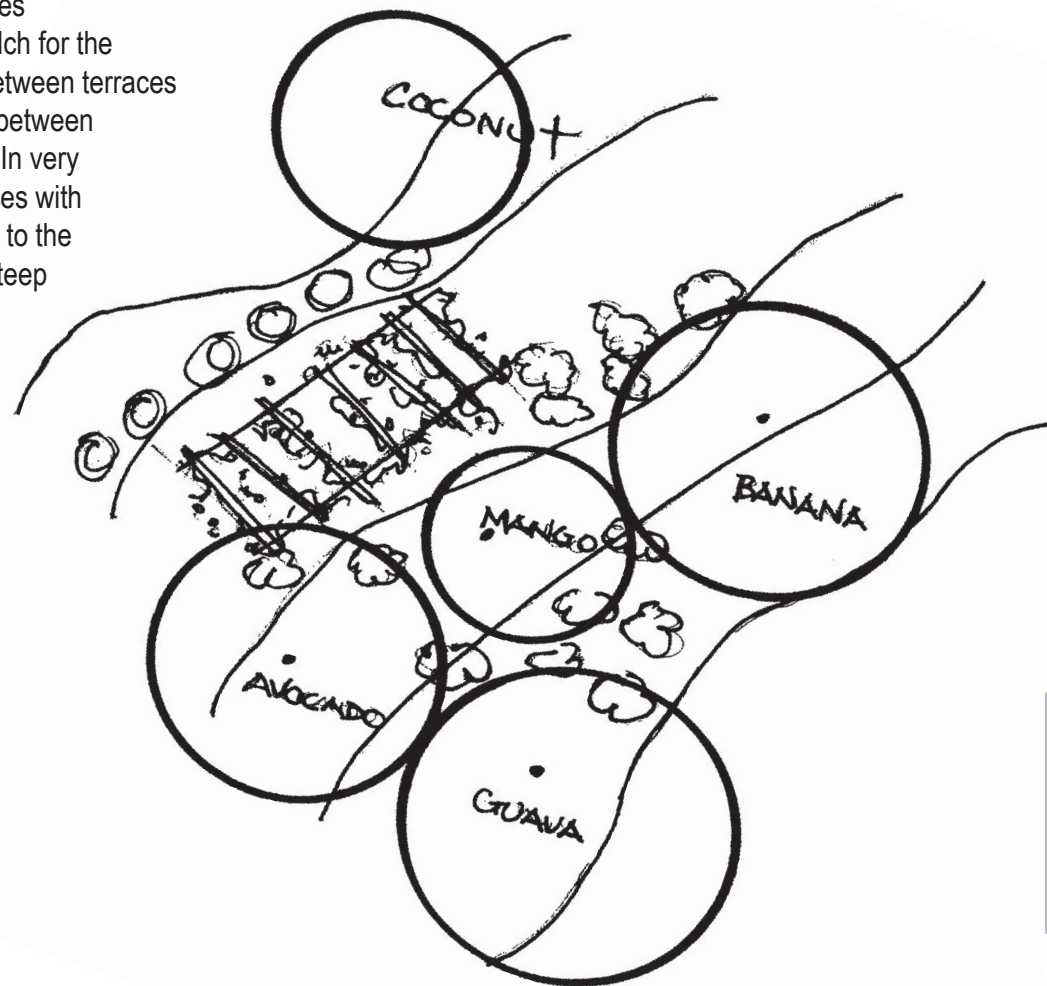
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Terraced Gardens

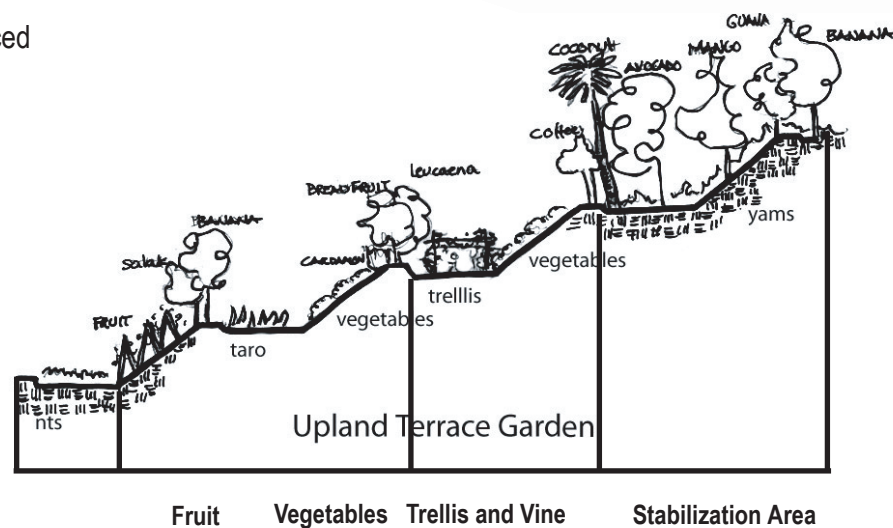
Plant trees on upper terraces, terrace side borders, and the top of the terrace wall.

By doing this the terrace becomes more stable and will provide mulch for the garden. The maximum slope between terraces is 6 feet with a maximum slope between terraces of 37% or a 3:4 slope. In very steep slopes build narrow terraces with each terrace spilling extra water to the planted terrace below. In less steep slopes, build broader terraces.

A plan view of one garden terrace shows the response to topography. Trees should take up to 40-60% of the space to supply leaf litter. Trees are planted closely on the higher elevation with trellis and vegetables planted in the less steep parts of the home garden.



An elevation of an upland terraced garden shows the distribution of trees.



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