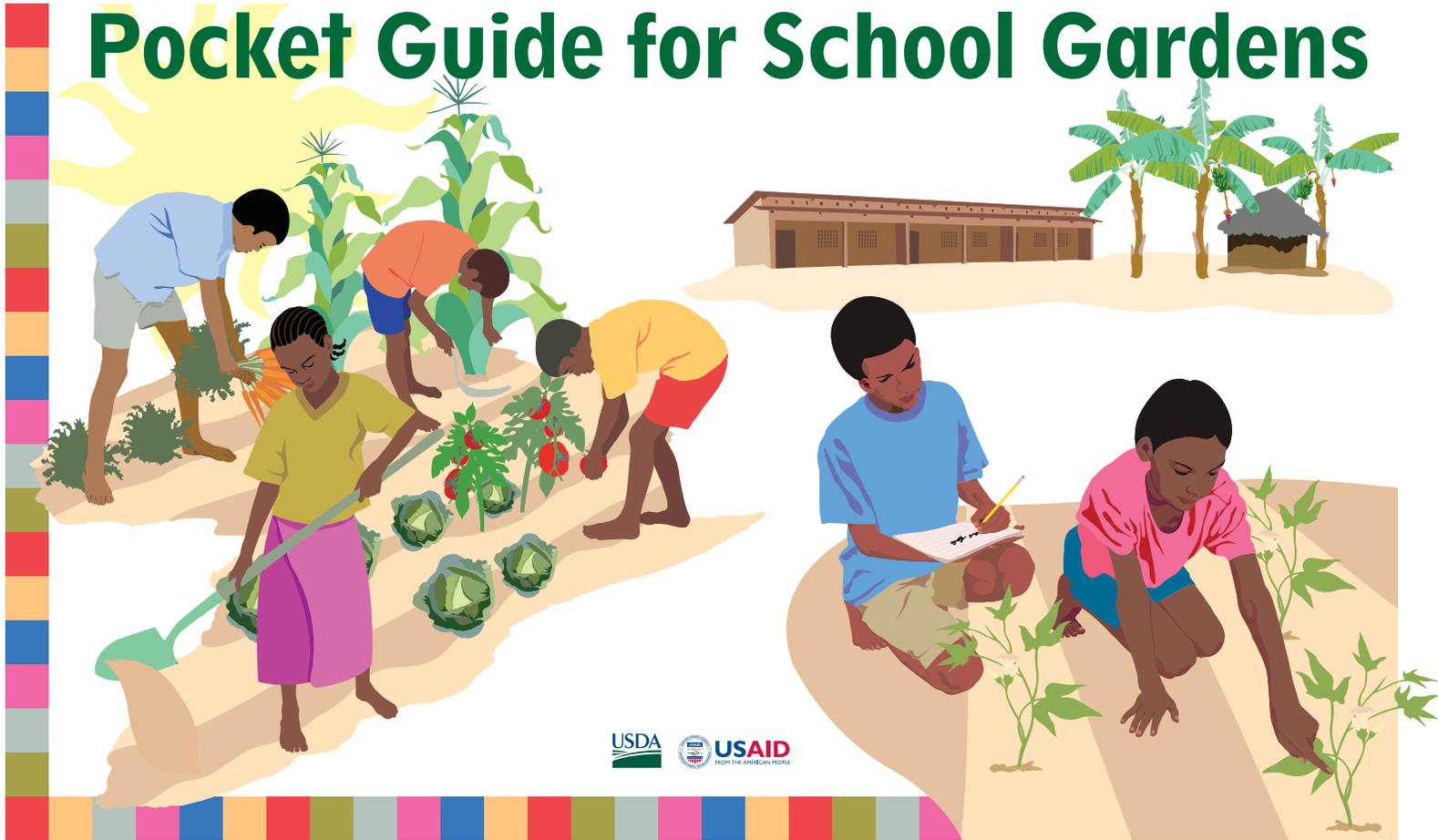
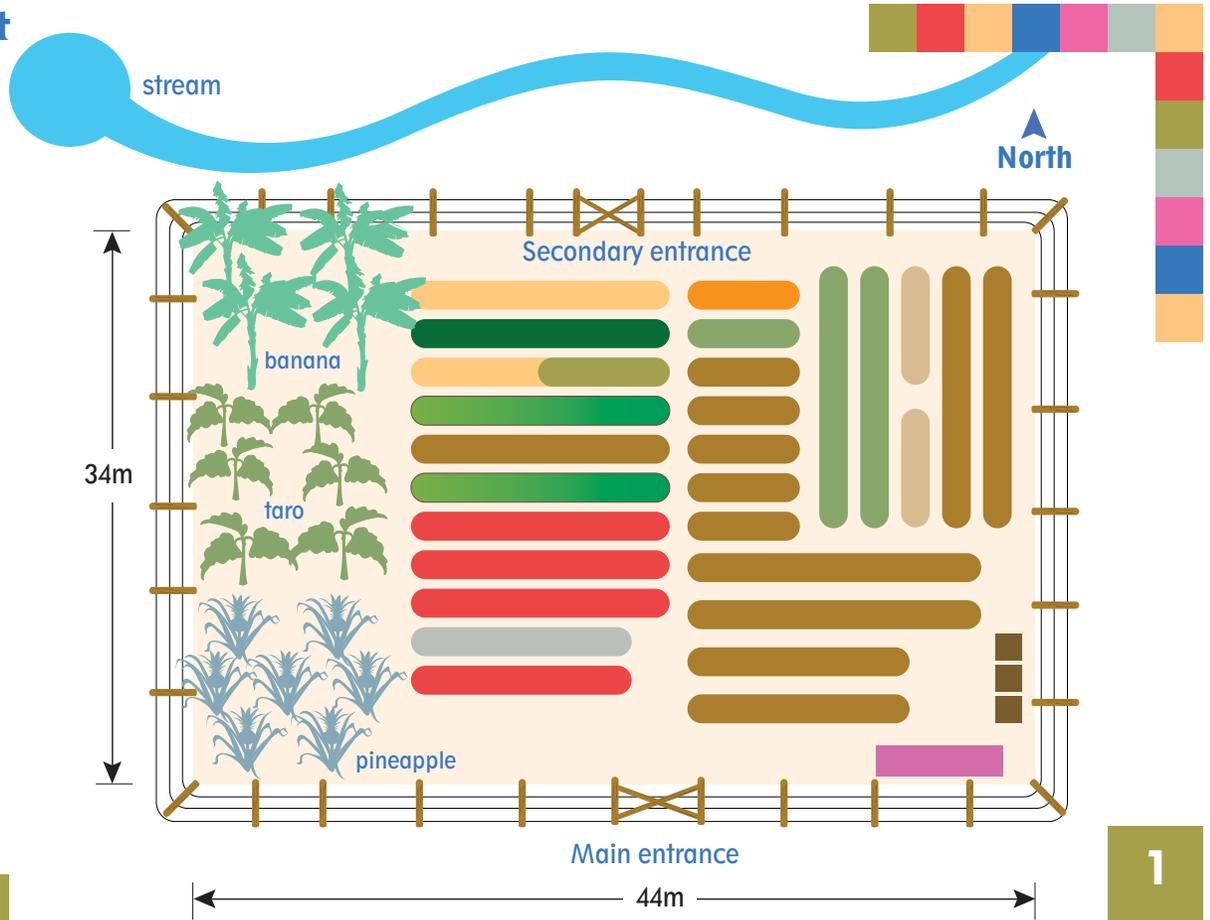


Pocket Guide for School Gardens



Example Layout of a School Garden



Introduction

Gardening can be a fun and interesting way to increase food security and help students learn at the same time. These are the basic steps to gardening:

- Form garden committee
- Choose a site
- Develop garden plan
- Prepare the site
- Plant
- Tend the garden
- Harvest

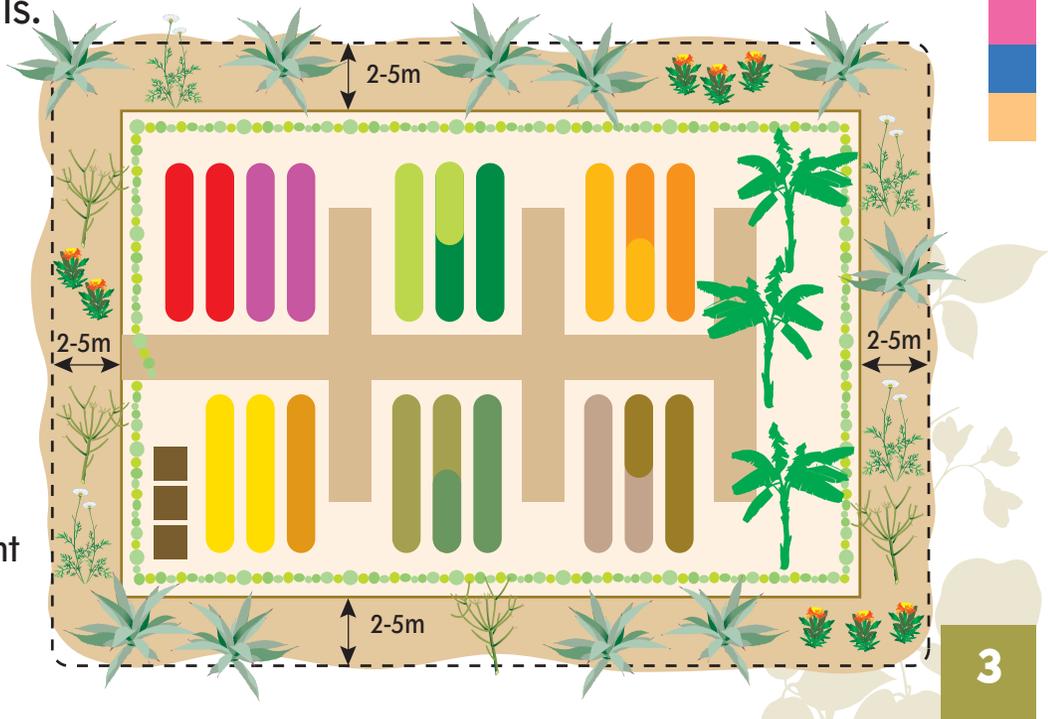


GARDEN PERIMETER

A fence and a perimeter free of weeds will help reduce damage from pests as well as domestic and feral animals.

- Clear the area outside the fence about 2-5m wide. The fenced area - both within the fence and outside it - should be weed-free to avoid harboring pests and to eliminate any unwanted source of weed seeds.

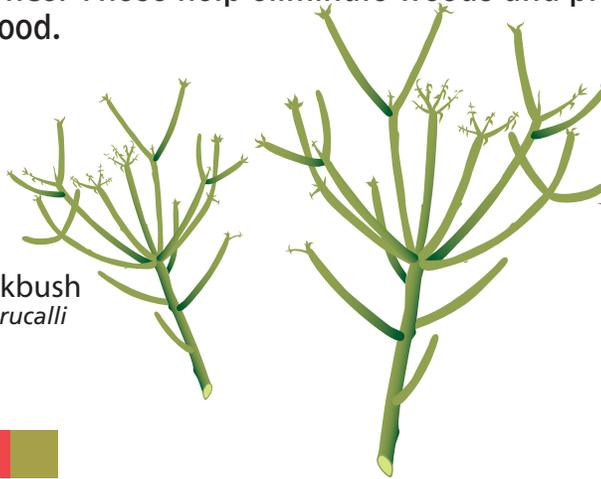
- Plant insect-repelling and/or insecticidal plants such as marigolds, pyrethrum or daisies. Plant directly adjacent to the fence to repel pests.



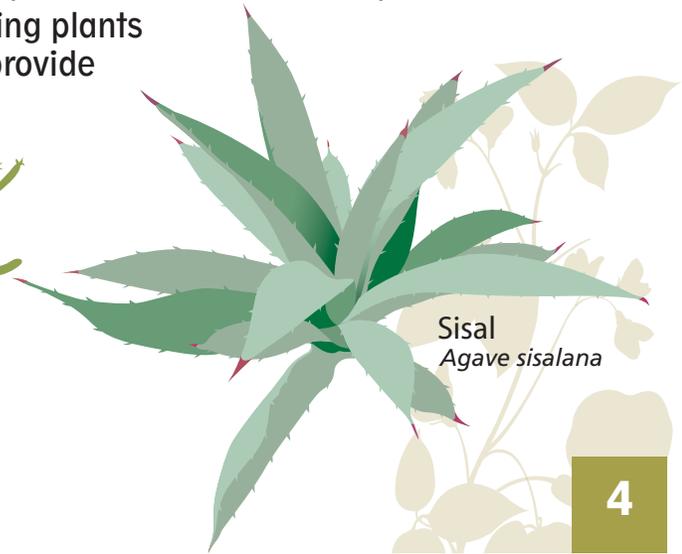
GARDEN PERIMETER

- Plant “defensive” plants such as sisal (**Agave sisalana**) or African milkbush (**Euphorbia tirucalli**) along the outer perimeter to repel animals. Sisal has sharp pointed puncturing leaves. The African milkbush has sticky and toxic latex (sap) which repels most animals.
- Plant low-maintenance plants adapted to poor soils, such as cassava or taro, between the outer defensive perimeter and the insect-repelling plants along the fence. These help eliminate weeds and provide additional food.

African Milkbush
Euphorbia tirucalli



Sisal
Agave sisalana



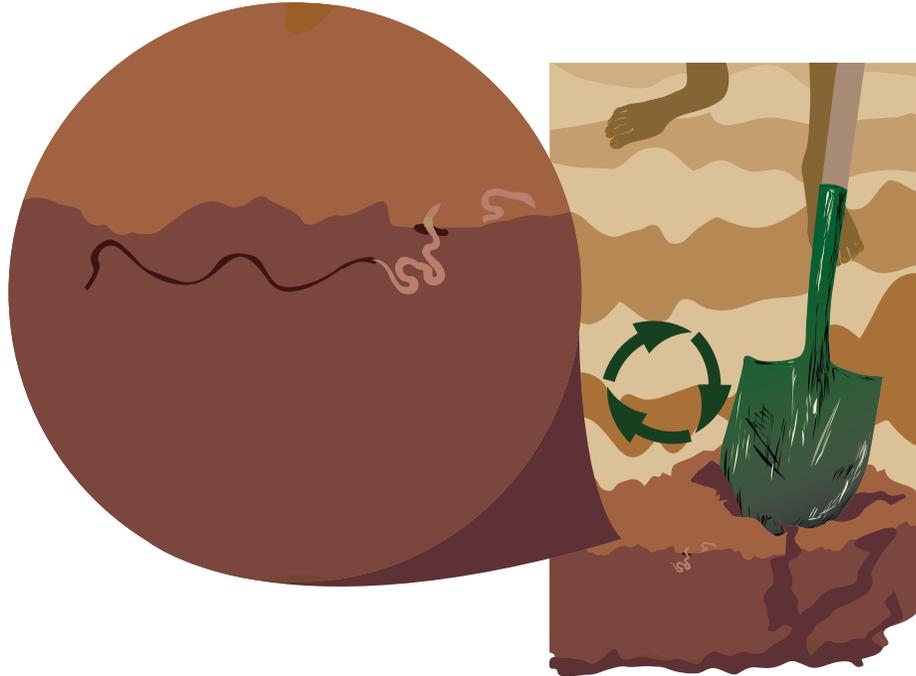
COMPOSTING

Make compost in a hole in the ground or in a pile above ground. Start with a layer of brown dry material; add a layer of green rich material. Alternate these layers several times. Also add some mature compost or good garden soil to start the decomposing process. Water and cover the pile if it is dry. Turn or mix every 1-2 weeks.



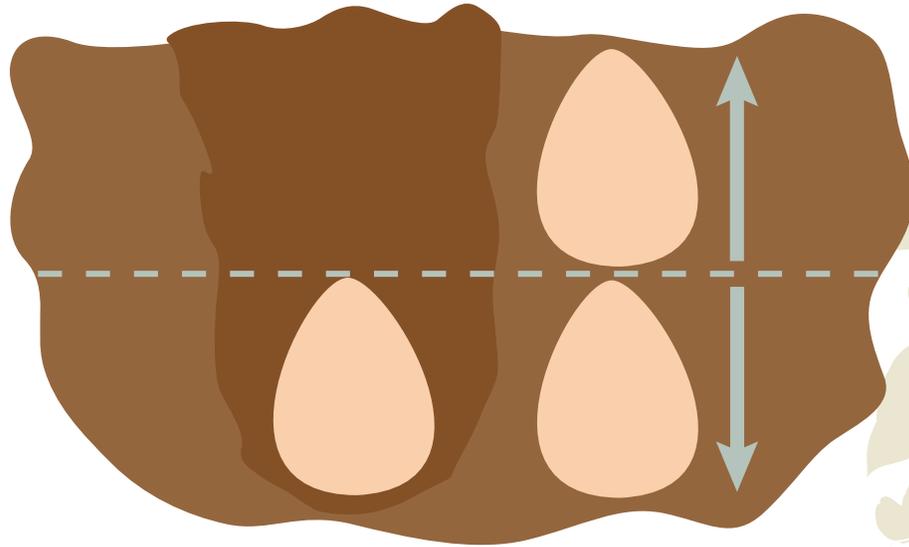
SOIL PREPARATION

Plants grow best in well-drained soil with compost (decomposed organic matter) added. Work the soil to a depth of 20 cm. and mix in your compost before planting.



PLANTING SEEDS

As a general guideline, plant seeds at a depth twice the size of the seed.



Planting Depth

SEED GERMINATION TEST

Testing seeds for their viability (germination rate) helps ensure that you plant enough seeds and therefore helps increase the productivity of your garden. Seeds can be tested simply:

1. Select the seed type to be tested. If you have seeds from more than one source, be sure to label them, to keep them separate, and to conduct a separate test on each group. Place a minimum of 20 seeds in organized rows on a clean damp cloth. Cover the seeds with another piece of clean cloth and roll the two cloths together.



Place the rolled cloth in a shady place for 5-7 days. Most seeds that are viable will have germinated within this time. Then examine the seeds.



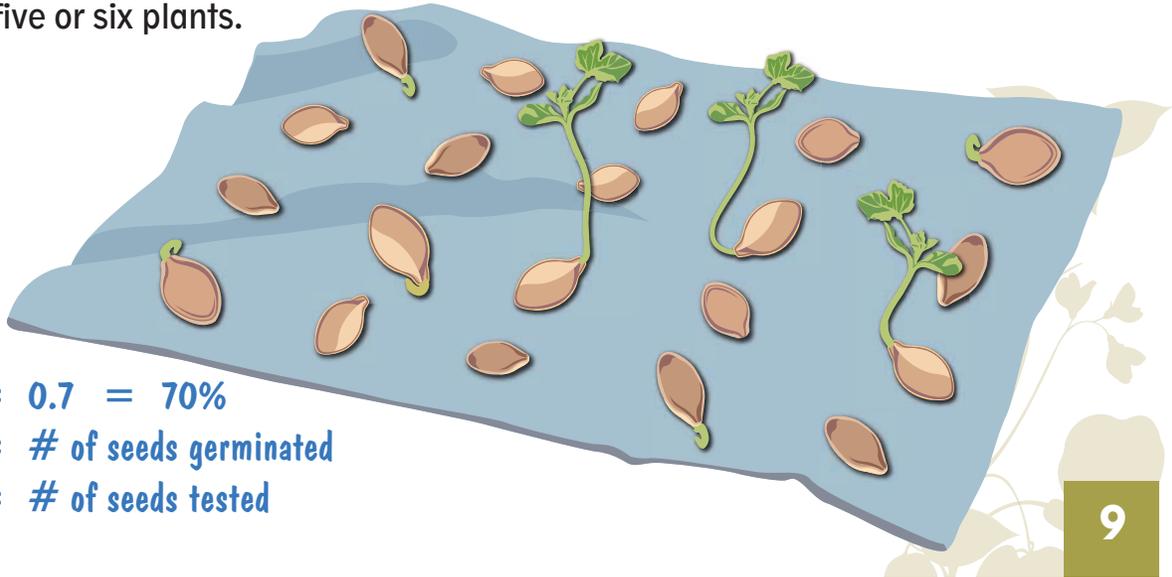
SEED GERMINATION TEST

- Count the number of seeds that have germinated and divide that number by the number you first tested. This is your germination rate. If the germination rate (GR) is less than 85%, you need to plant extra seeds. The lower the GR, the more (extra) seeds you will need to plant to ensure beds are fully planted. For example, if you want four squash plants but the germination rate was only 70%, you will need to plant enough seeds for five or six plants.

For example:

$$\text{GR (G14/N20)} = 0.7 = 70\%$$

where G = # of seeds germinated
N = # of seeds tested



PLANT SPACING

Plant seeds or thin young plants so that when full-grown the plants will be at least one hand-width apart.



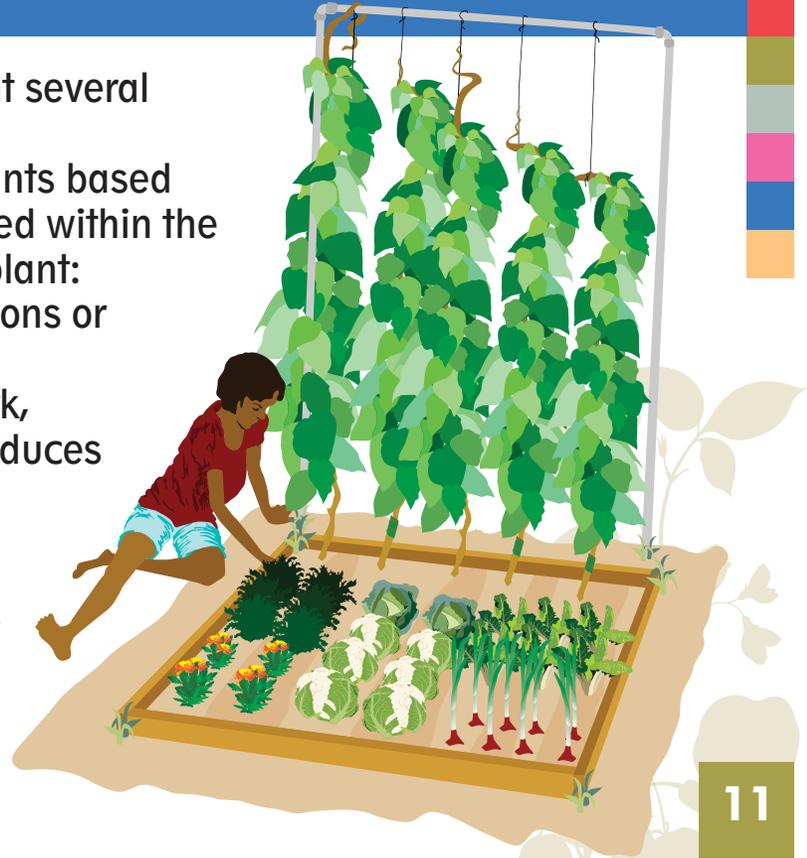
SQUARE METER GARDENS

With a square meter garden you plant several varieties of crops in a small space.

The key is to fill each square with plants based upon their final size and evenly-spaced within the square. For example, in one square plant: 1 cabbage, 4 spinach or beans, 9 onions or beet-root, or 16 carrots.

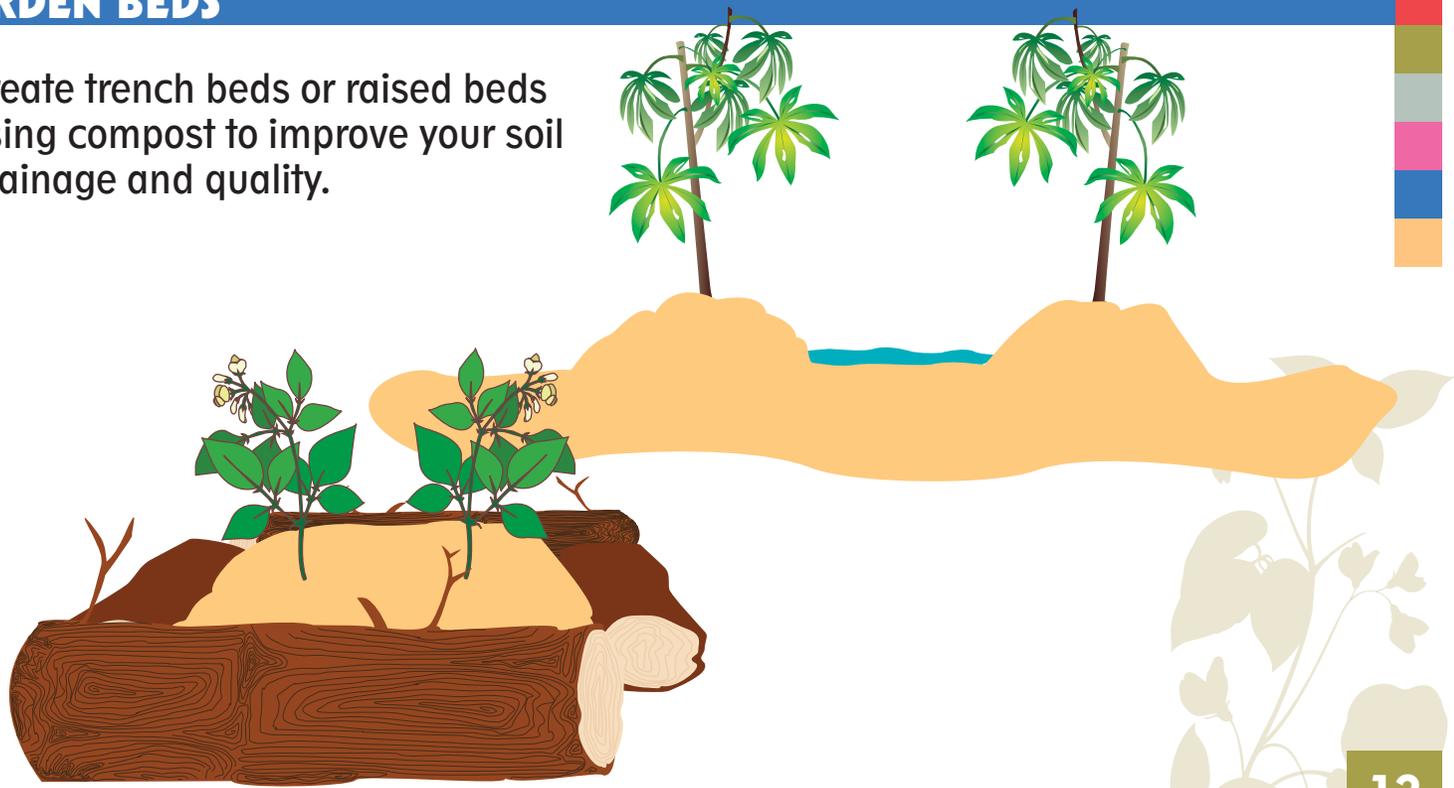
This type of garden requires less work, conserves seeds, saves water, and reduces the need to weed.

Natural insect repellent methods are very efficient in a close space like the square meter garden. The variety of plants within the small space also helps prevent plant diseases from spreading easily.

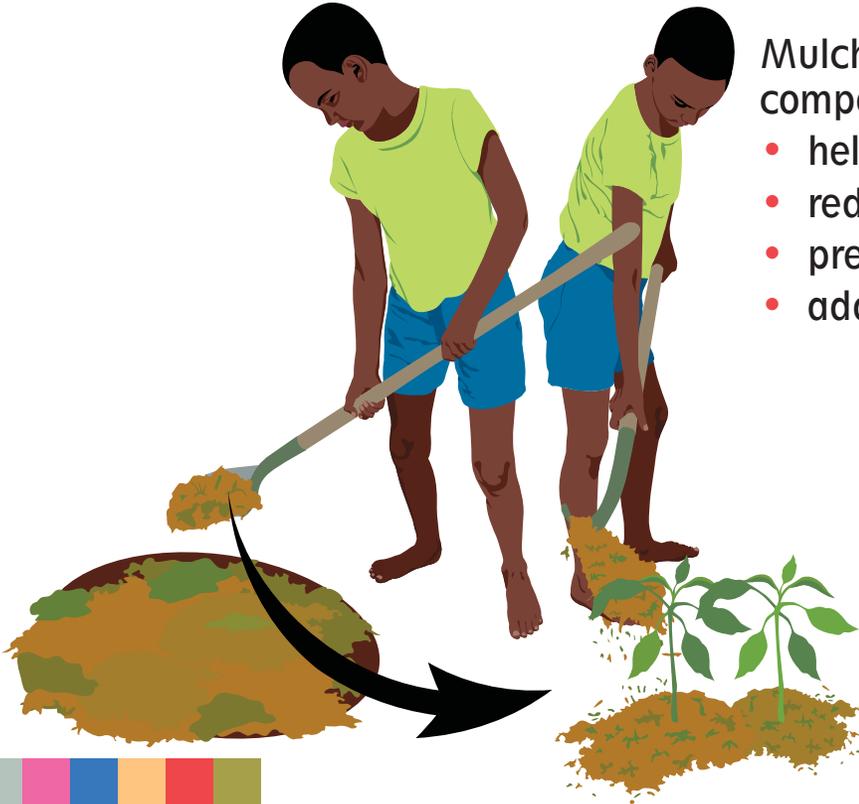


GARDEN BEDS

Create trench beds or raised beds using compost to improve your soil drainage and quality.



MULCHING AND WATER MANAGEMENT



Mulch around the plants and add compost to your garden to:

- help keep moisture in the soil,
- reduce weeds,
- prevent soil erosion, and
- add nutrients to the soil.

CONTROLLING INSECT PESTS

The following two recipes can be made in the village and are safe to use in the garden.

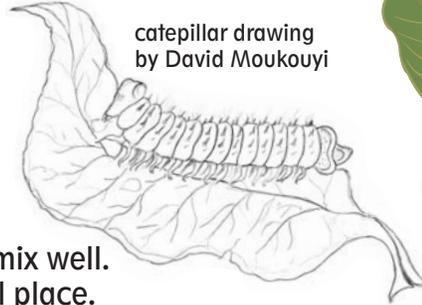
Recipe for controlling insect pests (Insecticide)

Ingredients:

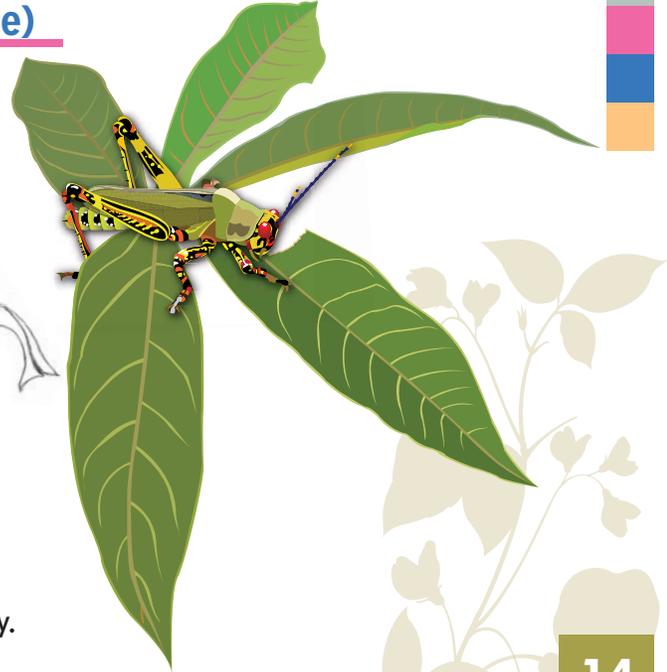
- 1 spoon crushed garlic
- 1 spoon crushed chili pepper
- 1 heaped spoon grated soap
- 2 cups boiling water

Method:

1. Dissolve soap in water.
2. Add other ingredients and mix well.
3. Leave for two days in a cool place.
4. Strain the mixture through a sock or cloth.
5. Mix 1 cup of pesticide mixture with 10 cups (1 small bucket) of water.
6. Apply to portions of plants being attacked by pests.
 - Use a small mop or broom made from straw or cloth.
 - Include both upper and lower sides of leaves.
 - Rain will rinse off insecticide, so reapply when necessary.
 - Always apply to new plant growth.



caterpillar drawing
by David Moukouyi



CONTROLLING FUNGAL PESTS

Recipe for controlling fungal plant diseases

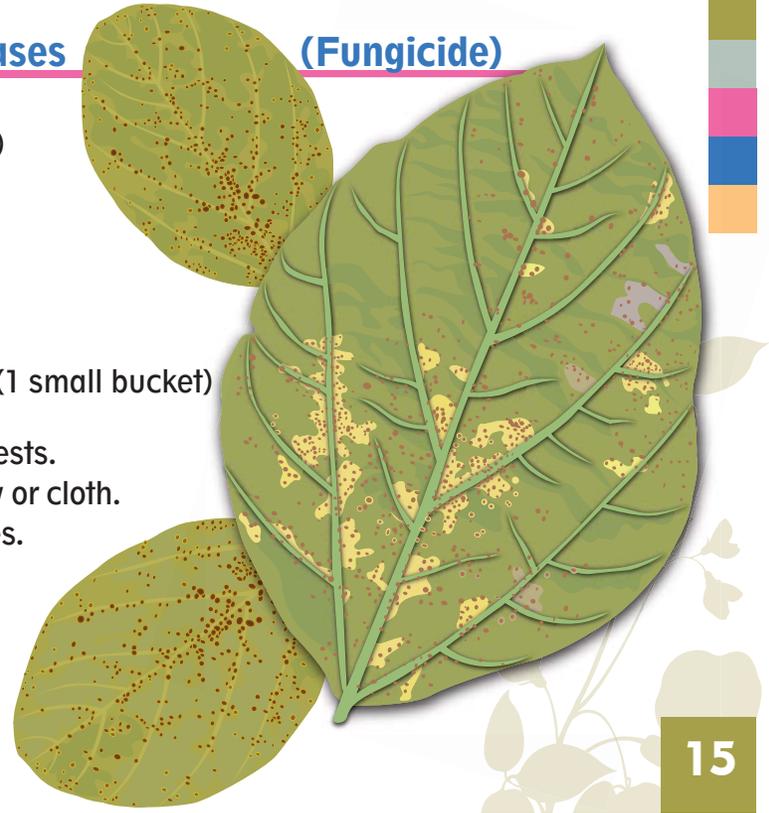
(Fungicide)

Ingredients:

- 1 heaped spoon baking soda (sodium bicarbonate)
- 1 heaped spoon grated soap
- 2 cups hot water

Method:

1. Dissolve soap in water.
2. Add other ingredients and mix well.
3. Mix one cup of fungicide mixture with 10 cups (1 small bucket) of water.
4. Apply to portions of plants being attacked by pests.
 - Use a small mop or broom made from straw or cloth.
 - Include both upper and lower sides of leaves.
 - Rain will rinse off fungicide, so reapply when necessary.
 - Always apply to new plant growth.



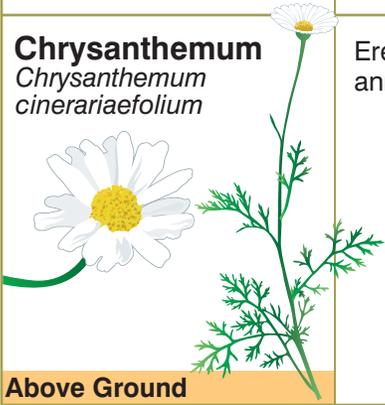
Insecticidal Plants

Insects can be repelled or killed by solutions made using plants, called insecticides. To reduce insect pests, first try a natural, non-toxic insecticide such as the mixture on page 14. If this is not effective, select one or more of the insecticidal plants listed below and experiment with the effectiveness.

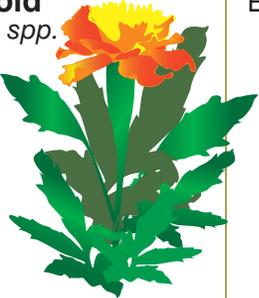
- Apply solutions to plants in morning or late in the day, never mid-day.
- Before using a solution always test it: apply a small amount to a few leaves of several types of plants, wait a day, and check for damage. If no problems occur, apply the solution.
- Apply to portions of plants (including both upper and lower sides of leaves) before the disease progresses. Use a small mop, broom or brush made from twigs, grass or strips of cloth tied together.
- Rain will wash off the insecticide, so reapply solutions when necessary.
- Rotate insecticides used so the insects do not develop resistance to a specific solution.



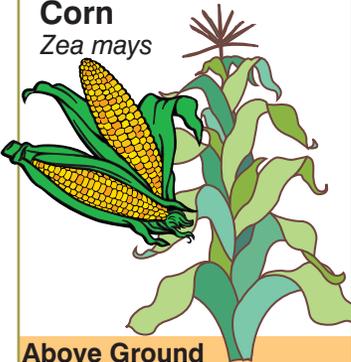
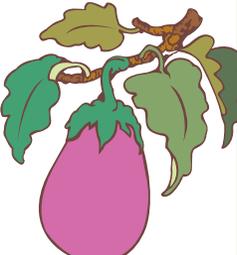
Insecticidal Plants

Common Name & Scientific Name	Plant Type	Parts Used	How Used	Comments
Chili Peppers	See page 14.			
Chrysanthemum <i>Chrysanthemum cinerariaefolium</i> 	Erect herbaceous annual	Seeds (flower heads)	<ul style="list-style-type: none"> • soak dried flower heads in kerosene for 24 hours • filter or strain solution • dilute 1:10 (1 part solution: 10 water) 	Source of commercial pyrethrum. Generally non-toxic to humans. Excellent for school gardens.
Above Ground Garlic	See page 14. Also see section entitled “Root Vegetables” found later in <i>Pocket Guide</i> .			

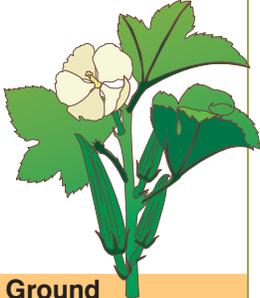
Insecticidal Plants

Common Name & Scientific Name	Plant Type	Parts Used	How Used	Comments
<p>Marigold <i>Tagetes spp.</i></p> 	<p>Erect, annual herb.</p>	<p>Entire plant, especially leaves.</p>	<p>Plant repels nearby insects.</p>	<p>Flowers are ornamental. Use to also beautify garden.</p>
<p>Above Ground</p>	<p>Large, fast growing, spreading tree with compound leaves.</p>	<p>Seeds (uses for other parts of tree offered in Comments Column).</p>	<ul style="list-style-type: none"> • soak .6 kg. crushed dried seeds in 10 l. warm water for 24 hours • filter or strain solution • add 1.0 g. soap • dilute 1:10 (1 part solution: 10 water) 	<p>Source of azadirachtin. Do NOT apply to plants in the tomato family. Use all parts of tree:</p> <ul style="list-style-type: none"> • leaves for composting • twigs for dental care • dead wood for firewood
<p>Above Ground</p>				

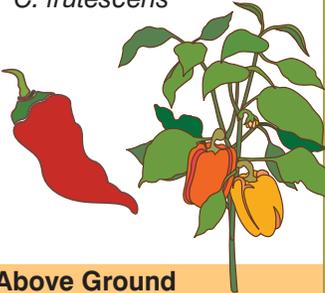
Fruit Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Corn <i>Zea mays</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow</p> <p>Important to keep soil moist.</p> <p>Plant no more than 2 seeds in each hole.</p> <p>Cover roots as they grow above soil.</p>	<p>70-90 days</p> <p>Harvest when silk turns brown and ears are full of kernels.</p>	<p>Good source of fiber to aid digestion.</p> <p>Provides potassium to help maintain fluid balance.</p> <p>Provides some energy.</p> <p>Some vitamin B.</p>	<p>Good companion plants: beans and cucumbers.</p>
<p>Eggplant <i>Solanum melongena</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p> <p>Mulch with pine needles when available.</p>	<p>80-90 days</p> <p>Best to harvest when firm and shiny and before they are too large.</p>	<p>Good source of fiber to aid digestion.</p> <p>Helps body use carbohydrates and proteins.</p> <p>Provides potassium to help maintain fluid balance.</p>	<p>Good companion plants: beans, spinach, and marigolds.</p>

Fruit Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Gumbo (Okra) <i>Abelmoschus esculentus</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p> <p>Does well in hot weather.</p>	<p>55-65 days</p> <p>Harvest often to keep the plant producing.</p> <p>Harvest when okra pod is 10 cm. long and still bright green color.</p>	<p>Source of vitamin C to help heal wounds, fight infection, improve immune system, and keep skin and gums healthy. Source of iron for blood and to prevent anemia. Provides potassium to help maintain fluid balance. Provides calcium for strong bones and teeth.</p>	<p>Seeds are easy to save: permit a few pods to grow large, dry them, and remove the seeds to use later.</p> <p>Good companion plants: beans, and tomatoes.</p>

Fruit Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Pepper <i>Capsicum annuum</i>, <i>C. frutescens</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p> <p>Add compost about 8 weeks after planting.</p>	<p>60-90 days</p> <p>Harvest when firm and the right size and color.</p> <p>Harvest individual peppers as they mature so plants continue to produce.</p>	<p>Source of A for eyesight, especially for seeing at night. Provides vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p>	<p>Useful for adding flavor.</p> <p>Useful as a natural, non-toxic insecticide.</p> <p>Good companion plant: onions.</p>
<p>Pineapple <i>Ananas comosus</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p>	<p>100-180 days</p> <p>Harvest when fruit is enlarged and starts to change color.</p>	<p>Excellent source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. High in fiber to aid digestion. Vitamin A for eyesight.</p>	<p>Do not plant seeds. Instead plant slips, suckers, crowns, or rations.</p> <p>Good companion plant: aloe.</p>

Fruit Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Tomato <i>Solanum lycopersicum</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p>	<p>70-90 days</p> <p>Harvest when fully red in color for most nutrition and flavor.</p>	<p>High in vitamin A for eyesight, especially for seeing at night. High in vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. Helps body absorb iron.</p>	<p>Seeds are easy to save: spread seeds on paper and dry.</p> <p>Good companion plants: cabbage, carrots, onions, peppers.</p>

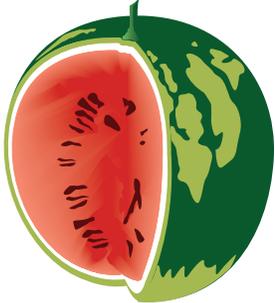
Vines

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Cucumber <i>Cucumis sativus</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow/Medium</p> <p>Important to keep soil moist.</p>	<p>50-70 days</p> <p>Harvest when cucumber is firm and color is bright green, before it turns yellow.</p> <p>Harvest individual cucumbers as they mature so plants continue to produce.</p>	<p>Some energy and vitamin A, B and C. High in fiber to aid digestion.</p> <p>High in potassium to help maintain fluid balance.</p>	<p>To save seeds, allow fruit to turn yellow color.</p> <p>Good companion plants: beans, corn, onions, and marigolds.</p>

Vines

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Pumpkin <i>Cucurbita maxima</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p>	<p>60-180 days</p> <p>Harvest when pumpkin enlarges and changes color.</p>	<p>High in vitamin A for eyesight, especially at night.</p> <p>High in vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p> <p>Good source of fiber to aid digestion.</p> <p>Leafy shoots are highly nutritious.</p>	<p>Easy to save seeds. Seeds also edible and are especially good roasted.</p> <p>Good companion plants: beans, corn, and marigolds.</p>

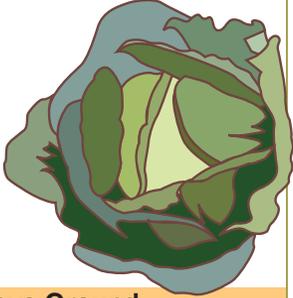
Vines

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Watermelon <i>Citrullus lanatus</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Important to keep soil moist.</p>	<p>60-100 days</p> <p>Harvest when fruit enlarges.</p>	<p>Some vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. Helps body absorb iron.</p>	<p>Native to central Africa.</p> <p>Easy to save seeds.</p> <p>Good companion plants: corn, marigolds, and nasturtium.</p>

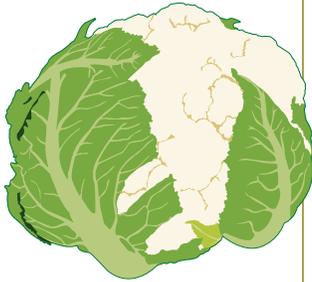
Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
Amaranth <i>Amaranthus spp.</i>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow/Medium</p> <p>While important to keep soil moist, also does well in semi-arid conditions.</p> <p>Easy to grow.</p>	<p>30+ days</p> <p>Harvest leaves just prior to maturity. Remove apex of stem when flower stem develops to spur continuous leaf formation. Harvest often to encourage new leaf formation.</p>	<p>Excellent source of many vitamins and minerals. Helps heal cuts and wounds and fights infection.</p>	<p>Contains oxalic acid which should be avoided by those who have arthritis. Should not be re-heated as may become toxic for children. Discard the cooking water.</p> <p>Easy to collect seed.</p>
Beet (Beetroot) <i>Beta vulgaris</i>  <p>Below Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium</p> <p>Does not like hot soil.</p> <p>Prefers moist soil with mulch. Keep free of weeds. Cultivate shallow.</p>	<p>50-60 days</p> <p>Harvest when leafy tops are about 5 cm. tall.</p> <p>Leafy tops can be cooked as greens.</p>	<p>Juice good source of antioxidants.</p> <p>Leaves good source of calcium for strong bones and teeth.</p>	<p>Good companion plants: beans, onions, and tomatoes.</p>

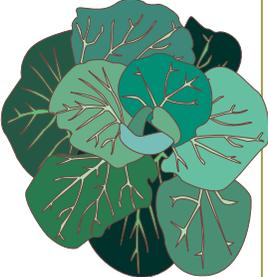
Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Cabbage <i>Brassica oleracea</i></p>  <p>Above Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Shallow/Medium</p> <p>Important to keep soil moist.</p> <p>Grows best in cool weather.</p>	<p>60-90 days</p> <p>Harvest when the cabbage head has become solid.</p> <p>Leave behind older leaves, stems and roots to produce smaller heads later in the season.</p>	<p>Good source of vitamin A for eyesight, especially at night.</p> <p>Good source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p> <p>Good source of zinc to help fight malaria and other diseases.</p> <p>Provides fiber to aid digestion.</p>	<p>Good companion plants: beans, onions, tomatoes, and marigolds.</p>

Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Cauliflower <i>Brassica oleracea botrytis</i></p>  <p>Above Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Medium</p> <p>Prefers rich, well-drained soil.</p>	<p>70-80 days</p> <p>To obtain a white, edible head (the curd) tie the outer green leaves up and around the head to shield from sunlight. If exposed to sunlight the curd will turn yellow, but still be edible.</p> <p>Harvest medium-size heads (12-15 cm.)</p> <p>Use knife to cut head along with some attached leaves.</p>	<p>Source of some vitamins, fiber to aid digestion, and antioxidants which may help prevent colon cancer. High in vitamin C.</p>	<p>Good companion plants: beans, onions, tomatoes, and marigolds.</p>

Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Collard <i>Brassica oleracea</i> <i>var. acephala</i></p>  <p>Above Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Shallow/Medium</p> <p>Important to keep soil moist.</p>	<p>50-80 days</p> <p>Harvest lower or outer leaves only so plant will continue to grow.</p> <p>When fully harvested, cut entire plant off 8 cm. from ground so new shoots may grow from existing stem.</p>	<p>Excellent source of vitamin A for eyesight, especially for seeing at night.</p> <p>Excellent source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p> <p>Provides calcium for strong bones and teeth.</p> <p>Some vitamin B and folate, along with vitamin K and iron to help blood.</p>	<p>Good companion plants: beans, onions, tomatoes, and marigolds.</p>

Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Endive and Chicory <i>Cichorium endiva</i> and <i>C. intybus</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium/Deep</p> <p>Important to keep soil moist.</p> <p>Water well before harvest to hydrate leaves.</p>	<p>30+ days</p> <p>Harvest leafy head before maturity.</p>	<p>High in vitamin A for eyesight, especially for seeing at night.</p> <p>High in vitamin K and folate to help blood.</p> <p>Some vitamin C, iron, calcium, and potassium.</p>	<p>Collect and roast root for a coffee substitute.</p> <p>Easy to save seeds: allow plant to form seeds in flower heads.</p> <p>Good companion plants: beans, corn, tomatoes, and marigolds.</p>

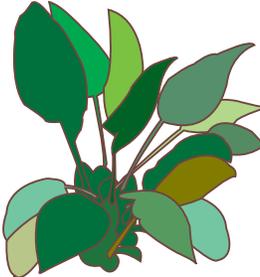
Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Kale <i>Brassica oleracea acephola</i></p>  <p>Above Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Shallow/Medium</p> <p>Prefers organic matter in soil with good moisture retention. Needs rich soil and lots of water.</p> <p>Tolerates high temperatures.</p>	<p>50-80 days</p> <p>Harvest and cook all parts of plant: leaves, flowering shoot, and stems.</p>	<p>Excellent source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep gums healthy.</p> <p>Excellent source of vitamin A for eyesight, especially for seeing at night.</p> <p>Some iron.</p>	<p>Good companion plants: beans, onions, tomatoes, and marigolds.</p>

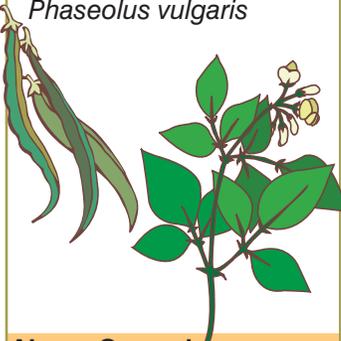
Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Sorrel <i>Rumex spp.</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow/Medium</p> <p>Important to keep soil moist.</p>	<p>30+ days</p> <p>Harvest leaves before they are mature.</p> <p>To promote new leaf growth clip off stem tip when flower stem begins to develop.</p>	<p>Provides some vitamins, minerals, and fiber to aid digestion.</p>	<p>Contains oxalic acid and therefore should be avoided by those who have arthritis. Should not be re-heated as may become mildly toxic for children. Discard the cooking water. Easy to save seeds by allowing flowers, fruits, and seeds to develop.</p>

Leafy Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Spinach <i>Spinacia oleracea</i></p>  <p>Above Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Medium/Deep</p> <p>Important to keep soil moist.</p>	<p>45-50 days</p> <p>Begin harvesting larger leaves when they are 15-20 cm. long. Continue harvesting larger leaves as they grow, so the plants keep producing new leaves.</p>	<p>High in iron for blood and to prevent anemia. High in vitamin A for eyesight, especially for seeing at night. High in vitamin B, in potassium to help maintain fluid balance, and in calcium for strong bones and teeth.</p>	<p>Good companion plants: beans, onions, tomatoes, and marigolds.</p>
<p>Swiss Chard <i>Beta vulgaris cicla</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow</p> <p>Important to keep soil moist.</p> <p>Tolerates high temperatures and heavy rainfall.</p>	<p>60-70 days</p> <p>Cut outer leaves when young. Do not cut center leaves.</p> <p>Under good conditions successive harvests are possible.</p>	<p>Provides vitamin A for eyesight, especially for seeing at night. Source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p>	<p>Increase production by increasing nitrogen levels.</p> <p>Mature leaves best eaten cooked.</p> <p>Good companion plants: beans, onions, and tomatoes.</p>

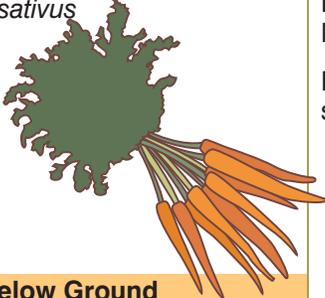
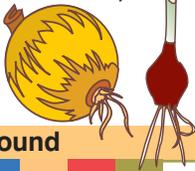
Legumes

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Green Bean (French Bean) <i>Phaseolus vulgaris</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow/Medium</p> <p>Important to keep soil moist. Tie plants to bamboo poles. With pole beans like this you can grow more than with bush beans in the same amount of space.</p>	<p>45-70 days</p> <p>Harvest when the pods are almost full size, but before the seeds begin to bulge. Never pick beans that are wet or have dew on them because wet beans can promote mold. Harvest often so more beans grow.</p>	<p>High in fiber to aid digestion. High in iron for blood and to prevent anemia. High in potassium to help maintain fluid balance. Good source of zinc to help fight malaria and other diseases.</p>	<p>Good companion plants: cabbage, carrots, corn, cucumbers, eggplant, and marigolds.</p>

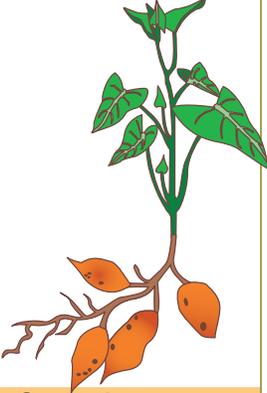
Legumes

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Peanut (Ground Nut) <i>Arachis hypogea</i></p>  <p>Below Ground</p>	<p>Sun: Full</p> <p>Root Depth: Medium/Deep</p> <p>Water most needed from 50-100 days after planting as pods develop. Water less in 2 weeks prior to harvest.</p>	<p>70-140 days</p> <p>Harvest only after peanuts are mature and veins are visible on hull.</p> <p>To reduce moisture, cure plant in the sun for several days with peanuts attached.</p>	<p>Excellent source of protein for growth. Good source of fiber to aid digestion. Source of iron for blood and to prevent anemia. Provides fat and vitamin B for repairing tissue.</p>	<p>Excellent plant for improving soil fertility. Turn roots back into garden soil. Compost all parts of plant including shells.</p>

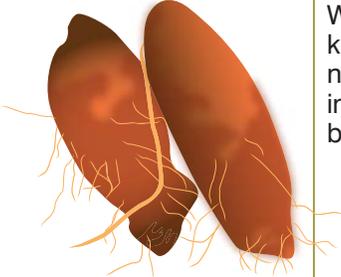
Root Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Carrot <i>Daucus carota</i> spp. <i>sativus</i></p>  <p>Below Ground</p>	<p>Sun: Partial</p> <p>Root Depth: Medium/Deep</p> <p>Important to keep soil moist.</p>	<p>70-80 days</p> <p>Water well just before harvesting.</p> <p>Harvest when roots are about 5 cm. or more in diameter.</p>	<p>Excellent source of vitamin A for eyesight, especially for seeing at night.</p>	<p>Good companion plants: beans, onions, tomatoes.</p>
<p>Garlic - <i>Allium sativum</i></p>  <p>Onion - <i>Allium cepa</i></p>  <p>Below Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow</p> <p>Important to keep soil moist.</p> <p>Prefers cooler temperatures.</p>	<p>90-120 days</p> <p>Eat onions and garlic when they are mature.</p> <p>May instead harvest the dry bulb: when the top falls over remove top from bulb and allow bulb to continue drying.</p>	<p>Young plants a source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. Provides potassium to help maintain fluid balance.</p>	<p>Best for flavoring.</p> <p>Good companion plants: cabbage, carrots, cucumbers, peppers, and tomatoes.</p>

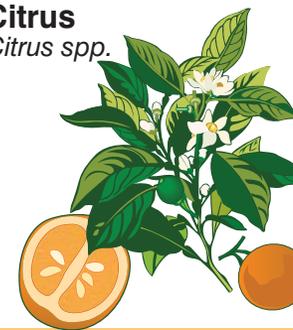
Root Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Sweet Potato <i>Ipomea batatas</i></p>  <p>Below Ground</p>	<p>Sun: Full</p> <p>Root Depth: Shallow</p> <p>Important to keep soil moist.</p>	<p>60-100 days</p> <p>Harvest sweet potatoes and use stem for propagation.</p>	<p>Excellent source of vitamin A for eyesight, especially for seeing at night. Excellent source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. Tender shoots and leaves are high in iron, vitamin A and C, and energy.</p>	<p>Plant stem cuttings.</p> <p>Good companion plants: beans, corn, cucumbers, pumpkins, and watermelons.</p>

Root Vegetables

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Yam <i>Dioscorea spp.</i></p>  <p>Below Ground</p>	<p>Sun: Full</p> <p>Root Depth: Deep</p> <p>While important to keep soil moist, no need to water yams in the last weeks before harvest.</p>	<p>100-130 days</p> <p>When harvesting dig carefully to avoid cutting or bruising the yams or breaking the roots.</p> <p>Eat soon after harvest as yams do not keep well in warm climates.</p>	<p>Good source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.</p> <p>Good source of fiber to aid digestion.</p> <p>Orange or yellow color varieties are most nutritious.</p>	<p>Peel and boil to remove oxalates.</p> <p>Plant pieces of tuber (root) that have buds.</p>

Trees

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Banana <i>Musa spp.</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Deep</p> <p>Provide lots of water to young trees during establishment, for example twice a week. This is especially important during the dry season.</p>	<p>10-15 months</p> <p>Harvest when fruits are fully enlarged and yellow color.</p>	<p>High in potassium to maintain fluid balance.</p> <p>Good for infants and elderly persons because easy to digest.</p> <p>Small amounts of vitamin A and C.</p>	<p>Add banana plants to compost to help return calcium to the soil.</p> <p>Use tree fibers for making ropes, mats. Use leaves for cooking, food parcels. After harvesting all fruit, cut down the plant. A new plant will grow from the base.</p>
<p>Citrus <i>Citrus spp.</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Deep</p> <p>Provide lots of water to young trees during establishment, for example twice a week. This is especially important during the dry season.</p>	<p>3+ years from layered plants and much longer if from seed.</p> <p>Harvest when fruit is fully developed. When ripe, the skin will be aromatic if peel is scraped.</p>	<p>Excellent source of vitamin C to prevent scurvy, help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. Needed to absorb iron in foods.</p>	<p>Fastest propagation method is from layering in which you use older branches.</p> <p>Peel and leaves are effective for killing worms (vermicide).</p>

Trees

Common Name & Scientific Name

Mango
Mangifera indica



Above Ground

Root System & Growing Conditions

Sun: Full
Root Depth: Deep
Provide lots of water to young trees during establishment, for example twice a week. This is especially important during the dry season.

Days to Harvest & Method

3 years after planting
Harvest when fruit is yellow-red color.

Health Benefits

Excellent source of vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy.
Excellent source of vitamin A to speed healing, boost immune system, and help eyes and tissue.
Excellent source of potassium to help maintain fluid balance.

Comments, Propagation, & Companion Plants

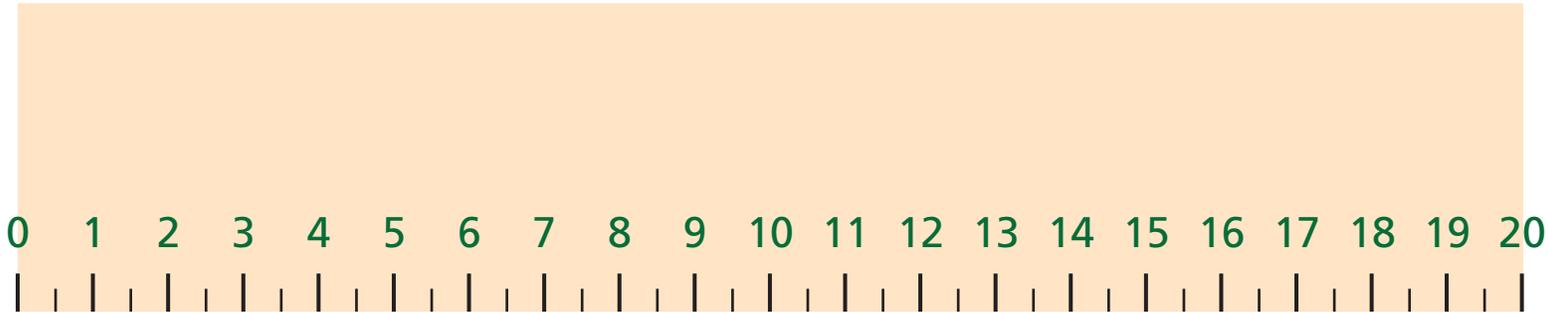
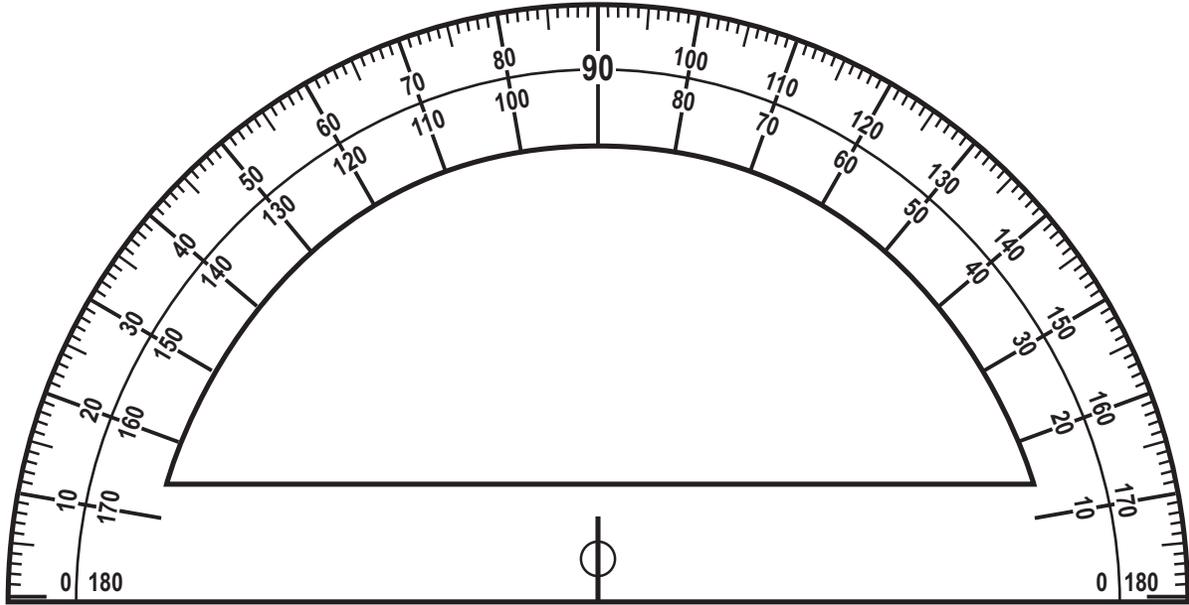
Avoid contact of fruit with lips as it will cause irritation for some. Select know variety and graft in 2nd or 3rd year onto established seedling.
Mature trees provide excellent shade and hundreds of fruits.

Trees

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Papaya <i>Carica papaya</i></p>  <p>Above Ground</p>	<p>Sun: Full</p> <p>Root Depth: Deep</p> <p>Provide lots of water to young trees during establishment, for example twice a week. This is especially important during the dry season.</p>	<p>7-11 months</p> <p>Harvest when fruit is yellow-orange color.</p>	<p>High in vitamin C to help heal cuts and wounds, fight infection, improve immune system, and keep skin and gums healthy. High in potassium to help maintain fluid balance. Source of fiber to aid digestion. High in vitamin A for eyesight.</p>	<p>Flowers must be pollinated to produce fruit.</p> <p>Easy to save seeds: remove fleshy material surrounding each seed to increase germination speed and rate.</p>

Trees

Common Name & Scientific Name	Root System & Growing Conditions	Days to Harvest & Method	Health Benefits	Comments, Propagation, & Companion Plants
<p>Safu <i>Dacryodes edulis</i></p>  <p>Above Ground</p>	<p>Sun: Full Root Depth: Deep</p> <p>Provide lots of water to young trees during establishment, for example twice a week. This is especially important during the dry season.</p>	<p>3 years</p>	<p>Excellent source of plant oils (33-65%).</p> <p>Excellent source of protein for growth.</p> <p>Helps body absorb some vitamins, especially vitamin A.</p>	<p>Native to central Africa.</p> <p>Easy to propagate from fresh seeds or transplanted wild seedlings.</p>



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