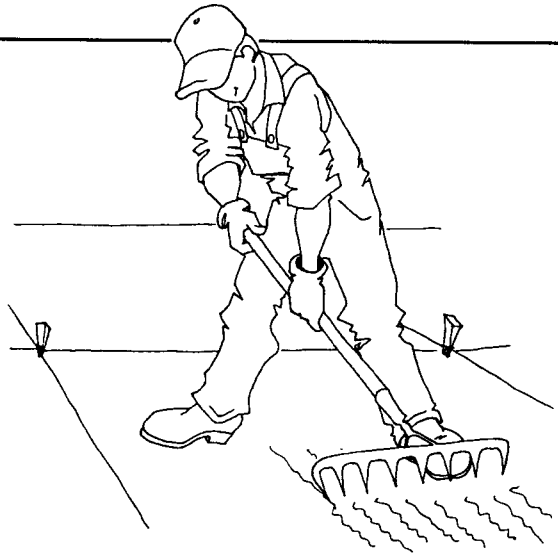


## STEP ONE

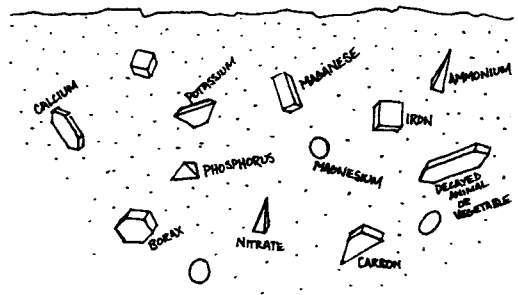
### Soil and Soil-Bed Preparation



### About Soils

Soils are primarily Inorganic. Soils are made mostly of basic elements (such as potassium, phosphorus, calcium, iron, carbon, manganese, magnesium, etc.) or combinations of elements (such as ammonium nitrate, borax, etc.). All of these materials are inorganic.

In addition, some soils may have organic materials (from decayed vegetation and animals). A loamy soil has more organic material than clay or sandy soil.

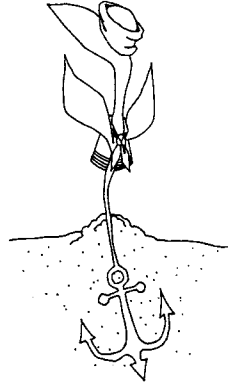


The chemical composition of a field of rocks may be no different than that of the finely ground soil surrounding them. In fact, a bag of mineral-based fertilizer was probably once rock-size pieces of essential minerals—minerals that have been pulverized and combined in formulas useful for plant growth. These inorganic minerals are no different from the soil to which they are returned.

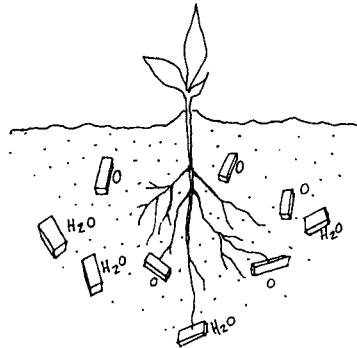
Since plants will grow in most any soil, it is usually the size of soil particles that is more important than the makeup of the soil.

## Soil Provides 5 Essential Functions:

**1** Soil provides anchorage and protection for plant roots.

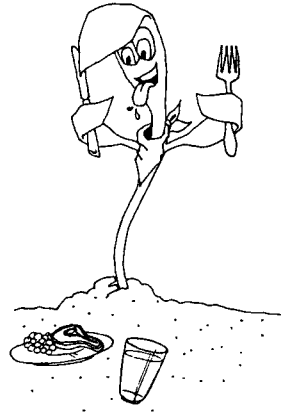


**2** Soil holds water and oxygen for plant use.

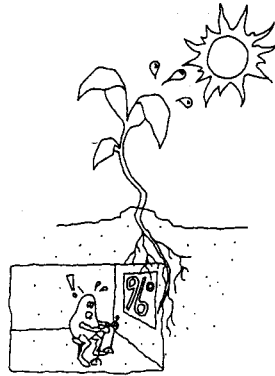


**3**

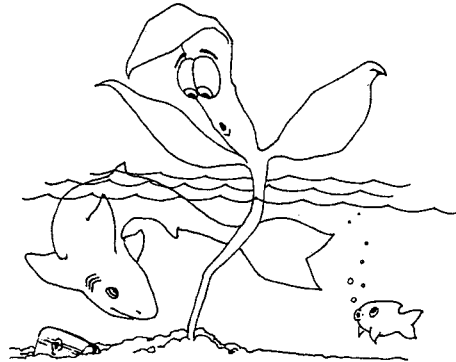
Soil has minerals which plants need for food. Soil also holds and stores additional minerals that may need to be applied to it.

**4**

Soil acts as a temperature regulator in hot weather.

**5**

Soil affords drainage for plant roots. If soil is too hard and compact, it will not drain.



Crops fail when one or more of these five essential functions is missing.

Soil Function	Problem	Possible Remedies
<b>Provide anchorage</b>	Soil too coarse; will not hold seeds or seedlings	Remove rocks; break up clods of soil; add loose sandy soil, compost, grass, leaves, etc.
<b>Hold water &amp; oxygen</b> (see Step 3, page 33)	Water puddles on top.  Water soaks into ground too quickly.	Too much hard, claylike soil—loosen with sand, compost, leaves, etc.  Add fibrous, water-holding materials such as leaves, sawdust, compost, peat moss, etc.
<b>Store minerals</b> (see Step 4, page 39)	Soil doesn't seem to produce healthy plants.	Add supplementary minerals (fertilizer).
<b>Regulate temperature</b>	Seeds not germinating, or plants developing too slowly.	Make sure garden has sufficient sunlight. Black plastic helps heat the soil.
<b>Afford drainage</b>	Ground allways seems too moist and marshy. Water sets on top of ground and won't soak in.	Garden rows may need to slope more. Make soil looser and more absorbant by adding coarser materials to it. If ground water is too near the surface, consider a different location.



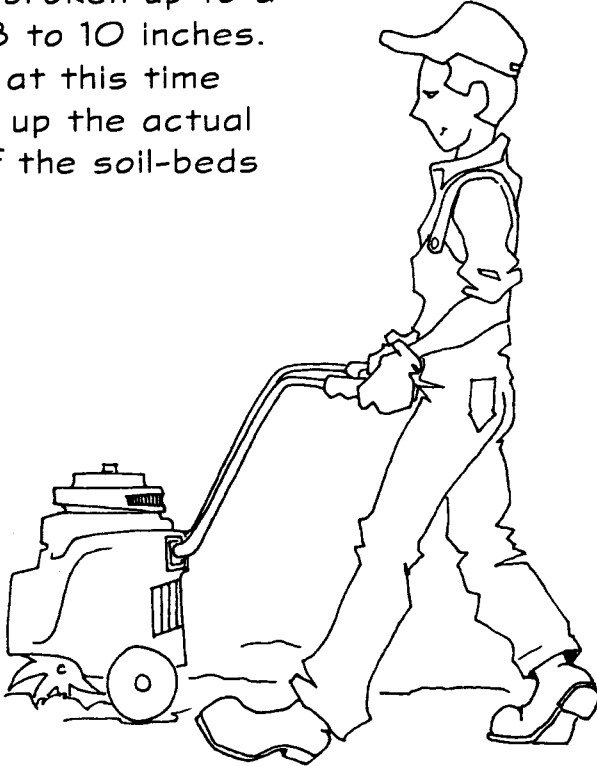
## Choosing a Location

- Choose a sunny location. Plants need sunlight. Avoid shade from buildings, tall shrubs or hedges, or fences.
- Flat, level areas require less work to prepare.
- Terrace sloping areas to facilitate irrigation and prevent erosion.
- Make sure an adequate water supply is available nearby—irrigation ditch, well water, piped-in water.
- Make sure you have easy access to your garden.



## Preparing the Area

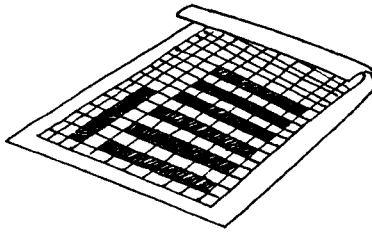
- Remove any rubbish. Burn it or haul it away.
- Remove rocks. (Stack them neatly along the side of your garden.)
- Remove stumps, logs, and dead and living vegetation.
- Dig up and remove the rhizomes and runners of all perennial weeds and shrubs.
- Level the area, making it as flat as possible.
- Loosen or cultivate the soil sufficiently so it can be easily shaped into the soil-beds and be made ready to receive the seeds or seedlings. The soil should be broken up to a depth of 8 to 10 inches. (Doing so at this time will speed up the actual shaping of the soil-beds later.)



# Arranging and Shaping the Soil-Beds

Perhaps the single most important step in having a successful gardening experience is creating well-shaped soil-beds.

- Start with a clean, weed-free plot.
- Plan in advance the number of soil-beds needed. You might create a "blueprint" of your garden area, indicating the placement of the soil-beds.

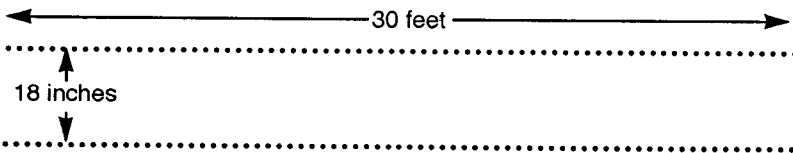


*See page 57 for planning and record-keeping forms and suggestions for their use.*

- The soil can be slightly moist or dry during the following procedures.

## THE INDIVIDUAL SOIL-BED

The ideal soil-bed 30 feet long. Each bed holds two rows of plants at the base of two ridges of soil. The ridges are 18 inches apart.



A well-formed soil-bed:

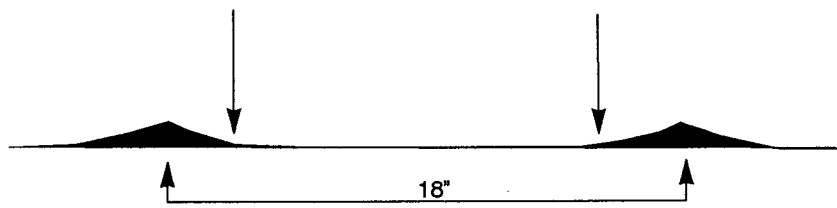
1. Has ridges which take the chore out of controlling weeds (explained on pages 49-50).



2. Has a flattened center area which carries fertilizer (explained on page 29) and water (explained on page 36) to the plant.



3. Helps you determine where the seedlings or seeds are to be placed (explained on page 27).



Cross section of a soil-bed



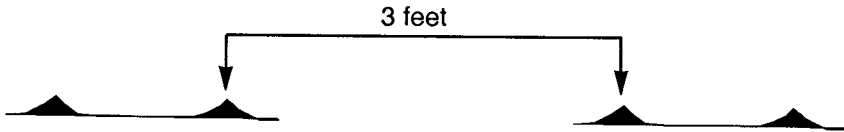


*Why 30 feet? My garden plot is less than 30 feet in length or width. So, what do I do?*

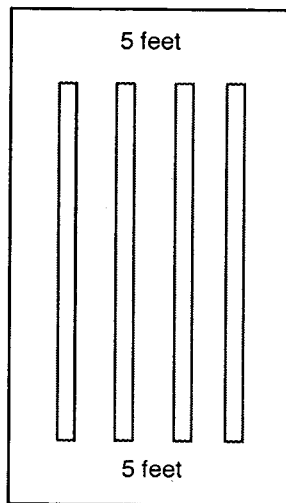
Since many gardens can readily accommodate 30-foot seed beds, the specific measurements for applying the optimum amount of fertilizer are based on this length. For smaller gardens, adjust your soil-beds to half or a third the length (15 or 10 feet); then adjust the fertilizer measurements in like manner.

### MULTIPLE SOIL-BEDS

Aisles between soil-beds should be three (3) feet apart:



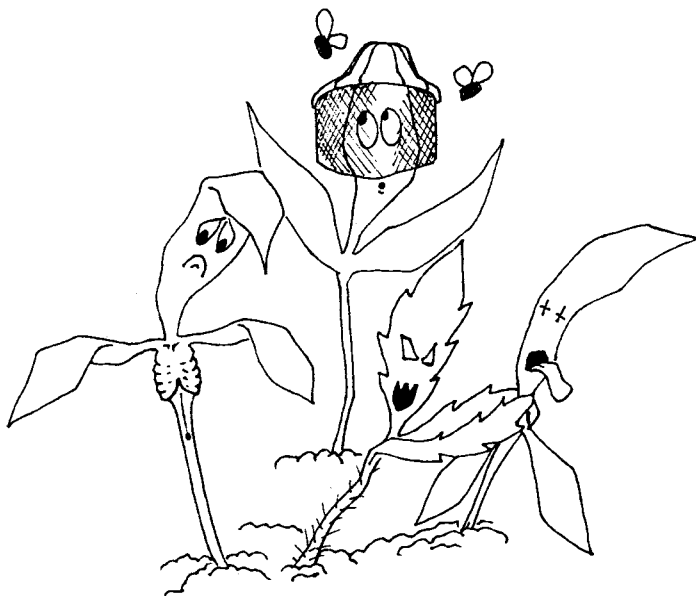
Allow five (5) feet at the ends of the soil-beds.





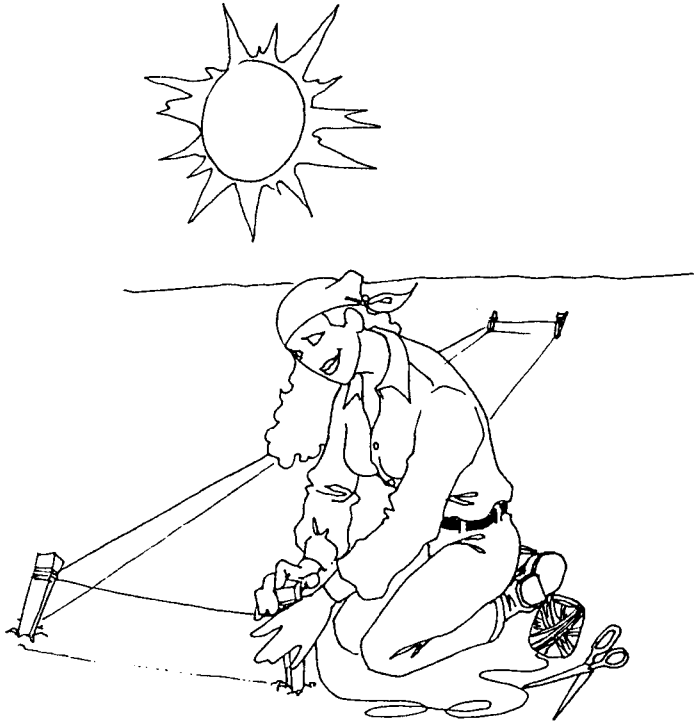
*I'm used to spacing everything closer. Making 18 inch, 3 foot, and 5 foot spaces seems like a waste of space. Why such wide spacing?*

Texans have a saying: "Don't fence me in!" If the space in the aisles between the beds is restricted, the result will be poor inspection of the crops. This sets the stage for problems with weed control, adequate watering, disease and insect problems, harvesting on time, etc. With adequate space, leaves and vines have sufficient room to spread in the aisles for maximum light, essential for best growth. Wide aisles prevent foot traffic from damaging plants.



## SHAPING THE SOIL-BED

Plot out a soil-bed by placing stakes at each of the four corners (18" by 30'). Tie and stretch string to the stakes to show the placement of the two 30-foot rows of the soil-bed.



With a garden rake, pull a little soil from the aisles into the staked-out area. (This will make the soil-beds slightly higher than the aisles.)



## LEVELING THE SOIL-BED

Take a straight 8- to 10-foot 2x4 (or 2x2) and securely fasten a spirit-level to the center of it.

Start at one end of the soil-bed. Use the board to check the level of the ground. Move the soil so that you create an even, gentle slope from one end of the soil-bed to the other. It is not necessary to level the aisles.



Leveling is very essential, as it facilitates the movement of the water when irrigating and makes the process easy and more efficient. A little more time spent leveling will save more time later.

Moving the soil in this leveling process is a good time to loosen it and break up any clods that were not broken up during the initial ground-preparation stage.

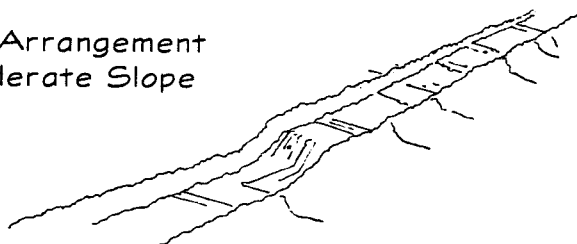
You are now ready to spread the pre-planting fertilizers evenly over each soil-bed.



*Wait a minute! About leveling—what happens if my ground has a more-than-gentle slope? What is the best way to create my soil-beds on sloping ground? Any suggestions?*

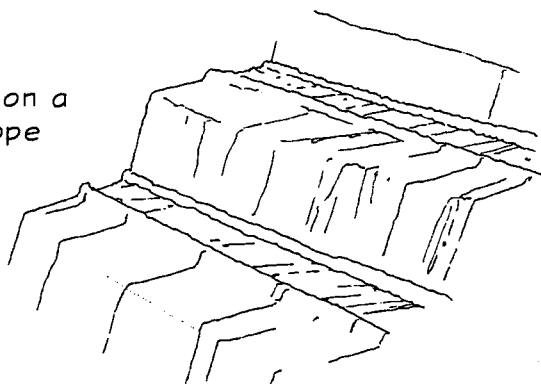
If you have a moderate slope, you might divide your soil-bed into two 15-foot lengths and create a "stair-step" effect as shown in the illustration below.

Soil-Bed Arrangement  
on a Moderate Slope



If you have a steeper slope, create terraces as illustrated below:

Soil-Bed  
Arrangement on a  
Steeper Slope



Remember, whether you use any of the three arrangements, make sure the soil-beds are level and with enough slope for water to move freely, but not so fast as to erode the soil.

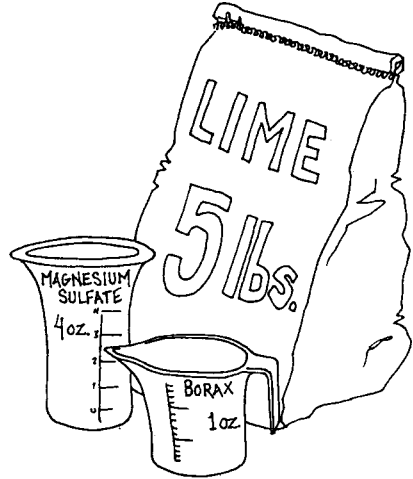
## APPLYING THE PRE-PLANTING FERTILIZER

Now your soil-beds are ready for the pre-planting fertilizer.

Mix together:

- 5 pounds of lime or gypsum
- 1 ounce (30 grams) borax
- 4 ounces magnesium sulfate

It is easier to mix these ingredients evenly in these smaller amounts. (Doubling this mix will sufficiently prepare five 30-foot soil-beds.)

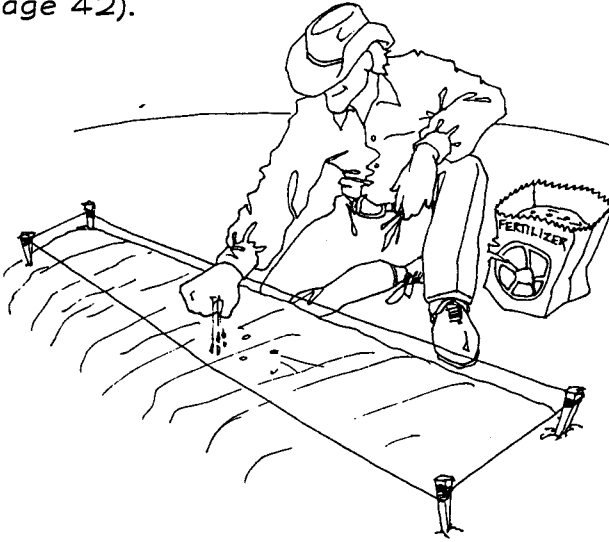


*Where do I get these three ingredients?  
What do I ask for?*

Garden shops (nurseries), farm supply stores, and chemical shops usually carry packaged fertilizers, including gypsum and/or agricultural lime.

Borax and magnesium sulfate are frequently sold in supermarkets under the following names: Twenty Mule Team Borax (a detergent) and Epsom salt—magnesium sulfate (a laxative).

To each soil-bed, evenly spread two pounds of the pre-planting mixture plus one pound of the Growing Mix (see page 42).



Mix it together well with the soil.

Make sure to maintain the level slope of the beds.

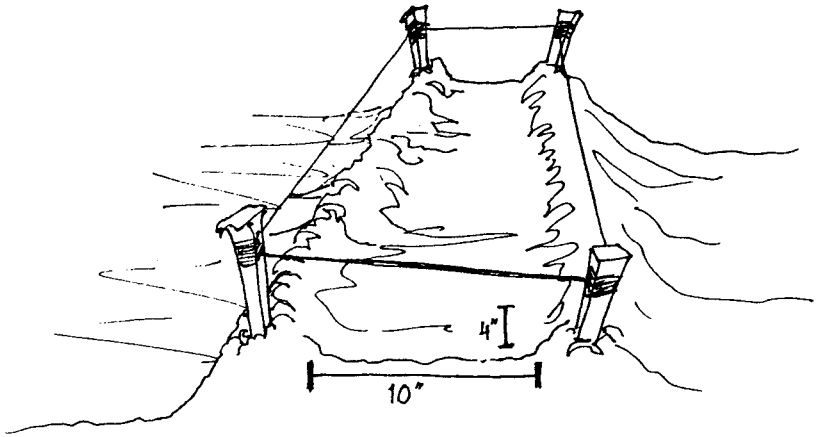
### "RIDGING" THE SOIL-BEDS

This is one of the most important steps.

With the rake tines facing down, pull a small amount of soil from the aisles to start a small ridge along each string.

Then, using the same procedure, pull a small amount of soil from the center of the soil-bed to the strings, creating a ridge.

Do this until a ridge four (4) inches high has been created.



Next, flatten the center of the soil-bed, creating an area from 10 to 12 inches wide. Make sure it is flat (not rounded) and maintains the gentle slope you previously created. This is where the water will flow during irrigation.

Your soil-bed is now ready for planting!



### Potato Supreme

8 cooked potatoes, cubed

Sauce:

1 can cream of chicken soup

1/4 cup margarine

1/2 tsp salt

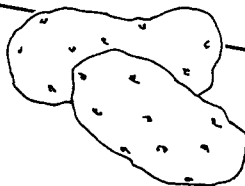
1/4 cup chopped onion

1 1/2 cup sour cream

1/2 tsp pepper

1 cup grated cheese

Mix together and pour over potatoes.  
Bake at 350° for 20 minutes. Cover with cornflakes  
or crispy rice and bake for 10 more minutes.



### Zucchini Quiche

3 cups thinly sliced zucchini

4 beaten eggs

1/4 cup oil

1/2 cup chopped onions

1 cup Bisquick (or similar mix)

1/2 cup grated parmesan cheese

1/2 cup grated cheddar cheese

1 T. chopped parsley

Mix all ingredients together.  
Bake in a pie, casserole, or quiche dish  
at 375° for 45 minutes.

