

CLOSE TOGETHER PLANTING



ISAIAH 58
MOBILE TRAINING INSTITUTE

CLOSE TOGETHER PLANTING

ALL NATIONS INTERNATIONAL



Close Together Planting

Isaiah 58 Mobile Training Institute

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We dedicate this manual:

To those who wanted to know... but never had a teacher.

To those who looked for the vision... so that they could run with it.

To those who want to know "What's Next?"

Those who knew they were teachers... but did not know what to teach.

To those who are looking for Christ in Us the Hope of Glory!

May this manual reveal to you Jesus Christ and

May the peace that He has ordained for you be with you always.

In 1954, God gave Rev. Agnes I. Numer the revelation of Isaiah 58. He told her, "This is My plan, for My church, for the end of time." He showed her planes, trains, warehouses, training centers, centers of refuge, food distribution and so much more.

Rev. Numer established training centers where leaders received a vision, a hope, a plan and the principles of God's Kingdom. Those leaders passionately put these principles into practice in ministries around the globe. God has been their Jehovah Jireh.

God also showed Rev. Agnes I. Numer a school of ministry that would share these principles of His Kingdom to the nations. The Isaiah 58 Mobile Training Institute is now available in print and eBook form.

Thank you.

All Nations International

Habakkuk 2:2 (KJV) "And the Lord answered me, and said, Write the vision, and make it plain upon tables, that he may run that readeth it. 3 For the vision is yet for an appointed time, but at the end it shall speak, and not lie: though it tarry, wait for it; because it will surely come, it will not tarry."

2 Timothy 2:2 (KJV) "And the things that thou hast heard of me among many witnesses, the same commit thou to faithful men, who shall be able to teach others also."

Rev. Agnes I. Numer, also known as the "Mother Teresa of America" passed away July 17, 2010 at 95 years of age. She has leaves behind a tremendous legacy.

ACKNOWLEDGMENTS

There are so many who are a part of this manual. So many authors and editors transcribers and artists. It has taken more than 40 years to write this manual. Please see individual courses for Acknowledgements

Thank you to those who have:

1 Corinthians 3:6-8 (NLV)

“I planted the seed. Apollos watered it, but it was God Who kept it growing. This shows that the one who plants or the one who waters is not the important one. God is the important One. He makes it grow.

The one who plants and the one who waters are alike.

Each one will receive his own reward.”

ONE
CLOSE TOGETHER PLANTING



Raised-bed gardening is a form of gardening in which the soil is formed in three-to-four- foot-wide (1.0–1.2 m) beds. The soil is raised above the surrounding soil and is sometimes enclosed by a frame generally made of wood, rock, or concrete blocks, and may be enriched with compost.

The vegetable plants are spaced much closer together than in conventional row gardening. The spacing is such that when the vegetables are fully grown, their leaves just barely touch each other, creating a microclimate in which weed growth is suppressed and moisture is conserved. The close plant spacing and the use of compost generally result in higher yields with raised beds in comparison to traditional gardening.

TWO PLANT GROWTH



Flowers make more plants by forming seeds. Fruit are natural seed holders.

Leaves make food. Sunlight works in the leaves to take raw materials from soils and air. Leaves "breathe". They draw in carbon dioxide and let out oxygen (which we breathe) and water vapor.

Stems are plumbing

Nutrients and water are taken from the soil through the roots and are drawn up the stems to the leaves. Then, food from the leaves continues through the plant.

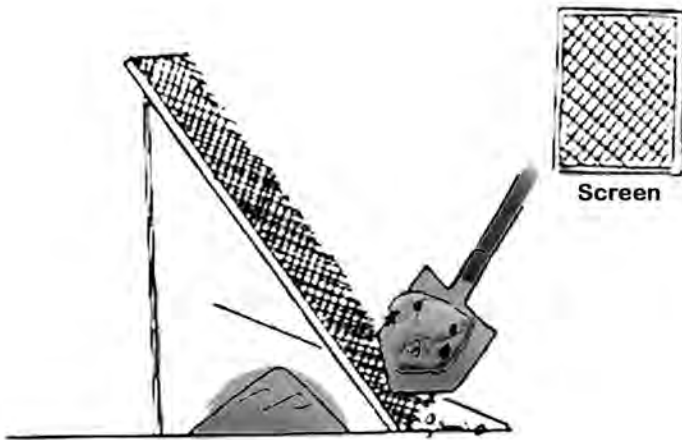
Main Roots anchor and hold the plant upright against wind and weather.

Tiny Root Tips (many times, so small you can't see them) draw water and nutrients through fine tips only.

Soil needs air and water, and needs to be "loose" and easy to dig and plant in.

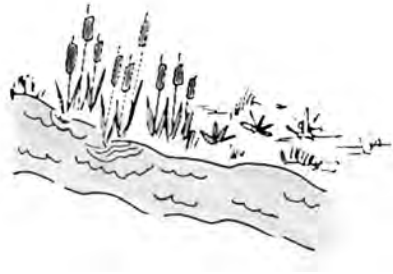
New Word:

- **Screen** - Wire mesh fastened to a frame placed at an angle - (see picture).



To sift soil, throw sand, stones, grass against mesh. Sand will go through, stones and grass will remain behind. When you get ready to plant a garden, you must first decide where to plant.

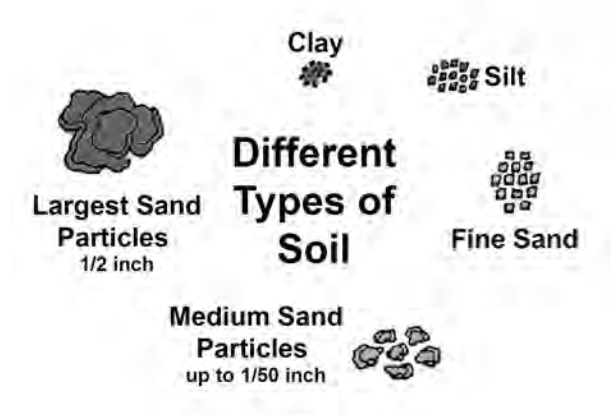
You need the following to make sure your garden grows well.



- **Water:** You will want to be able to water your garden. Plant your garden somewhere close to a well or stream or some other source of water. Vegetables need a lot of water. A good way to decide where your garden should be and how large is to let your water supply provide the size.



- **Sun:** Most vegetables grow best in direct sunlight. Pick the sunniest spot available because your plants have to have a minimum of 6 hours of a day of sunshine.



- **Soil:** You must look at the soil where you want to put a garden. Sometimes soil is very hard or mostly rocky. If the soil is too bad, you may not be able to plant in it. Some very hard soil or rocky soil can be chopped, dug and sifted to make it soft enough for plants. To sift it, put it through a screen or very small netting to take out the rocks and big hard clods. If the soil is not right, it cannot grow plants.

Good soil is land used for planting. Good soil is a mixture of clay, sand and rotted plants. It also has small living animals which are so tiny you cannot see them with your eyes.

Soil is different in different parts of the world.

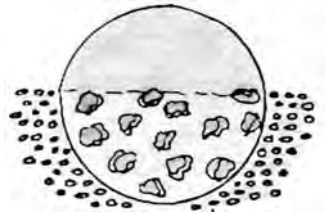
One of the most important things about gardens is to make the soil just right for your plants to grow. It is important to know what kind of soil you have.



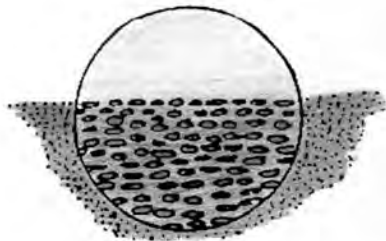
Clay is made up of very tiny pieces of soil. (It can be used to make pottery and bricks when it is dried.) These tiny pieces are flattened and fit closely together so tightly that it is hard for water and air to get inside.

When soil has too much clay in it, the plant roots cannot grow deep into the soil because it is too hard. Air does not get to the roots and water runs off the top; when clay gets wet it dries out slowly because water goes down slowly. But clay has a lot of very important nutrients in it, so it is good to have some in your soil. Too much clay is not good because it is too hard.

Sandy soil has larger particles than clay, they are more rounded, rather than flat. This shape allows room between each particle so air and water can flow through more easily.



Sandy soil dries out quickly and must be watered a lot. Too much water washes away valuable nutrients.



Loam is best for growing a garden, it is a mixture of clay, sand and compost. Compost is soft, crumbly, brownish or blackish and is made by allowing dead leaves, plants and waste to rot. It is made by man to help in the garden. Loam is ideal for planting, because it has clay, with its wet, healthy nutrients and sand, to drain well and let water and air go down to the roots of the plant and compost to help feed the plants.

Test your soil:

Make a ball with a handful of soil. Throw the ball up into the air. If the ball sticks together before it lands, there is too much clay in the soil. You will have to add some sand.

Another way to test the soil is to water it. If the water does not sink into the soil, runs off or form puddles on the surface, there is probably too much clay in the soil.

Before you start your garden, remove all large rocks from where your garden bed will be; remove all grass; remove all weeds. If the weeds were very thick and were growing everywhere, plant legumes the first year. Legumes are beans or peanuts. These will help make your soil better the next year.



1. Get a clear jar with straight sides and a flat bottom
2. From the garden area dig 6 inches, then take a sample (3-5 scoops of soil from different places)
3. Mix all the samples together and fill the jar half full of the soil samples.
4. Add water to the top
5. Shake jar for two minutes, then let the soil settle for 2 - 24 hours.
6. Measure each layer with ruler
7. Divide by whole amount to get percentage
8. See Textural Chart to get results



Textural Triangle

THREE

CLOSE TOGETHER PLANTING

Close together planting was first used by French farmers centuries ago. It is good especially if you have only a very little space to plant in.

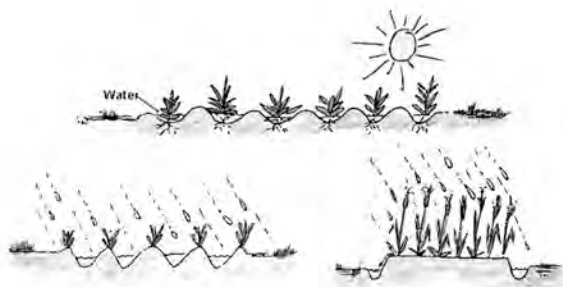


The farmers who started this kind of gardening had lots of manure. If you have lots of manure cover your bed-to-be with six inches of good rotted compost or manure before you ever start your deep digging. Then mix in more compost or manure

as you go. (Remember, you can only do this if you have a lot of manure).

The way you plant your garden depends upon the kind of weather you have in your area. If you live in a dry place where it is very hard to get water, you would want to plant your garden so that you catch every drop of water you can on your plants. If you live in a place where there are monsoons and heavy rains you would want to plant your garden so that the plants are raised higher and will not be washed away.

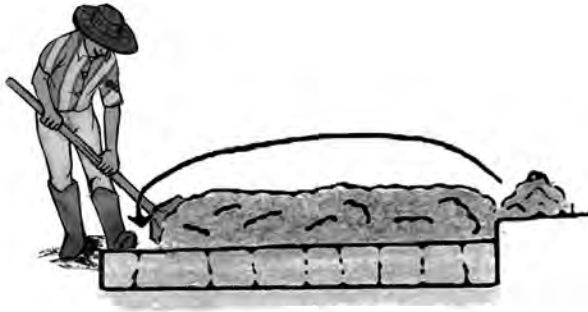
If your climate is dry, you will want to make rows. You will want to grow your vegetables down inside the trenches. This way you catch every drop of water on your plants. You can also make your garden lower than the ground around it. Make a high edge all the way around. Then, flood the lowered bed with water. This will keep all the water on your plants.



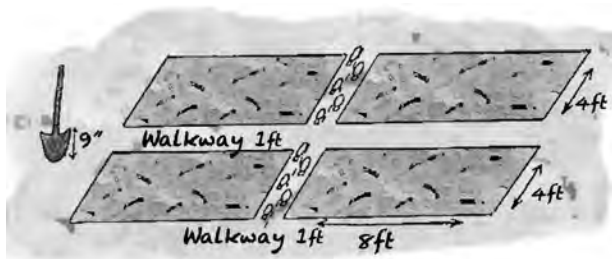
If your garden is in a wet area, you will want to plant you garden on raised beds. This way the plants are above the water and will not be washed away.

Step One: Make a Garden Bed by Deep Double Digging

- Dig a trench 8 foot long and a foot wide by removing the top nine inches of soil alongside
- Loosen the soil in the trench another nine inches. The trench should then be 18 inches deep, half filled with loose soil. REMEMBER TO ADD SAND IF THERE IS TOO MUCH CLAY IN YOUR GARDEN. Twelve inches is deep enough.



- Cover the bottom nine inches of loose soil in the first trench with nine inches of top soil from a second trench dug alongside the first.
- Loosen the bottom nine inches of the second trench.
- Continue these first four steps until you have dug three or four trenches right alongside each other.
- Cover the bottom nine inches of soil in the last trench with the nine inches of top soil that you had removed from the first trench.
- Try to get the soil broken down to a fine texture.



Level the garden bed so it is completely flat and level. Try to break down the soil to a fine texture. Then raise the garden bed four to six inches above the ground around it. This will keep it from being flooded by heavy rains.

The end result, is a raised garden bed 8 foot long and 4 foot wide. Four feet is a good width for a garden bed because you can easily reach into the middle of it to plant, weed or harvest without stepping into it.

You can make as many of these beds as you would like. Leave one foot walkway between each bed. If you do not have enough space, you can make the bed smaller.

Benefits of a Raised Garden Bed

- The roots of the plants will grow deep into the soil. Deeply rooted plants have healthier roots and stand stronger.
- Water sinks down deep into the soil and stays there.
- Air can get to the roots and aid the growth process.
- Compost is mixed into the soil helping the plants get minerals they need and providing nutrients at all levels.

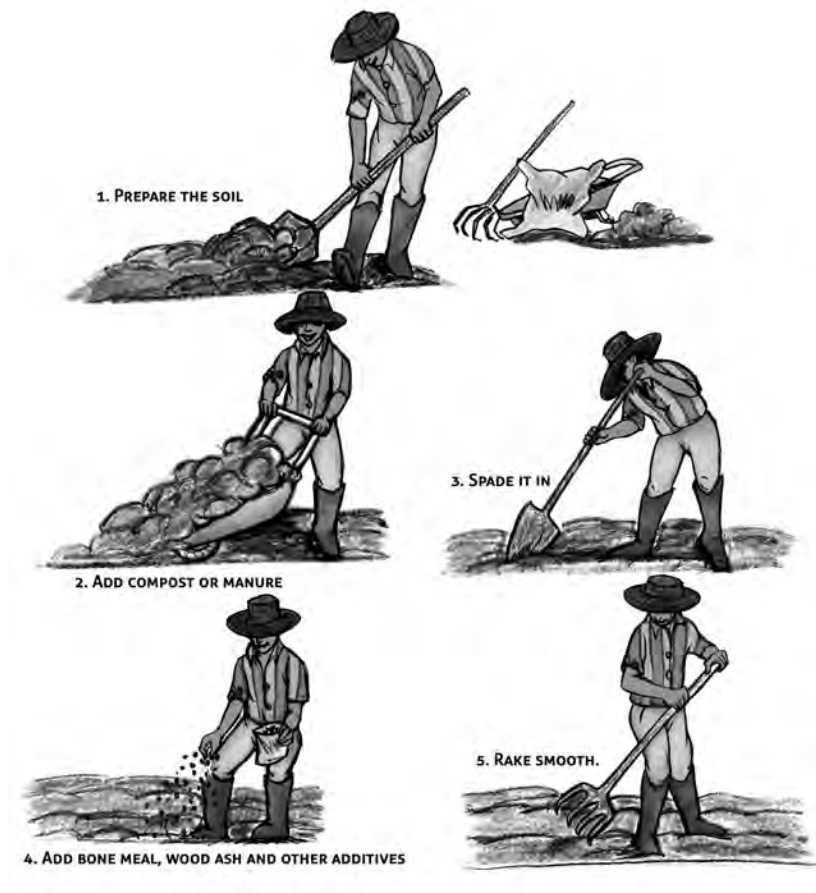
Step Two: Your Fertilizing Process

Sprinkle a dusting bone meal, some wood ashes an inch or more of well rotted manure (if you did not use manure when you made your garden bed.) over the top. Rake or cultivate this fertilizer into the top 3 to 6 inches.

Step Three: After Your Deep Digging is Finished

- Soak the soil with gentle spray of water.
- Your garden bed should be smooth and flat, but soft.
- Leave this finished bed for two days.

Note: If there is a shortage of water, soak several thickness of newspaper and lay around the base of plants to keep them moist.



The Planting Process

1. Take an inch thick stick and draw rows lengthwise in the prepared garden bed.



2. You will then have hollows and ridges.



- If you have a lot of rainfall, plant seeds in rows along the ridges.
- If you have little rainfall, plant seeds in hollows.



It is possible to plant the seeds close together because the garden bed has been prepared by deep digging. This allows the roots of

the plants to grow deep. Since the roots grow deep they get plenty of moisture and nutrients from the soil and the plants can grow close together. This will help your plants to produce many large and tasty fruits, vegetables and melons.

In close together planting, the plants are planted so close that the outer leaves of the plants will touch as they get bigger.

Whether you are setting out transplants or planting from seed, you are going to put the plants closer than you ever have before. When the plants are big, you will have a solid garden of plants in your little space. If your soil is deep enough; is fertilized well; is watered well and you keep it weeded carefully, that little piece of earth will be able to support all those plants.

When the plants are fully grown, you should be able to see the ground beneath. This kind of shading helps the soil stay moist and protected from too much wind and rain. The plants will also protect each other from too much wind and rain. Weeds do not grow well because they are shaded too much by the good plants.

Plant - Distance Apart (inches) - Depth in Soil (inches)

Corn	- 8"	- 2"
Okra	- 8"	- 1"
Tomatoes	- 24"	- 0.5"
Bush Beans	- 4"	- 1"
Pole Beans	- 8"	- 1"
Peppers	- 18"	- 1"
Jicama	- 4"	- 1"
Squash	- 18"	- 1"
Pumpkins	- 18"	1"
Melons	- 18"	- 1"

Cucumbers - 4" 1"
Onions - 1" - 1"
Carrots - 1" - 1"
Radishes - 0.5" - 0.25"

Close together planting like this works better with leaf and root crops like lettuce, spinach, cabbage, beets, carrots and turnips.

Big vegetables like corn and squash are going to take more room no matter how hard you try.

Look at the chart to see how far apart to plant your seeds. The plants are listed from tallest to shortest (unless they are put in a trellis).

Carefully follow planting instructions on seed packet for each type of seed.

FOUR COMPOST, FERTILIZER, AND SOIL ADDITIONS

New Words:

- **Waste** - paper, newspaper, cardboard (not tins or plastic).
- **Organic Material** - vegetable leaves, and foodstuff which cannot be eaten. Also tea and coffee grounds.

Compost is rotted leaves, plants and dead insects. It is important because it helps the soil grow plants better. You should never use Citrus fruit or the peelings from them, nor cabbage leaves in compost. Remember that the best soil is:

- 1/3 clay
- 1/3 sand
- 1/3 compost

Three Kinds of Compost

1. Manure
2. Rotted plant and animal life. Eggshells are excellent for compost.
3. Earthworm castings and rotted root hairs (very small roots.)

Manure is very good compost. It has already been changed by being chewed into pieces by some animal. Dry manure is compost. Fresh manure is just manure. It contains worms and diseases. Do not use manure that has not been dried. Do not use human waste -- Human waste carries many diseases.

The best manure for your garden is horse manure. Remember not to use any fresh manure. Get some manure that has been completely dried. It should be at least two weeks old.

Cow manure is good also. You can use a lot of it in your garden. Rotted cow manure ruins beans. Beans do not need as much fertilizer.

Sheep or goat manure is not so good for your garden unless you use only a little. Sheep and goat manure is very strong. If you use too much of it, it will be too strong for the plants and will kill them.

Chicken manure is also strong but you can use it if you mix it with sawdust and then wait for a few weeks before you use it.

Humus in the soil helps beat down the aphid population and also helps so much when there is a drought.

Garden residues for compost - Tomato and squash vines, flower stems and pepper plants. Grass cuttings are excellent also.

Compost Does A Lot for Your Garden

New Word:

- **Recycle** - to treat something or allow it to rot in order to use it again.

When you add compost to the soil, you are improving the soil, making it easier to work with. Water and air penetrate better. Also, compost helps recycle waste, leaves, grass and other organic material. Compost allows the plants to choose the nutrients they want.

Compost also makes the fruits and vegetables taste better.

Compost is made from plant materials, (such as leaves, twigs, and grass), garbage and manure. There are several ways of making compost.

1. Use a barrel. (This method takes about two weeks.)
2. Make a pile. (This method takes about three months.)

How to Use a Barrel:

1. Cut out the top and bottom of a rain barrel or an oil drum.
2. Fill the drum with 1/3 plant material, 1/3 waste and 1/3 manure. Chopped into very small pieces and mixed well.

3. Cover everything in the drum with one inch of dirt to prevent odors and flies. This is very important.
4. Help the compost rot by making it moist.

You will have to turn the contents of the barrel once every three days. Do this by lifting the barrel off the material, mix the material and put it back in the barrel.

After two weeks you will have a barrel full of compost.

How to Make a Pile:

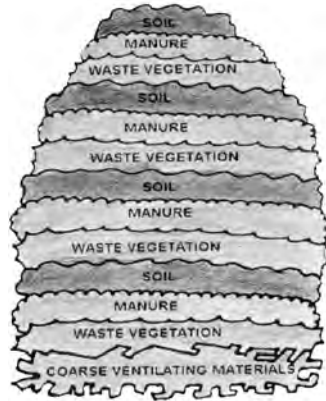
Find a place where water drains off quickly and make a compost pile there.

1. Begin by loosening the soil at the place where you are going to make your compost pile.
2. Get some twigs and lay them across each other until you have a pile about three inches high. This is to allow air to circulate = ventilation.
3. Put six inches of plant material, (grass, leaves, and small twigs), on the pile of large twigs.
4. Add four inches of waste.
5. Cover the whole pile with four inches of fresh manure. (Manure is the most important ingredient of a compost pile. The manure will rot the rest of the material in the compost pile.)
6. Lastly, cover everything with one inch of dirt to prevent odors and flies. (This is very important because flies carry many diseases.)
7. You can add layers of plant material, waste and manure (in that order) until the pile is five feet high.

8. When the pile is five feet high you should not add anymore plant material or waste to it. You can start a new compost pile.
9. As it rots, the pile will shrink down to about two feet.
10. It is helpful to keep the whole pile moist while it is rotting.

The pile will not become compost until it "rots".

Completely "turn" or "mix" this pile once a week with a shovel, pitch fork or rake. Take some of the material from the bottom of the pile and place it on the top of the pile. Do this until you turn the entire pile. Add more manure with dirt, and wet the pile again.



In about three months, if the weather is warm the material will be completely rotted and you will have compost.

You will always have compost for your garden if you start a new compost pile every month.

Soil Additions

Besides compost, there are some other things you can put in your soil to improve it.

- Add limestone if the soil is too acid. (Soils in areas of heavy rainfall tend to be acid).

- Add crushed rock or eggshells if the soil is too alkaline. (Areas of light rainfall tend to be alkaline).
- Phosphorous, potassium, and nitrogen are important nutrients in the soil. Grind up some bones for phosphorous.
- Add wood ash for potassium.
- Add fish, blood, or ground up horn for nitrogen.

Manure Tea for Feeding Plants

Two shovels of manure (cow or horse) in a 5 gallon bucket of water. Mix well, let it sit until the sediment settles to the bottom of the bucket, then dip out liquid and pour around the base of the plants.

FIVE

PLAN YOUR GARDEN

Planning Your Garden

Planning your garden has a lot to do with where you live. It has to do with how hot the sun is in your area. When you plant your garden make sure your plants will get enough sun but not too much sun. Too much sun will burn your plants.

If you live where the sun is very hot, you need to plant the taller plants toward where the sun rises, then the tall plants will help shade the shorter plants.

If you live where the sun is not very hot, you need to plant the shorter plants toward where the sun rises, then the shorter plants will get enough sun, and will not be shaded by the taller plants. The chart from Section 2 lists the plants from tallest to shortest.

Some plants like corn need the hot sun.

Other plants like lettuce need to be partially shaded.

Tomatoes, cucumbers, pole beans, and even pumpkins and squash can all be grown on trellises to save room in the garden.

Here are three types of trellises:



Corn, okra, pumpkins, and squash take up a lot of room. They must be planted together in a separate field.

Peppers, tomatoes, herbs, and even carrots can be used as ornamental plants. They can be used as borders or hedges around your house or compound.

Remember to keep the garden bed moist at all times while the seeds are beginning to grow. It is best to water the garden lightly just after sundown or just before sunrise. Water once a day until the plants are three weeks old. When the plants are three weeks old, you will only need to water them every three days, but you will not water them lightly - instead you will water them until the garden bed is thoroughly soaked. This heavy watering will allow the water to go down deep into the soil. The plant roots will be encouraged to grow deep to get the water. The plants will become stronger.

Rain is God's way of watering a garden. Rain falls as little droplets which do not disturb or wash away the soil. Rain water is good water which is free of things that can hurt your plants. This makes rainwater better for watering a garden than river water. Water is not the only thing that falls to the ground during a rainstorm. Large amounts of nitrogen also fall to the ground with the rain water. Nitrogen is important for plant growth.

If your garden is in a wet area, you will want to plant your garden on "raised beds". This way, the plants are above the water and will not be washed away.

Plant by Phase of the Moon

The pull of the moon's gravity will help pull the seeds out of their shells. Plant leafy crops in the light of the moon. Moonlight helps the leaves grow. Planting root crops in the dark of the moon will help root growth. This does not mean to plant your crops at night it means to plant during the days of the moon phase.

Starting Seeds in Flats

New Words:

- **Flat** - A flat is a box with very low sides to grow you seedlings in until they are just a few inches tall.
- **To Thin** - carefully pull out the extra weaker plants to allow the stronger plants to grow evenly.

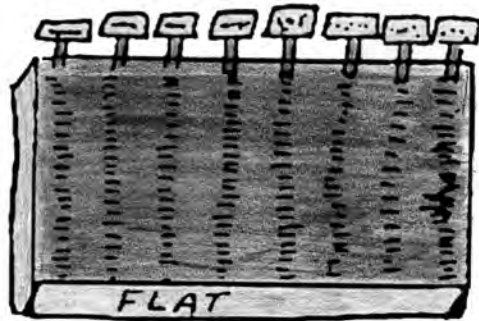
Sometimes it is better to plant certain seeds in flats and transplant them to the garden after a few weeks. This is

especially important in cold areas. You can start your planting while there is still frost and cold, and transplant into the garden after the ground is warm enough. This way, you can start your garden early.

Seeds started in flats can be completely protected from the weather, insects and weeds until they are strong enough to be transplanted into the garden.

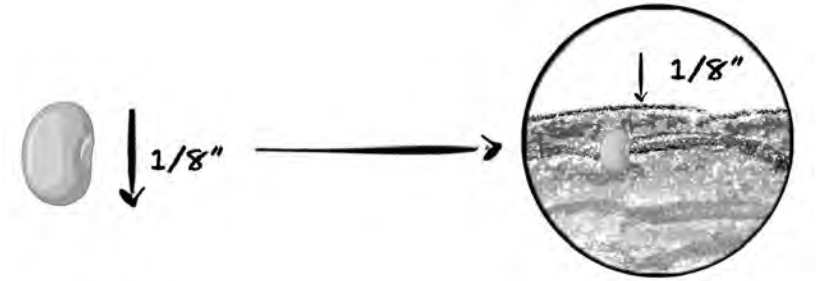
Because they can be completely protected, seeds grown in flats need less care and watering than seeds planted in the garden.

How to Start Seeds in a Flat



Remember the best soil is $\frac{1}{3}$ clay, $\frac{1}{3}$ sand and $\frac{1}{3}$ compost.

1. Before mixing for a flat, mix the clay and the sand and bake in the oven at a medium temperature (300°F). This will kill all weeds and their seeds.
2. Add compost or dry manure to the clay/sand mixture.



3. Plant the seeds the same depth as the length of the seed. This is a good rule for all seeds if you do not know how deep to plant a seed.

4. Plant the seeds in rows.

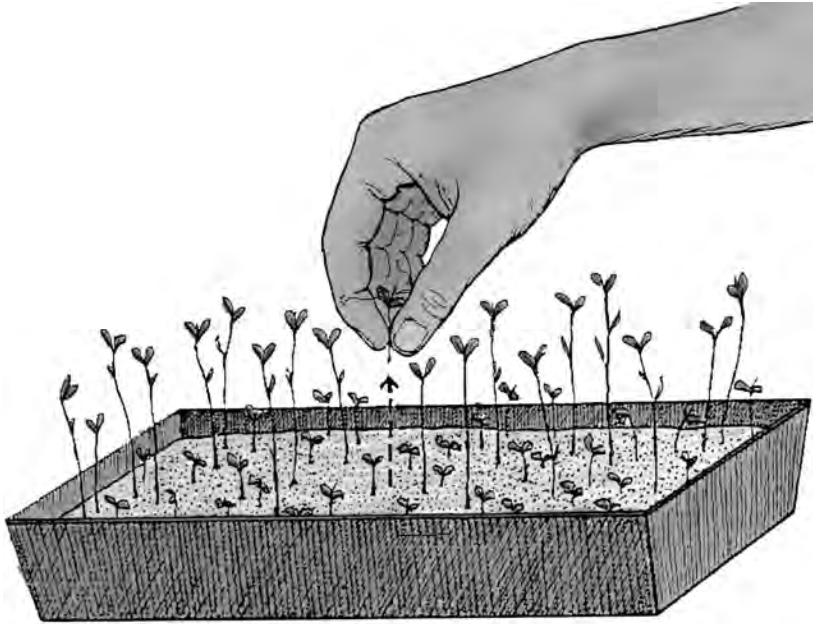
5. Mark the rows so that you will know what is planted.

6. Keep the soil moist.

7. After the seeds have begun to grow, thin the plants so that they are not crowded.

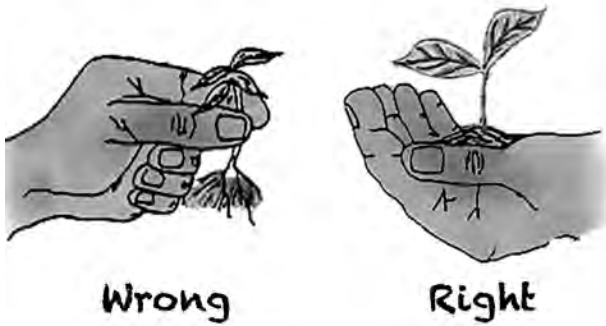
8. When the second set of leaves begin to appear, the plants can be transplanted.

Or, wait until the plants are three inches high.



Transplanting

1. Prepare rows in the same way as you would for planting seeds (*see Planting Process section*).
2. Transplant late in the afternoon so that the plants will get some sun but not too much.
3. The soil in the flat must be moist. Gently lift each plant out of the flat keeping some soil around the roots. Try to keep the roots covered



4. Hold the plant very gently in your hand. Hold it by cupping your hand around the soil, never by the stems. The stems are very fragile and break easily.

5. In the row, make a hole deep enough and wide enough for your plant, using stick or a small trowel.



6. Gently place the plant in the hole, so that the first set of leaves is just above the ground.



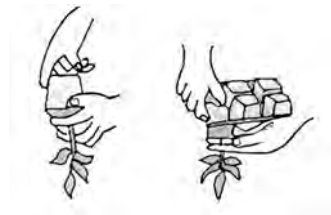
7. Press the soil down firmly but not tightly. (Lightly pat down the soil) After planting, firm the soil slightly with your hands to remove any air pockets. Don't wait for the newly transplants to show signs of wilt before watering again. A little extra attention in the first few days after planting will ensure healthy plants.

8. When you have transplanted all the plants, water the bed gently but thoroughly.

9. When many plants are grown together in a single flat, their roots intermingle. Individual plants are less likely to be damaged if you pull them apart with your hands instead of using a knife.



10. For transplants grown in individual plastic pots, tip the pot and tap the plant into your hand -- don't pull it out. Plants in six packs



should be turned over and pushed out from the bottom of your thumb. Hold the soil in place with your other hand.

Watering your garden.

Two ways that you can catch rain water and use it on your garden are a tank or a rain barrel.

1. Keep the garden moist at all times when the plants are first beginning to grow.
2. Use a watering can or spray nozzle on a hose to water like soft raindrops.
3. When the plants are three weeks old you can water more heavily but less often. Every 3 to 4 days, either from rain or by watering.
4. Cabbage, cauliflower, and broccoli like water on their leaves, and are lovers of cool weather. Radishes also do well in early spring. Most other plants do not like water on their leaves.



New Word:

Mulching - covering soil around the plants in order to keep moisture in and prevent weed growth.



Mulching keeps your plants moist and helps keep weeds away. Use dried grass, leaves, manure, compost or sawdust as a mulch. Spread an inch or so of the mulch on the garden bed. Black plastic, brown paper, aluminum coated plastic and foil can also be used instead of mulch. You can determine the way you will mulch by your climate - for example - if you live in a very hot climate black plastic will burn your plants.

Water often.

Vegetables need a lot of water. Flowers can survive longer without water than vegetables, so can trees and bushes. Roses and Chrysanthemums love a lot of water. Water often. Some vegetables never recover from a drought and almost all of them will produce a lot more with abundant water.

A good way to decide where your garden should be and how large it should be is to let your water supply decide the size. Unless you live in an area with dependable spring to fall, long

abundant rains, don't cultivate and plan to garden in places that you can't get water to.

If you are working with a limited water supply, figure that your garden needs at least an inch of water a week, either from the sky or from your water system.

SIX

PLANT MAINTENANCE

Irrigation and Water Systems

Soaker Hose

A soaker hose has a gentle soaking action that is good for your tender plants and mature plants. Water will spray up to 3 to 5 feet through the holes, depending on the water pressure. For larger gardens hook up to 2 or more hoses.



- Take a hose and block it up at one end.
- Make tiny holes evenly spaced along the length of the hose.
- Attach the open end to your water source.

A soaker hose can be attached to a clean bucket or barrel in a high place about 10' high near a garden. The hose is attached to the bucket or barrel, with a nail or a pin, make a hole where each plant is located.

Bucket



Another way to water is to carry water in buckets and pour it beside the plants. Some farmers make very good gardens watering this way. Pour the water gently on young tender seedlings. Too much water at once may uproot them and they will die. New seeds cannot take a hard flow of water. Water them gently until they

come up.

New Word:

Irrigation - To bring heavy flow of water by trenches into your garden, flood the garden, if you have a lot of water, or else run it down little ditches along each row.

Flood Irrigation. Flooding is best for big fields of plants such as corn, alfalfa, wheat and rice.

- Water flows along the main trench to the field.
- Open the wall of the field by digging away a small section.

- When the whole field is watered close the wall.

Row Irrigation

- Water flows along the main trench to the field.
- Open the wall to let water run down the lowest row.
- When the row is watered; block the water so that it will flow into the next row.
- Go to each row until all the rows are watered.



Exact places for the trenches must be carefully planned. Water has to flow downhill, but you want it to flow slowly so that it doesn't wash the plants. Make your trenches according to the slope of your land.

Always begin at the lowest end of your field.

Insect Control

The first rule for keeping insects out of your garden is to keep the garden clean. Remove all trash from your garden. Pick up all sticks, twigs, branches, leaves, old rags, pieces of wood or any other trash that may be lying around. Do not let the insects have a home where they can breed.

If you see insects in the garden you can pick them off with your fingers and kill them.

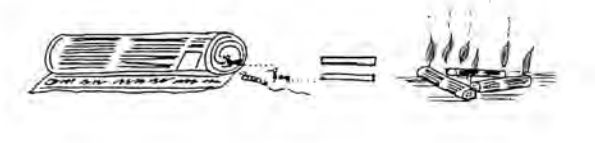




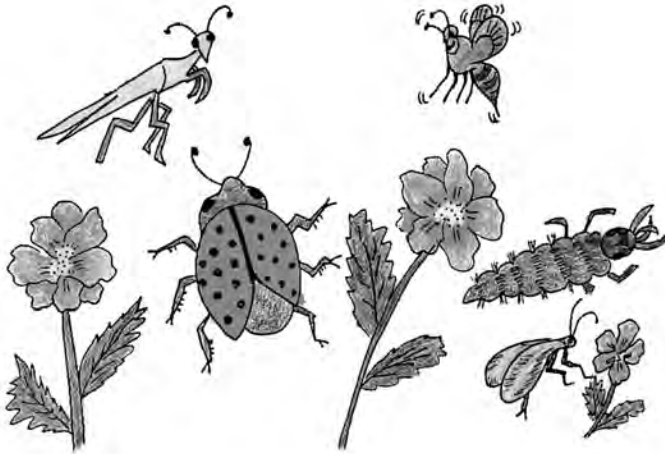
Spray Bugs Off

- Wash insects off with water. Aphids and other sucking insects can be washed off the plant stems they have been feeding on. They will not return.

- Make a poison by adding one spoonful of soap shavings or one spoonful of kerosene to a gallon of water. Spray it on the plants.
- Rotation of crops helps to control aphids and other insects.
- Soil rich in humus helps control aphids.

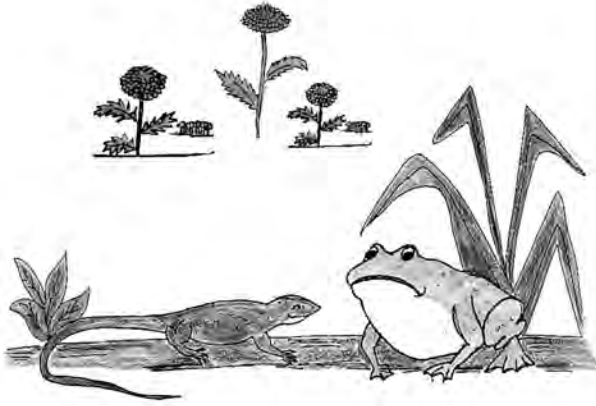


- Place rolled up newspapers on the ground at night. During the night, crickets and other bugs will crawl into the newspaper. In the morning, you can burn the newspaper.



Good Bugs

- Wasps, praying mantises, and lady bugs kill harmful insects. Don't kill wasps, praying mantises or lady bugs if you see them in your garden.
- Plant sunflowers five feet outside your garden. The sunflowers will attract insects away from your garden.
- Plant tomatoes close to the house, especially the kitchen to keep flies away.
- Plant a border of peppermint around your garden to help keep ants away.



Good Garden Helpers

- Birds, frogs, and lizards also kill insects. Let these animals live in your garden. But remember that birds can also eat your plants.
- Plant a border of marigolds around the garden. The marigolds will keep insects away from the garden.
- Sprinkle some ashes around the plants to keep cutworms and snails away.



- Plants that have just started to grow are often attacked by "cutworms". Cutworms eat plants right at the soil line. Place a small roll of paper around each plant to protect the stems from the cutworms.

- Grasshoppers and other insects that chew leaves do not like the taste of onions. Mix some onion juice with a little bit of water and spray it on the plants to discourage chewing insects.
- Smoke also drives insects away, but you have to be careful not to scorch or burn the plants.

Rodent Control



Rodents and some farm animals would like to get into the garden and eat plants. To keep them out you will have to build a fence. But some rodents can burrow under your fence. A 4 foot chicken wire fence will stop them if the fence is partly underground. Dig a trench 2 feet deep around your garden; put the wire into the trench - 2 feet below the ground and 2 feet above - fill the trench. A brick or cement block wall built the same way would also keep the rodents out.

Weeds

The only really effective way to get rid of weeds is to pull them out by hand. You must pull out the roots of the weeds. If you leave the roots, the weeds will grow again. The weeds will come out easier when you soak the ground before you pull them out. If the ground is too dry, you may pull out plants you do not want to, or leave some roots in the dry, hard ground. If you have a very big field, you can easily use a hoe to loosen the weeds, but be very careful not to cut the weeds up with the hoe and leave pieces that will take root and grow again.

Diseased Plants

Remove or treat all diseased plants as soon as you see the disease.

SEVEN HARVESTING

Replanting: After the crops have been harvested, you can replant right away. Add more compost or dry manure to the soil. Pull up old plants and use them to make compost. Plant a small quantity of each crop at one time. Two weeks later, plant a small quantity of each crop. Do this as often as your planting season permits. This prevents waste of crops which cannot be used quickly enough.



Two Weeks, Four Weeks and Six Weeks

Rotating Your Crops

Corn uses up a lot of nutrients in the soil. Beans, peanuts, and other legumes put nitrogen back in the soil. It is a good idea to plant beans or some other legume where the corn was the year before. Plant the corn in a different part of the garden for a year or 2 and then plant it again where the beans have been. This will keep your soil full of nutrients.

Tomatoes seem to like to be grown in the same place every year.

Harvesting Your Crops

As a rule it is best to pick vegetables while tender.

Corn is ready to be picked in 65 - 90 days, depending on the type of corn.

Okra pods should be picked just before they are ripe. If they are not picked, the plant will not make new pods.

Beans are ready to be picked about 45 days after planting.

Carrots and onions can be used at almost any time after the first few weeks.

Pick cucumbers any time before they begin to turn yellow.

You usually can tell if the crop is ready by the taste.

EIGHT SEEDS

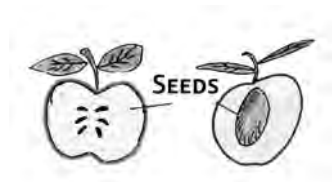
Grow Your Own Seeds

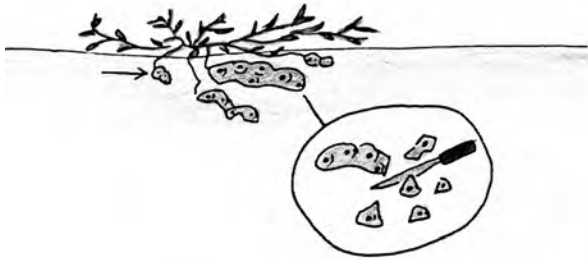
Root vegetables are generally Biennials - it takes two years to make a seed. The first year it makes a root and stores food. The next year root vegetables send up a long stalk. All the stored food from a summer's growth is in the root. Then the stalk flowers.

Where each flower was, seeds will form and can be collected when dry.

Fruited Plants make their seed inside the fruit. For example, melons tomatoes, green peppers, and eggplant. First comes the flower, and then the fruit. Let the seed - bearing fruit get fully ripe.

Then scoop out the seeds and let them dry naturally - on a newspaper.





Tubers - for example potatoes, are under the ground . The plant sends up a stalk and flowers above the ground. This is not the seed. Small knobs on the potatoes are used to grow new plants.

Flower Seeds



You can save seeds from almost any flower that has a flower head such as Marigold or Zinnia. Go out in the fall when the flowers are dry. Cut off and dry the flower heads. Store in a dry place for the

winter. In the spring, break the head apart. The seeds are in the flower head.

Seeds saved from your garden have a built-in resistance to insects and diseases. These seeds also produce better tasting crops and are more nutritious. If you save the best seeds from your garden, you will not run out of seeds. You can save many seeds and share them with others. In fact, you might even sell some seeds for a profit.

Save the best seeds so you can plant them again and little by little make your crop better. Choose the best seeds from each harvest. Save the seeds from:

1. Strong, healthy plants.
2. Plants that grow fruit quickly.
3. Plants that don't get diseases.
4. Plants that have large or tasty fruit.

Remove sick or unhealthy plants from your garden before they make your healthy plants get sick.

Harvest the best seeds from fruits and vegetables that are well ripened, but not too ripe. Don't let them rot or blow away.

Collect the seeds on a dry day, after the dew is gone.

Harvesting and Cleaning Vegetables



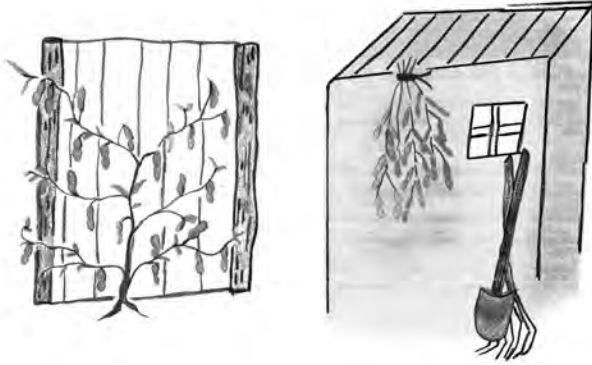
Corn: Pick corn after stems and leaves have turned brown. Take away the husks from the ears of corn. Put the corn in the sun to dry. When the corn is completely dry, put it away.

Okra: Remove stems when pods are dry, almost splitting. Remove seeds and dry before storing.

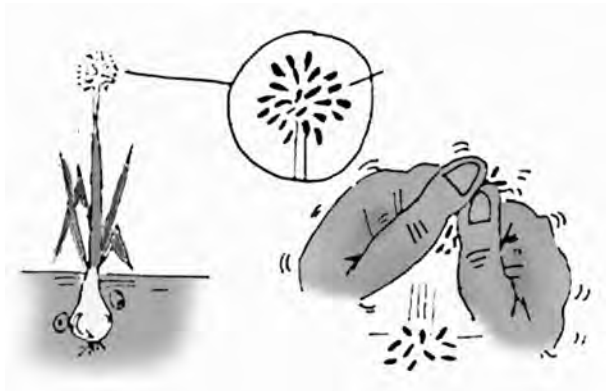
Squash: Pick squash, melons, and pumpkins when they are ready to eat. Wash the seeds and dry them as well.

Cucumbers: Should be picked when they are large and golden yellow. Wash the seeds and dry them.

Beans: Pull up the bean plants when the pods turn brown. Hang up the whole plant in a sheltered place to dry.



Peas: Pull up when pods have turned brown, hang up to dry.



Onions: Wait until you see black seeds on the dead flowers, then cut the stems. Dry the flowers and rub the seeds from the heads. Or save very small onions for replanting. Store small onions in a cool, dark, dry place.

Leeks: Same as onions.

Garlic: Same as onions and leeks.



Carrots: Same as onions. Save carrot tops in cold place or even in cold water.

Carrot tops will not save very long. Plant them soon. Soak them in water for a few days before you plant them.

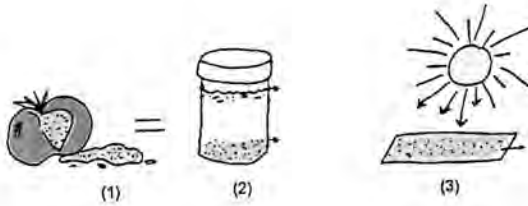
Peppers: Remove the seeds and dry them.

Mustard: Cut the flower stems when the pods are very dry, but not wilted. Remove the seeds and dry them.

Radish: Same as mustard.

Chinese Cabbage: Same as mustard and radish.

Tomatoes: Pick tomatoes when they are red, but still firm. Place the seeds in a jar of water for two or three days. Good seeds will sink to the bottom. Pulp and bad seeds will rise to the top. Wash the seeds, then dry them on a screen or on newspaper.



Eggplant: Same as tomatoes.

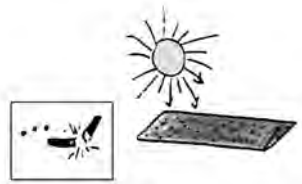


Potatoes: Pull up when plants are dry. Save the smallest potatoes for replanting. Keep some potatoes in a cool dry place and cut them into pieces, (each piece should have an eye (knob) when you are ready to

plant them.

Storing Seeds

Seeds must be completely dry to prevent molding and being eaten by insects.



- Test the seeds to see if they break with a "crack".
- Mix some wood ash or lime with the seeds, if you can.

Save seeds in a jar that has a tight lid.

Several envelopes or plastic bags filled with seeds can be kept in the same jar. Put the date and name of seed on the envelope or jar. Each year use the oldest seeds first.

Place one type of seed in jar with **plastic seal on the lid**. Label jars with name and date.

Toasted rice keeps moisture and water out of your dry seeds. If you live in a tropical country, it would be a good idea to mix some toasted rice in with the seeds.

Most seeds will remain good for two to three years. Melon seeds last longer.

Plants need tender loving care.

Plants live and grow, much like human beings. Jesus said,

"Consider the lilies of the field. They toil not, neither do they spin. Yet I say unto you that even Solomon in all his glory was not arrayed like one of these."

God cares for plants. He gives light and warmth from the sun. He waters them with the rain and gives them air to breathe.



He cares for people the same way.

And we should, too!

As God's children we should care for people by making sure that they have food, clothing, shelter, medicine and the Godly help that they need.

We need to share all the wonderful food that God has blessed us with, and thank Him for all He has given us.

NINE

LET'S REVIEW

Plant Growth

Fill in the blanks

1. _____ make more plants by forming _____.
2. Fruits are natural seed _____.
3. _____ make food.
4. Leaves draw in _____ and lets out _____ and water vapor.
5. The _____ are plumbing.
6. _____ and _____ are taken from the soil through the _____ and are drawn up the stems to the _____.
7. The soil needs _____ and _____, and needs to be " _____ " and easy to dig and plant in.
8. You will want to be able to _____ your _____.
9. _____ needs a lot of water.

10. Most vegetables _____ best in direct _____.

11. Your plants need to have a minimum of _____ a day of sunshine.

12-14 List the three types of soil:

12. _____

13. _____

14. _____

15. Good soil is a mixture of _____, _____, and _____ plants.

16. _____ is made up of tiny pieces of soil.

17. _____ is best for growing a garden.

18. _____ has larger particles, more rounded than flat.

19. If the _____ sticks together before it lands, there is too much _____ in the soil.

20. Another way to _____ the soil is to _____ it.

Score exercises 1 - 20

Close Together Planting

Underline the Correct Answer

21. (Close Together, Far Away) Planting is a way of gardening first used by (German, French) farmers centuries ago.

22. The farmers who started this kind of gardening had lots of (manicure, manure).

23. The way you plant your garden depends upon the kind of (weather, wither) you have in your (area, city).
24. If your climate is (dry, wet) you will want to make (hedges, rows). You will want to grow your vegetables (down, upside down) inside the trenches.
25. If your garden is in a (wet, dry) area, you will want to plant you garden on raised (beds, pillows).
26. The (roots, stems) of the plants will grow (deep, shallow) into the soil.
27. (Compost, Compose) is mixed into the soil helping the plants get (minerals, numerals) they need and providing nutrients at all levels.
28. If you have a lot of (waterfall, rainfall), plant seeds in rows along the (hedges, ridges).
29. It is (impossible, possible) to plant the seeds close together because the garden bed has been prepared by deep digging.
30. (Big, Small) vegetables like corn and squash are going to take (more, less) room no matter how hard you try.

Score exercises 21 - 30

Compost, Fertilizer, and Soil Additions

Multiple Choice

Circle the letter for the correct answer

Composting

31. Compost is:

- a) rotted leaves, plants and dead insects.
- b) Fresh leaves, plants, and live insects
- c) Old leaves, plants, and insects

32. You should never use:

- a) Smashed fruit or the skins, nor lettuce leaves in compost.
- b) Citrus fruit or the peelings from them, nor cabbage leaves in compost.
- c) Raw fruit or their peelings, nor corn cobs in compost.

33. Manure is:

- a) Said to have a very bad smell
- b) From a cow dung.
- c) A very good compost.

34. The best manure for your garden is:

- a) chicken manure
- b) horse manure
- c) rabbit manure

35. Humus in the soil helps beat down the aphid population and also helps so much when there is:

- a) A drought
- b) A storm
- c) A hot weather

36. Compost also makes the fruits and vegetables taste:

- a) sweet
- b) sour

c) better

37. Find a place where water:

- a) drains off quickly and make a compost pile there.
- b) runs off quickly and make a heap pile there.
- c) drains off slowly and make a garbage pile there.

38. Cover the whole pile with:

- a) five inches of trash
- b) two inches of vegetables
- c) four inches of fresh manure

STOP!

Score exercises 31 - 38

DO NOT look back at the Training Pac while completing the Review.

REVIEW # 1

Fill in the blanks

- 1. _____ make more plants by forming _____.
- 2. _____ make food.

3-5 List the three types of soil:

- 3. _____
- 4. _____
- 5. _____

6. Good soil is a mixture of _____, _____, and _____ plants.
7. Another way to _____ the soil is to _____ it.

Choose the best answer

8. (Close together, Far away) planting is a way of gardening first used by (German, French) farmers centuries ago.
9. If your climate is (dry, wet) you will want to make (hedges, rows). You will want to grow your vegetables (down, upside down) inside the trenches.
10. The (roots, stems) of the plants will grow (deep, shallow) into the soil.
11. If you have a lot of (waterfall, rainfall), plant seeds in rows along the (hedges, ridges).
12. (Big, Small) vegetables like corn and squash are going to take (more, less) room no matter how hard you try.
13. The way you plant your garden depends upon the kind of (weather, wither) you have in your (area, city).

Multiple Choice (Circle the letter for the correct answer):

14. You should never use:

- a) Smashed fruit or the skins, nor lettuce leaves in compost.
- b) Citrus fruit or the peelings from them, nor cabbage leaves in compost.
- c) Raw fruit or their peelings, nor corn cobs in compost.

15. The best manure for your garden is:

- a) chicken manure
- b) horse manure
- c) rabbit manure

STOP!

Score exercises 1 - 15

Plan Your Garden

True or False (Write "T" if the answer is True and "F" if the answer is False)

1.____ Planning your garden has a lot to do with where you live.

2.____ When you plant your garden make sure your plants will get enough sun but not too much sun. Too much sun will burn your plants.

3.____ If you live where the sun is very hot, you need to plant the smaller plants toward where the sun rises, then the short plants will help shade the taller plants.

4.____ Some plants like corn need the hot sun.

5.____ Remember to keep the garden bed soaked at all times while the seeds are beginning to grow.

6.____ When the plants are three weeks old, you will only need to water them every three days, but you will not water them lightly -- instead you will water them until the garden bed is thoroughly soaked.

7. ____ Rain is God's way of watering a garden.
8. ____ If your garden is in a wet area, you will want to plant your garden on "flat beds". This way, the plants are below the water and will not be washed away.
9. ____ Seed started in flats cannot be completely protected from the weather, insects, and weeds until they are strong enough to be transplanted into the garden.
10. ____ Transplant early in the afternoon so that the plants will get some sun but not too much.
11. ____ When you have transplanted all the plants, water the bed gently but thoroughly.
12. ____ Keep the garden moist at all times when the plants are first beginning to grow.
13. ____ Mulching keeps your plants very wet and helps keep grass away.
14. ____ Flowers can survive longer without water than vegetables, so can trees and bushes.
15. ____ A good way to decide where your garden should be and how large it should be is to let the sun decide the size.

Score exercises 1 - 15

Plant Maintenance

Fill in the blanks

16. Another way to water is to carry the water in _____ and pour it beside the plants.

17. Remember to be very _____ on young tender
_____.
18. _____ is best for big fields of plants such as corn,
alfalfa, wheat and rice.
19. The water has to flow _____, but you want it to flow
_____ so that it doesn't wash the plants.
20. The first rule for keeping _____ out of your garden
is to keep the garden _____.
21. _____ and other sucking insects can be
_____ off the plant stems they have been feeding on.
22. _____ of crops helps to _____ aphids and
other insects.
23. Wasps, _____, and lady bugs
_____ harmful insects.
24. _____ and some _____ animals would like to
get into the garden and eat plants.
25. The only really _____ way to get rid of weeds is to
pull them out by _____.

Score exercises 16 - 25

Harvesting and Seeds

Match the correct Answer

- 26.____ After the crops have been harvested
- 27.____ It is a good idea to plant beans or some other legume

- 28.____ Tomatoes seem to like to be grown
- 29.____ Beans are ready to be picked about
- 30.____ You can tell if the crop is ready
- 31.____ Root vegetables are generally Biennials.
- 32.____ The small knobs on the potatoes
- 33.____ Seeds saved from your garden have a
- 34.____ Remove sick or unhealthy plants from your garden
- 35.____ Pull up the bean plants when
- 36.____ Seeds must be completely dry

Answers

- a) by the taste.
- b) you can replant right away.
- c) where the corn was the year before.
- d) 45 days after planting.
- e) in the same place every year.
- f) built in resistance to insects
- g) are used to grow new plants.
- h) This means it takes two years to make a seed.
- i) the pods turn brown.
- j) to prevent molding and being eaten by insects.

k) before they make your healthy plants get sick.

STOP!

Score exercises 31 - 36

DO NOT look back at the Training Pac while completing the Review Close Together Planting WORKBOOK

REVIEW # 2

True or False (Write "T" if the answer is True and "F" if the answer is False)

- 1.____ Planning your garden has a lot to do with where you live.
- 2.____ If you live where the sun is very hot, you need to plant the smaller plants toward where the sun rises, then the short plants will help shade the taller plants.
- 3.____ Rain is God's way of watering a garden.
- 4.____ A good way to decide where your garden should be and how large it should be is to let the sun decide the size.

Fill in the blanks

5. Remember to be very _____ on young tender _____.
6. The first rule for keeping _____ out of your garden is to keep the garden _____.

7. The only really _____ way to get rid of weeds is to pull them out by _____.

8. _____ seem to like to be grown in the same place every year.

9. Root vegetables are generally _____. This means it takes _____ years to make a seed.

10. _____ must be completely dry to prevent _____ and being eaten by insects.

Score exercises 1 - 10

STOP!

You must now **prepare yourself for the PRE-TEST.**

In preparation, you may want to follow one or more of these suggestions:

- 1. Rewrite every incorrect exercise in the Reviews.
- 2. Reread each section of the Training Pac.
- 3. Relearn each section you still do not completely understand.

TEN
PRE-TEST

Fill in the blanks

(5 points each question)

1. _____ make more plants by forming _____.
2. _____ make food.
3. Good soil is a mixture of _____, _____, and _____ plants.
4. _____ and _____ are taken from the soil through the _____ and are drawn up the stems to the _____.
5. Most vegetables _____ best in direct _____.

Underline the best answer

6. (Close together, Far away) planting is a way of gardening first used by (German, French) farmers centuries ago.

7. The way you plant your garden depends upon the kind of (weather, wither) you have in your (area, city).
8. If your garden is in a (wet, dry) area, you will want to plant you garden on raised (beds, pillows).
9. (Compost, Compose) is mixed into the soil helping the plants get (minerals, numerals) they need and providing nutrients at all levels.
10. (Big, Small) vegetables like corn and squash are going to take (more, less) room no matter how hard you try.

Multiple Choice

11. Compost is:
 - a) rotted leaves, plants and dead insects.
 - b) Fresh leaves, plants, and live insects
 - c) Old leaves, plants, and insects
12. Manure is:
 - a) Said to have a very bad smell
 - b) From a cow dung.
 - c) A very good compost.
13. Humus in the soil helps beat down the aphid population and also helps so much when there is:
 - a) A drought
 - b) A storm
 - c) A hot weather

True or False (Write "T" if the answer is true and write "F" if the answer is false)

14. ____ Planning your garden has a lot to do with where you live.

15. ____ If you live where the sun is very hot, you need to plant the smaller plants toward where the sun rises, then the short plants will help shade the taller plants.

16. ____ Remember to keep the garden bed soaked at all times while the seeds are beginning to grow.

17-20 Match the correct Answer (Match the statement on the left to the letter on the right.)

Statement

17. The first rule for keeping insects out of your garden

18. Rotation of crops helps

19. Root vegetables are generally Biennials

20. Seeds must be completely dry

Match to Correct Letter

a. This means it takes 2 years to make a seed

b. to prevent molding and being eaten by insects.

c. control aphids and other insects

d. is to keep the garden clean

ELEVEN
FINAL TEST
FINAL TEST

Word List

Weather

Main Roots

Close Together

Moist

Rainfall

Rotted

Horse Manure

Hot

Mulching

Hand

Transplanted

Rows

Biennials

Clean

Sunlight

Rotation
Compost
Vegetables
Flowers
Molding

Fill in the blanks with the words from the word list

1. _____ make more plants by forming seeds.
2. _____ anchor and hold the plant upright against wind and weather.
3. Most vegetables grow best in direct _____.
4. _____ planting is a way of gardening first used by the French farmers centuries ago.
5. The way you plant your garden depends upon the kind of _____ you have in your area.
6. _____ is mixed into the soil helping the plants get minerals they need and providing nutrients at all levels.
7. If you have a lot of _____, plant seeds in rows along the ridges.
8. Compost is _____ leaves, plants and dead insects.
9. The best manure for your garden is _____.
10. If you live where the sun is very _____, you need to plant the taller plants toward where the sun rises, then the tall plants will help shade the shorter plants.
11. Remember to keep the garden bed _____ at all times while the seeds are beginning to grow.

12. Plant the seeds in _____.
13. When the second set of leaves begin to appear, the plants can be _____.
14. _____ keeps your plants moist and helps keep weeds away.
15. _____ need a lot of water.
16. The first rule for keeping insects out of your garden is to keep the garden _____.
17. _____ of crops helps to control aphids and other insects.
18. The only really effective way to get rid of weeds is to pull them out by _____.
19. Root vegetables are generally _____. This means it takes two years to make a seed.
20. Seeds must be completely dry to prevent _____ and being eaten by insects.

11. Let's Review Key

Section I

1. Flowers, seeds
2. holders
3. Leaves
4. carbon dioxide, oxygen
5. stems
6. Nutrients, water, roots, leaves
7. air, water. loose
8. water, garden
9. Vegetables
10. grow, sunlight
11. 6 hours
12. clay
13. sand
14. loam
15. clay, sand, rotted
16. Clay
17. Loam
18. Sand
19. ball, clay, soil
20. test, water

Section II

21. Close together, gardening, French
22. manure

23. weather, area
24. dry, rows, down
25. wet, beds
26. roots, deep
27. Compost
28. rainfall, ridges
29. possible
30. Big, more

Section III

31. A
32. B
33. C
34. B
35. A
36. C
37. A
38. C

Review #1

1. Flowers, seeds
2. Leaves
3. Clay
4. Sand
5. Loam
6. clay, sand rotted
7. test, water
8. Close together, French
9. dry, rows, down

10. roots, deep
11. rainfall, ridges
12. Big, more
13. weather, area
14. B
15. B

Section IV

1. T
2. T
3. F
4. T
5. F
6. T
7. T
8. F
9. F
10. F
11. T
12. T
13. F
14. T
15. F

Section V

16. bucket
17. gentle, seedlings
18. Flooding
19. downhill, slowly

20. insects, clean
21. Aphids, washed
22. Rotation, control
23. praying mantises, kill
24. Rodents, farm
25. effective, hand

Section VI

26. B
27. C
28. E
29. D
30. A

Section VII

31. H
32. G
33. F
34. K
35. I
36. J

Review #2

1. T
2. F
3. T
4. F

5. gentle, seedlings
6. insects, clean
7. effective, hand
8. Tomatoes
9. Biennials, 2
10. Seeds, molding

Pre-Test

1. Flowers, seeds
2. Leaves
3. clay, sand, rotted
4. Nutrients, water, roots, leaves
5. grow, sunlight
6. Close together, French
7. weather, area
8. wet, beds
9. Compost, minerals
10. Big, more
11. A
12. C
13. A
14. T
15. F
16. F
17. D
18. C
19. A
20. B

Final Test Key

1. Flowers
2. Main Roots
3. Sunlight
4. Close Together
5. Weather
6. Compost
7. Rainfall
8. Rotted
9. Horse Manure
10. Hot
11. Moist
12. Rows
13. Transplanted
14. Mulching
15. Vegetables
16. Clean
17. Rotation
18. Hand
19. Biennials
20. Molding