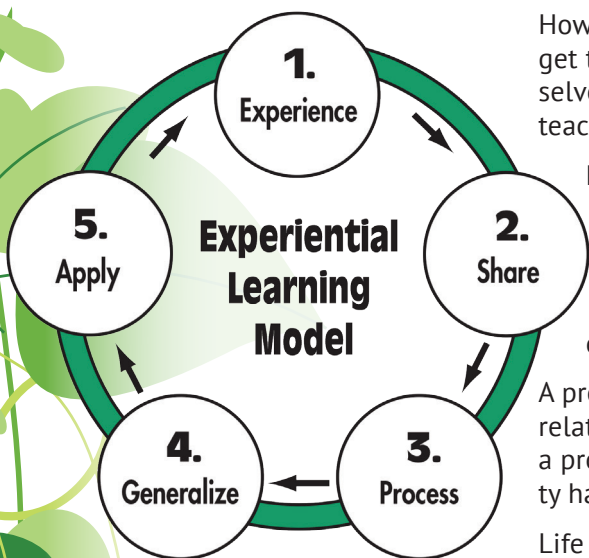




Note To The Project Helper



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals"
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How wonderful that you've agreed to be a project helper to help youth get the most out of learning about vegetable gardens and about themselves. Whether you are a family member, project leader, junior leader, teacher, or neighbor, your help is greatly appreciated!

Each of the 18 activities in Take Your Pick is designed to give the young person an opportunity to learn by doing. Then the youth reflect on what happened, what they learned, and how they can generalize and apply it to everyday life. This is called the **experiential learning** process, and it distinguishes 4-H from most schools and other formal education programs.

A project skill and a life skill are listed for each activity. The project skill relates to the vegetable gardening subject matter. The life skill relates to a process that the member undergoes when doing the activity. The activity has been designed to teach both these skills.

Life skills are grouped into three major categories. This Level C manual introduces contributing life skills. It logically follows Level A, See Them Sprout, and Level B, Let's Get Growing, which focus on competency and coping life skills. Level D, Growing Profits, further reinforces contributing life skills.

Acknowledgements

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Life Skills Learning through 4-H

Competency

Acquiring knowledge
Using scientific methods
Mastering technology
Making career decisions
Managing resources
Communicating

Coping

Recognizing self-worth
Relating to others
Making decisions
Solving problems
Dealing with change

Contributing

Applying leadership skills
Taking community action
Volunteering
Conserving the environment

How can you guide and challenge members? You can:

- Guide the member in thinking through why something happened or didn't happen
- Listen
- Be a resource person for understanding the subject matter
- Provide additional information to challenge the member

A project leader/helper's guide for the four youth manuals is available online for download. It contains a content overview, activities list by manual, background information not found in the members' manuals, and additional suggestions for group activities. The Solutions section of the project leader/helper's guide answers some of the the questions posed in the "Grow What You Know," "What's It All About?" and "Dig Deeper" sections of the 4-H members' manuals.

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In Level C, Take Your Pick, you will:

- Complete the activities in year 1, year 2, or year 3, depending on your level.
- Complete the record sheet for year 1, year 2, or year 3 at the back of this manual.

For exhibit options, see your county handbook/Fair Book.

Broadcast Your Garden



Broadcast planting

Planting a garden in single rows is the most popular planting method because it's easy to take care of and harvest. But you might want to try other ways to plant, too. One of them is the broadcast planting method.

Broadcasting is best for single-crop beds or broad strips of plants instead of the usual rows. It works well with fast-growing, small-seeded plants that can be eaten when young. These include:

- Radishes
- Beets
- Carrots
- Onions
- Spinach
- Leaf lettuce
- Turnip greens

You broadcast seeds by scattering them evenly over the entire length and width of a specific area that is 2-3 feet across. You don't need to bend over or kneel to space seeds exactly. You can walk your area and plant it standing up.

Although you can sow large areas quickly using broadcast planting, you might need to weed because you can't cultivate. You need to space plants properly when they get bigger, too.

1. Draw your plan for this year's garden in the space below or on the graph paper provided for you on page 55 of this manual. List the seeds you will broadcast.

A large empty rectangular box with a black border, intended for drawing a garden plan.

Size of my plot (length and width in feet) or container _____

Location of my garden _____

Direction the garden rows or containers face _____

Type of soil in my garden plot or container _____

Vegetables I plan to plant:

By broadcasting seeds in the garden _____

By seeding rows or hills in the garden _____

By purchasing transplants _____

By starting seeds indoors _____

Where I plan to purchase seeds or plants _____

Number of packets (or ounces) of seeds I need to buy ____ Cost _____

Now that you have drawn your plan in step 1 on the previous page, read “Grow What You Know” before answering questions 2-5 below.

2. Share with your project helper how you investigated your soil.

3. What action is recommended to improve your garden’s soil?

4. What kind of problems are important to you right now?

5. What can you do to help solve the problems that affect you?



GROW WHAT YOU KNOW

IMPROVE YOUR SOIL

Testing your soil tells you what it needs to improve it. Although you can buy a home testing kit, it is not as accurate as sending a sample of your soil for professional analysis at a testing lab. Your local Cooperative Extension Service can suggest where to test your soil. The testing lab sends you a report with recommendations to improve your soil. Test results may include:

- Soil pH (see Acid Basics for more information on pH); and
- Nutrients present and in what quantities (calcium, magnesium, nitrogen, phosphorus, potassium, sodium, sulfur, and trace minerals).

The best strategy for improving any soil is to build the organic content. Soil is nearly half minerals and half water and air; the percentage of minerals determines soil’s texture. Organic matter makes up only a small percentage of the soil, but for gardeners, it’s the most critical. Improve your soil each year by working in about 4 inches of compost, well-rotted manure, old leaves, and/or other organic matter.

Knowing the texture and structure of your soil is important. Together they determine how well your soil absorbs and hold nutrients and water, how quickly it drains, and how easily it can be worked up.

What can you do to improve your garden’s soil this year?

DIG DEEPER

The next time your yard needs a big hole, volunteer to help dig. You will be able to see different layers of soil—topsoil, subsoil, and parent matter. This helps you understand your soil's structure.

Make a tasty model of your soil's structure by baking a cake. Stack the following layers: white cake (parent matter), yellow cake (subsoil), and chocolate cake (topsoil). Use light brown frosting, chocolate chips, and nuts to represent decaying leaves, and mix a drop or two of green food coloring into coconut for decaying plants. You can even add a few gummy worms for soil health, as you learned in Wiggly Farm Acres in Level B. No one will mind eating this kind of "soil!"

Find out how humans affect soil composition. What happens to soil when cars and trucks drive on it? When an oil spill pollutes it?



Supplies: seeds for your garden, tape measure or yardstick, four short stakes, rake, organic matter or compost, transplants if you are using any, shovel, string, garden markers

1. When it's time to plant your garden, mark the rows and sow the seeds you are growing in rows. For broadcast planting other seeds, see step 3.
2. If you're using transplants, water them well before taking them out of their containers. Follow the transplanting directions you learned in Level B, On the Move.
3. To broadcast plant your seeds, fling the seeds outward in even motions the full width of the bed. Let the seeds scatter in midair so they fall evenly on the soil. Here are some helpful hints:
 - If the seeds are sticking together, mix them with fine sand, dry coffee grounds, or dry soil, and then spread the mixture.
 - If the seeds are dark in color or very fine, mix them with white play sand so you can see where you've already sown.
 - You can also use an empty salt shaker to sow very fine seeds.
4. Gently press the seeds into the ground using the back of a hoe. Tamp gently again. Then water with a gently spray. Don't worry about covering fine seeds; they do well with a mist of water.
5. Keep the seedbed moist until the seedlings sprout. Plants come up quite close together, so thin and harvest. Don't throw the thinnings away—add them to a salad!



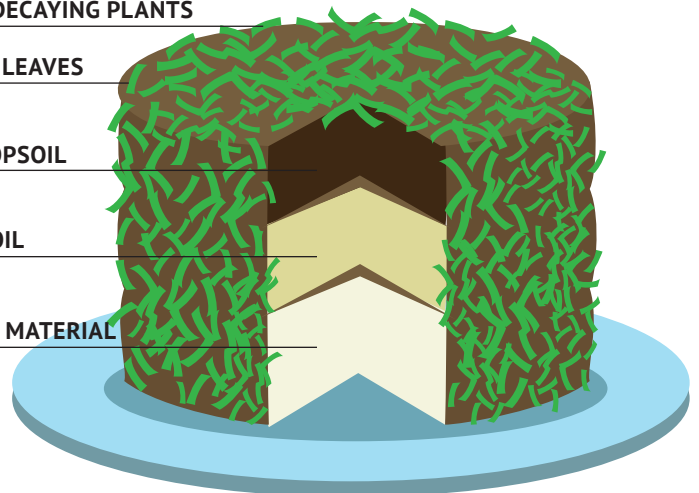
COLORED COCONUT/DECAYING PLANTS

FROSTING/DECAYING LEAVES

CHOCOLATE CAKE/TOPSOIL

YELLOW CAKE/SUBSOIL

WHITE CAKE/PARENT MATERIAL



Stretch It Out

How to succession plant

The succession planting method is especially good for:

- Carrots
- Squash and melons
- Lettuce
- Cabbage
- Snap beans
- Tomatoes
- Radishes
- Sweet corn

In some cases, it's smart to plant short rows of a crop at one-week intervals, instead of a long row that's planted just once. When a short row matures, you aren't swamped with more produce than you can eat. By the time you've used the first planting, the second row is ready to be harvested. This method is especially good for salad greens and radishes. For broccoli and cauliflower, you can plant seeds indoors for transplanting to the garden later according to your succession plan.

Another way to use the succession planting method is to plant vegetables with different maturity dates. (See *Keep On Planting* for information on hybrid versus standard forms.) You might have noticed in catalogs or at a greenhouse that seeds and cultivars for certain vegetables are classified as "early," "mid-season," or "late." This is especially true for tomatoes and sweet corn. By checking days to maturity, you can continuously harvest over several weeks by planting tomatoes that mature in 54 days, 72 days, or 80 days. In the same way, you can enjoy sweet corn throughout the summer season by planting in succession varieties that mature in 65 days, 78 days, and 92 days.

Succession planting method

In this year's garden, try another planting method to make the most of your garden space and add variety. The succession method allows a garden to produce a continuous supply of certain vegetables. It stretches the harvest period, because one planting becomes ready to harvest as another finishes bearing. In succession planting, you stagger the plantings of seeds or transplants at about two-week intervals. Plan to plant a succession crop two or three days after harvesting and working up the soil.

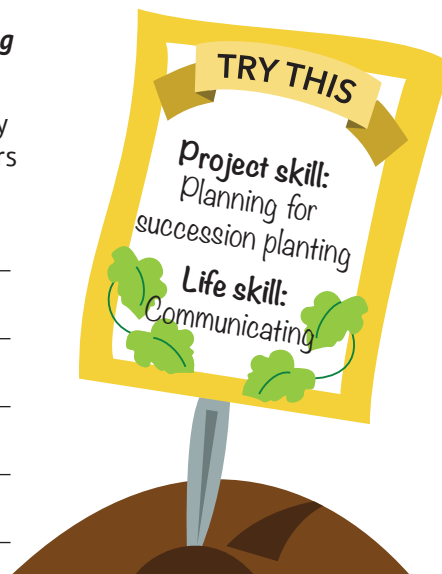
Supplies: pencil, three gardeners who use the succession planting method

1. Ask three gardeners if they can suggest tips for successfully planting a garden with succession crops. Write their answers on three separate lists.

Name: _____

Name: _____

Name: _____





GROW WHAT YOU KNOW

SEASON EXTENDERS

Another way to make the harvest season last longer is to extend the growing season. By lengthening a short growing season, you can harvest an earlier and larger crop. You can't control the weather, but you can work around it. You can extend the season to as early as possible in the spring and as late in the fall as possible.

You have already learned about starting seeds indoors and protecting transplants from cold temperatures outdoors. Season extenders are materials and structures used to keep the air and soil around plants warm. These structures generally trap the sun's warmth. How many of these different types of season extenders do you know? In the box at right, draw a line from each season extended to its correct description.

Then research online or in books about how to construct your own season extender. Try to incorporate a season extender in your garden plan.

2. Get more information from a garden resource book. List the name of the resource and the idea(s) it gave you.

3. Refer to your garden drawing from the previous lesson, Broadcast Your Garden. Draw another garden plan below showing the succession plants you plan to grow.



Size of my plot (length and width in feet) or container _____

Location of my garden _____

Direction the garden rows or containers face _____

Cold frame

A cover for an individual plant, such as a cone-shaped "hat," or a plastic tunnel-shaped covering that is slit (for ventilation and watering) and suspended over the row; usually has closed ends. Another example can be made from a plastic milk jug with the bottom cut out. (Plastic or glass should not touch the plant.)

Cloche

Sheets of transparent plastic or fabric suspended with metal, plastic, wire, or wooden hoops over a row; the ends are open.

Row cover

Usually a rectangular frame made of wood with a transparent glass or plastic slanting top; can also be tent style or flat-topped.

Type of soil in my garden plot or container _____

Vegetables I plan to plant:

By purchasing transplants _____

By starting seeds indoors _____

By succession planting _____

Where I plan to purchase seeds or plants _____

Number of packets (or ounces) of seeds I need to buy _____ Cost _____

Number of transplants I need to buy _____ Cost _____

1. Share with your project helper the information you received by talking to three different gardeners who use the succession planting method.

2. Communication is not always verbal. How did a resource book answer compare to the verbal comments you received from gardeners?

3. How do you communicate with others?

4. Describe something you have done differently because you read a book or talked to someone who had a better way to do it.

DIG DEEPER

Many garden resources give detailed instructions for building cold frames and other season extenders. Find one you can make with your project helper, and make it.

Use a season extender to have a second cool-weather crop in the fall. Depending on the weather and the season extender(s) you make, you may have fresh lettuce, radishes, and carrots from late fall through early winter.

Learn about hotbeds. Why is a hotbed used, and how is it different from a cold frame?

Raised beds are another way to extend the season by allowing earlier planting. The soil in raised beds warms more quickly in the spring than the soil on the ground. Try constructing a raised bed. Research different designs online.



Don't Forget Herbs

All about herbs

Herbs are among the easiest plants to grow in a garden. They add fragrance, color, variety, and even a sense of history. Best of all, they are generally pest-free. You can include herbs in your garden in many different ways.

- Combine herbs with vegetables and flowers in beds and borders.
- Start a windowsill herb garden, especially if you have limited space and time.
- A kitchen garden planted close to the kitchen door is perfect for marjoram, basil, thyme, parsley, and oregano.
- Grow a traditional herb garden in a patterned shape. (See Thyme for Planting later in this manual for more information.)
- Tuck some commonly used herbs in the corners of your vegetable garden, or create a special area where you can grow one, two, or many different kinds of herbs.
- Grow larger amounts of herbs by planting them in rows or beds in your vegetable garden for easy care and harvest.
- Herbs do well in pots. Once planted in pots, they make great decorations or can be entered as an exhibit at your county fair.

Planning for herbs

Beginner herb gardeners should start with herbs they know, then branch out and look for new uses. Think about:

- What herbs you want to grow.
- What you'll use them for (basil for Italian dishes, sage for poultry dishes, etc.).
- What sites would suit their growing needs.

In planning where to plant the herbs, consider each herb's sunlight and moisture needs, color, texture, and height.

You can plant herbs used in cooking that must be sown every year (annuals) among your vegetables or any place in the garden. Plant herbs that live for more than two years (perennials) along the edges of the vegetable garden, so you can still till your garden next year.

For most herbs that are used in cooking, a single, healthy plant is enough for a year's supply for an average family.



Supplies: flowerpot or other container, small rocks or broken pots, potting mix, herb transplant

1. Herbs grow well in containers. Choose an herb and a pot right for its size. Rosemary (*Rosmarinus officinalis*), can grow up to 3 feet tall, while some cultivars of thyme (*Thymus spp.*) tend to sprawl and cover wide areas but don't grow tall.
2. Once you select a container, put some small rocks or pieces of broken flowerpots in the bottom. Add a small amount of well-draining potting mix. Herbs don't like to be wet all the time, so proper drainage is necessary. This also means you need to check the soil's moisture more frequently because it drains well.
3. Place your herb transplant on top of the soil. The soil that surrounds the transplant should come to about 1/2 inch below the top of the container. Add or remove soil to raise or lower the transplant to this level.
4. Add more soil around the transplant, being sure to leave about 1/2 inch between the top of the soil and the top of the container. This allows water to pool and slowly drain through the soil.
5. Place your new herb container in a sunny area and watch it grow! Don't fertilize herbs too much, as this could reduce their fragrance.



**GROW
WHAT
YOU
KNOW**

PLANTS LIKE COMPANIONS

Think about giving your garden vegetable plants some friends! Certain plants may be beneficial to others when planted close to each other (although this is not scientifically proven). For example, marigolds are considered the workhorse of companion plants. They might help fight off specific harmful insects from other vegetable plants nearby. Marigolds might discourage Mexican bean beetle, nematodes, and other insects. See Thyme for Planting in this manual for a chart of vegetable companions.

While some crops encourage each other's growth, other companions have a negative effect. For example:

- Most plants do not tolerate fennel, so plant it away from vegetable plants.
- Walnut tree roots contain a toxin called juglone that kills tomato, potato, and eggplant, so locate your garden at least 50 feet from walnut trees.
- Carrots do not tolerate dill.
- Cucumbers do not tolerate sage.

Perhaps some plants didn't grow as well as you expected them to, but you couldn't figure out why. Maybe they weren't "friends?"

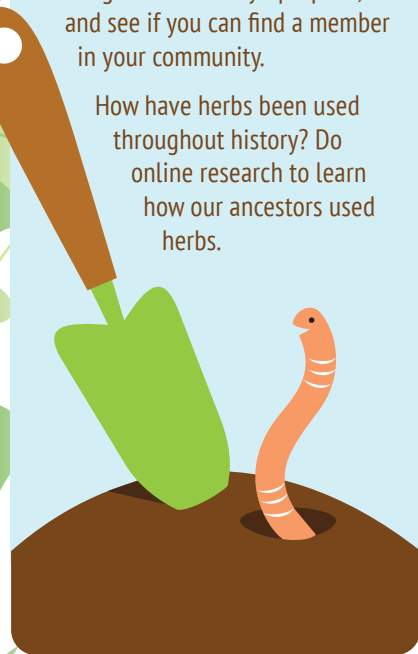
DIG DEEPER

Make a plan for using the herbs you plan to grow, besides in cooking. Think about freezing them or making potpourri, herbal tea, sachet sacks, and other items.

Visit someone who grows herbs to learn a few planning and planting tips.

Visit the Herb Society of America website at www.herbsociety.org. Investigate the society's purpose, and see if you can find a member in your community.

How have herbs been used throughout history? Do online research to learn how our ancestors used herbs.



1. Share with your project helper how you decided what herbs and containers to use for your herbs.

2. Why is decision making important when planning a garden?

3. List some other things in your life that require planning and making decisions.

4. How can the decision-making skills you learned in this activity help you plan better in the future?



What's Under Your Feet?

Dig in organic material

If you mix enough organic matter into your soil, you might not need to add any fertilizer. However, knowing specifically what “enough” means is difficult. The amount needed depends on:

- Your soil
- The weather and time of year
- The plant you want to grow

The most effective way to incorporate organic material into the soil is to dig it in during autumn. You can also spread it over the soil as a mulch during the growing season. Well-rotted manure is best; well-rotted compost can also be used. Both condition your soil by improving drainage (water-holding capacity) and providing nutrients.

Sphagnum peat moss is an excellent soil conditioner because it increases water retention; however, it has few nutrients.

You used a squeeze test in First You Plan in Level A to get a feel for your soil's texture. A more accurate test is soil fractional analysis.

Supplies: clear glass quart jar with a tight-fitting lid, like an empty mayonnaise jar; 1 cup dry, finely pulverized soil (take tablespoon-size samples from several locations in your garden, mix, dry, and pulverize with a rolling pin or mallet); watch or clock; ruler; permanent markers

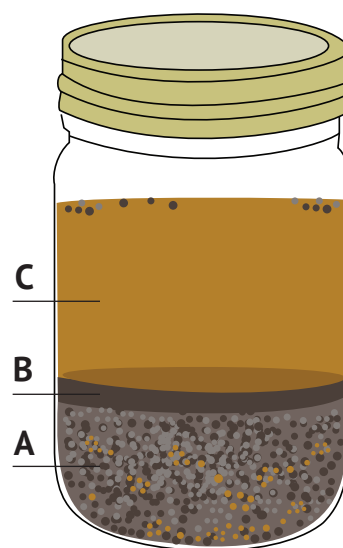
1. Fill the jar two-thirds full of water. Add soil, and fasten the lid securely.
2. Shake the jar vigorously for one minute, and let it sit undisturbed.
3. Note the stuff that settles to the bottom of the jar within one minute. It is made up of sand particles. Mark the jar with a crayon or grease pencil at the end of one minute. This indicates the level of sand. Label it A.
4. After two hours, most of the silt has settled. Make a second mark on the side of the jar to indicate the level of silt. Label it B.
5. When the water is clear, all the clay particles have settled. Mark the level of clay on the jar. Label it C.



Soil test results

If you have tested your soil and received the lab analysis report, take time to read through it. Ask your local Cooperative Extension office or your project helper to help you understand the report, if you need to. Before you plan, try to follow the suggestions made in the report.

A soil test doesn't tell you what type of soil you have or how much organic matter it contains. It tells you about your soil's “vital statistics”—its pH and nutrient content. (Acid Basics later in this manual has more information about pH.) Read more about adding nutrients in the form of fertilizer in “Grow What You Know.”



GROW WHAT YOU KNOW

NUTRIENT MATCH

Plants need certain nutrients in specific proportions in the soil. These can be supplied by adding given amounts of compost or manure. Depending on how much organic matter is available, you might need to add nutrients in the form of fertilizer. In the box at right, match the nutrients with their action.

Natural or organic fertilizers are composed of organic material such as animal manure, bone meal, and blood meal. Organic fertilizers come from animal, plant, or natural rocks. Chemical fertilizers are made of inorganic or artificial materials.

Each fertilizer has advantages and disadvantages. There is one important difference, though: While chemical fertilizers increase soil fertility, they do not improve soil structure because they contain no organic matter.

What kind of organic matter will you add to your soil this year? Which organic fertilizer might you want to use as a supplement?

- Determine the percentage of each type of particle. Measure the thickness of each level with a ruler. Multiply each by 100, and divide by the thickness of all the levels (D).

% sand = thickness of A x 100 / D _____

% silt = thickness of B x 100 / D _____

% clay = thickness of C x 100 / D _____

- Compare the percentages you calculated with a soil texture triangle such as the one below. For more information on the soil texture triangle visit https://www.agry.purdue.edu/soils_judging/new_manual/Ch2-texture.html. What is the classification of your soil?

NUTRIENT

Phosphorus

Nitrogen

Potassium

Trace elements

ACTION

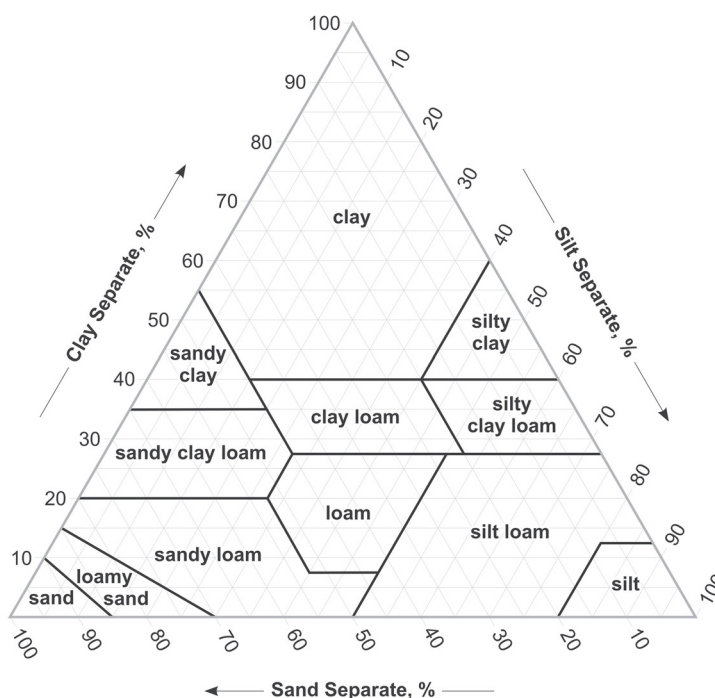
Helps leaves grow

Needed in small amounts for health, like vitamins

Encourages roots and fruit development

Contribute to overall hardness and to fighting disease

Soil Textural Triangle



1. Share with your project helper the soil problems you have in your garden.

2. What action did you take to improve your garden's soil?

3. Why is it important to take action as soon as possible to help solve an important issue?

4. How will you use what you learned to solve another problem in the future?



DIG DEEPER

Make a photo journal of your garden's progress. Describe how soil conditioning makes a difference.

Help solve a younger 4-H member's problem with his or her garden soil.

Experiment with lettuce and fertilizer. Germinate lettuce seeds in two containers. Give one container fertilizer and the other, no fertilizer. After 20 days, what happened?

Do nutrient deficiencies make a plant look different? Research online or find a book that explains nutrient deficiencies. Look in your garden to see if you can find any plants that show a nutrient deficiency.

With your club, family, or group of friends, discuss the advantages and disadvantages of organic and inorganic fertilizers. Research both types so that you can have an informed and factual discussion.



Keep on Planting

Succession planting

In *Stretch it Out*, you planned a garden that uses succession planting. You start by planting seeds as usual on the dates you set up in your plan, then stagger planting by one or two weeks or by using seed varieties that mature at different dates.

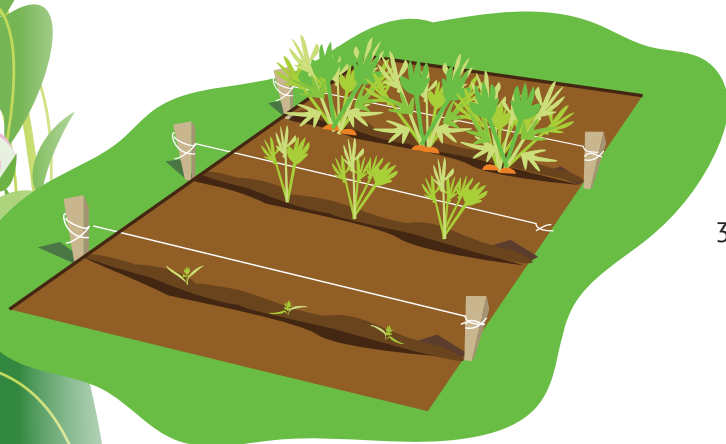
Gardeners who use succession planting usually have two concerns: getting seeds to germinate in hot, dry weather; and keeping transplants watered so they'll root quickly. Seeds that germinate when it's hot and dry, and then run out of moisture, die.



Some tips for succession planting:

- Plant seeds a little deeper—1/4 to 1/2 inch deeper for small seeds or 1/2 to 3/4 inch deeper for larger seeds. This allows the seeds to use the small amount of moisture beneath the soil surface.
- Time your planting with the calendar in mind, and plant just before or just after it rains.
- Place a light layer of mulch such as straw or peat moss over the row you planted. The mulch should be light enough for seedlings to grow through. Don't take the mulch off once the seeds germinate, or you may pull up a lot of seedlings, too.

Supplies: seeds for your garden, tape measure or yardstick, four short stakes, organic matter or compost, garden markers, transplants if you are using any, shovel, string, rake

1. When it's time to plant the next crop in your garden (the succeeding crop), decide where to plant the new seeds. After you harvest the previous crop, work the remains into the ground right away. The greener the leftover plants, the better for your soil. Don't leave crop leftovers to wither aboveground, where pest and diseases can find a home. Green plants are beneficial for earthworms and other soil life and decompose (break down) more easily. Tough, old plants are difficult to work into the soil.
2. Till, or spade, the soil 4-6 inches deep in the morning, when plants have the most moisture in them. Chop up the green residue to mix it deep into the soil. Small pieces of green matter decompose faster. Before working heavy residues into the soil—from cauliflower, broccoli, or early corn—you can pull them up, mow them down, or chop them up.
3. Mix in 3 to 4 pounds of dehydrated manure for every 50 square feet to be succession planted. However, if you are replanting a crop where you tilled in peas or beans, you don't need much extra fertilizer. Legumes add nitrogen to the soil by taking it from the air and fixing it onto the root nodules. Plant your succession crop within two or three days of working up the soil.



- 
- 
4. Fertilizing after you've planted the seeds is important.
 - Bacteria and other organisms in the soil need nitrogen to break down (decompose) the old crop. If nitrogen needs are great, soil organisms can tie up much of the nitrogen in the top part of the soil. Your seeds might sprout, but they'll stall in their growth because they don't have enough nitrogen. Later, as the green material in the soil breaks down, extra plant food is released.
 - Weather is a factor in keeping nutrients in the soil. While your first crop grew, rains carried more of your early fertilizer deeper into the ground. By mid-season, nutrients might be too far from plants' roots.
 5. Smooth out the seed bed before sowing seeds.
 6. Mark your row with a string. Sprinkle the seeds, tamp them firmly into the soil, and cover them with the proper amount of soil for the seed size (indicated on the seed packet).



GROW WHAT YOU KNOW

HYBRIDS VS. STANDARD FORMS

Special breeding techniques have resulted in seed varieties called hybrids. Hybrid seeds may cost a little more but offer these advantages:

- Stronger plants
- Earlier harvest
- Heat or cold tolerance
- More flavor
- Heavy yields (or prolific producer)
- Increased size
- Better keeping qualities
- Improved disease resistance

Standard forms, or heirloom varieties, offer the option to save seeds from year to year with a plant that will mostly look like the parent plant. Standard or heirloom seeds can be more expensive than hybrid seeds, but the taste and quality might be better.

Because disease resistance is an important part of hybridizing, the names of hybrids include the initials of the diseases or pests they are resistant to. For example, a tomato hybrid labeled "Tomato VFN" resists verticillium wilt (V), fusarium wilt (F), and nematode pests (N). Hybrid varieties of peppers, tomatoes, melons, and corn are especially important for disease resistance.

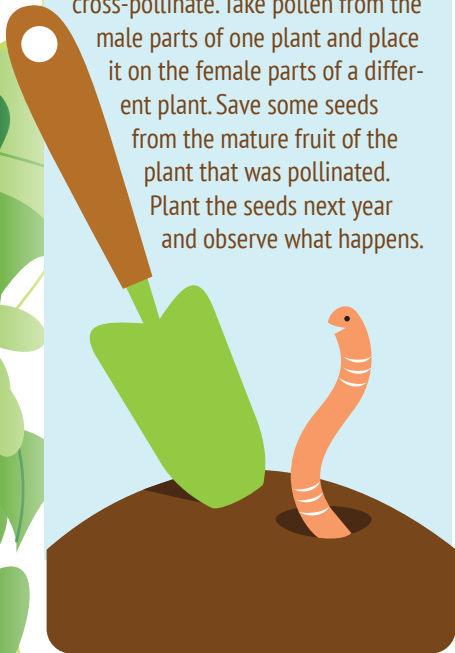
Read the labels on the seed packages or plants you have purchased. Which hybrids are you planting this year? Which standard forms?



DIG DEEPER

Interview other gardeners about how they use succession planting in their garden. Try both methods of succession planting—planting every two weeks, and using hybrid varieties that mature at different dates. What method works well for the vegetables you like to eat?

Try hybridizing in your garden. Squash are generally easy to cross-pollinate. Take pollen from the male parts of one plant and place it on the female parts of a different plant. Save some seeds from the mature fruit of the plant that was pollinated. Plant the seeds next year and observe what happens.



1. Share with your project helper how you changed your planting style to use succession planting in your garden.

2. What was hardest about succession planting? Easiest?

3. How do people deal with change?

4. If you felt that something needed to be changed in your school or community, how would you convince people to do it?

