Vegetable Garden HANDBOOK

Oregon State University
4-H 233

Extension Service
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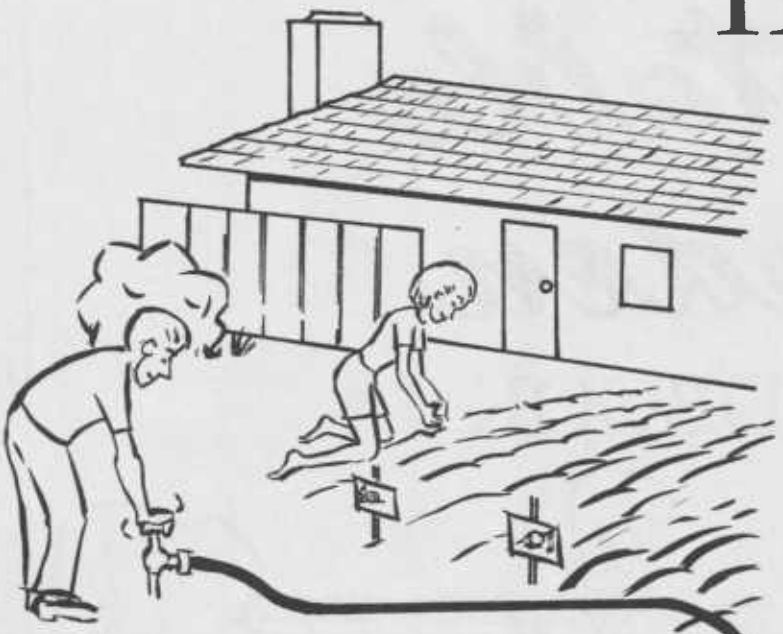
Oregon 4H Vegetable Garden HANDBOOK



Growing a garden can be fun. You will find a thrill of accomplishment in planting a seed no bigger than the diameter of the lead in a pencil and see it grow into a six- to ten-pound head of cabbage, or a single kernel of corn into a stalk seven feet tall with two or three ears of corn with perhaps 600 kernels on each ear.

A vegetable garden will bring you close to nature. It will give you enjoyment and satisfaction to grow vegetables from seeding to harvest. You will be contributing to better family living by producing some fresh, wholesome vegetables.

Growing a garden involves work. While you work you will learn and develop skills that will be useful the rest of your life. Your garden project may open the door to an interest in plants and science and perhaps a very useful career.

Vegetables include several very different families of plants and hundreds of varieties. A good definition for a vegetable is: an annual plant (grown from seed every year) the roots, stems, leaf stalks, leaves, or fruits of which may be eaten. But, we also grow perennial vegetables (those that grow from the same roots each year). Those grown in Oregon include globe artichoke, asparagus, horseradish, and rhubarb. The tops of these perennials usually die down in the winter.

Vegetables have been grown by man over many hundreds of years because they are flavorful, nutritious, easy to eat, and produce seed that can be stored from one growing season to the next. Mankind has made many improvements in vegetables. They are quite different from their original prehistoric forms. Very special conditions have to be provided for vegetables in order for them to grow vigorously. They are unable to take care of themselves as are their more hardy cousins, the weeds. Most work in gardening is not in growing the vegetables—it is in keeping weeds, insects, and diseases from the garden.

OREGON STATE UNIVERSITY EXTENSION SERVICE

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Plan, plant, and care for a small garden the first year. A beginner's vegetable garden may be only a few plants in a narrow border, some transplanted vegetables in large flower pots or tubs, or a plot of garden space about 200 some feet (10′ x 20′).

Learn to do things correctly in a little garden first and you will find your garden will grow larger as your skills increase.

An important step in getting off to a good start is to select the very best varieties of three or four kinds of vegetables. Include root, leaf, and fruiting types of vegetables.

Use lime, fertilizer, compost, and manure to improve the soil. Control weeds by hoeing, cultivating, and mulching. Control insects by spraying or dusting. You will also learn more about gardening and marketing by exhibiting vegetables at shows. Give at least one gardening demonstration and keep your records up-to-date.

Gain new experience and develop new skills by adding at least two new activities to your project each year.

It is better to do a good job with a small garden than a poor job with a large one. Make a drawing of the garden you would like to have and list the vegetables to be planted in each row.

1. Start some plants that will come up early every year (perennials) such as globe artichokes, asparagus, horseradish, and rhubarb.
2. Grow some of your own transplants.
3. Use sheets of plastic as a mulch or for plant protection.
4. Process some vegetables and preserve them by canning or freezing.
5. Store some vegetables such as potatoes, squash, or onions.
6. Make a collection of reference books, clippings, and pamphlets.
7. Try some vegetables that are more difficult to grow such as celery, celeriac, brussels sprouts, endive, witloof, and leeks.

You'll need some tools

Hoes, rakes, shovels, hand trowels, garden hoses, and sprinklers are needed garden equipment. Besides this, you should also have a duster or sprayer for pest control. It is best to have a good pesticide applicator; however, for the small garden, you may purchase your pesticide mixtures in a shaker can or dusting tube which will be adequate for occasional insect and disease control.

And don't forget fertilizer, short stakes, and string for making rows. For certain vegetables you will need long support stakes or trellises. Some tender plants need some form of plant protection from frost if planted very early in the spring. Hotcaps may be used or clear plastic over a trellis. For preparing the soil in the spring, you might use a rotary tiller.

Decide What to Plant

A good garden has root, leaf, fruit, and bulb types of vegetables. Some root crops are parsnips, sweet potatoes, radishes, beets, carrots, rutabagas, turnips, and horseradish. Leaf crops are lettuce, cabbage, and spinach. Fruiting crops include beans, tomatoes, corn, peppers, and peas. Bulb vegetables are onions, garlic, and shallots. White potatoes are tubers or underground stems and cauliflower and broccoli are immature flowers.

Grow some herbs such as parsley, thyme, mint, or chives, etc. Many times these can be grown in a flower border or other area away from the garden plot.

GET OFF TO A GOOD START

Garden soil usually has to be worked up at least once each year to a depth of 6 to 9 inches. The soil on the seed row should be level and smooth so there is a thin layer of fine soil at the surface. The surface soil must be fine so that it will come into close contact with the seeds to provide the moisture seeds need to sprout (germinate). Transplants like tomatoes don't require fine soil.

If your garden area slopes steeply, it would help a great deal to rake the soil downward into narrow terraces. Straight rows make the garden easier to care for, add to its appearance, and avoid wasted space. Use a string with a small stake at each end to lay out straight rows.

Small seeds such as lettuce, carrots, and radishes are planted only one-half inch deep. Cover the seeds and gently firm the soil over them. In dry weather, moisten the soil every day to help germinate shallow-seeded vegetables such as carrots.

Tomatoes, peppers, cabbage, broccoli, cauliflower, brussels sprouts, and lettuce may all be grown from seed sown directly in your garden. You may also buy the seedlings (transplants) all ready to plant from local greenhouses and garden supply stores.

When transplanting, place the seedlings in a hole to the depth of the first leaves. Hold the seedlings by the leaves so as not to pinch or damage the stems. Firm the soil gently around the roots and soak the soil by pouring at least a cup of water around each plant. When the water has soaked in, level the soil around the plants. If the weather is very hot and sunny, shade the plants for a day or two with a newspaper tent or a wooden shingle stuck in the ground on the sunny side of the plant.

SAVE SPACE

To save space in small gardens, two different vegetables may be grown in the same row; for example, radishes with cabbage. Intercropping works best if one of the vegetables matures quickly (such as radishes) and is harvested before the other.

Vegetable plants need less space than is usually thought necessary. A square or triangular arrangement of the plants makes the best use of space. Following are some arrangements of plants that save space. Walk-ways would have to be provided to facilitate harvesting.

Try them!

	In row (*inches*)	Between rows (*inches*)
Brussels sprouts	24	24
Sweet corn	9	20
Beets and carrots	2	6
Bush snap beans	5	7
Cauliflower	24	24
Tomatoes	12	24
Broccoli	24	24
Cabbage	24	24
Peppers	12	12
Lettuce	9	9
Onions	2	6
Squash	12	36

You can see that in most cases the distance between rows is the same as the distance between plants in the row. Leave walk-ways in your garden. If you have a large garden and lots of room, it may be easier for you to plant the rows of vegetables two to three feet apart.

For a small garden, one or two plants of tomatoes, cucumbers, pumpkins, or summer squash will provide all the fresh produce you can use daily. Most vegetables also can be grown together with flowers and shrubs in sunny borders that are fertile and well watered. Vegetables will not grow well beneath trees.

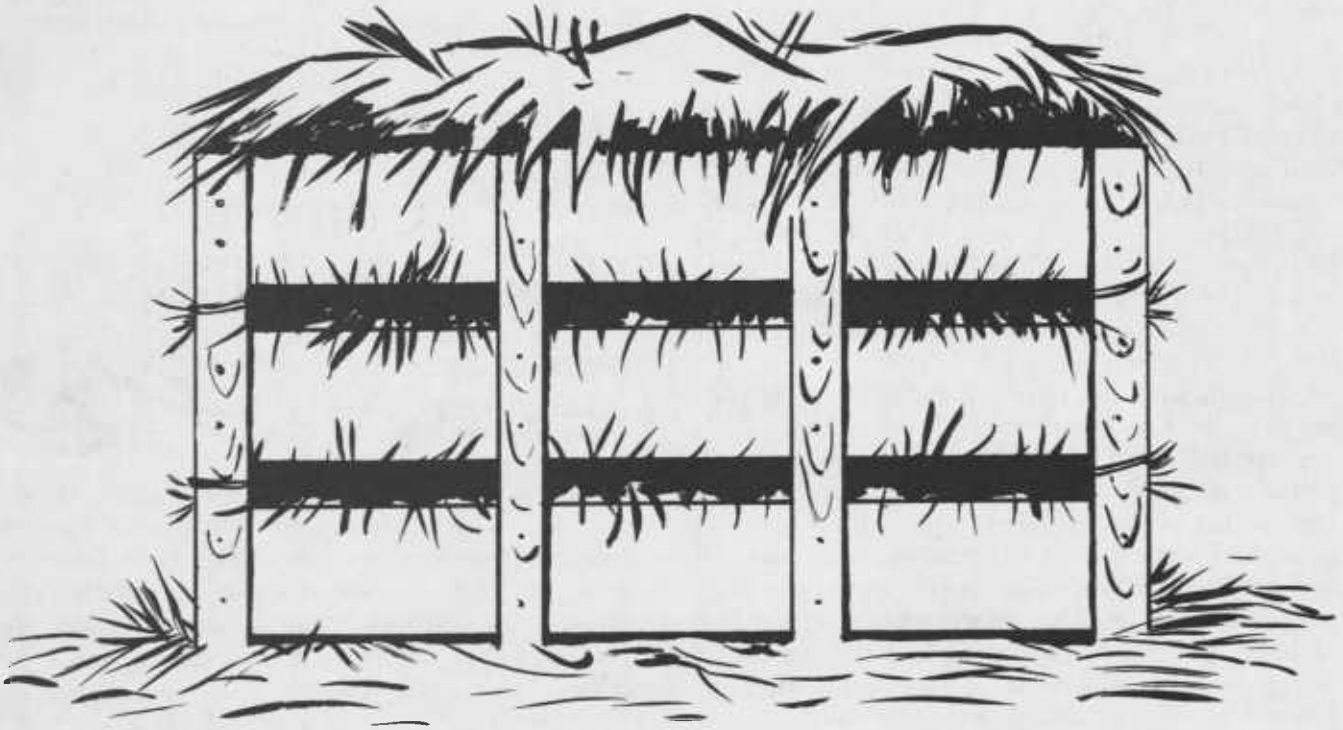
Use stakes or trellises to support trailing vegetables such as tomatoes, cucumbers, and sweet potatoes. Paint the stakes and trellises bright colors to add to your garden. Corn should be planted in a block of not less than 6′ x 8′ for pollinization. Planting small blocks of corn at two- to three-week intervals will keep your family with fresh corn from July to October.

In order to get seed of the recommended varieties (reference: E.C. 671) it is usually necessary to shop in more than one catalog. Your club may make a collection of seed catalogs. The seed racks at grocery stores are not the best place to shop for seeds of vegetables adapted to Oregon. It is better to pay a higher price for good seed of the best varieties rather than to shop for bargains.

Add
Organic Matter

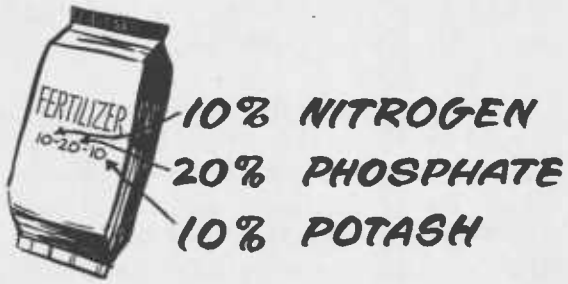
Compost is made up of leaves, manure, garden refuse (corn husks, carrot tops, bean vines, and other waste products), weeds, fertilizers, and soils which are piled up together and allowed to rot before they are added to the garden. Compost may be added any time after it has thoroughly rotted. Compost piles have to be turned over once or twice so that the material on the outside is worked to the inside of the pile to decay. The heat that develops inside the compost pile helps to destroy insects and diseases.

Manure (barnyard manure), if it is fresh, should be put on the garden in the winter; if it is old and well rotted, it may be worked into the soil before spring planting. From 6 to 10 bushels (200 to 300 pounds) to 1,000 square feet is plenty. (Multiply the length of the garden times the width to get the number of square feet.) Do not use fresh manure where carrots are to be grown because it causes the roots to be misshapen.



Fertilizers and Lime

Commercial fertilizer is necessary for best yields even when manures or composts are used. In most cases only complete fertilizer should be used. Complete fertilizers are ones that have mixed together nitrogen, phosphorus, and potash. Complete fertilizers come in bags marked with three numbers which tell the amounts (percentage) of nitrogen (N), phosphorus (P_2O_5), and potash (K_2O). Some good garden fertilizers are 8-24-8, 10-16-8, and 10-20-10. It is best to apply most of the fertilizer before planting.



Broadcast (scatter or spread) two to three pounds of complete fertilizer over 100 square feet of garden before digging and work it thoroughly into the soil as the soil is prepared. Or, at time of seeding, place bands of fertilizer three inches to each side of the seeds and three inches deep. Use six ounces (one cup) of fertilizer to 20 feet of row. Put one pound on each side of a row 100 feet long. (Hint: a one-pound coffee can holds two pounds of fertilizer.) Do not let fertilizer come in contact with seeds or plants because it can damage them seriously. Put on more fertilizer when the leafy vegetables such as cabbage and lettuce are about half grown, and after fruiting crops such as tomatoes and beans have set their first fruit. Sweet corn should be sidedressed with bands of fertilizer when it is 12 to 15 inches tall.

Lime is used to "sweeten" the soil and to supply the plants with calcium and magnesium which are needed to grow healthy plants. Usually 50 pounds of finely pulverized limestone to 1,000 square feet of garden every two or three years is enough. Try to get lime that contains at least 10 percent MgO, which means it contains magnesium as well as calcium. This information is on the bag of lime. Broadcast the lime when the garden is being prepared and work it thoroughly through the soil by digging and raking or rototilling. Some people may need to wear gloves because lime can dry or irritate the hands.

Pulverized limestone fertilizer, manure, or compost may all be worked into the soil at the same time. There are no magic fertilizers, and there is only one special growth-promoting thing for your garden—that is *your* "shadow." See that it spends a lot of time in your garden.

Irrigation Is Necessary

If it has not rained for a week and the soil in your vegetable garden is drying out, it is time to water. Remember, when watering it is better to soak the soil once a week rather than to sprinkle once a day. Irrigate your vegetables during the day so that the leaves are dry by nightfall.

Plants remove water from the soil by taking it up through the roots and losing it to the air through tiny holes (stomata) in the leaves. The soil directly under your vegetables will nearly always be much drier than between the rows. Look and see for yourself.

Never let the soil under your vegetables become so dry that it will not form a ball easily. Dig to a depth of 6 to 10 inches, pick up a handful of soil and squeeze it to check the moisture.

Most summertime problems in vegetable gardens can be corrected by thorough watering and the occasional addition of small amounts of fertilizer. Vegetable plants should continue growing from the time they sprout until they are harvested. Rapid growth results in high quality.

Control Insects and Diseases

It may occasionally be necessary to use chemical dusts or sprays to protect your garden from insects and diseases. Ask your parents or leader to help you. With the exception of controls for cabbage and onion root maggots, do not make preventative applications of insecticides to your vegetables. Wait until you find damaging insects on your plants. (Use special baits to control slugs.) For details, read EB 747 *Vegetable Garden Insect Pests*, see list of references.

All these materials are available from a garden supply store. Read the labels carefully and follow directions. Wear good rubber gloves and a long plastic apron when applying pesticides. Wash your hands with soap and warm water immediately after use. Be sure to get help and advice from an experienced adult to be sure of your safety. A very worthwhile project is to build a small cabinet or cage that can be locked in which to store your garden chemicals. Always keep them out of the reach of children. Always handle them carefully. Always read the labels.

CONTROL WEEDS

Most weed seeds are small and not visible in the soil. Weed seeds may lie dormant in the soil for years before they sprout (germinate).

Weeds compete with vegetables for water, nutrients, light, and space. Most weeds are vigorous and better adapted to the gardens than vegetables. Even small weeds can very seriously reduce growth and yield of vegetables, especially if the weeds are not eliminated while the vegetables are just getting started.

Most weeds can be killed while they are very small by scraping the surface of the soil with a sharp hoe or rubbing the soil with the back of a rake. File the edge (blade) of the hoe until it is a sharp as a knife, then work carefully through your garden, walking forward so as to avoid stepping on the vegetables. Pull out the weeds that cannot be reached with the hoe.

Grass weeds should be killed before they have more than two leaves and other weeds should not be left beyond the four-leaf stage.

A mulch is something that is placed on the soil to help control weeds and prevent the surface of the soil from drying out. Mulches are usually loose materials such as sawdust, shavings, wood chips, barkdust, gravel, pine needles, straw, and peat moss, spread to a depth of two to four inches. Increase the amount of nitrogen fertilizer if these loose woody materials are used for mulch. Other satisfactory mulches can be made from wrapping paper, fiberboard, roofing paper, aluminum foil, and sheets of plastic.

Black plastic polyethylene film is one of the best mulching materials for weed control. It also improves the growth of melons and sweet potatoes. Spread it on the ground, hold the edges down with soil, then plant the seed and plants by punching holes through the film. Paper and other similar materials also are used in this way.

TRY SOME SPECIALTIES

Along with the more familiar crops, try to grow some specialties. You will notice many opportunities if you look more carefully at the vegetables offered in your grocery store and market, or at seeds offered in the catalogs.

Gourds are usually not edible, but they are both decorative and useful. There are many different kinds. They can be dried, painted, and varnished. Some can be made into bird houses.

Growing mushrooms requires a lot of gardening skill, understanding, patience and preparation. Study references first, then proceed with confidence. Be prepared for failure on the first couple of tries. (See references and supplies for Club Leaders.)

Herb gardens can be decorative, interesting, and educational. They are well-suited to very small areas or even to growing in large flower pots. Herbs may be dried and stored. Try to grow five or ten different herbs.

Try Oriental foods such as edible pod peas, chinese cabbage, chinese water chestnuts. Water chestnuts are grown in a paddy with their roots covered with three to four inches of water all the time. Make a small plastic paddy. Start by getting water chestnuts from a local Chinese restaurant or oriental restaurant supplier.

Thin the Seedlings

Unless seeding is very carefully done, vegetables must be thinned when they are young in order for those remaining to make their best growth. This is particularly true of those grown from small seeds. It is difficult to sow most small seeds thinly enough so that seedlings do not crowd each other.

Carrots should be thinned to stand about two inches apart when they have only two or three leaves. Also, thin lettuce, beets, turnips, and rutabagas. Do not thin all your onions. Onions grown close together from seed produce green (spring) onions. For large onions, thin some of them to 3 inches and let them grow until fall. Store some of the bulbs until Christmas if you can.

Where winter temperatures are low, stored vegetables must be protected from freezing. In Western Oregon most root and leafy vegetables must be left in the garden into late fall and harvested as needed. Onions and potatoes can be stored until Christmas in open boxes or shelves in an unheated garage or shed. Store well-matured winter squash and pumpkin in a dry place where the temperature is about 55 to 60 degrees.

Home facilities are not suitable for long-term storage of most vegetables. Canning or deep freezing the vegetables is a better alternative.

STORE SOME Vegetables

HARVEST ON TIME

Snap beans should be picked when they are about the thickness of a pencil and just as the seeds are beginning to form. Beans also may be left and harvested as dry beans. Dry beans may be stored for a long time.

Lima beans should be picked when the seeds are green and tender and before they reach full size.

Beets and carrots should be harvested when they are young and tender and about one and one-half to two inches in diameter.

Sweet corn is best when it is in the "milk" stage. Peel back the husk and press a large kernel with your thumbnail; if it squirts, the ear is ready to eat.

Summer squash and cucumbers should not be allowed to get too big or old because the skin becomes hard and the seeds may not be easily cut with a knife.

Winter squash and pumpkins should be left on the vine until the skin is hard. This is usually until after the first light frost. You will find that when you eventually cut the winter squash or pumpkin open, the seeds as well as the rind are hard. The seeds may be saved, toasted, salted, and eaten.

Butternut squashes are damaged easily by frost. Harvest when nine to twelve inches long and three to five inches at largest diameter.

Peppers are harvested when the fruits are solid and dark green, or they may be left until they turn red.

Tomatoes for fresh use are picked as soon as they become red. **Onions** may be eaten as green "spring" onions or may be left to form a bulb. The bulb is ready to harvest and dry (cure) after the leaves naturally fall over in August.

Cabbages are ready for harvest when they become very hard. **Leafy vegetables** such as lettuce, spinach, and kale may be harvested any time after the plants are large enough to eat. Do not pull up the plants. If you pick off only the larger leaves, the plants will continue to grow and produce.

INTERESTING THINGS TO TRY

Sweet potatoes are grown from sprouts that grow from the edible roots. Get two or three sweet potatoes from the grocery store in April or May, cover them with moist sand, and keep them warm. Sprouts will grow. Pull off the sprouts when they are about six inches long and plant them in your garden after mid-May. Find the warmest spot in your garden, and use a plastic mulch for best results. Harvest in September.

Garlic is grown from segments of the bulb called cloves. Get a garlic bulb from your grocery store in October. Break the bulb up into cloves and plant them immediately about two inches deep. Each bulb has about 10 cloves. Harvest in late August after tops fall over and become dry.

Onions are best grown from seeds sown in very early spring. Try seeding onions in late September and October to supply green onions in winter and very early bulbs next summer. For large bulbs in Oregon, grow Yellow Sweet and White Sweet Spanish, Yellow Globe Danvers, and the recommended hybrids. Thin the plants when they have

only two or three leaves. The remaining plants should be three inches apart in the row.

Rhubarb, beets, and lettuce can be grown in a flower border. Beets and lettuce can be used for edging a flower bed. Rhubarb adds color. One or two rhubarb plants are enough for a family.

Tomatoes may be grown from seeds sown directly in the garden in mid-April most years. Tomato seedlings are quite cold tolerant. Thin out the plants while they are still very small; leave them only one foot apart.

It's fun to grow pumpkins for Halloween. They should be planted by mid-May. Use a large variety such as Jack-o-lantern. In a small garden, one plant will produce 6 to 15 pumpkins. You may need to keep trimming the vines to keep the plant from covering the whole garden. When the pumpkin begins to develop, write or draw on the skin with a sharp nail or ball point pen. The scars that develop will be decorative. Tie a belt or cloth band around the little pumpkin so that growth will be restricted in the middle and it will develop into a dumbbell shape or a pumpkin with a "head." Draw a face on the head while it is still small.

USEFUL CAREERS

Commercial vegetable production, like other branches of agriculture, is based upon science. To understand the growth, development, and evolution of whole living plants requires not only plantsmanship, but knowledge of botany, chemistry, physics, and mathematics. One basic subject blends with another to form more specialized areas of study such as plant physiology, biochemistry, biophysics, and molecular biology to name only four. Because of constant change, scientific vegetable production takes on continually changing patterns, much as a kaleidoscope. You are sure to find a phase that really appeals to you if you are truly interested in plants.

In addition to the scientific aspects of vegetable production, there are many essential and practical professions in food science for both boys and girls —vegetable processing; human nutrition; extraction of flavors, fragrances, and essences; packaging; merchandising; quality control; storage; and transportation.

Other careers that help to support the vegetable industry include plant breeding (genetics), plant disease control (pathology), insect control (entomology), and chemical weed control.

Employment in commercial vegetable production and most of the supporting services requires education beyond high school. The Department of Horticulture and the Department of Food Science and Technology at Oregon State University in Corvallis can train you for any of these interesting and useful professions.

Those with sufficient training become farmers or find challenging jobs with many private companies and with state and federal government agencies. All boys and girls who like to work with plants will find that there are many professions in which they can use their knowledge and skills. Because of the many aspects of gardening, everyone in this 4-H project can enjoy a more useful life closer to nature whether he chooses food production as a profession or simply as a hobby.

Your County Extension Agent (4-H) will be glad to discuss career opportunities with you.

DEMONSTRATION SUGGESTIONS

The Garden project offers unlimited topics for demonstrations. Here are a few suggestions:

1. How to store pesticides safely.
2. How to clean a sprayer after use.
3. How to make a window box.
4. How to clean and sharpen garden tools.
5. How to use plastics in the garden.
6. How to make and use trellises and supports for tomatoes and cucumbers.
7. How to save space in the garden.
8. How to use mulches to control weeds the easy way.
9. How to use plastic mulch to improve production of muskmelons.
10. How to select and prepare vegetables for exhibition.
11. How to tell when a watermelon is ripe.
12. Drying and storing herbs.
13. Using decorative gourds.

Club Tours

County Extension Agents can help make the necessary contacts:

1. Local vegetable processing companies.
2. Seed processing company and warehouse.
3. Fertilizer manufacturing company.
4. Vegetable research and breeding farms.
5. Commercial vegetable farms—fresh market and processing crops.
6. Greenhouse vegetable operations.
7. Onion and potato grading and packaging
8. Produce markets.
9. Agricultural equipment manufacturers.
10. Oregon State University.
11. Mushroom forcing houses.
12. Rhubarb forcing houses.

Glossary

ANNUAL PLANT—grown from seed every year and will produce flowers and seeds in one growing season. Examples are beans, peas, and corn.

BIENNIAL PLANT—requires two growing seasons to produce a flower and seed. Examples are beets, carrots, spinach, and onions.

BORDER—an edge, boundary line, or narrow strip.

BROADCAST—distribute evenly and at random over the surface of the garden as in the case of lime.

COLD TOLERANT—plants able to withstand low temperatures, but not freezing.

COMMERCIAL FERTILIZER—plant nutrients in concentrated form that are available for sale in dry or liquid form.

COMPLETE FERTILIZER—a combination of plant nutrients that is made up mostly of nitrogen, phosphorus, and potassium salts.

COMPOST—waste plant materials and sometimes manures collected in piles, moistened, and allowed to partly decompose before being returned to the garden. The purpose of compost is to increase the fertility of the soil.

FERTILIZER—chemicals and manures that enrich the soil.

FRIABLE—refers to a soil that is granular, loose, and crumbly.

GERMINATE—the sprouting of a seed; to sprout and begin to grow.

HARDY PLANTS—those capable of withstanding very difficult growing conditions such as cold, heat, drought, high winds, insects, diseases, or other situations that cause stress but do not result in the death of the plant. Vegetable plants are not very hardy, but most weeds are.

HARVEST—to pick or gather the vegetables whenever they are ready to be eaten.

INSECTICIDE—chemicals used to kill insects; "cide" at the end of a word means "to kill." For example, pesti*cide* means pest-killer; herbi*cide* means plant-killer; fungi*cide* means fungus-killer.

LIME—a white fertilizer material which adds calcium to the soil and helps to make other plant nutrients that are already in the soil more available to the plants.

MAGNESIUM—a fertilizer material essential for plant growth usually supplied to the soil in combination with lime, as Epsom salt or in special fertilizer mixtures.

MANURE—animal refuse from stables and chicken houses used in large amounts to enrich the soil.

MULCH—a material used on the surface of the soil to stop weed growth and to slow down the loss of water. Mulches may be loose materials such as sawdust, barkdust shavings, or straw, or in sheets such as plastic film or paper.

NITROGEN—added to the soil in different fertilizer materials to make plants grow faster by improving vegetative growth.

ORGANIC MATTER—plant and animal remains, such as compost, which enrich the soil as they decompose.

PERENNIAL—a plant that remains in the ground and grows from the same roots every year. For example, asparagus.

PHOSPHATE—a fertilizer material that is essential for plant growth. It is especially important when vegetable plants are very small seedlings. It gets them off to a good start by improving root growth.

POTASH—a fertilizer material that is essential for plant growth. Potash improves the tenderness and quality of the vegetable.

RIPE—the stage of development at which a vegetable is ready to harvest.

SEEDLING—a very young vegetable plant grown from seed and usually not more than two or three weeks old.

SIDE DRESS—to place additional fertilizer in bands on strips or one or both sides of a row. The fertilizer is usually placed about three inches deep and does not come in contact with the seeds or plants.

SPROUT—to germinate as a seed or to grow from a bud. A sprout may also be the part that grows out, such as a bean sprout, potato sprout, or bud sprout.

TOP DRESS—to spread additional fertilizer between the rows, usually scattering it beside the rows on the surface of the soil. The fertilizer should not be scattered on the plant leaves.

TRANSPLANT—a seedling or small plant temporarily grown in one place and later planted in another. Tomato seedlings are sometimes first grown in greenhouses and then transplanted into the garden.

TRACE ELEMENT—fertilizer materials essential for plant growth but normally used by vegetables only in very small amounts. Examples are: zinc, boron, copper, and iron.

A VARIETY—includes those vegetables of the same kind (or crop) that are alike. Each variety of a crop is usually distinctly different from other varieties in one or more important characteristic. Variety is a name given to a distinct form of vegetable, such as *Blue Lake* bean, *Jubilee* sweet corn, and *Silver Bell* squash.

Catalogs

1. George W. Park Company, Inc. Greenwood, South Carolina 29646.
2. W. A. Burpee Seed Company, Riverside, California 92502.
3. Farmers Seed and Nursery Company, Fairbault, Minnesota 55021.
4. Joseph Harris Seed Company, Inc., Moreton Farm, Rochester, New York 14601.
5. Mushroom Supply Company, Toughhenamon, Pennsylvania 19374 (Home-gro mushroom kits).
6. Burgess Seed and Plant Company, Galesburg, Michigan 49053.
7. L. L. Old Seed Company, 722 Williamson Street, Madison, Wisconsin 53701.
8. Nichols Garden Nursery, 1190 N. Pacific Hwy., Albany, Oregon, for novelty items and herbs.

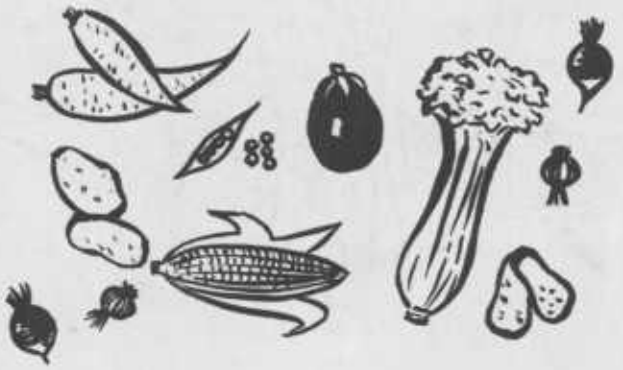
References

(For Club Members)

1. FS 53, Tomatoes in the Garden.
2. EB 614, Farm and Home Vegetable Garden.
3. EC 671, Vegetable Varieties for Fresh Market and Home Garden.
4. EB 747, Vegetable Garden Insect Pests.
5. EC 653, How to Select and Prepare Vegetables for Exhibition.
6. Vegetable Gardening (a Sunset Book).
7. FS 136, Ornamental Gourds.
8. FS 137, Home Storage of Pumpkins and Squashes.
9. FS 138, Garlic for the Garden.
10. FS 139, Blossom-End Rot of Tomatoes.

(For Club Leaders)

1. USDA H & G 202—Growing Vegetables in the Home Garden.
2. Sunset Western Garden Book.
3. Sunset Vegetable Gardening.
4. Film List of Fruit and Vegetable Facts and Pointers. United Fresh Fruit and Vegetable Association, 777 14th Street NW, Washington, D.C. 20005 (also request any discarded vegetable posters).
5. The Home Vegetable Garden, Brooklyn Botanical Gardens, Brooklyn, New York, $1.50.
6. American Gourd Society, Route 1, Box 274, Mt. Gilrad, Ohio 43538.
7. Manual of Mushroom Culture, Mushroom Supply Company, Toughkenamon, Pennsylvania 19374, $2.50. Also provides home garden mushroom kits.
8. A Child's Garden, A Guide for Parents and Teachers, Ortho Chevron Chemical Co., Public Relations, 200 Bush Street, San Francisco 94120.



4-H Vegetable Garden Exhibits

It is fun to show others what you have grown. You will want to select your best for the fair.

The numbers or amount of each vegetable required for exhibit are: one head of cabbage, cauliflower, lettuce, spinach, kale, etc.; one melon, pumpkin, squash, slicing cucumber, etc.; one bunch of five radishes, green onions, etc.; five each of potatoes, dried onions, beets, carrots, garlic, pickling cucumbers, tomatoes, peppers, etc.; five pods each of beans, peas, etc.

Some county fairs will have 4-H classes for single vegetables such as one squash, five carrots, five pods of beans, etc. All county 4-H fairs have classes for 4-H Vegetable Garden exhibits as follows: Junior (9, 10, and 11),* three vegetables. Intermediate (12, 13, and 14), four vegetables. Senior (15, 16, 17, and 18), five vegetables.

If your vegetables are among the best in your county, you will be selected to send an exhibit to the State Fair. 4-H members may also exhibit in adult classes at many fairs.

* Your age last Dec. 31.

Judging and Identification

In a judging contest, you compare the vegetables then select those you think are the best. A judging class usually has four items, such as four heads of cabbage. They will be numbered from 1 to 4. You examine them carefully, then place them in order, with the one you like best in first place. You may place them 3-2-1-4, with number 3 first and number 4 last. Your placing will be compared with that of a qualified official judge. If you placed them the same as he did, your score is 100. If not, your score will be determined by the number of switches made. It might be 85, 70, 55, or less.

You may also be asked to give oral or written reasons on why you placed them as you did. Have the class in mind, tell how you placed them and why you placed each one over the next. You will be scored on your reasons as well as your placings. Your reasons score can be higher than your placing score, if you have good reasons for placing them as you did.

You will also be asked to identify common garden vegetables, weeds, and insects. The specimens to be identified will be numbered. You will be given a sheet of paper or a card with numbers. After each number, write the name of the vegetable, weed, or insect. You get extra points for spelling correctly.

Your scores for judging, reasons, and identification will be added to get your total score. If you place among the top three in your county, you may get to go to the State Fair in Salem.

Garden Tours

Your club or perhaps your county will hold a garden tour in which all gardens will be visited and scored. You will want to have your garden looking its best—free from weeds and insect damage.