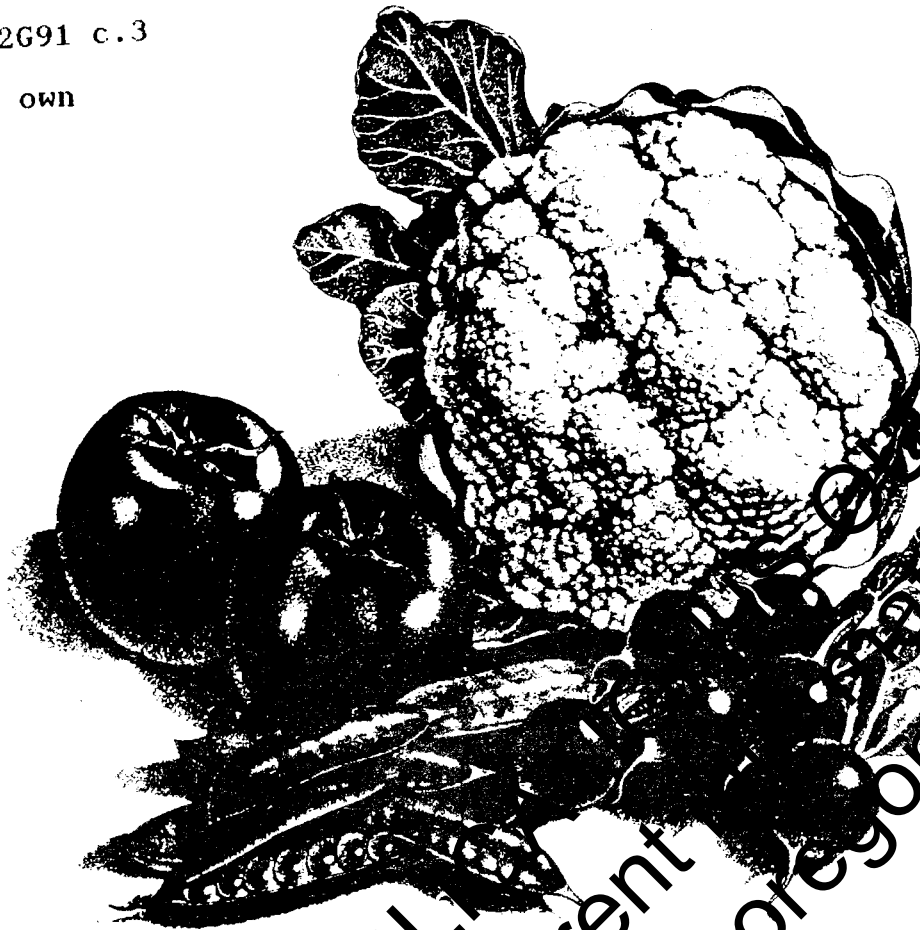


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Growing your own



APR 17 1991

DATE

*A practical guide to
gardening in Oregon
featuring vegetable
varieties, planting dates,
insect control, soil
preparation, and more...*

GROWING YOUR OWN

Getting Started

Choosing Proper Site is Key Garden Decision

Choosing a garden site is one of the most important decisions any gardener will make. The ideal location is level and well-drained, in full sunlight all day and in an area with good air circulation. The soil is loose, dark-colored and fertile.

Few gardeners are lucky enough to have such a perfect spot. The following suggestions will help you in selecting the best available garden site.

Avoid placing the garden in a low spot where neither water nor air will drain away properly. Such areas are slow to warm up in the spring because of poor air circulation and excess water and frost buildup.

A gradually sloping hillside with a southern exposure is a better location than a low, level area where there is no air drainage. A southern exposure receives the maximum amount of sunlight throughout the growing season.

Do not plant mid-summer vegetables, other than leafy crops such as lettuce, on the north side of a building or on the northern slope of a hillside.

The garden spot needs at least six hours of direct sunlight each day (eight to 10 hours is ideal). This means planting vegetables away from buildings, trees and other objects that would shade the garden area. If part of the garden must be in the shade, grow lettuce in the shaded areas.

Examine the potential garden site to see how it drains. Avoid areas that remain soggy after a rain. Loamy or sandy loam soil is preferable to a heavy clay soil. Solve minor drainage problems by adding organic matter to the soil.

Locate the garden away from trees and shrubs. Their roots will rob vegetables of nutrients and water.

Look for a site that supports lush vegetative growth, even if it

is in the form of dark, green, sturdy weeds. If weeds won't grow in an area, vegetables probably won't grow there either.

A nearby easy-to-use water supply is also important. Watering is necessary at planting time and for irrigation during the summer. If irrigating is complicated and time-consuming, the desire to keep the garden going may wane.

It's safe to plant gardens over drain fields of properly working septic systems, but take care to avoid disturbing the physical structure of the drain field. This means no deep plowing or rototilling. And don't plant root crops, such as potatoes, that grow below the soil surface. Digging potatoes at harvest time will disrupt the soil. Do not plant gardens on or near failing septic systems.

Finally, the closer the vegetable garden is to your back door, the more you will use it. It will be easier to take care of the garden and harvest crops at their prime.

OREGON STATE UNIVERSITY EXTENSION SERVICE



Oregon State University Extension Service
Master Gardener Volunteers

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Preparing Garden Soil

Making a poor garden better often begins with the soil. If good soil qualities are lacking in your garden, consider making a few amendments.

Good organic amendments (additions) for garden soils include wood by-products like sawdust and bark mulch, peat moss, rotted manure, grass or wheat straw and compost. Inorganic amendments include pumice, perlite, vermiculite and sand.

Adding organic materials to sandy soils improves their nutrient and water-holding capacity. Peat moss, with its high humus content, is the ideal amendment for raised beds or small gardens because it is nearly weed-free. However, due to its high cost, using peat moss to improve large gardens may not be economical.

Any composted material that has been reduced to humus is an excellent soil amendment. For example, rotted manures are an excellent soil amendment if they have been properly composted to kill weed seeds.

Unfortunately, many manures available to consumers have not been composted and contain large amounts of bedding materials like sawdust, wood chips or straw. These organic materials are high in carbon content and low in nitrogen, and will have a negative effect on plant growth unless extra nitrogen is added.

Microorganisms in carbon-rich amendments take free nitrate nitrogen out of the soil to build their own tissues. Therefore, no nitrogen is available for growing garden plants. And, no nitrogen will

become available to the vegetable crop until the excess carbon-rich organic matter breaks down.

The breakdown of organic matter high in carbon content would take years with the nitrogen naturally present in cattle or horse manure. The solution is to mix in additional nitrogen—at least six pounds of ammonium nitrate, or 10 pounds of ammonium sulfate per inch of organic matter applied over a 1000-square-foot area.

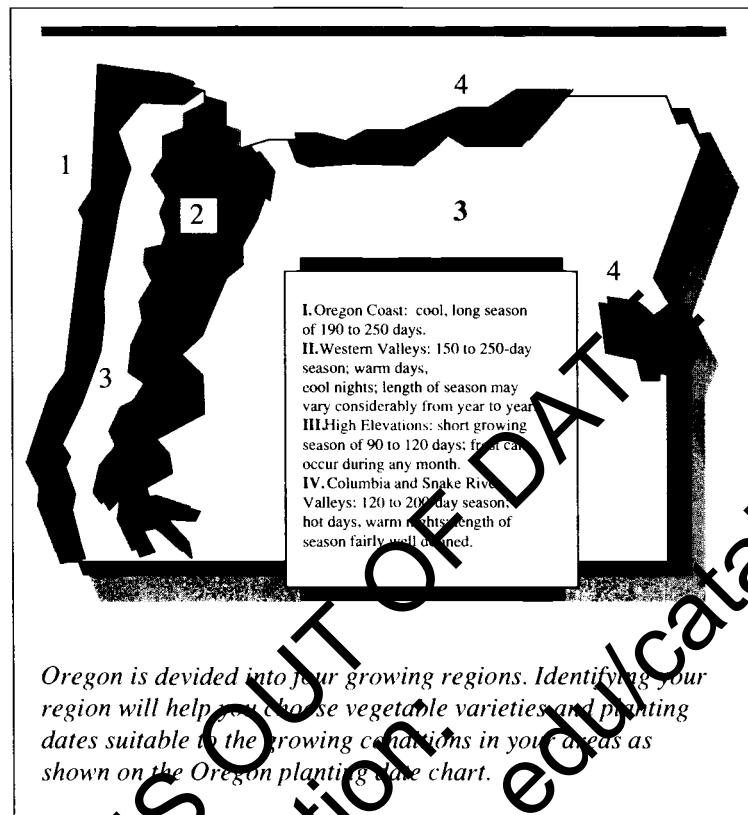
Heavy garden soils high in clay content have a high nutrient and water-holding capacity, but tend to crust and compact, and take a long time to dry out. Well-rotted manure or rotted sawdust improves the drainage characteristics of clay soil by increasing its porosity, water permeability and aeration.

Inorganic amendments such as perlite and vermiculite don't contain humus and don't contribute to its production. Inorganics function primarily as wedges that physically separate soil particles, increasing their porosity and aeration.

Sand is low in both water- and nutrient-holding capacity and causes finer silt or clay soils to compact. Mix sand with an organic amendment such as peat moss or sawdust to improve the sand's amending properties.

Rototill any amendment into garden soil thoroughly to prevent layering. Rototilling organic amendments into gardens in the fall will give soil microorganisms an early start on converting organic matter to humus. Another rototilling in the spring will complete a thorough mixing of the amendments.

Many gardeners ask how much of a given amendment is needed to make a significant change in the physical characteristics of a particular garden soil. The amendment added to your garden soil must equal at least one third of the volume of the soil you are amending. For example, to amend a garden 20 feet by 50 feet to a depth of four inches, you would need four cubic yards of a given amendment ($20' \times 50' \times 4" = 333 \text{ cubic ft.} \times .333 = 111 \text{ cubic feet} / 27 \text{ cubic feet} = \text{approximately } 4 \text{ cubic yards}$).



Follow Directions for Best Yields

Planting a vegetable garden is not a complicated and mysterious process, but success does involve following directions.

The planting directions printed on the backs of vegetable seed packets include three basic principles that will improve your chances of success.

Cover Crops

Another way of amending garden soils that requires minimum effort is planting a green manure cover crop. An excellent winter cover crop for western Oregon is crimson clover. Plant it no later than October 1 and water it in so the crop is established before cold weather sets in. When rototilled under in late April, crimson clover will produce three to four pounds of nitrogen per thousand square feet. Plant at a ratio of 1/2 pound of seed per thousand square feet.

Fava beans or Austrian winter peas make an excellent green manure crop for tilling under in the summer. Plant in early April at a ratio of 1/2 pound of seed per thousand square feet. Rototill the crop when it begins to bloom.

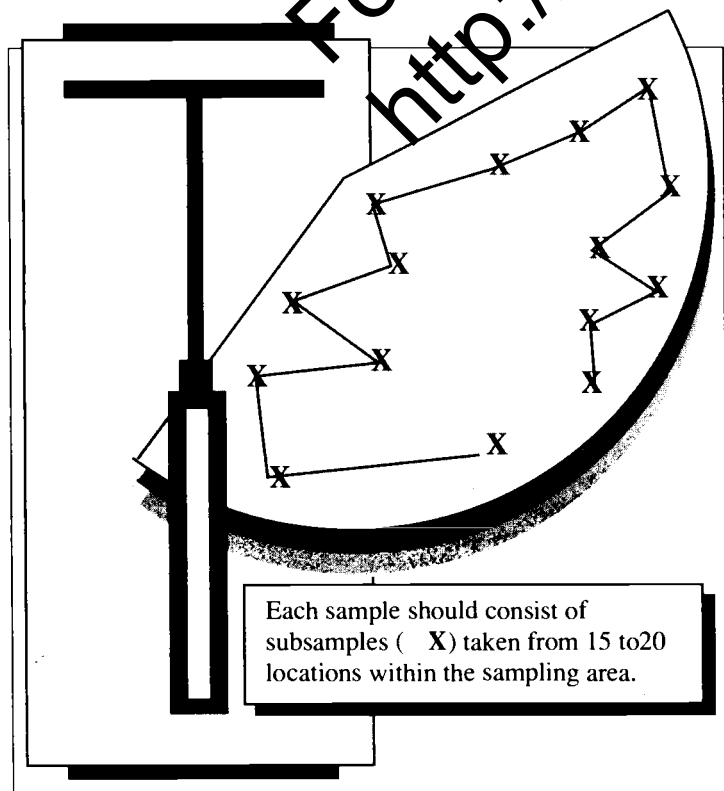
Rototill green manure crops at least two weeks before planting your garden. A final pass with the rototiller just before you plant is usually sufficient to prepare garden soil for seeding vegetables.

Never rototill a wet soil or you'll cause heavy clodding in the soil and a compacted "tiller pan" beneath the rototilled layer. A good seed bed contains loose and friable soil free of compacted lumps of soil or clods.

Soil Testing

Soil pH, a measure of soil acidity or alkalinity, is important in maintaining an available supply of plant nutrients. Soil pH below 7.0 is acid and above 7.0 is alkaline.

Most vegetables grow best in a slightly acid soil with a pH between 6.0 and 6.8. Soils with a pH above or below this range may have problems with the availability of phosphorus, boron, and most of the minor elements such as manganese and iron.



The best way to determine the nutrient status of your soil is to test it. Kits and instruments available from nursery and garden stores may give some indication of the soil pH or nutrient status.

However, the most accurate method is to have your soil tested by a commercial soil testing laboratory or by the soil testing laboratory at Oregon State University. The laboratory test will determine the available supply of plant nutrients, including phosphorus, potassium, magnesium, calcium and the soil pH.

Other laboratory tests available include those for lime requirement, boron, soluble salts, cation exchange capacity, organic matter, zinc and total nitrogen.

A soil test does not indicate the presence of insects or plant diseases. The test results are used to make recommendations for fertilizer needs and lime requirements. Soil tests prevent application of unneeded fertilizer and ensure proper nutrient levels for a productive, high-quality yield.

A yearly soil test is not required or recommended. Gardeners probably have a good idea of the fertility needs of plots they have successfully gardened before.

On the other hand, consider testing soil you are gardening for the first time. A soil test may also be needed if there are problems in the garden that you suspect are related to soil fertility.

The cost of a soil test varies with the number of elements to be tested. Detailed information is available at county Extension offices.

In the absence of soil test results, consider these suggestions: If the soil has not been limed during the last five to 10 years, apply 100 to 200 pounds of limestone or dolomitic lime per thousand square feet. For heavier soils use the higher rate. Mix the lime thoroughly into the top six inches of soil prior to planting. Lime is not needed each year. Its full neutralizing effect won't occur until one year after application.

Sulfur may be used to lower pH. To reduce the pH from 7.5 to 6.5 requires about 20 pounds of dusting or wettable sulfur per thousand square feet. Gypsum may also be used for this purpose.

Plant vegetables at the right time. Planting seeds at the time recommended on the seed packet or in OSU Extension publications will reduce the risk of frost or hot-weather damage to young plants.

Plant vegetables at the right depth. Vegetables planted too deeply take longer to come up, if they come up at all. There is also the chance that weeds may grow up first around the area and crowd out the vegetables.

Plant vegetables with small seeds, such as cabbage, carrots, radishes, and lettuce, 1/2 inch deep. Plant vegetables with medium-sized seeds, such as beets and chard, 3/4 inch deep.

Plant large-seeded vegetables, such as beans, corn and squash, 1 to 1 1/2 inches deep.

Plant vegetables the right distance apart, especially when planting in rows or wide beds. Correct spacing allows each plant to get its share of sunshine, water and nutrients from the soil. If you plant seedlings too close to each other, the vegetables will not grow as large as they normally would. Excessive tops on radishes or other root crops result from crowding.

Oregon Planting Dates for Garden Vegetables

Use Mulches to Advantage

A good layer of mulch can be your garden's best friend. Mulches reduce soil compaction and erosion, stop weeds, reduce water loss to evaporation and regulate soil temperature. Mulches of compost, bark, sawdust and peat moss also add organic matter to the soil and stimulate such soil organisms as earthworms.

Plastic mulches warm the soil during sunny days, permitting early growth in spring months when the soil normally remains cold. Clear plastic mulch warms the soil more than black plastic, but clear plastic also allows the growth of weeds underneath, creating competition with garden plants. Use black plastic to avoid the weed growth.

Organic mulches insulate the soil surface, so don't apply a sawdust, bark or compost mulch until the soil has warmed up. Apply organic mulches uniformly two to four inches deep over each garden row. You may need additional layers of mulch later to maintain weed control.

Grass clippings make an ideal mulch, but don't use clippings from a lawn treated with herbicides for at least two mowings after the treatment. Also, don't make a layer of grass clipping mulch deeper than one to two inches. Otherwise, the grass will pack together, repel water, smell bad and become slimy.

Row covers are a new type of mulching material that can help gardeners gain some growing days in early spring.

The terms "spunbonded polypropylene" and "spunbonded polyester," "nylon netting" and "perforated polyethylene films," describe the materials available to gardeners wanting to get an early spring start.

You can lay some row cover materials across wire supports to make a low tunnel over the planted row. Or use other row covers designed to lay directly over crops, "floating" above the plants as they grow.

Floating row covers warm the soil and air around the young plant, allowing it to grow much more quickly than uncovered plants.

Row covers allow gardeners to experiment with crops that require longer growing seasons, such as high-quality melons in western Oregon, or long-season tomatoes in eastern Oregon.

Another advantage of floating row covers is that they screen out pest insects, like the raddish maggot, wireworm, cucumber beetle and beet leafminer, that will damage garden plants.

Used properly, mulches can work wonders in vegetable gardens, not only in encouraging quick growth, but also in warding off plant-wrecking pests.



Vegetable	Start plants indoors this long before planting date shown for your area.	Oregon coast Astoria-Brookings Region I	Western valleys Portland-Roseburg Region II	High elevations, mtns. & plateaus of central & eastern Oregon Region III	Columbia and Snake River Valleys Hermiston-Pendleton; Ontario Region IV	Amount to plant for family of four (allows moderate amount for processing)	Distance apart in the row
Artichokes (globe)	Crown pieces	Aug.-Oct. May-June	Aug.-Nov. April-June	not suitable	not suitable	3-4 plants	48-60 inches
Asparagus	1 year	March-April	Feb.-March	March-April	Feb.-March	30-40 plants	12 inches
Beans (lima)	.....	not suitable	May-June	May-June	April 15-June	15-25' of row	4-6" bush 12-24" pole
Beans (snap)	.....	May-July	May-June	April-June	April 15-July	15-25' of row	2-6" bush 12-24" pole
Beets	.....	March-June	March-June	April-June	March-July	10-15' of row	12 inches
Broccoli	6 weeks	May-June	March-Aug.	April-June	April-July	15-20' of row	12-24 inches
Brussels sprouts	6 weeks	May-June	May-July	April-June	April-July	15-20' of row	24 inches
Cabbage	6 weeks	Jan.-April July-Sept.	April-June	April-June	April-July	10-15 plants	24 inches
Cabbage (Chinese)	4 weeks	July-Aug.	August	April-June	August	10-15' of row	6 inches
Cantaloupes	4 weeks	May	May	not suitable	May	5-10 hills	48 inches
Carrots	.....	Jan.-Aug.	March-July 15	April-June	March-July	20-30' of row	2 inches
Cauliflower	6 weeks	June & Jan.	April-July 15	April-May	April-July	10-15 plants	24 inches
Celery	9 weeks	March-June	March-July	May-June	June-August	20-30' of row	2 inches
Chard	.....	Feb.-May	April-July	March-June	Feb.-May	3-4 plants	12 inches
Chives	.....	April	March-May	April-June	Feb.-March	1 clump	Scatter
Corn (sweet)	.....	April-May	April-June	May-June	April 15-June	20-30' in 3 rows	15 inches
Cucumbers (slicing)	4 weeks	May-June	May-June	May-June	April 15-June	6 plants	24 inches
Cucumbers (pickling)	4 weeks	May	May-June	May-June	April 15-June	25' of row	6-12 inches
Dill	.....	May	May	May	May	25' of row	6-9 inches
Eggplant	8 weeks	not suitable	May	not suitable	May	4-6 plants	24 inches
Endive	6 weeks	March-July	April-Aug. 15	April-July	August	10-15' of row	10 inches
Garlic	.....	Nov.-Dec.	Sept.-Feb.	Aug.-Sept.	Nov.-Feb.	10-20' of row	3 inches
Kale	.....	May-July	May-July	May-July	May-July	20-30' of row	24 inches
Kohlrabi	.....	July-Aug.	April-Aug. 15	May	April to Aug.	10-15'	3 inches
Leek	.....	Feb.-April	March-May	April-June	Jan.-April	10 ft. row	2 inches
Lettuce, head	6 weeks	Feb.-July	April-Aug.	April-Aug.	Feb.-April	10-15' of row	12 inches
Lettuce, leaf	5 weeks	Feb.-Aug.	April-Aug.	April-Aug.	Feb.-April	10-15' of row	6 inches
Okra	8 weeks	not suitable	not suitable	not suitable	May	10-20' of row	18 inches
Onions	10 weeks	Jan.-March	Mar.-May	May-June	Feb.-April	30-40' of row	3 inches
Parsley	10 weeks	Dec.-May	Mar.-June	May-July	Feb.-May	1-2 plants	8 inches
Parsnips	.....	May-June	April-May	May	Mar.-June	10-15' of row	3 inches
Peas	.....	Jan.-Aug.	Feb.-May	April-June	Mar.-April	30-40' of row	2 inches
Peppers	9 weeks	May	May-June	May-June	May	5-10 plants	12-18 inches
Potatoes (sweet)	6 weeks	not suitable	not suitable	not suitable	May	50-100' of row	12 inches
Potatoes (white)	.....	Feb.-May	April-June	May-June	Mar.-June	50-100' of row	12 inches
Pumpkins	4 weeks	May	May	June	April 15-June	1-3 plants	48 inches
Radish	.....	All year	March-Sept.	April-July	Mar.-Sept.	4 ft. row	1 inch
Rhubarb	Crown piece	Dec.-Jan.	March-April	April	Feb.-March	2-3 plants	36 inches
Rutabagas	.....	July	June or July	April-May	Mar.-July	10-15' of row	24 inches
Spinach	.....	Aug.-Feb.	April & Sept.	April & July	Sept.-Jan.	10-20' of row	12 inches
Squash (summer)	.....	May	May-June	May-June	April 15-June	2-4 plants	48 inches
Squash (winter)	.....	May	May	May	April 15-May	2-4 plants	72 inches
Tomatoes	7 weeks	May-June	May	May	May	10-15 plants	36-48", closer if supported
Turnips	.....	Jan. & Aug.	Apr.-Sept.	April-May	Feb. & Aug.	10-15' of row	24 inches
Watermelons	4 weeks	not suitable	May	not suitable	May	6 plants	72 inches

Medford area planting dates may be 7-10 days earlier and extend 7-10 days later than dates indicated for western valleys.

Container Gardening

If you lack space for a garden, consider raising vegetables in containers. You can grow any vegetable in a container with enough preparation and care.

Start by finding a container large enough to support fully grown plants and with adequate soil-holding capacity to accommodate the plants' root systems. The container must have drainage holes.

You can grow vegetables in anything, including barrels, flowerpots, milk jugs, bleach bottles, window boxes, baskets, tile pipes and cinder blocks. For most plants, containers should be at least six inches deep.

A fairly lightweight potting soil is the best growing medium for container plants. Garden soil is too heavy for container growing. Most commercially sold potting mixes are too lightweight for garden plants because they do not offer adequate support for plant roots.

If you buy a potting mix, add soil or compost to provide bulk and weight. Or, mix your own with equal parts peat moss or well-rotted compost, loamy garden soil and clean, coarse builder's sand. Add a slow-acting, balanced fertilizer (slow-release synthetic or organic fertilizers work best) according to container size. Add lime to bring the mixture's pH to around 6.5.

The ideal vegetables for containers are those that take little space, such as carrots, radishes, lettuce, and parsley, or those that yield produce over a long period of time, like tomatoes, peppers, herbs and eggplant.

When planting, first carefully clean the container, then fill it to within one-half inch of the top with slightly dampened soil mix. Sow the seeds or set transplants. Gently water the soil with warm water, taking care not to wash out

the seeds. Label each container with the name and variety of plant and planting date. When seedlings have two or three leaves, thin them for proper spacing between plants.

Water container plants whenever the soil feels dry. Apply water until it begins to run out of the container's drain holes.

Container plants need more fertilizer than plants in regular gardens because the frequent watering leaches fertilizer minerals out of the soil. For best results, start a feeding program for container plants two months after planting. Use a water-soluble fertilizer at its recommended rate of

application every two to three weeks.

An occasional application of fish emulsion or compost will add trace elements to container soil. Do not add more than the recommended rate of any fertilizer. Too much may cause harm to plant roots.

Watch for and control plant insect pests. Place containers where they will receive maximum sunlight and good ventilation. During periods of high temperatures and bright sunshine, move the containers into shade during the hottest part of the day. Shelter plants from severe rain, hail and wind storms.

The versatility and mobility of a container garden allows you to grow a wider variety of vegetable plants over a longer time-span than the usual spring/summer/fall growing period. By starting your garden indoors in the spring, moving it outdoors for the summer and then back indoors in the fall for frost protection, you can use nearly every available growing day.

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Label container with variety and planting date.

Fill container with damp soil mix to 1/2" of top.

Drain holes in bottom of container.

Vegetables like carrots take little space.

Don't Let Physical Limitations Limit Your Gardening

Home gardening's therapeutic value is well known. Those who have tried gardening know the relaxation and satisfaction of leisurely working outdoors, planting, cultivating and harvesting garden plants.

However, for older persons or individuals with physical limitations, the pulling, bending and kneeling that gardening requires can turn this enjoyable activity into a daunting task.

The solution is to find ways to make difficult gardening tasks easier.

Gardeners with arthritis can soften joint pain by weeding with gloves that are one or two sizes too large. Insert foam padding into the roomy gloves to cushion your grip. Also choose light gardening tools with larger easy-to-grip handles.

Raised beds and adaptive tools are handy gardening alternatives for individuals in wheelchairs or those with limiting back or joint problems. When planting seeds, try using a three-foot long piece of PVC pipe about an inch in diameter. Cut one end diagonally. Use the pipe to make seed rows. Pour the seeds down the pipe as you go along the row. Then, on a second pass along the row, use the pipe to cover the seeds with soil.

Gardeners who tire easily can set a slow, steady pace that prevents fatigue. Even if it takes two weeks to prune a large shrub, the satisfaction is the same and the exercise is beneficial too.

Oregon State University Extension Master Gardeners are gathering information that can make gardening easier for persons with physical limitations. Whether you are tending gardens from a wheelchair, or with arthritic hands, a visual impairment or a heart condition, there are many ways to make gardening easier.

Do you know of some ways to make gardening less strenuous for persons with physical limitations? Please send your helpful hints to Master Gardeners Horticultural Therapy, Multnomah County Extension Service, 211 S.E. 80th, Portland, Oregon 97215.

Vigor a Key to Disease-free Garden

Promoting a healthy and vigorous garden is no accident. It is an art requiring attention, observation, planning and activity. The health of plants generally proceeds from two important sources.

The first source is genetics, which has to do with a plant's breeding or its inherited nature. The second is environment, which has to do with a plant's physical setting (where it is located in the garden) together with its cultivation (the way in which it is nurtured).

Here are some ways in which these two important elements, nature and nurture, can help you arrive at a healthy garden.

Nature

Always start with good quality seed or plant material free from physical defects, disease and insects. Poor quality and inferior seed and stock can frustrate even the most careful and consistent cultivation. With certain vegetables, such as potatoes, it is usually good insurance to buy certified seed vegetables which have been treated to prevent disease infection.

Certain other plants (such as tomatoes) are continually developed to improve their resistance to devastating fungus diseases like verticillium and fusarium, as well as to almost microscopic worms called nematodes. Reliable seed companies and nurseries are the best sources for disease-resistant seed and transplant stock.

Nurture

1. The first and last word is soil. Healthy plants do better in fertile, organism-rich soils. Constantly improve your soil's quality and life-giving potential. Replace the major and minor elements that crops

remove from garden soil along with the soil's organic content. This continual replacement process aids in increasing important soil microorganisms, many of which help prevent the development and spread of soilborne diseases.

2. Thin out overcrowded plants and remove weak and spindly ones. Overcrowded plants will not yield an abundant harvest. Weak, sickly plants are an attraction to both insects and diseases.

3. Rotate your crops. Diseases will often persist in areas where crops were planted the year before. In addition, crops that are heavy feeders often deplete soils of certain major nutrients and trace elements. Even though fertilizers are added each year, the quality and amount of subsequent yields may slowly diminish.

Soils need time to recuperate from these crop demands. Aid this recuperation process by rotating crops on a four-year basis. One example of a rotation might be: root crop, followed by leaf or seed crop, then cabbage family crop and finally legumes. Legume crops, like peas, help to fix and restore lost nitrogen in the soil.

4. Control weeds close to the garden. Weeds often act as a host or refuge for insects and a favorable environment for fungal, bacterial and viral diseases. Remove weeds before they become established. In the home vegetable garden the best and safest controls are mulches, timing and a sturdy but lightweight hoe with a gardener attached.

5. Sanitation, not sterilization, is the key word in any garden. Keep tools clean and in good working condition. Remove prunings, thinned plants, weeds and other garden refuse to the compost pile or other appropriate area.

Finally, cigarette smokers may transfer certain virus diseases from tobacco to tomatoes, peppers and eggplants when they handle them.

Washing the hands thoroughly before working in the garden prevents this transfer.

Recycle With Compost Pile

The compost pile is the home gardener's recycling factory. Instead of throwing away valuable organic materials, recycle them for use on the home landscape.

Compost is a good fertilizer and soil conditioner when worked into the garden soil, and it is an excellent mulch.

You can compost many types of organic materials. Sod, grass clippings (avoid clippings from lawns recently treated with weed killers), healthy leaves, hay straw, young weeds (avoid seed-laden weed material), manure, chopped corn stalks, shredded newspaper and many kinds of vegetable refuse from the kitchen are good materials for composting.

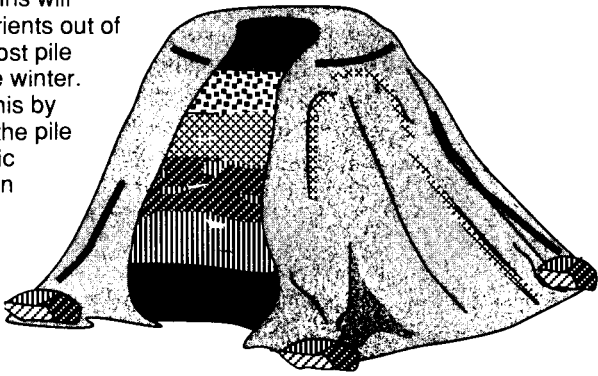
Oak, walnut and laurel leaves are slow to decay and do not make good composting materials.

Two bins are better than one for making compost. Make the bins four to six feet high, three to five feet wide, and any convenient length.

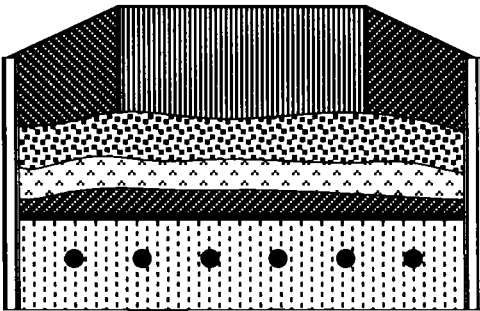
Fill one with alternate layers of organic material six to 12 inches thick and garden soil about one inch thick. Add a cup of fertilizer high in nitrogen, such as ammonium sulfate, for each cubic foot of compost material.

Lime is needed on some soils. Add two-thirds cup of lime per cu-

Steady rains will leach nutrients out of the compost pile during the winter. Prevent this by covering the pile with plastic sheeting in winter months.



Fill the compost bin with alternate layers of organic material 6-12 inches thick and garden soil about one inch thick.



bic foot of compost. However, don't lime compost that might be used around some ornamentals that do not tolerate lime.

The use of animal manure in compost reduces the amount of fertilizer you would normally add.

Moisten the organic material thoroughly and repeat the layering process until the bin is full. Pack the material tightly around the edges, but only lightly in the center. The center of the pile will get more

than the edges, thus preventing water from running off.

Although the compost pile needs watering periodically during the summer, steady rains will leach nutrients out of the compost during the winter. Prevent this loss by covering the pile with plastic sheeting during the winter months.

Shredding or otherwise converting the material into small particles speeds up the composting process.

Autumn leaves may not compost completely during the winter. Turn them over every month or so to promote decomposition. To turn, fork the material from one bin to another with the drier outside portion placed in the center.

When all of the ingredients have decomposed to a uniform, loamy appearing material, the compost is ready to use.

Tilling Advice

Tilling the garden performs a number of necessary functions. It mixes manures, fertilizers, compost and clippings into garden soil. And, it temporarily loosens the soil and helps control weeds that compete with crops for moisture and nutrients.

Frequent tilling, however, may do more harm than good.

Soil loosened by cultivation usually returns to its original condition after one or two irrigations. Continued tilling tends to destroy the structural qualities of a soil and may eventually leave you with a soil that is better suited to making bricks than producing crops.

Till garden soil only when it will accomplish some useful purpose, such as turning under organic matter, controlling weeds, breaking crusted soil for water penetration, or loosening a small amount of soil for planting seeds.



Watering Vegetable Gardens

Deciding how often to irrigate the garden and how much water to apply each time is a more complex task than it appears. Irrigation needs vary with different soil types.

For example, sandy soil will hold just under one inch of water per foot of soil, loamy soil about 1 1/2 inch, and clay soil two or more inches of water. Therefore, water sandy soils more often. Water clay soils less often, but apply more water to saturate the ground.

Rooting depth is also a factor in deciding how to irrigate the garden. Corn, tomatoes, asparagus and rhubarb have deep root systems that allow them to draw water from the top two feet of soil. These crops need water less frequently than other vegetables such as lettuce, beets, green beans and chard. The root systems of these plants are shallow, drawing water from the top foot or less of soil. Additional factors in garden irrigation planning are climate conditions—wind and temperature. Wind and warmth cause rapid loss of plant moisture to evaporation.

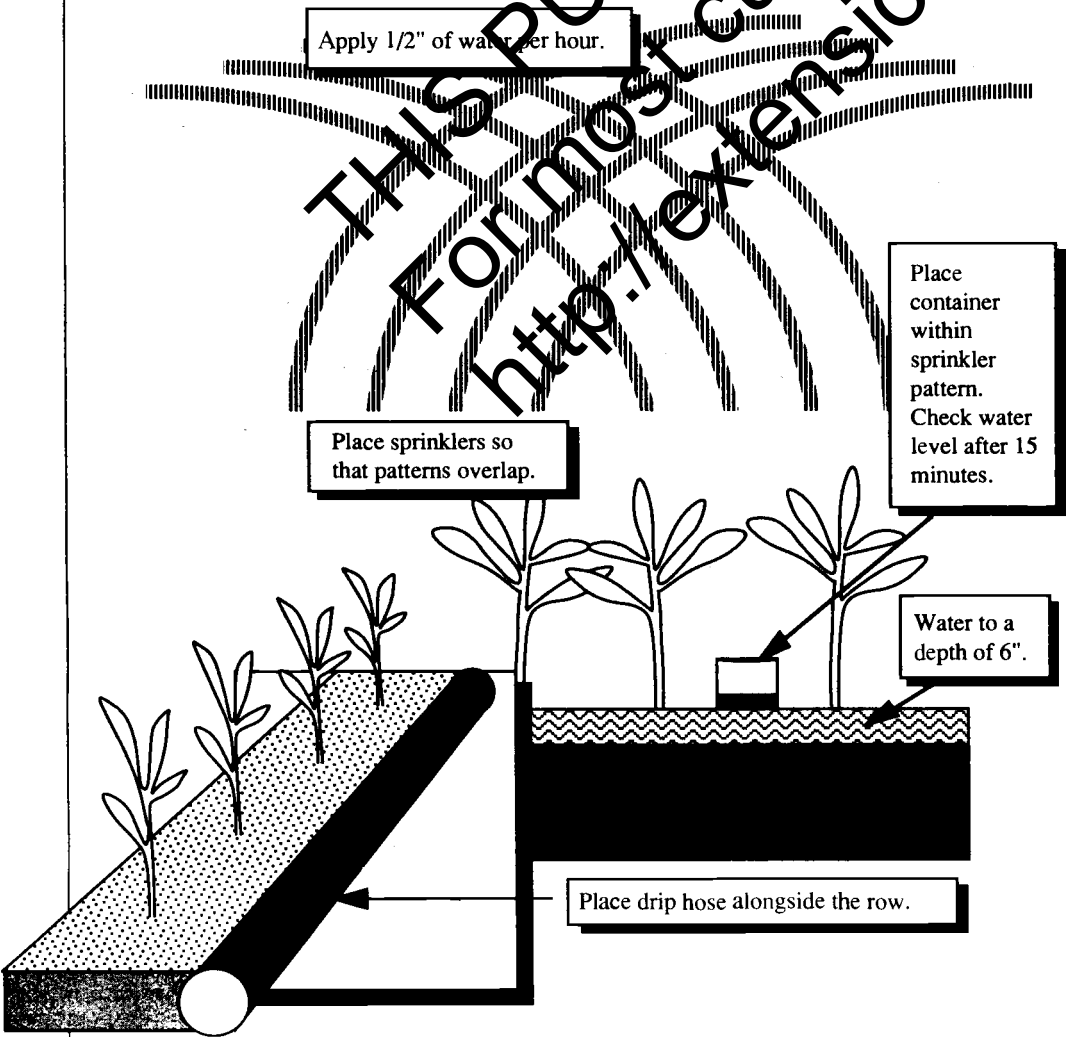
Use plant symptoms as a guide to irrigation. When short of water, many plants become dark bluish green in color, or wilt, or both. These symptoms appear first during the hottest part of the day. When you notice either symptom, it's time to irrigate.

Each irrigation should provide only enough water to replace what the plants and evaporation have taken. Give the soil a thorough soaking and don't water again until needed. At least one inch of water every five to seven days during the hottest part of the growing season is recommended.

Consider these basic garden watering guidelines:

1. Apply 1/2 inch of water per hour to avoid runoff from sloping gardens. Determine the rate of water delivery from sprinklers by placing small cans in the sprinkler pattern. Check the water level after 15 minutes.
2. Place oscillating sprinklers above the garden's tallest plants to prevent them from blocking the spread of water throughout the garden. To avoid dry spots, place sprinklers so their patterns overlap.
3. For best results with drip hoses, place them alongside the row.
4. Soak the soil at least six inches deep each time you water.

Be aware that water needs of vegetable plants are greatest at time of planting and during development of flowers and fruits.



Extension Gardening Program

The aim of the Oregon State University Extension gardening program is to help beginning and experienced gardeners alike get the most from their efforts, not only in terms of productive harvests and aesthetically pleasing landscapes, but also in personal satisfaction.

The gardening program is one of many Oregon State University Extension programs in agriculture, forestry, home economics, energy, community development, marine advisory and 4-H youth development that bring practical knowledge to people throughout Oregon. These informal education programs extend the expertise and knowledge of Oregon State University and the Land Grant University System to all areas of the state.

The Extension gardening program has been expanding rapidly in response to public demand. National estimates indicate that well over 50 percent of American households are engaged in some type of gardening activity. In Oregon, the percentage is as high or higher.

Oregon State University Extension Service offers educational programs, activities, and materials—without regard to race, color, national origin, sex, age, or disability—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.

Gardening in Central and Eastern Counties

Although it may not be a gardening paradise, central and eastern Oregon are more than a wide expanse of high desert. Vegetable and fruit gardening success is possible east of the Cascades if you observe the area's special and widely varying climate and soil characteristics.

Growing seasons may be as short as 80 to 90 days in central Oregon and in high elevation areas of several eastern counties. In some of the lower elevations and river valleys, growing seasons may exceed 125 to 130 days.

Also, high fluctuations in daytime and nighttime temperatures, often as much as 40 to 45 degrees, affect vegetable and fruit production on the east side. Cool nights reduce the chances of successfully growing vegetables that like warm nights, such as lima beans and eggplant.

Gardening Along the Columbia River

For gardens in lower elevation areas along the Columbia River, frost and cold are not the main enemy. In the river gorge, beginning in mid-spring and extending through summer, heat and steady winds buffet gardeners trying to establish fruit and vegetable plantings.

Starting a garden in a steady 20-mile-an-hour breeze with temperatures approaching the mid-80s can be a challenge. Frequent, light waterings are the only way to keep seedlings from drying out. Place a rock or secure a roofing shingle on the windward side of seedlings to break the wind and help plants become established.

As the season progresses and temperatures rise above 100 degrees, protection from wind and heat becomes critical. Plants can wilt and die quickly if not properly cared for. Give established plants plenty of water. Sprinkler irrigation 60 to 90 minutes at a time, three times a week, will keep plants growing vigorously.

For season-long protection from the wind, plant a hedge that will grow 4-5 feet high on the west side of the garden. It will provide some wind protection yet allow plenty of light to reach garden plants.

Planting Dates

Planting dates for the high-elevation, short-season areas generally lag behind those in other parts of the state. In high areas, gardens are usually planted from mid-May, for cold-tolerant plants, to mid-June. Later plantings often fail to mature because of fall frosts.

Short-season vegetable varieties offer the best chance of success. For example, cool nights during the growing season may cause a 65-day tomato to require 75 to 80 days, or more, to mature.

Root crops like potatoes, carrots and beets, or cold-tolerant crops like cabbage, chard, leaf lettuce and kohlrabi do quite well in high-elevation gardens.

Use plant protection devices, such as row covers, hotcaps and Walls-o-Water, to extend the grow-

ing season for vegetables requiring longer periods to mature.

Concentrate on those vegetables adapted to your particular area. Avoid planting vegetables that require special, intense, or improved growing conditions.

In areas along the Columbia River, where the growing season approaches or exceeds 120 days, planting dates can be moved up into early May.

Tree Fruits and Berries

Survival of fruit trees in the short-season areas is not usually a problem. However, fruit production can be inconsistent. Spring frosts during the bloom period cause most production failures. Late-blooming tree fruits sometimes encounter early fall frosts before maturity.

Microclimates also occur. They create small geographic areas of moderate weather, making tree fruit production quite successful in some locations and all but impossible in others.

Berries, particularly strawberries and raspberries, are good selections for dependable fruit production in many eastern Oregon areas.

Soil Types

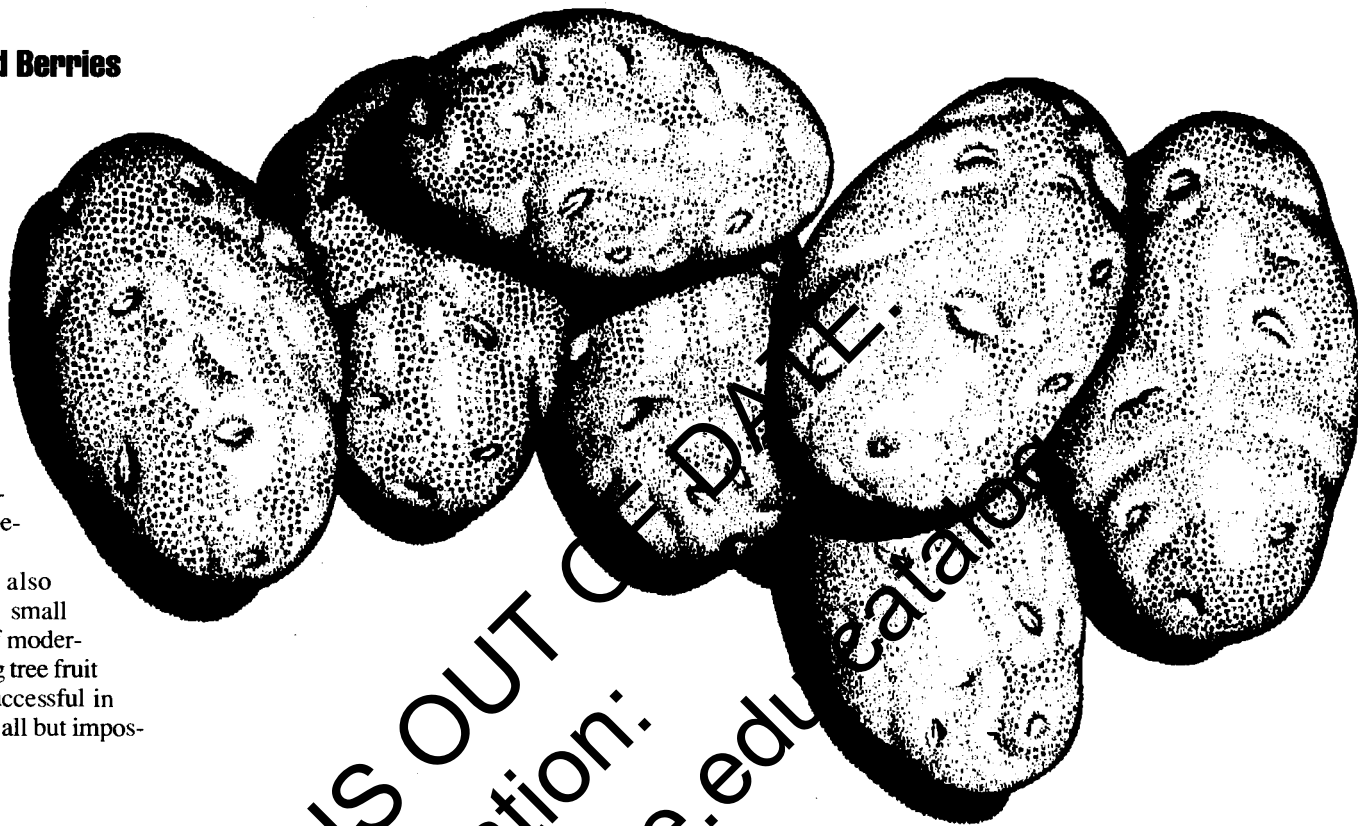
Soil types in central and eastern Oregon vary widely. Light-textured soils, low in organic matter, nutri-

ent content and water-holding capacity, are found in parts of central Oregon and the eastern Columbia Basin area. These soils may require frequent applications of fertilizer and water.

At the other extreme are the heavy soils, high in soluble salts (which create an alkaline problem), found in many eastern Oregon areas.

Additions of organic matter in the form of manure or compost is generally beneficial on most central and eastern Oregon soils.

Specific information for each area is available from county offices of the Oregon State University Extension Service or from local garden centers.



Intensive Gardening Methods

When gardening space is limited, use intensive gardening methods to grow more produce in a limited area.

Intensive gardening means placing plants closer together, either by narrowing the space between rows or by placing plants closer together in the row.

Intensive gardening may also include the use of season-extending plant protectors, such as hotcaps or row covers, or the use of applied heat and light to enhance plant growth.

Don't forget that intensity of planting must be accompanied by an intensification of the care, fertilization, irrigation and weeding that all gardens need.

Raised Bed Gardening

The raised bed system is an intensive gardening concept that permits better water drainage and early warming of the soil. If your garden area is poorly drained, raised beds are a relatively simple way to solve drainage problems.

Construct raised beds by mixing decomposed organic matter into the soil, along with fertilizer and other amendments such as ground lime or sulfur. Then, dig aisles between beds, shoveling topsoil from these paths up onto the beds. Finished raised beds should be eight to 12 inches higher than the paths, with a planting area three to four feet wide and whatever length you desire.

Try one or two beds first. If you like the results, add on more next season. Plant the beds with several rows or broadcast seed in a wide

strip. Space plants at equal distance from each other on all sides so leaves will touch at maturity.

Raised bed gardening allows you to break gardening chores into units. Instead of having to weed the entire garden, do one bed today, another tomorrow.

Vertical Gardening

Vertical gardening, using trellises, nets or string to support plants, gives a multi-level aspect to gardening. This intensive technique allows you to gain gardening space by going up.

Vining and sprawling plants, like cucumbers, tomatoes, pole beans and melons, are obvious candidates for training on supports. Some plants entwine themselves onto the support, while others require tying.

Vertical plants cast shadows, so don't plant shade-intolerant plants on their shady side.

You may need to irrigate and fertilize vertical gardens more frequently because more plant foliage is being grown in less garden space and it is elevated where it gets more exposure to wind and sun. This causes the plant to use water more quickly.

Interplanting

Interplanting two or more types of vegetables in the same place at the same time is another way of intensifying your gardening efforts. Careful planning is essential to making this system work.

For example, consider interplanting a row with peppers and

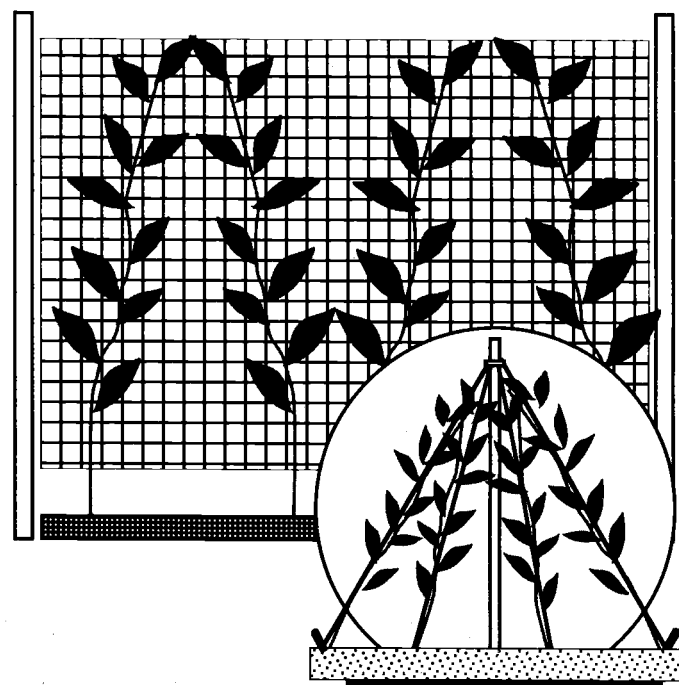
onions. You can harvest the onions green, leaving the peppers the space they need for full development. Or, plant a shade tolerant vegetable like lettuce in the shadow of taller crops like sweet corn or pole beans.

Factors to consider are length of the plant's growth period, the plant's growth pattern (tall, short, below or above ground) and possible negative effects of plants on

other plants (like the allelopathic effects of sunflowers and Jerusalem artichokes on nearby plants). Also, consider the plant's preferred season, and its light, moisture and nutrient needs.

When interplanting, don't defeat your purpose by crowding plants together without supplying the extra care—watering, weeding, fertilizing—that a double population of plants will require.

Vertical Gardening



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Gardening in the Rogue Valley

Gardeners in the Rogue Valley enjoy an excellent climate for gardening and a wide variety of fertile valley soils. Warm, sunny weather in late spring, summer, and early fall provides good growing conditions with a minimum of garden plant diseases. Year-round gardening is also possible, with mild winters where temperatures seldom drop below 20 degrees.

Variety of Soils

Rogue Valley soils range from sandy loam to heavy clay. Most of the clay soils originate from rocks of ancient volcanic activity in the Cascade Mountains. Granite soils are from older, more durable, and slowly weathered rocks of the Siskiyou Mountains. The granite rock materials formed sandy loam soils that drain well but are not as rich in nutrients as clay soils. Gardeners usually prefer loam or sandy soils.

Clay soils drain and dry slowly. When wet, they are sticky and difficult to garden. "Heavy" clay soils live up to their name when gardeners try working them too early in the spring. Work clay soil when it's too wet and it will make a poor seed bed of hard clods. Prepare garden soil when it's no longer sticky and when a handful squeezed together does not form a hard lump.

Improve heavy clay soils by adding organic matter, an excellent soil amendment regardless of soil type. In well-drained granite soils organic matter improves water retention, while in heavy clay soils organic matter improves soil drainage.

Soils that drain well will warm faster in the spring, but may become too warm for some crops during midsummer. Experienced

gardeners rotate from cool to warm season crops in early summer to gain the advantage of increased soil temperature.

A Mild Climate

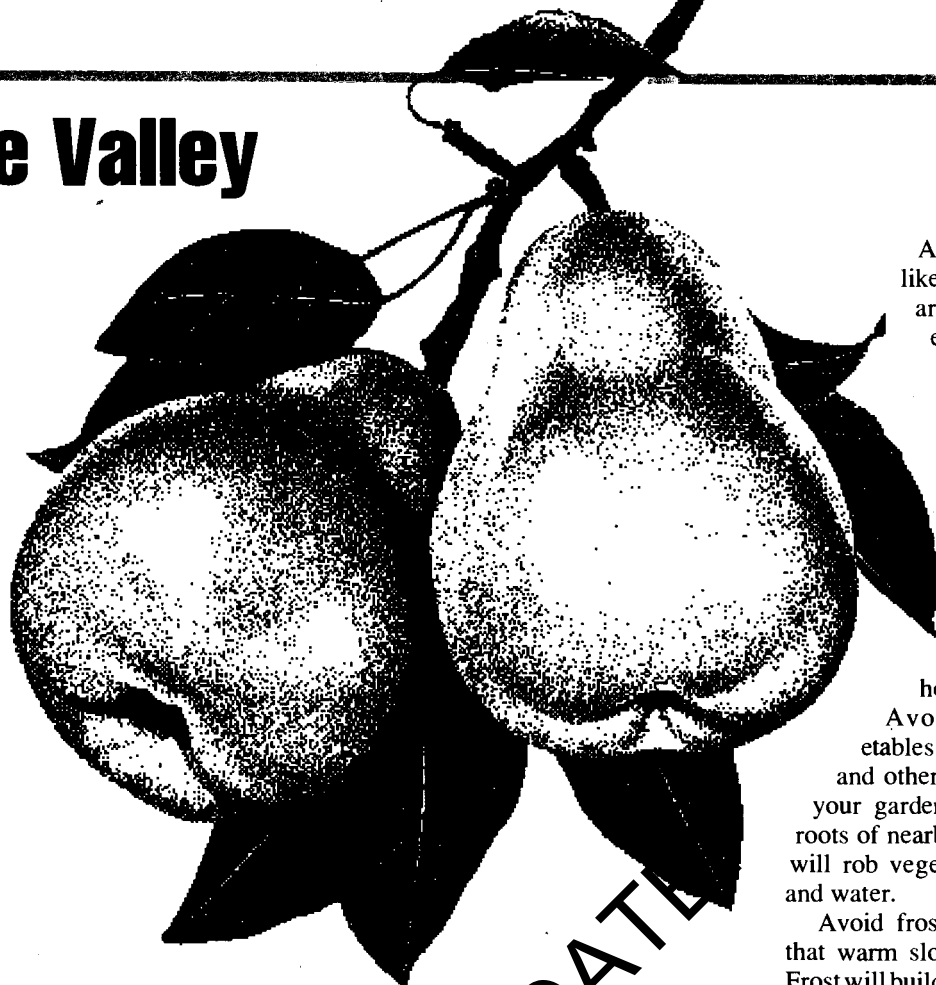
The Rogue Valley climate is influenced by the nearby Pacific Ocean, with its marine warmth in winter and cool but dry air in summer. The moderating air mass is carried onshore by prevailing westerly winds.

In spite of some rather warm midsummer days, the growing season's average daily temperature is 70 degrees. These warm days are offset by cool nights, as cold air drains down from the surrounding mountain slopes.

During early summer these cool nights may prevent fruit set for crops such as tomatoes. Sufficiently warm nights will eventually prevail, however, and tomato fruit will be set by midsummer.

It's possible to grow winter garden crops successfully in the Rogue Valley during most years, and such crops can be grown in the valley consistently if they are given some protection, particularly on days of extremely low temperatures. Although annual extreme lows range between 10 and 20 degrees, the average daily temperature dips only slightly below freezing during the coldest months of December and January.

The frost-free period is 165 to 170 days, beginning about the first of May and ending in mid to late October. This varies slightly from one location to another in the valley. These dates are critical for growing tomatoes, corn, potatoes, squash, cucumbers and other warm season crops susceptible to frost injury. Try to select vegetable varieties that will mature within the frost-free period.



Since 75 percent of the average annual rainfall comes between November and March, take advantage of breaks in the weather to prepare your garden for a mid-February planting of peas and onions. Avoid early planting in areas that remain soggy after a rain.

Plant corn and potatoes around mid-April even though near- or below-freezing temperatures may still occur. The first plants may be nipped back, but damage will be minimal and plants will continue to grow and emerge from the ground until the onset of the frost-free period.

Other warm season crops do best with mid-May to early June plantings, when there is less chance of frost and when warmer soil conditions prevail.

Rogue Valley fall weather is ideal for cool season crops. Try a

midsummer planting for fall harvest. Midsummer planting of cool season spring crops is also recommended where soggy soils prevent early gardening.

Choice of Garden Site

Due to variations in the topography of the valley floor, foothills and mountainous areas, and tree density on forested sites, the Rogue Valley offers varied microclimates of sunlight exposure, temperature, humidity and air drainage.

Select your garden site with care and take advantage of the climatic variation within your yard. It may determine your success as a gardener. For example, the south side of a house or slope is a warmer site than the north side. A southern exposure receives maximum sunlight through the gardening season.

Also, plant crops that like more warmth in an area with southern exposure. Plant shade-tolerant leafy vegetables on the north side of a building or on a north slope.

Locate your garden where it will receive at least six hours of sunlight each day (eight to 10 hours is preferred).

Avoid planting vegetables near buildings, trees and other objects that shade your garden. In addition, the roots of nearby trees and shrubs will rob vegetables of nutrients and water.

Avoid frost pockets or areas that warm slowly in the spring. Frost will build up in areas lacking air drainage, such as low spots at the base of a hill or at the foot of a slope bordered by a solid fence.

Wherever you locate your garden, be sure a readily available supply of water is nearby. Garden soil on hot and windy sites in the Rogue Valley may lose up to half an inch of water per day. Since there is very little rainfall during the summer, watering is necessary at planting time and throughout the summer. If watering your garden is difficult and time-consuming in the spring, it may become more work than you want to do during the hot days of July and August.

Place your garden where it will catch your eye and remind you of its needs.

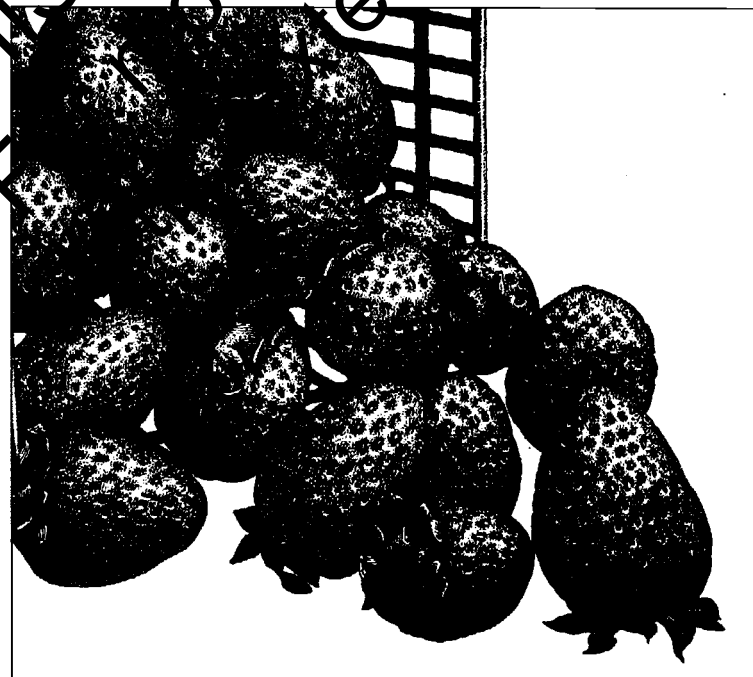
Gardening on the Coast

Gardening on the Oregon coast isn't impossible. On the other hand, it isn't easy, either. The wind, fog, and cool temperatures are natural obstacles to gardening success. However, if you match plant needs and garden design and placement to coastal climate conditions, home gardening by the beach can be a rewarding experience.

Garden plants need sun, moisture, and nutrients to grow vigorously. If any of these requirements are present in too little or too large a quantity, problems result.

Lack of sunlight and warmth are often limiting factors on the coast. Removing trees can sometimes make a big difference. Orienting the garden rows in a north-south direction helps maximize sunlight exposure to all parts of the garden.

Make the most of available heat by planting on the south side of a wall or building. Plastic hotcaps, cloches or row covers, and small greenhouses can modify the planting environment to increase heat. Be sure to provide ventilation when using plastic coverings, or plants will dry out.



High rainfall in the spring is a problem where soils drain slowly. Add organic matter and use raised beds to improve soil drainage.

Soil in raised beds drains better and warms more quickly in the spring. Raised beds also offer a larger planting area when only a small garden space is available.

Many coastal soils are sandy and do not hold water well. Gardens on these soils need additional organic matter and frequent watering during the drier summer months.

A lack of nutrients limits plant growth in any gardening environment. Be sure to apply adequate fertilizer to coastal gardens during the growing season.

Wind protection is essential on the coast. Wind causes moisture to evaporate from plant leaves more quickly than roots can take in new moisture. This causes drought stress, which in windy areas may occur even when the ground is saturated with moisture. Place small fences, tires, or other objects around plants to break the wind.

Coastal gardeners use shade cloth, snow fencing, and many other permeable materials to protect young plants in windy locations.

A key detail in coastal gardening success is the selection of appropriate varieties. Cole crops, root crops, lettuce, peas, spinach, zucchini squash, leeks, and onions do well on the coast.

Tomatoes and corn will do well if you use short-season varieties and some type of row covering to speed germination and early growth.

Select fruit trees carefully for coastal orchards and gardens. Pick varieties that are less susceptible to diseases currently found in wet, mild climates. Good examples are the scab-resistant apple varieties, such as Prima, Liberty, and McShay.

Hoeing Best for Weeds

Preparing to attack weeds in the backyard garden? Put away the sprayer and grab the hoe.

The use of herbicides to control weeds on such a small scale isn't practical. The problem is that most home gardens have at least a dozen or so vegetable varieties—few of which tolerate the same weed control spray.

Nor is there any one weed spray for all of the weeds that compete with vegetables.

Weeds are best controlled by shallow and frequent cultivation, ideally with a hoe. It may be hard physical work, but it's more economical and efficient than modern herbicides. Once weeds are removed, keep them out by using mulching materials to control weed seedlings.

Also—avoid the use of fertilizers containing weed killers.

Don't Let the Bugs Beat You to It

Preventive medicine is a good thing, but not when it comes to insect control in the home garden. Don't apply pesticides as a matter of course. Use chemicals only when you know that insects are present and causing damage and there are no other means of control.

You can beat the bugs by monitoring your plants—carefully and regularly checking them for both beneficial and pest insects. Catching pest infestations early will make control easier. Covering planted rows with "floating row covers" helps keep insects from infesting young plants.

Some fruits and vegetables need less watching than others. Melons, corn (except for ear worms), cucumbers, and squash are relatively safe from insects. Once tomatoes are past the flea beetle and cutworm stage, they too are not as vulnerable.

On the other hand, various types of insects love to feast on broccoli, cabbage, cauliflower, peas, and—late in the season—green beans and turnips.

Here are some of the most common insect pests and control measures for each.

Cabbage maggot

The underground larvae inflict damage on cabbage family varieties and radishes. Flies lay eggs that develop into the maggots on plant stems or near ground level.

The adult fly is susceptible to dusts or sprays of methoxychlor, diazinon, or malathion. Several Applications at 10-14 day intervals should eliminate the problem. A soil treatment with diazinon at planting time will also control the maggot. Surrounding the stem with paper collars may help deter downward movement of the maggot.

When transplanting sets, ring the base of each plant with one-half teaspoon of diazinon dust, or spray one-half cup of liquid diazinon at the base of each transplant.

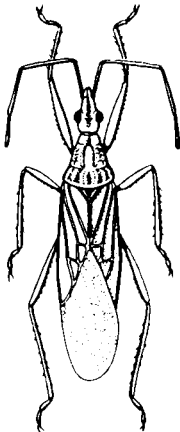
Destroying crop refuse and trash in the fall will help eliminate overwintering sites for these pests. Control of wild mustard around the garden will also help reduce cabbage maggot fly populations.

Beneficial Garden Insects

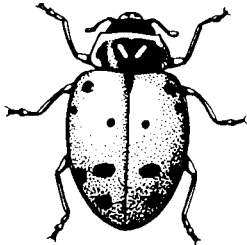
These are beneficial insects, not pests. Beneficial insects feed on pest insects and help the gardener with pest insect control. Try to avoid killing beneficial insects.

Drawings reproduced from *Insects and Mites of Economic Importance in the Northwest*.

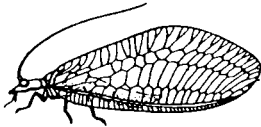
Western Damsel Bug
Heteroptera: Nabidae
Nabis alternatus Parshley



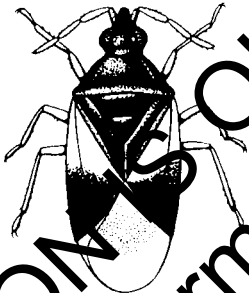
Lady Beetles
Coleoptera: Coccinellidae
Hippodamia spp.
Coccinella spp.



Green Lacewing
Neuroptera: Chrysopidae
Chrysopa spp.



Minute Pirate Bug
Heteroptera: Anthracoridae
Orius tristicolor (White)



Garden symphylan

This is a small, 17-legged insect, about one-quarter inch in length, that lives in the soil. It often arrives in the garden in manure taken from an old pile.

These pests feed on the roots of many garden plants, causing stunting or death. They are hard to find, but evidence of their presence will be short stubby roots and a stunted plant. Because symphyllans do not make their own tunnels through the soil, some control is possible through frequent tilling or discing of the soil to break up natural runs or galleries.

When "symps" are known to be present, a preplant application of diazinon followed by discing or tilling into the top few to six inches of soil, will help.

Natural enemies feed on symphyllans, but the populations of these enemies are not sufficient to reduce heavy infestations.

Flea beetle

This tiny, blue-black beetle eats holes in the leaves of many garden vegetables. Potatoes are especially susceptible to the larvae.

In cole crops, a dust or spray of Sevin, diazinon, or rotenone will control the insect. Potato plants require three applications of Sevin or diazinon at two to three week intervals. Apply the first treatment when flea beetle damage is discovered.

Cutworm

Several species of cutworms damage crops by cutting off seedlings at the soil line, eating holes in edible roots, and feeding on foliage. Treating soil with insecticides at planting time does little good.

For cutworm control in small areas, hand-pick climbing cutworms from plants during the evening, or scratch the soil to uncover them during the day.

For additional control, place a stiff three-inch-high cardboard collar around the stems of young plants and push it down one inch into the soil.

A spray or dust of Sevin or *Bacillus thuringiensis* (Bt)—on the infested soil if cutworms are cutting plants below ground level, on the foliage if they are the climbing type—will also help.

Aphid

Aphids come in a variety of colors. Black aphids infest green beans late in the summer. Green aphids infest cabbage family plant varieties and are especially distasteful on broccoli and cabbage, where they hide within the head.

Malathion, diazinon and insecticidal soap will control aphids. Also limit damage through frequent removal of aphids with a stream of water from the garden hose. Resident ladybird beetles and other predators may substantially reduce aphid populations. Take care to protect and encourage these predators.

Cucumber beetle

This is a green "ladybug" with black spots. It damages vegetables by chewing holes in leaves. Use Sevin, diazinon, or rotenone for control.

Cabbage worm

These larvae attack cabbage family plant varieties. Coverplants with nylon net to prevent the butterfly (adult stage of the cabbage worm) from laying its eggs on plants.

Diazinon, Sevin, *Bacillus thuringiensis* (Bt), rotenone, malathion, and methoxychlor will also control these pests.

Spray new growth early and frequently with spores of *Bacillus thuringiensis* (Bt) to control many of the leaf-eating cabbage worms. The pesticide Bt is nontoxic to humans, wildlife and unrelated insects. Trade names include Dipel and Thuricide.

Alternative Insect Control for Gardens

Several alternatives to synthetic pesticides are available for home gardeners who wish to avoid chemical control of insect pests. All require more work and a better-than-average knowledge of the insect world. Simply knowing which insects are detrimental to the home garden, and which are beneficial, can go a long way in helping you protect garden vegetables from hungry bugs.

Start by deciding how much insect damage is acceptable. Plant extra vegetables to compensate for the projected loss. Try the following suggestions to minimize further losses.

1) Exclude insects from plants by using fiber materials, row covers or other types of barriers such as plastic bottles and hotcaps.

2) Use biological controls like insect predators (beneficial insects), parasites, nematodes, and beneficial animals, such as birds, geese, and chickens, to reduce pest insect numbers.

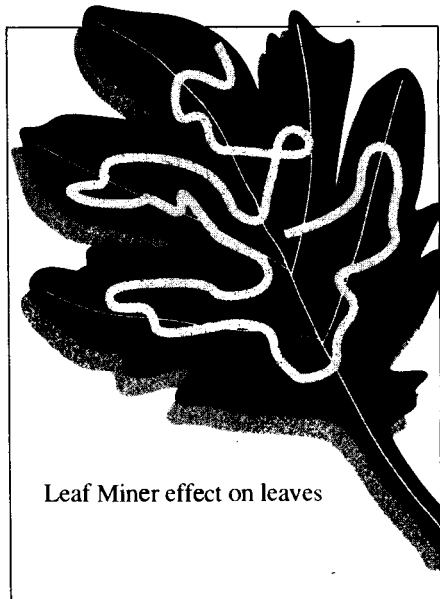
3) Select insect- and disease-resistant vegetable varieties. Avoid those plants that attract insects or are susceptible to diseases. Wireworms, symphylla, cabbage maggots, onion maggots, and other soil insects can damage tuber and root crops (potato, carrots), and infest or kill cole crops (radishes, cauliflower, cabbage, broccoli, turnips, rutabagas). Beans, beets, chard, peas, cucumbers, spinach, and squash are more insect-resistant.

4) Use pheromone traps and yellow sticky boards to catch insects and disrupt their mating cycle. Pheromone traps catch adult insects, indicating when a particular insect is present. Yellow sticky boards help identify types of pest insects as they emerge.

5) Keep plants healthy by watering enough to keep garden soil

moist. Fertilize and thin plants to reduce competition for moisture and nutrients. Removal of weeds will help conserve soil moisture and eliminate hiding places for pest insects.

6) Keep the garden sanitary by removing any plants that become infested with insects. For example, root maggots may infest radishes or turnips, making the plants all but useless. When the harvest of a crop is finished, remove all left-over plant residue.



Leaf Miner effect on leaves

7) Avoid growing the same types of vegetables in the same spot year after year by rotating crops in the garden. A four-year rotation is best. Avoid large plantings of any one crop.

8) Use registered insect control materials that occur naturally in the environment, such as pyrethrins, rotenone, ryania, sabadilla, insecticidal soap, *Bacillus thuringiensis* (Bt), diatomaceous earth, and elemental sulfur. All are somewhat effective on garden insects. Many of these products are available at garden stores.

9) Hand-pick insects off garden plants or knock them off plants with a stream of water from the garden hose. Destroy the pest or it may come back.

Training Program Develops "Master Gardeners"

The Oregon State University Extension Master Gardener program is in its second decade of training volunteers to answer home horticulture questions. These Master Gardener volunteers receive training from Extension agents, Extension specialists and others who are recognized experts in their fields. The program is offered in 23 counties.

Master Gardeners return volunteer time to the OSU Extension Service equal to the number of hours of training they receive. They help Extension agents extend garden information to their communities at county Extension offices, garden centers, county fairs and other special activities. Some county Extension offices charge a fee to cover the costs of instruction and printing of materials.

If you are interested in gardening and have a desire to help others, consider becoming a Master Gardener. Call your local county office of the OSU Extension Service for more information.