

areas and erosion rills and mulch with straw. Fertilize grass and mow regularly. The pipe spillway, valves, and watering trough should be maintained free of debris at all times.

Inspect your pond frequently and make repairs as needed. In this way you will avoid the big repair jobs that result from neglect.

For information on technical assistance, pond design, stocking and management of fish, and planting of grass and other vegetation adapted to your area, consult your local soil and water conservation district office, your county Extension office, or the local office of the Soil Conservation Service.

Vegetable Gardens: A Happy Escape, Especially If the Harvest Is Good

VEGETABLE GARDENING is the relaxing art and science of turning a love for growing plants into a productive activity.

A combination of attributes make it a national hobby with both young and old. For an ever-increasing number of individuals, seed catalogs and the thoughts of spring gardening provide a happy escape from the winter doldrums.

Vegetable gardeners unanimously agree that many home-grown vegetables picked at their peak of maturity have quality seldom found in vegetables purchased from commercial markets. From spring through late fall, a well-planned and maintained garden can provide a supply of fresh vegetables, thus increasing the nutritional value of the family diet. Freezers make it possible to preserve some of the surplus vegetables to be enjoyed at a later date, while other vegetables can be stored for a few months in a cool area.

Not to be overlooked is the finger-

tip convenience of having vegetables in the back yard; this in itself justifies home gardening for many individuals. In addition, vegetable gardening provides exercise and recreation for both urban and suburban families.

Although the initial dollar investment for gardening may be nominal, one cannot escape the fact that gardening requires manual labor and time. Many of the gardening tasks must be performed at times that are most inconvenient. Neglecting jobs that should be performed on a regular basis may result in failure and a negative feeling towards gardening.

Do not allow spring enthusiasm to dictate more than you can handle. A small, well-maintained garden is more enjoyable and profitable than a large neglected one. The garden usually expands proportionately to the positive experiences and with the sense of "pride of accomplishment".

Vegetables thrive in full sunlight and need at least 5 or 6 hours of sun during the middle of the day. Excessive shading results in rank, spindly plants and poor yields. If possible, the garden should be reasonably near the house so the gardener can work in it at odd moments.

Soils for vegetables should be friable (easily crumbled) and porous for quick water drainage, deep crop root penetration, and good aeration. A deep, fine, sandy loam or silt loam is best.

Usually the home owner has little choice in the soil type he can select. Fortunately, many vegetables can be grown on relatively poor soils if the soils are properly conditioned.

An area consisting of "fill dirt" is difficult to reclaim for a vegetable garden. A filled area usually contains a high percentage of bottom subsoil (clay), stones, and debris. The fertility is usually very poor. It requires time,

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fertilizer, and a considerable amount of energy to make a fill soil productive.

Low and wet spots should also be avoided. If water remains in puddles on the soil surface for several hours after a moderate shower, the site should not be used for vegetables. Very few vegetables can tolerate "wet feet" for long periods.

Some heavy soils can be used for vegetables if improved by adding organic matter and lime, but they are difficult to handle and must not be worked when they are too wet.

Sandy soils are quite satisfactory for vegetables in years with average rainfall, but supplemental irrigation may be necessary in dry periods. Adding organic matter to these soils will improve their structure and value.

Vegetables are frequently classified according to their ability to survive frosts.

Hardy or cool-season crops will survive medium to heavy frosts. Seed from this group can be planted as soon as the soil can be prepared in the spring or in mid-summer for a late fall crop.

Semi-hardy vegetables will survive a light frost. Seed will germinate at relatively low temperatures, and can be planted 2 to 3 weeks before the last frost date.

Tender or warm season crops are injured or killed by frost, and their seeds seldom germinate in cold soil.

The home gardener should choose those vegetables which the family likes best.

Certain vegetables, such as celery, are difficult to grow. Celery from the grocery store is usually as good or of better quality than home grown.

The more perishable vegetables such as sweet corn, peas, snap beans, broccoli, and asparagus should receive first consideration in the home garden. These vegetables, when freshly harvested, have a flavor seldom found in grocery store produce.

Space is another consideration. A small space will provide vegetables for

many meals if it is planted with crops such as tomatoes, snap beans, summer squash, broccoli, and cabbage. Corn, peas, winter squash, and melons require more space in relation to the amount they produce.

The inexperienced gardener should grow few crops and select those that are easy to grow. Corn, snap beans, peas, tomatoes, radish, and squash are good for beginners. Broccoli, cabbage, cucumbers, and melons require more attention because of the need for disease and insect control. Care must be taken in seeding the small-seeded crops such as beets and carrots in order to obtain good germination.

The garden can be planted at one time, or in a succession of plantings. One planting will give a long harvest of tomatoes, peppers, summer squash, beets, carrots, broccoli, and cucumbers.

Sweet corn is a one harvest crop. Planting varieties with a spread of maturity or several different plantings of the same variety is necessary to obtain a steady supply of corn when it is at the peak of quality.

Crops such as summer squash, broccoli, and cucumber must be harvested as they mature in order for the plants to continue bearing.

On the other hand, a single planting of some crops will produce for only a short time even if more than one variety is used. Radishes, head lettuce, and peas are in this category.



Sweet corn should be picked fresh and cooked immediately for best flavor.



Bolting—flower and seed stalk development induced by high temperatures—is common with spinach, radish, and lettuce. Note seed stalk development in variety in background. Summer bibb in the foreground is resistant to bolting.

An intermediate group in which two or three plantings may be needed to ensure a long season includes cabbage, snap beans, and leaf lettuce.

If the family is going on an extended vacation, crops that have a short harvest period should be omitted or else planted to mature before or after the vacation.

It is especially convenient to grow garden vegetables that are frequently used in cooking or in salads, such as tomatoes, peppers, parsley, and chives.

A paper plan of the garden drawn to scale which lists the crops to be grown with the number of rows, the distance between rows, and the planting dates for each vegetable will be an asset at planting time. By keeping the following points in mind, the gardener can work effectively:

- Group the crops according to height to prevent shading

- Garden rows can be faced either east and west or north and south. If they run east and west, plant the tall growing crops on the north side of the garden so they do not shade the small ones

- If the garden is on a hillside, run the rows across the slope—not up and down it. This helps to hold water and reduce erosion

- Group together the small-growing, quick-maturing crops

- Productivity of a small garden may be increased by succession planting.

Remove the refuse from early maturing crops and make a second application of fertilizer before the second planting. Practice crop rotation if possible.

Seed quality varies but seed laws protect the gardener fairly well against poor seed and misrepresentation. The kind, variety, percentage of germination, and date of testing are marked on every package offered for sale.

A general guide to the quantities of seed to buy is given in the table with this chapter. Buy enough seed at one time to last through the entire season.

Saving seed from the garden is a poor practice. Many of the best varieties are hybrids that will not breed true to type.

There is also a risk of carrying disease with the seed.

Selection of vegetable varieties is a difficult problem. Seed catalogs are colorful and profusely illustrated; the written description of each variety convinces the gardener that he must include it in his garden. Since it is impossible to grow every variety, the following rules will simplify your selection:

Buy vegetable seeds and transplant by variety name. The time of maturity, quality, and disease resistance differ so much among varieties that success or failure in your garden may be determined by the choice of variety.

Since the best means of disease control in the home garden is using disease- and insect-resistant varieties, these varieties should be bought whenever possible.

Purchase your seed and transplants from a reputable firm.

Try new varieties on a limited scale until they prove to be better than the ones you have been growing.

Every gardener needs a hoe, an iron rake, a spading fork, and a spade or round-pointed shovel. For large gardens, a good wheel hoe or hand

cultivator and a small garden tractor multiply a gardener's efficiency.

It is important to know the pH of your garden soil. A pH test may be needed if the garden is in a new location.

A soil with a pH of 7.0 is neutral, while one with a pH of 7.1 or above is alkaline or sweet. A pH reading below 7.0 is acid or sour. Most vegetables grow best on a slightly acid soil where the pH is between 6.0 and 6.8.

Lime should be applied to the garden when a test has indicated the soil is too acid, that is, below 6.0.

Commercial fertilizers are applied to increase the nitrogen, phosphorus, and potash content of the soil. A 5-10-10 fertilizer contains 5 percent nitrogen, 10 percent phosphoric acid, and 10 percent potash.

A 5-10-5, 5-10-10 or similar analysis fertilizer should be used at the rate of 4 to 5 pounds to each 100 square feet of garden area. On soils that have been well fertilized for many years, 1 to 2 pounds of fertilizer may be adequate, especially if the pH is in the 6.0 to 6.8 range.

Organic matter increases the water-holding capacity of sandy soils and makes them more workable. It makes heavy soils more tillable, reduces soil compaction, increases ability of the soil to take up water rapidly, and improves drainage.

Incorporating organic matter also improves soil aeration and tends to enable soils to warm up earlier in the spring.

Besides furnishing organic matter, farm manure can supply the bulk of the fertilizer elements (nitrogen, phosphoric acid, and potash) if it is supplemented with 1 to 1½ pounds of superphosphate to each bushel of manure per 50 to 75 square feet of garden area. Unless the manure is well rotted, it should be applied before plowing or spading and then turned under.

Poultry, sheep, and goat manure should be used at the rate of no more than 1 bushel to 100 square feet of garden.

Compost is a good source of organic matter for the home garden. A compost pile can be made with leaves, weeds, straw, waste hay, and any waste vegetable matter other than diseased parts of vegetables.

Pile these materials together as they accumulate, keeping the lighter ones, such as leaves, from blowing away by throwing a little soil over the pile. Add 1 cup of agricultural lime and 1 cup of a complete fertilizer with each bushel of compost to hasten decay. It is not necessary to include special bacteria or fertilizers.

Each spring start a new pile. Turn the old one over several times during the year to ensure even decay; it will be ready to apply to the garden before spring plowing the second year. Leaf compost can, however, be used for a mulch the first spring after the pile is built or it can be put directly on the garden and turned under the first year.

Compost makes good potting or plant growing soil for use during the winter.

Rows are designed for convenience in planting, cultivating, and harvesting. If they are too closely spaced, competition between plants for water, plant nutrients, and sunlight and weed control is intensified and harvesting becomes difficult.

Suitable row spacings are given in the table with this chapter. Standard 3- and 6-foot row spacings are the most convenient if small power tools are used.

Seeds should be sown a little thicker than the plants will finally stand, to allow for those that fail to grow or that may be killed when they are very young. Space the seed uniformly. Heavy seeding wastes seed and time in thinning the plants.

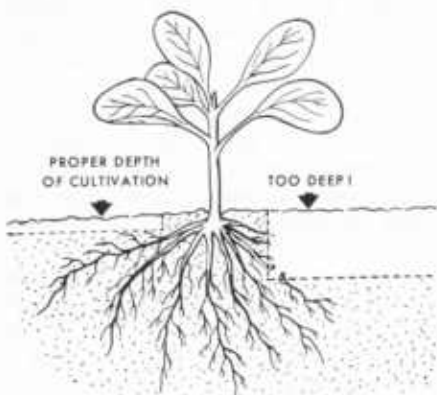
A general rule is to plant shallowly in early spring, especially on heavy soils. In warmer weather and on lighter soils deeper seeding is usually advisable.

Cover large seeds such as corn, peas, and beans with one to two inches of

soil. Cover small seeds such as carrots and lettuce with $\frac{1}{4}$ - to $\frac{1}{2}$ -inch of soil. When covering the seed, provide good contact between the soil and seed by gently firming the soil over the seed.

In hot, dry weather when the soil around the seed dries out quickly, frequent light watering to keep the surface soil moist will help germination. Remove surplus plants before they can compete with those that are to remain. The total yield is likely to be much greater if thinning is done early than if it is done only by removing vegetables that are large enough to eat.

Here are some transplanting tips. Water plants in flats or market-packs an hour or more before transplanting them. Keep a block of soil around the roots and set out the plants as soon as they have been removed from the container.



Top, deep cultivation destroys necessary plant roots. Bottom, warm season crops and especially the vine crops benefit from black plastic mulch and hot-tents.

Holes for the plants should be dug slightly larger than the blocks of soil around the roots. The plants should be set slightly deeper than they were in the original containers.

After partially filling the hole with soil and firming it around the roots, pour a cup of water or transplanting solution into the hole around each plant. Finish filling the hole with loose soil.

Weeds can be the gardener's worst enemy. They compete for moisture and nutrients, and they can harbor insects and diseases. They shade the plants and interfere with air circulation.

Since tall weeds can retard evaporation of dew and rain from foliage, they can increase the incidence of diseases during periods of excess rainfall.

Weeds can be controlled by a combination of hand weeding, cultivation, and mulching. Shallow cultivation is less injurious to crop roots than deep cultivation, and is just as efficient in controlling weeds. A wheel hoe with weed knives is one of the most efficient and useful tools for the home garden. A hoe is the next best hand tool for weed control.

Weed growth can be effectively controlled by using either organic mulches or black plastic (polyethylene). Mulches also tend to conserve soil moisture, prevent erosion, and eliminate root damage caused by deep cultivation or hoeing. They also keep the fruits of such crops as tomatoes, cucumbers, and melons clean.

Organic mulches are especially desirable on light sandy soils and with cool-season crops. Straw, old hay or grass, leaves, sawdust, and wood shavings are the most common organic mulches.

Black or very dark polyethylene plastics have proved effective in hastening maturity as well as in controlling weeds.

Using black plastic mulch with cucumbers, pickles, melons, and squash in many instances has resulted in a three-fold increase in yields. Black

plastic frequently increases the yield of the warm-season crops such as peppers, eggplant, and tomatoes, and may increase the yield of all early planted crops.

Because mulches reduce heat radiation from the soil, increasing the chance of frost damage on a cool night, the gardener should apply mulches after the soil has become warm and *after all danger of frost is past*. With black plastic, it is important that the soil be well supplied with water from either a good soaking rain or an irrigation a few days before the plastic is laid.

Additional water during periods of drought (no soaking rain for 10 to 14 days) may improve the quality and yields of summer vegetables. Moisture is more likely to be a limiting factor on sandy or shallow soils than on heavy or deep soils.

From seeding until harvest, diseases and insects may cause some losses to vegetables. Home gardeners may be disappointed in their attempts to control diseases if they rely only on spraying or dusting after diseases appear. Successful control requires a 7 to 10 day dusting or spraying schedule. Many dual home-garden mixtures are available.

Pesticides are poisonous to humans and wildlife. Read the precautions and follow the directions on the label.

Even the best cared for garden has its problems. Some are inconsequential; often they cannot be attributed to gardening mistakes. An occasional plant may suffer an abnormality or even die from an unknown cause.

Adverse weather such as excessively high or low temperatures, too much or too little rain, and high winds can cause poor growth, blossom drop, and plant damage.

In many instances, poor soil conditions—including improper fertilization, soil compaction, inadequate drainage, poor texture or structure, and undesirable pH—are responsible for inadequate growth.

Poor location of the garden, exces-

sive shading or competition from nearby trees, insects, diseases, root pruning caused by deep cultivation, and careless use of herbicides, insecticides, and fungicides are frequently the cause of abnormal plants.

Sometimes soil testing shows the reason for poor growth. Perhaps the trouble is simply a lack of adequate fertilizer. A shortage of an essential plant nutrient is likely to reduce the yield of any crop before the deficiency causes visible symptoms.

Gardeners growing tomatoes, peppers, or eggplant are occasionally confronted with the problem of poor or no fruit set. Poor setting of fruit and blossom drop can be caused by periods of cold weather with nights below 55°F., abnormally hot weather, warm nights above 75°F., low soil moisture, and excessive shading.

Have you considered growing a dishpan full of radishes or a plastic pailful of tomatoes? Recent developments allow urban and suburban gardeners to grow vegetables in a soil-less mix. This method of growing plants which uses various assorted containers filled with artificial or synthetic soil is known as patio gardening, mini gardening, container gardening, pillow pak, and sausage culture.

The synthetic soil or mix is a combination of sphagnum peat moss, horticultural vermiculite, lime, and fertilizer. It can be purchased as a prepared mixture or the gardener can prepare his own. The mix is lightweight and free of weeds and disease.

To prepare a bushel of mix, simply combine ½ bushel of #2 size horticultural vermiculite, ½ bushel of peat moss, 5 tablespoons of ground limestone, 2 tablespoons of powdered superphosphate and 8 tablespoons of 6-12-6 or 5-10-5 fertilizer.

Thoroughly mix the materials on a clean surface or in a container. Add water until the mixture is wet. If it is very difficult to wet, add a small amount of detergent to the water.

Containers in which plants can be grown are limited only by the imagi-



Top, dwarf cherry tomato plants are ideal for container gardening. Plastic bags filled with artificial soil make excellent mini-gardening containers. Above, salad-type tomato plant in a 10-inch plastic pot with artificial soil.

nation. Frequently used containers include heavy duty plastic bags, plastic pans or pails, bushel baskets, and large flower pots. For the more adventurous gardener, a rectangular bin can be constructed from 1" x 12" lumber.

Successful mini gardening depends in part upon the selection of crops. Where possible, dwarf varieties should be grown. Do not overcrowd the plants. A dwarf tomato, or small varieties of pepper, or an eggplant can be grown in a plastic water pail or wastepaper basket.

Root crops such as radishes and

onions do well in a dishpan or bushel basket. Vine crops such as cucumbers should be grown in bushels or tubs and placed in an area where they can "run" or be trellised to the side of a building.

The long season crops such as peppers, cucumbers, and eggplant will need supplemental feeding during the course of the growing season. This is easily accomplished with the water soluble fertilizers available in most garden centers.

When using plastic containers, make several holes in the bottom to allow for drainage.

For those who do not have adequate space or time but enjoy the quality of fresh vegetables and outdoor activities, patronizing a "pick your own" vegetable operation is an enjoyable alternative.

Vegetables and fruits commonly grown for "pick your own" operations include peas, tomatoes, corn, snap beans, strawberries, blueberries, cherries, and apples. Other crops may also be available in your area.

Because unit prices are considerably lower than at roadside stands and markets, this is an economical method of obtaining quantity and quality for canning and freezing.

Many of the operations allow the entire family to pick.

Preserving of excess vegetables through canning and freezing provides a means of enjoying home-grown produce all year.

Overproduction of vegetables from the average home garden is not likely to be a problem. However, a large garden usually produces more than the family can consume, sell, or distribute to neighbors, and the gardener is confronted with the problem of surplus vegetables.

The initial investment for canning and processing equipment is considerable. It is recommended that the inexperienced housewife consult with the local county home economist before launching a full-scale home vegetable preservation program.

If canning and freezing are a traditional family activity, the following points may be helpful.

Can or freeze only high quality vegetables. The quality of vegetables cannot be improved by processing. Under or overmature vegetables should not be preserved.

Process the vegetables as soon as possible after harvesting. Peak quality may be lost in a 2- to 3-hour period. If it is inconvenient to process soon after harvesting, place the vegetables in a refrigerator or in cold water.

Freshly harvested and immediately frozen asparagus, lima beans, and broccoli retain quality very close to that of the freshly harvested vegetable. Tomatoes, the vine crops, root crops, and the leafy vegetables—with the exception of spinach—do not freeze well. Cauliflower, brussels sprouts, snap beans, peas, corn (off the cob), are also excellent for freezing.

In regions of the country subject to early killing frosts, certain vegetables can be harvested prematurely or at maturity and stored fresh for future consumption.

Partially ripened tomato fruit will develop good color and flavor most rapidly if allowed to ripen at 70°-75°F. Large, solid green tomatoes can be picked and slowly ripened in a cool (60°F.), moist, dark place over several weeks. Sunlight is not necessary.

Muskmelons harvested at fullslip will continue to ripen satisfactorily after being removed from the vine if they are held at room temperature. In contrast, watermelons will not continue to ripen if harvested prematurely.

Winter squash and pumpkins should be harvested before heavy frost. Frost-injured fruit do not store. Cut the stem from the vine and store fruit where it is dry and the temperature can be kept at 55°-60°F. or slightly above.

Cabbage, mature dry onions, and potatoes store well in a ventilated, dark room where the temperature is near 45°F.

Root crops can be kept for several months if they are stored in an outdoor

pit covered with boards and sod. It is essential to maintain a high humidity and temperatures just above freezing.

Many home gardeners use the home basement for vegetable storage, but usually this is undesirable because it is a bit too warm and too dry. Yet many of the above crops can be held for 2 to 3 months if placed in cool areas.

Within a given community, many individuals are well-versed in home gardening. Gardeners are usually willing to discuss techniques and relate their experiences. The neighbor who has an outstanding garden probably did not develop it in one season.

The county cooperative extension agent is an invaluable source of information. Seed catalogs contain a wealth of information and are easily obtained by writing to seed companies.

Excellent resources are also available through men's and women's garden clubs, botanical gardens, arboretums, the State land-grant universities, and the U.S. Department of Agriculture.

For further reading:

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Sound Advice For Controlling Home Noise

APPPLICATION OF NOISE control techniques requires some knowledge of the nature of noise. Noise is unwanted sound. Sound is the hearing sensation originated by vibrating bodies and borne as an elastic disturbance through the air.

Airborne sound is associated with a measurable pressure variation in the air, usually measured in decibels (db).

Tone, or pitch, of sound is a function of the frequency of vibration of the originating source in hertz (cycles per second).

Human hearing ranges from a pitch of 25 hertz to about 18,000 hertz depending upon the decibel level. At low frequencies, decibel level must be comparatively high for the tone to be heard. Tones about 500 hertz can be heard even though decibel levels are very low. Low frequency, high-pressure sound waves may be perceived by sense of touch as well as hearing. The human

aging process causes loss of hearing sensitivity in the upper frequency region of the hearing curve.

Annoyance level of a noise is related to decibel level and frequency with pitches near and above 2,000 hertz being more psychologically annoying. Sudden high pressure sounds are associated with an abrupt mechanical failure or other calamitous occurrence. They have a startling effect that is not desirable.

If sound waves are allowed to bounce off surrounding hard surfaces (or reverberate), then noise originated by a single vibrating source is perceived by the listener as coming from a multitude of directions.

Reverberation causes some degree of psychological disorientation and is not desirable.

A complete absence of background sound in our surroundings is as undesirable as noise. Human hearing is conditioned from birth to some background sound and a complete lack of such sensation may aggravate symptoms of insecurity or anxiety. Subconsciously everyone listens for sounds to assure that pump, furnace, or refrigerator is still functioning.

Noise may originate from within or outside of a dwelling. The most common source of outside noise is land or air traffic although manufacturing plants may contribute. Common sources of inside noise are musical instruments, household appliances, plumbing fixtures, human traffic, and loud speech.

Transmission of noise in dwellings is generally classified as airborne, or structure-borne. Airborne noise is a wave phenomenon caused by alternate compression and decompression originated by the action of a vibrating body. It can best be visualized as the wave action caused by dropping a stone in still water.

Structure-borne noise is caused by

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