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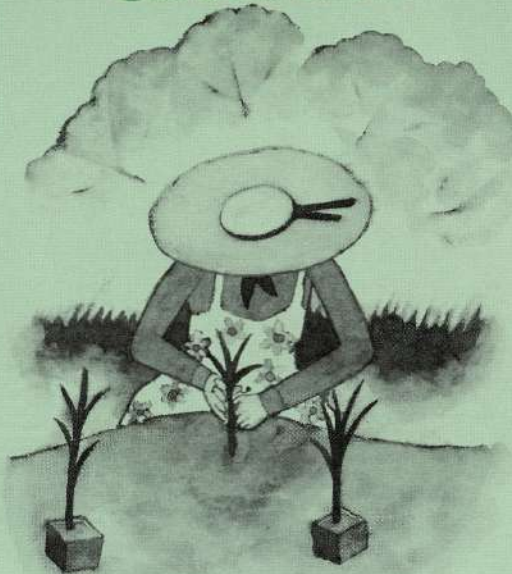
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How Does Your VEGETABLE Garden Grow?



With each new spring, more and more people react to the lure of colorful seed catalogs and the shock of spiraling food prices by spading up a garden patch and taking their chances with the whims of nature, marauding insects and soil of dubious fertility. This summer an estimated thirty-five million family vegetable plots are busy producing a variety of crops ranging from the common to the exotic, with an equally wide range of quality.

Many H&S families have already found that gardening is fun and have encouraged their friends to give it a try. Each spring manager Dean DuCray of the Executive Office Research Department grows his own special blight-resistant tomato plants and makes them available to his fellow accountants who annually till the soil of New Jersey, with results that have jestingly been described as ranging from gourmet to garbage.

Gardening can and should be fun. But it is more fun if it is done right, and this is where a little advance planning and preparation

can pay off in high yield and superb flavor. Don't expect a big dollar saving, particularly for the first year. The average home garden will save a family only about \$75 during the season (if you don't count labor), but the savings can be much higher if crops are frozen or stored for use through the winter.

The urge to garden afflicts most people about the same time as the annual attack of spring fever. The better gardens, however, are begun in the summer and fall, with the mulching of grass clippings, leaves, cobs, rinds and other foliage and the preparation of a compost bed.

A compost bed in an out-of-the-way corner of your property is an easy and inexpensive way to upgrade the soil quality to support the high-yield home garden year after year. The mulch bed or compost pile is simply alternate layers of several inches of organic matter with a light dusting of lime and either manure or a handful of high-nitrogen fertilizer, needed to feed the bacteria that decompose the organic matter. A mulching attachment which blocks the outlet chute of your power lawnmower permits the chopping of huge quantities of leaves into fingernail-size pieces which compact well, stay moist and will not blow away. Nail some wide boards together to keep the pile in place.

As the layers of the bed build up, the top should be dished in slightly and holes made in the pile with a rake handle to collect rain and keep the compost wet. As the organic matter decomposes, the temperature inside the pile can reach 150 degrees or

more, so it must be kept wet. It is also helpful to turn the pile with a spade from time to time to ensure uniform breakdown. Mulching in the summer and fall will provide a rich, dark and woody-smelling soil builder to spade into your garden the following summer.

The soil, of course, is the most critical part of your garden, and its quality can mean the difference between lush, bountiful produce and anemic plants with a below-average yield.

Before you drop that first seed in the ground, find out exactly how good or bad the soil is by testing its pH, the symbol representing the degree of acidity or alkalinity. Inexpensive and easy-to-use kits are available that enable you to test pH as well as the levels of the essential soil nutrients—nitrogen, phosphorus and potash (potassium). Nitrogen is the major element needed. It stimulates leaf growth and greener leaves. Too little nitrogen causes yellow leaves and stunted growth, while too much delays flowering, makes stems spindly and reduces fruit quality. Too much nitrogen also lowers a plant's resistance to disease. Phosphorus is important for a strong root system and good growth. It speeds maturity and increases the vitamin content of plants. Potash, the third major nutrient, contributes to the general vigor of the plant and its ability to resist disease. A readily available source of potash is the ashes from your summer barbecue.

The kits not only let you test for and achieve a proper pH balance, but also recommend sources and amounts of elements to be added to your soil. The three figures that appear on commercial fertilizers (e.g., 10-6-4, 20-5-7, 10-10-10) always indicate the nitrogen, phosphorus and potash content in that order, making it easy for the home gardener to remedy any deficiencies.

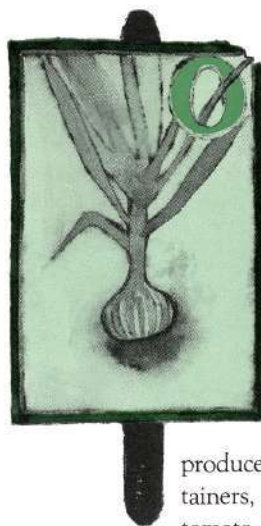
Another important key to successful home gardening is planning. You don't really need a lot of space. A plot only twenty by twenty feet will supply most of the day-to-day vegetable needs of a family of five if it is selectively planted. You will need two or three times as much space, however, if you are partial to cucumbers, corn, melons or vine squash. The most popular small-space consumers are onions, beets, carrots, turnips, bush beans, radishes, lettuce and bush-type summer squash. The favorite small-garden crops that grow vertically are tomatoes and pole beans, both of which yield very heavy crops for the space required. If cucumbers are a must and your space is limited, you might try growing them on a wall of chicken wire at the extreme north side of your garden.

Placement of crops is important, with taller plants to the north and successively smaller plants toward the south side of the garden to get maximum benefit from the sun. Plants growing in the partial shade of others tend to reach for the light and become scrawny and susceptible to damage. This is especially true of pepper plants, which are brittle at the joints and must be cultivated and harvested carefully.

Intercropping—the growing of so-called compatible crops such as corn and pumpkins together—is one way to get optimum yield. Another is succession cropping. The space used for lettuce, ready for picking early in the season, may be planted in snap beans after the lettuce is harvested. The pea patch finished

by the end of June can be planted in corn, and your rows of spinach can be followed by cabbage or broccoli. Dwarf snow peas can be followed by two successive crops of yellow wax beans. But when you push the soil to produce at this rate, it is imperative that you maintain a system of yearly composting to replenish nutrients and build up humus content.

Deciding what to grow and how much of each for the best-balanced yield should be a family matter. Get the children involved, with the degree of participation matched to ages and interests. You will be amazed at how many new vegetables the youngsters will eat if they have had a part in the planting, cultivation and harvest. The children, too, will be surprised that peas, so often tough and flavorless from a can and only a little better when frozen, taste so good right off the vine or served fresh and hot within a few minutes. It is a treat that only the home gardener can enjoy.



ne of the considerations affecting crop selection should be whether or not the vegetable can be easily stored or frozen for use through the winter when produce prices soar and real savings begin to add up. A single twenty-foot row of onions, for example, will provide all your family's needs during the summer, plus about forty pounds to hang in your basement or garage—enough to last many families until spring.

Peppers and snap beans are big producers that are easily frozen in plastic containers, and fresh tomato juice and thick tomato sauce made from your own tomatoes are a treat well into the winter. Beets, potatoes and winter squash are easy to store in a cool, dry place and taste almost as fresh in March as they did in September.

If you want your own fresh tomatoes for a Thanksgiving or midwinter salad, simply pick whatever unripe tomatoes are left on your plants late in the season—before they become frost damaged—and wrap them in newspaper. Store them in a box in a cool place and check for ripening from week to week. Some won't make it but those that do will provide ripe tomatoes right up to the end of the year. The flavor won't match that of the vine-ripened fruits, but it compares well with that of hothouse varieties, and at a considerable saving.

The key, then, to realizing the greatest possible return from gardening efforts is to extend the growing season as much as possible and stretch your enjoyment of home-grown vegetables as far as you can into the months when produce prices are on the rise.

Certain crops are not easily damaged by late winter frosts and these should lead off the spring planting schedule. These "very hardy" plants can go into the garden from four to six weeks before the established "frost-free" date in your planting area. Peas, onions and lettuce can be planted as soon as the soil is dry

enough to work in the spring. They can be followed closely by cabbage, potatoes, spinach and turnips.

The "hardy" plants, like beets, cauliflower, carrots and radishes, can be started from two to four weeks before the frost-free date. Snap beans, celery, corn, squash and tomatoes can be wiped out by a late frost, so these should not be rushed. Wait until the weather is safe.

There are crops—onions, beets and carrots are examples—that should be planted in a broad row rather than all in line. Simply level the row the full width of the hoe blade and plant the seeds about an inch apart, staggered the full width of the row. Thin the plants as they grow, until the final crop is spaced about four inches apart to grow to maturity. The pencil-thick onions you have thinned out can be eaten as green onions, and the miniature carrots and beets are especially tender and a welcome early bounty for the home gardener. The broad-row method of planting will produce from three to four times as much as you would get from an all-in-line planting. Since the plants are relatively close together, cultivation can be tedious. Fortunately, the plants that grow well in broad rows don't need close cultivation. The key to growing better onions is to keep the soil firm around the bulbs, but loose between the rows, usually a foot apart. Incidentally, most home gardeners find that onions grown from seed will store better through the winter than those grown from "sets," the miniature onions grown especially for planting.

Getting the most from your garden, the optimum quantity of each of the crops you select, is often a problem with beginning gardeners and one requiring adjustments from year to year. You may find it necessary to buy more seed or plants than needed just to get the variety you want. It's relatively easy to buy the proper number of hothouse seedlings, and since a packet of seeds may cost only fifty to seventy-five cents, wasting some won't represent a large economic loss.



Tomatoes, the most popular of the home garden crops, seem to be the easiest to overplant. Six well-grown plants will easily provide all the tomatoes a family of five can use. Even if you get into freezing your own tomato juice or spaghetti sauce for winter use, you probably won't need more than a dozen plants. Tomato, cabbage and pepper plants are usually sold in containers of eight or twelve, so if you want to plant your favorite red tomato, a colorful and low-acid yellow tomato and the prolific plum or paste tomato, it means buying containers of each and planting only the best.

Most people don't want to throw away good plants, so they wind up planting three times as many as they need or can possibly use. The problem is the same for gardeners who raise their own plants from seed. It is too easy to plant "just one more" of the healthy plants so carefully nurtured and tended for from

eight to ten weeks. As a result, many gardeners wind up with six or seven hundred pounds of tomatoes and the recurring vow that next year will be different.

As for other popular crops, a family of five will be well fed with the following plantings: For peas of either the edible-pod or standard variety, a fifty-foot row will do, but keep in mind that the taller-growing varieties will produce more than the easier-to-grow dwarf varieties. Two or three hills of cucumbers are usually ample, and the same applies for summer or winter squash. A twenty-five foot row of snap beans will supply the average family. Peppers are very high-yield plants, both bell and banana varieties, and six or eight plants will be plenty. The same applies to green or red cabbage, depending upon whether you want to plant early varieties for summer use or late varieties that can be stored and used throughout the winter. Corn takes a lot of space, but it is extremely popular and therefore often overplanted. Limit each planting to a five-by-five-foot block. Corn should never be planted in a single, long row. Pollen from the tassels must powder the silks on other stalks to produce full ears.

There are ways to extend the yield period of favorites such as corn, while the season for others, like peas or lettuce, simply can't be extended. Lettuce, peas and radishes are cool-weather crops and won't tolerate hot summer weather. Plan to have something else in that row space during the summer. A common problem with home-grown corn is that the family is deluged with a high yield over a short period. An easy solution, if you have the space, is to plant a block of early hybrid that will mature in from sixty to sixty-five days, followed two weeks later by a standard variety, and a final block when the second planting is four inches high. With fertile soil, most hybrids will yield two ears to the stalk, with the lower ear ready first. Remember that on the average the flavor of corn is at its best about three weeks after the silk appears at the top of the ear. Begin checking in about eighteen days. Pull back the husk to see whether the kernels are filled out and show a milky center when popped with the thumbnail. If the kernels are compacted into tight squares, you have waited too long and the ear will probably be tough. One of the most flavorful rewards of home gardening is corn picked and eaten within the hour. Soon after corn is picked its sugar content begins to turn to starch, so don't let that home-grown flavor get away. You can never buy an ear of corn that will compare with it.

Every home gardener has his own favorite methods and tips. The H&S seniors and managers who have transferred to Executive Office from all parts of the country and, almost to a man, settled in the same general area of New Jersey, have been able to benefit from each other's experience.

Paul Winters, a manager with the Computer Applications Department who transferred to EO from the Portland office two years ago, suggests a sure-fire way of eliminating slugs and snails, a common problem in wetter areas. Slugs and snails have a weakness for beer (yes, beer) and you can get rid of them simply by placing three-quarters of an inch of beer in a shallow pan or dish and placing it in the garden. Both pests will drown in the beer.

Tomato-growing tips from manager Dean DuCray of the EO

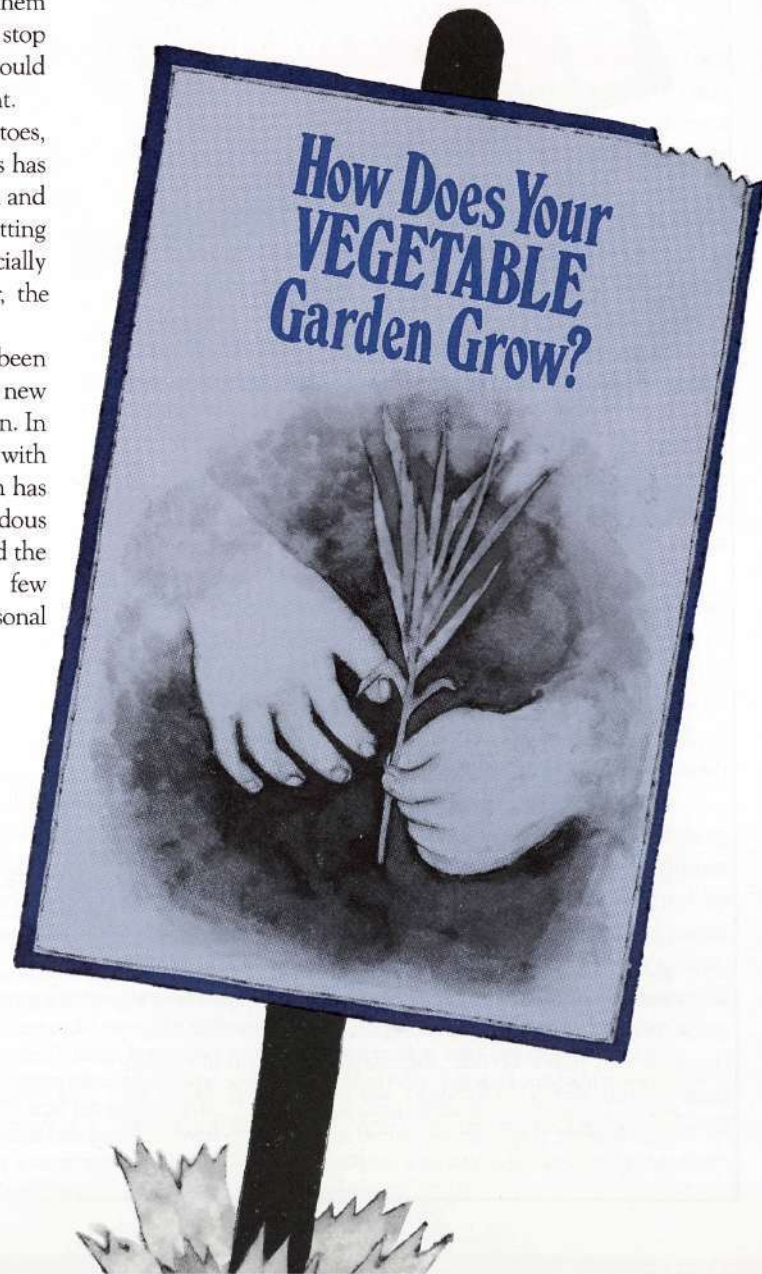
Research Department include the pinching off of suckers, the new growth that pops out between the main stem and branches, so that the plant will concentrate on producing bigger fruit rather than excess foliage. He also suggests that an irrigation watering system, where water flows down a series of shallow ditches among the rows, is better than spraying with a hose, which can splash soil-borne disease spores onto the leaves as well as sand into the leaves of spinach, lettuce and celery.

H&S Reports editor Harry Levy is one of the more adventurous of the H&S gardeners, and each year tries something new, such as peanuts, watermelon or celery. He is probably the Garden State's most avid purple-top turnip and cucumber grower. The best cucumbers, he says, come from the female flowers, those that have the bulge of the embryo fruit immediately under the flower. The key to better yield and flavor is to pinch off the male blossoms which, when pollinated, produce swollen, soft-centered fruit with hard seeds and a bitter flavor.

If you have an overabundance of snap beans, pick them anyway, other gardeners say. If you don't, the plant will stop producing altogether. As a general rule, ripe vegetables should always be picked and not allowed to over-ripen on the plant.

Many H&S families are already enjoying their early tomatoes, while others may have found that the first set of blossoms has fallen off, a common problem if the weather has been cool and damp. The trick is to spray the early blossoms with a fruit-setting agent, an aerosol spray containing a hormone that artificially pollinates the blossom. Besides being bigger and earlier, the fruit will often be seedless.

Whether you are among the H&S families that have been gardening for years or are just beginning, there are always new crops to try and new ways to get the most from your garden. In every office throughout the Firm there are home gardeners with varying degrees of involvement and experience—and each has stories of outstanding success with some crops and horrendous failures with others. It is all part of the game of seasons and the perennial urge to make things grow. Certainly there are few leisure activities that can match it when it comes to personal satisfaction, savings and, best of all, flavor.





➤➤ If you are planning to start a vegetable garden next year, now is the right time to begin preparing the soil. Vegetables need a lot of sun. Study your available land to select a site that has good soil and receives a maximum amount of sunlight during the day. Avoid low spots that collect and hold water for long periods after rain.

➤➤ If you've never grown vegetables before, don't start with too large a plot. It takes a good bit of digging and raking to prepare most ground, so start with a reasonable size in a location that will permit expansion. For the beginner, a certain amount of on-the-job experience usually is necessary, and a smaller plot makes the learning process easier.

➤➤ Once you decide on the size of your vegetable garden, make a sketch of where each variety will go. Locate the taller, bushier types so they don't shade lower plants. Remember, too, to leave enough space for you to walk between rows for weeding and picking.

➤➤ You can get a jump on the season by starting some varieties, such as tomatoes, cabbage, celery, lettuce and others, indoors in plastic containers, peat pots or a variety of other containers. But don't start indoors too early. The directions on seed packets will state whether plants can be started indoors successfully and the best time for planting.

➤➤ You don't have to buy seeds in a local store. Most newspaper garden sections contain ads for nursery supply houses offering vegetable seeds. A catalog often offers a broader variety of vegetables and a greater selection of different types of one vegetable. Selecting from a catalog lets you tailor the selection to your specific preferences.

➤➤ Try to pick disease-resistant varieties whenever possible. This is particularly important in certain vegetables, such as tomatoes. The catalog will indicate which strains are disease resistant; look for the same information on packets you may buy in a store.

➤➤ If you don't want to start your vegetables from seed, you can buy seedlings from local nurseries. These are established plants started in hothouses which you transplant in your garden. This lets you get an earlier start with a large plant and eliminates seeding and thinning. But there are drawbacks—a more limited selection of varieties, higher cost per plant. One warning: Buy only healthy-looking specimens.

➤➤ Don't overlook some of the innovations in vegetable gardening that make things easier. Most catalogs and many stores offer seed tapes. These are water-soluble tapes containing properly spaced seeds. You simply place the tape in the row you've made, cover with soil and water. You can also buy preplanted containers, peat cubes or small

peat pots. All you do is water to start them growing and then transplant outside when the temperature is right. Here, too, your selection is somewhat limited, and the cost is higher than for seed.

➤➤ Don't jump the gun on the weather. Some varieties can be started early, but many have to be planted after any chance of a frost. With others, the soil has to be warm to a depth of several inches before seeding. Slightly late is better than too early.

➤➤ Vegetables have to be watered and weeded. Every time you mow your lawn, scatter a light layer of grass clippings over the soil in the vegetable plot. This will add organic matter to the soil as you cultivate and also helps to keep down weeds.

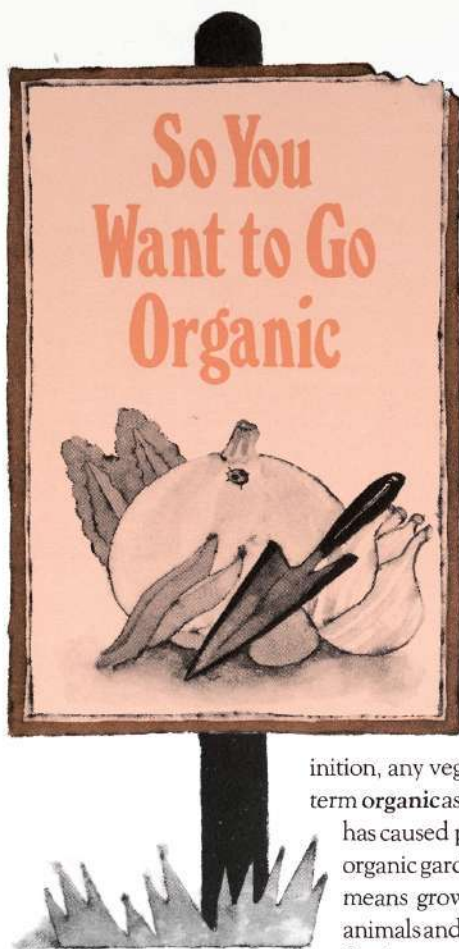
➤➤ Apply fertilizer judiciously, especially when the plants are young. Too much fertilizer can burn plants, even kill seedlings if they are overdosed. Follow directions on the package.

➤➤ Use pesticides only if necessary and with extreme caution. Never use the systemic variety (which are clearly labeled as such and never recommended for vegetables) since these are absorbed into the plant. Use only pesticides specially marked for vegetables and only in the amounts recommended on the label. Keep children and pets away when spraying and watch the direction of the wind. Most vegetables need insect pollination, so don't spray if there are a lot of bees or other helpful insects around. And never use a pesticide unless it is absolutely necessary.

➤➤ If you are going on vacation, arrange with a neighbor to water and weed while you are away. At the least, make sure the vegetables will be watered. You can reciprocate when your neighbor goes on vacation if he has a garden. You also can pay a local youngster to do this. Instruct the person who will be doing the job to remove and keep whatever ripens while you are away. This will provide an added bonus, and also keep many varieties providing fruit for a longer period.

➤➤ There is plenty of free or low-cost literature available. Garden supply stores are good sources of free printed information, usually produced by fertilizer and pesticide manufacturers. State agricultural agencies and the Government Printing Office (Washington, D.C. 20402) also have a wide range of inexpensive booklets and books available for the vegetable gardener. Write to them for a list of the material you might want to order.

➤➤ Don't be afraid to experiment. Not every vegetable will do well in every soil. Some prefer sandy soil, others a rich loam. Use a small part of your plot to try different crops every year.



Organic: of, relating to, or derived from living organisms.

Organic: relating to, produced with, or based on the use of fertilizer of plant or animal origin without employment of chemically formulated fertilizers or pesticides.

Webster's New Collegiate Dictionary

With seed and spade in hand, you're ready to become a vegetable gardener. Several possible questions remain: Do you want to go the organic route? Is it more healthful for you and your family? Is it less or more expensive?

Much of the existing confusion is the result of the charges and countercharges of the pro- and antiorganic factions. By definition, any vegetable is organic. It's the use of the term **organics** in the second definition above that

has caused problems. For those who believe in organic gardening, farming and food, the term means growing food products (poultry, meat animals and plants) without the use of chemical fertilizers, pesticides or hormones.

You can be an organic vegetable gardener if you restrict your use of fertilizer to the natural types, such as fish fertilizer, manure, compost and bone meal, and prohibit the application of any form of chemical pesticide.

Using natural fertilizers is easy enough. Under most circumstances, and when used according to directions, they will give the same results as the chemical varieties.

Bugs and other plant diseases pose the main problem for the organic vegetable grower. It is well documented that a healthy plant is frequently able to resist destructive insects and diseases without chemical assistance. On the other hand, some types of vegetables are susceptible to fungus (vine types such as cucumbers and melons in particular), while others can succumb to a number of plant diseases or insect attack. The hornworm caterpillar is one of the tomato's worst enemies, as is the aphid. The former are big enough to spot easily (once you learn what they look like, since they are well camouflaged) and can be picked off by hand. Aphids can often be washed away with a water spray from the garden hose.

Many fungi can be avoided by care in watering (keeping the spray off the leaves) and by spreading the plants out enough so that there is good air movement through them.

Your first course of action, of course, is simply to grow as many disease-resistant varieties as possible. These are always identified as such in the seed catalogs.

Many organic gardeners find that certain flowers, such as

marigolds, herbs and other plants, tend to repel destructive insects. Positioning bird feeders around the vegetable plot to attract insect-eating birds is another effective tactic.

Seed catalogs offer praying mantis egg cases and ladybug or ladybird beetles by the hundreds which you can "plant" in your garden. The egg cases (which you simply tie onto any convenient stem or branch) hatch huge quantities of mantises which, if they are not eaten by the birds you've attracted with your feeder, may grow up to feed on destructive insects. The ladybugs, voracious feeders, prefer a diet of pests such as aphids. Unfortunately, no one has yet found a way to keep these insects (both of which can fly) in your garden. They do tend to wander.

Are organically grown vegetables healthier to eat than most others? No one has been able to ask a carrot its preferences in fertilizer. A large part of the scientific community, including government researchers, is very much at odds with the organics over this question. The anti forces insist that nitrogen is nitrogen and that a cabbage doesn't care whether its food is in the form of natural or chemical fertilizer. There is no difference in the taste or nutritive value of vegetables grown organically or nonorganically, they insist. The opposing camp says there is a difference but is unable to provide any "scientific" proof or evidence to support its view.

The antiorganic forces also say pesticides pose no danger if the correct chemicals are used and are applied properly. The kicker, of course, is in their qualification as to choice and application. The organic supporters say there is no such thing as a really safe pesticide. Traces of it will be found on or in fruits and vegetables that have been sprayed even if the food is thoroughly washed, they contend.

The fact is that the evidence is not clear here. Pesticides recommended for vegetables are often powders which can be (and always should be) washed off before the food is eaten. Liquid sprays are of a type not absorbed by the plants and tend to break down quickly into harmless components.

What course should the home vegetable gardener follow? This remains a matter of personal choice. Using organic or chemical fertilizers makes little difference. Costs are roughly equivalent. Chemical fertilizers are often somewhat cheaper than organic varieties, but if there is a difference, it usually is not excessive. Application is generally as easy with one as with the other.

The argument for pesticides is murkier. The beginning gardener may not be able to cope with insect assaults without the aid of pesticides. Insect damage can be minimized by following the suggestions outlined elsewhere in these pages. Above all, if you see an insect in your vegetables, don't panic. Not all bugs are bad. The appearance of a small number of even the destructive variety should not be considered a clarion call for all-out chemical warfare. You can often pick them off by hand. If you must use pesticides, be selective in your choice of a chemical, don't overspray, and make sure all produce from your garden is well washed before being eaten or put into the refrigerator.