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Vegetable Gardening

Planning and Preparing The Vegetable Garden Site

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Home vegetable gardening continues to grow in popularity. Vegetables grown in the home garden are fresher, have better nutrient value and cost less than vegetables sold in markets. Vegetable gardening is also an interesting hobby with the additional benefit of healthful outdoor exercise.

Several things need to be remembered, however, when planning a vegetable garden to optimize yields of high quality vegetables. The information presented here is not intended to be all inclusive, but it is intended to give you some basic information on how to organize and prepare a vegetable garden site.

Start with a Plan!

To get the most from the space allotted to your garden, make a plan. Be sure to have it to scale — such as ¼ inch equals 1 foot. Then you can accurately plan space. Locate North on your plan as it relates to your garden spot.

Planning your garden can be an enjoyable task by the warmth of a fire on cold winter evenings. Take full advantage of garden references — seed catalogs, books, magazines, garden writers and University of Idaho Cooperative Extension Service publications. Keep in mind that soils and growing conditions vary widely around the state, so caution should be exercised in using gardening information from different areas.

A well-planned garden is easier to plant and care for and will probably be more productive than one that is not well planned. Planning will help determine how much seed and how many transplants will be needed, when to plant the seed and how far apart to place the rows. Also, by keeping the plan, you can keep notes on how things grow each year so as not to repeat the same errors in the following year. Try not to plant the same things in the same place each year because of disease buildup. Keeping your plan will help to avoid this problem. Plant tall vegetables such as corn so as to minimize shading of lower growing plants.

Size of Garden — How Big?

Consider the amount of time for gardening before deciding how large to make the vegetable garden. You cannot plan a large garden in the enthusiasm of springtime and leave on an extended summer vacation with expectations of a bountiful harvest upon your return. As a rough guide, figure on spending about 40 minutes to spade a 10-by-10 foot area. Allow 15 minutes to plant and 30 minutes a week for cultivation of this amount of area. Also, you will need 30 minutes for changing the water when irrigating.

Plan about nine times longer for a 30-by-30 foot garden. A well planned and cared for 30-by-30 foot garden will yield enough produce for a family of four. If much canning, freezing or dehydrating is planned, a garden twice the size would be needed.

Where To Plant The Vegetable Garden

Although many Idaho gardeners have little choice, selecting a garden site is extremely important. Consider the following points.

Location — Put your garden near your house or on your daily route to and from home where it will be under daily surveillance. Problems with weeds, rodents, insects and disease can be spotted and corrective measures taken. The sight of the growing garden will give you a feeling of pleasure and satisfaction as you watch the vegetable seeds or transplants grow and produce. Harvesting vegetables at their peak of perfection is much more likely if the garden site is as close as possible to your home.

Sunlight — The prime garden area is where the vegetables will receive full sun throughout the day. Large trees or shrubs too close to the garden spot can shade your vegetables as well as rob vegetables of much needed nutrients and water. As the absolute minimum, you must

have half the available summer sunlight hours as direct sunlight on your garden. Lots of sunshine is particularly important for vegetables that form fruit such as tomatoes, cucumbers, squash, eggplants, peppers and melons. Many of the leafy vegetables like spinach and lettuce will grow well with less than full sunlight.

Air Drainage — Proper air drainage is very important and often overlooked. Because cold air is heavier and denser than warm air, it flows like water down gulleys and valleys. This cold air dams up behind obstacles and settles in low spots. If possible, your garden should lie well up on a south-facing slope to avoid frosts that form because of this cold night air drainage. Gardens located in low areas get all the later spring frosts and the earliest fall frosts and lose several weeks of growing time.

A cold air barrier on the north side of your garden slope will divert draining cold air from your plants. This barrier can also hold solar-generated heat long into the chilly nights. The barrier can be as elaborate as a stone wall or as simple as a structure of stacked hay bales.

Slope — Even if the slope is very steep, you can still have a productive garden. Some of the world's best gardens are terraced. Terraced gardens are attractive and easy-to-work. Horizontal beds decrease erosion, especially when the strips between each level are left in sod.

Wind Protection — Cold winds that blow across the garden will chill the vegetable plants, slowing their growth. If the wind is strong enough, and the soil surface is unprotected, severe wind erosion can occur.

A windbreak to the side of the prevailing winds helps if your garden is in an exposed position. Solid wall windbreaks are not good, for they create vicious downdrafts on the leeward side. It is better to have breaks that are 50 percent air permeable. An example would be double rows of willow or deciduous hedges. Since living hedges take years to grow, a good short-term solution is a row of snow fencing placed near the border of your garden that receives the prevailing winds.

Precipitation and Irrigation — In some areas of the state, such as northern Idaho, natural precipitation may be sufficient to produce many crops especially for more drought-tolerant plants. Even in these areas, supplemental irrigation can be beneficial or necessary for maximum garden production. In most areas of Idaho, however, irrigation is necessary for maximum garden production. If irrigation is necessary, make sure an adequate and dependable supply of water is available. If the water supply is limited, you may need to select drought-tolerant plants.

Irrigation water can be applied with sprinklers, drip irrigation or through surface applications. Drip irrigation uses a system of plastic tubing with tiny holes that release water slowly for plants. Surface applications can be made in furrows or by flooding level areas or beds. If the garden area is sloping or rolling, sprinkler applications or drip irrigation are probably easier than surface applications.

Sprinkler irrigation makes more efficient use of water than surface irrigation, and drip irrigation is more efficient than sprinkler. Irrigation with furrows requires that furrows be within 12 to 18 inches of the plants so that water can move through the soil into the root zone of the plant. If surface irrigation is used on sloping areas, the furrows and planting should be made on the contour to prevent erosion caused by water running down the slope in the furrows.

Soil Drainage — If your garden is situated on a slope, soil drainage should be no problem. Avoid low flat areas that flood or where water collects. Soils in these areas will remain cold in the spring, delaying plant growth.

Good Soil — Good soil makes gardening easier and produces high yields. Many gardens are located on less than ideal soil. This is especially true if a garden is located near a house where construction of the house resulted in removal of the topsoil.

Soil texture is determined by the proportion of sand, silt and clay particles comprising the soil. Sand particles are relatively large, forming large pores with little capacity to hold water and plant nutrients. Clay particles are extremely small and tend to cause soils to harden when dry and to become sticky when wet. Clayey soils hold large amounts of water and plant nutrients but allow movement of water and air through the soil into root zone. An ideal soil contains sufficient sand to keep the soil porous and sufficient clay to hold nutrients and water for plants' use. Thus, the ideal soil texture for a garden is a loam or a silt loam.

If a soil is too sandy to be ideal, silt and clay soil material can be added to improve the soil texture. If the soil is too clayey, sand can be added to improve the soil texture. This, however, can be very expensive, especially if the garden is large in size as several inches of material must be added to adequately change the soil texture. For example, 3 to 4 inches of sand must be mixed with 6 to 7 inches of clayey garden soil or 3 to 4 inches of silt and clay mixed with 6 to 7 inches of sandy soil to appreciably improve the soil texture.

"Topsoil" makes the best garden soil. Topsoil is the surface layer or layers of a soil that has been in place for many years. This is the portion of the soil in which plants and other forms of life are most abundant. As these organisms live and die, they add organic matter to soil. Organic matter improves soil tilth, water holding capacity, water and air movement and supplies plant nutrients. Thus, the difference between the highly desirable "topsoil" and less desirable "subsoil" is organic matter. The use of organic materials such as animal manure, green plant materials, compost, peat moss, straw, bark, sawdust and other materials is recommended.

If the addition of large amounts of sand to clayey soils or large amounts of silt and clay to sandy soils is not feasible, you can "live with" these undesirable soil textures by adding large amounts of organic materials to the soil. Keep in mind the topsoil took many years to form, so don't expect organic matter to correct the problem in one year. It will probably be necessary to repeat the application of organic material for several years in a row before a poor soil will be greatly improved.

Some organic materials, such as animal manure and green plant materials, supply plant nutrients, especially nitrogen, to the soil. Green plant materials decompose or rot much more rapidly than materials such as straw, bark or sawdust. As a result, the slower decomposing material will take longer to improve the soil but will pro-

vide a longer lasting effect. Compost is an excellent organic material. (For more information, see University of Idaho CIS 679, *Making and Using Compost.)*

Organic materials which are low in nitrogen, such as straw and bark, will tie up nitrogen in the process of decomposing. This tie-up of nitrogen depletes a nutrient that is necessary for plant growth. Thus, when adding straw, bark and sawdust, add 3 to 4 pounds of nitrogen (9 to 12 pounds of 34-0-0 or 15 to 20 pounds of 21-0-0) for each cubic yard of material applied.

Fertilizer

In addition to water, air and sunshine, plants need food in the form of nutrients. Nitrogen (N), phosphorus (P), potassium or potash (K) and sulfur (S) are needed in large amounts. Calcium (Ca), magnesium (Mg), zinc (Zn), copper (Cu), boron (B), iron (Fe), chlorine (Cl), molybdenum (Mo) and manganese (Mn) are needed in small amounts but are no less important for good plant growth.

Because these nutrients are needed does not mean that they must be added to the soil each year. The soil has the capacity to store and release most of these nutrients as they are needed by the plants. So only the most heavily used nutrients must be applied — N, P, K and S — and then only N must be added yearly as it is subject to loss because of leaching during winter months or with irrigation. (For more information on fertilizing gardens, see University of Idaho CIS 265, *Fertilizer Tips for Gardeners.)*

Soil Testing

Soil testing can be used to evaluate the plant nutrient levels in a soil, soil pH and soil organic matter content. This testing can be done by a commercial or university soil testing laboratory (at a cost of $10 to $50 per sample) or with small home test kits that are available from garden supply sources (at a cost of $10 to $500 per kit). It is probably less expensive and just as effective to omit soil testing and apply a complete fertilizer (N, P, K and S) every 2 to 3 years and apply nitrogen fertilizer every year. This will guarantee high fertility and optimum production.

In some areas, some plants may respond to micronutrients. To determine these needs, check with a University of Idaho Extension county agricultural agent or your local garden store for information on these needs.

Soil pH

Soil pH test is the one test that may be most beneficial to the home gardener. Soil pH is an expression of the acidity or alkalinity of a soil. A pH of 7.0 is neutral. Most plants grow best at a pH of 5.5 to 7.5. A pH below 5.0 is too acid, and a pH above 8.2 is too alkaline for most garden plants.

Too acid a pH (pH of 5.5 and below) can be corrected with the addition of lime. The lime should be added at the rate of 10 to 20 pounds of lime per 100 square feet (10 × 10 foot area). The lime should be mixed well into the top 6 to 9 inches of soil. The lime may take a year or more to react with the soil to correct the acidity problem.

A soil with high alkalinity (pH above 8.2) can be corrected with the addition of gypsum and heavy leaching with water. The gypsum should be added at the rate of 10 to 30 pounds per 100 square feet. The leaching process requires that at least 6 to 12 inches of water must pass through the soil. This may be difficult or impossible if the soil is clayey. The use of heavy applications of organic materials and even large amounts of sand may be necessary. It may be best to haul in 12 inches of good topsoil or try to find a better site for your garden.

Preparing the Seedbed

The soil should be tilled when it is moist. The tilling operations can be done with a plow, a rototiller or simply spaded by hand. If the soil is too dry, it is difficult to work because it is hard and will form undesirable large clods. When the soil is too wet, it will be compacted and again tend to form large, hard clods when dry. The higher the clay content, the more difficult it is to have the right moisture content for easy working to obtain a desirable seedbed. The sandier the soil, the less problem with forming clods and soil compaction by tilling when too wet or too dry. The higher the organic matter content, the easier to prepare a good seedbed.

Work the soil to a depth of 6 to 8 inches, being careful not to bring subsoil to the surface. All fertilizers except nitrogen must be added and mixed with the soil during tilling. After tilling, the garden should be raked several times in different directions while the soil is still soft and moist until a finely pulverized seedbed is formed. A cloddy seedbed is undesirable as poor seed germination will result because of poor contact between seeds and soil particles. **Remember, patience in preparing the seedbed will pay off later in good seed germination and healthy, vigorously growing plants.**

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