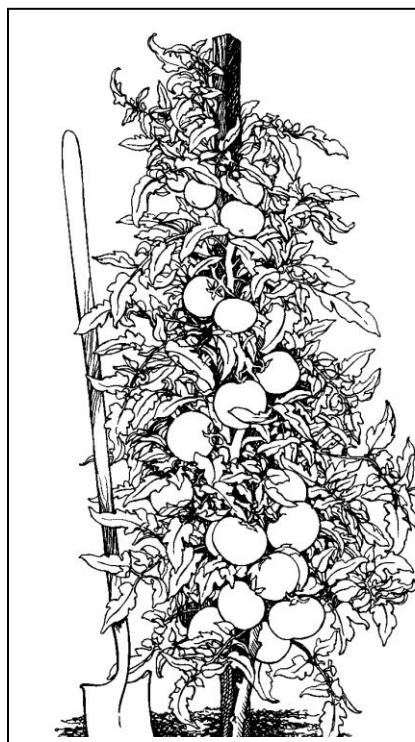


## GARDEN FOR FOOD PRIMER



### **Planning**

During winter, gardeners can leisurely look through seed catalogs to plan for spring planting. The selection of seeds from catalogs is much wider than that found in local garden centers. It is enjoyable and educational to study seed catalog descriptions.

Gardeners should realize that seed catalogs can vary widely in the amount of reliable information they provide on disease resistance, days to maturity, description of both plant and fruit size, drought and heat tolerance, flavor, germination, and cultural requirements. Keep reliable seed catalogs on hand as reference materials.

Below are topics to consider in early planning.

### **Crop Selection**

Many kinds of vegetables can be grown in Washington State. A balanced selection includes two leafy green or yellow vegetables (lettuce, spinach, chard, kale, squash), two pod vegetables (peas, beans), two root crops (carrots, beets, turnips, parsnips, radishes, salsify), plus tomatoes, cabbage, and any special vegetables enjoyed by the family. The addition of small fruits such as strawberries, raspberries, blueberries, or grapes rounds out the garden.

### **Preferences**

Selecting what to grow depends on a variety of preferences, such as flavor, available space, nutritional value, or how well the crop cans or freezes. Here is a list of easy-to-grow crops for the beginning vegetable gardener to consider — asparagus, beets, bush beans, cabbage, carrots, leaf lettuce, spinach, onions, leeks, peppers, summer squash, potatoes, and tomatoes.

Choose those vegetables that meet individual preferences. It's fun to experiment with new crops, but resist the urge to introduce too many new or unusual vegetables; limit yourself to one or two cultivars that are new to you per year. However, homegrown crops are an excellent way to introduce foods to the family. It is difficult to turn down foods that were nurtured to harvest by family members.

If nutritional value is the primary interest of the gardener, the best vegetables for vitamin and mineral content are listed on the following page.

## **A Dozen of the Most Nutritious Vegetables You Can Grow**

1. Beet greens provide calcium, iron, potassium, and B vitamins. They are an excellent source of vitamin A and vitamin C.
2. Broccoli is an excellent source of vitamin A and vitamin C and provides calcium, iron, potassium, and B vitamins. Try it raw in salads and dips.
3. Collards are an excellent source of vitamin A and vitamin C and provide calcium, B vitamins, potassium, and iron.
4. Kale provides potassium, calcium, B vitamins, and iron, along with a good supply of vitamin A and vitamin C. Cook it as you would any leafy green vegetable.
5. Lima beans provide iron, B vitamins, potassium, phosphorus, and some high-quality protein when teamed with whole grains, corn, soybeans, or animal products.
6. Mustard greens are an excellent source of vitamin C and vitamin A. Also, they provide calcium, iron, potassium, and B vitamins.
7. Peas provide iron, phosphorus, B vitamins, and vitamin C.
8. Potatoes as a vitamin-C source are excellent, if baked; good, if boiled; and fair, if French fried. All forms are a good source of potassium.
9. Soybeans combine with grains, seeds, and animal products to provide high-quality protein. Use them to replace meat or extend meat dishes. Also, they contain B vitamins, iron, potassium, and phosphorus.
10. Spinach is an excellent source of vitamin A and vitamin C and provides some iron and potassium.
11. Tomatoes are an excellent source of vitamin A, a very good source of vitamin C, and provide potassium, also.
12. Turnip greens are an excellent source of vitamin A and vitamin C, calcium, B vitamins, and iron. The turnips provide vitamin C.
13. All vegetables—raw and cooked—are good sources of fiber.

For more information visit Center for Disease Control Fruit and Vegetable Benefits Nutrition Information at [www.fruitsandveggiesmatter.gov/benefits/nutrient\\_guide.html](http://www.fruitsandveggiesmatter.gov/benefits/nutrient_guide.html)

## **Preserving the Harvest**

A family may want enough crops to supplement the food budget. Be aware that special plantings are probably necessary for canning and freezing. Gardeners interested in preserving should be prepared to preserve vegetables early in the season and during the peak of the harvest. Vegetables at the end of the season are of lesser quality, more likely to be infected with disease, and require more handling prior to preservation. Relying on garden surplus for canning and freezing often results in an insufficient supply.

For more information visit WSU Food Safety Information for Consumers at  
<http://foodsafety.wsu.edu/consumers/displayTopic.asp?id=6>

## **Hybrids**

Plant hybridizers constantly work to improve vegetable crops. Plant and crop size, color, flavor, storage qualities, days to harvest, and resistance to diseases are some qualities that plant breeders manipulate. Each gardener will choose cultivars based on varying preferences, but disease resistance is often a priority.

## **Disease Resistance**

When making a selection, learn if a particular disease is a local problem. A cultivar labeled disease-resistant indicates a lower susceptibility to infection by a particular disease under normal conditions. It does not mean immunity. Disease-tolerant indicates that a plant can withstand some disease infection without severe reduction in crop quality and harvest. Cultivars marked disease-resistant and disease-tolerant make smart choices for the gardener interested in limiting the use of pesticides.

## **All-American Selections**

Each year new seed selections are offered. Some carry a rating called “All-America Selections.” Plants grown from these seeds have been evaluated by experts and rated outstanding performers. All-America Selections have been grown in trials across the country and have performed better than standard cultivars. All-American Selections website [www.all-americanselections.org](http://www.all-americanselections.org)

## **Heirloom Varieties and Cultivars**

Heirloom plants are old varieties and cultivars grown by earlier generations of farmers and gardeners. Some are starting to be offered by the large commercial seed houses. Most heirloom vegetables have kept their traits through open pollination. They may offer adaptations to local growing conditions and exceptional flavor. Often, the plants are large or slow to produce a crop. Some organizations keep these valuable seed lines alive, and a few heirloom varieties are being reintroduced by companies.

## **Understanding Seed Catalogs**

Selecting seeds from a catalog involves understanding abbreviations that are used. These differ with the crop and are explained in good seed catalogs.

For example, here is an explanation of the abbreviations used to describe a tomato cultivar. For this example, the tomato ‘Quick Pick’ (F1) VFFNTA (I) 60 days will be used.

‘Quick Pick’ = the cultivar name, (F1) = the plant is a first-generation hybrid, V = resistant to Verticillium wilt, FF = resistant to both strains of Fusarium wilt, N = resistant to nematodes, T = resistant to tobacco mosaic virus, A = resistant to Alternaria or crown wilt, (I) = an INDETERMINATE or vining growth pattern as opposed to a DETERMINATE or bush habit. (Other abbreviations that may be found that indicate disease-resistant qualities may include the following: L = resistant to leaf spot or Septoria St = resistant to Stemphylium or grey leaf spot.)

Sixty days indicates that this cultivar typically requires 60 days after transplanting to produce a crop. This is an approximate period that is influenced by local weather conditions.

## **Planting Time**

The planting time of seeds and transplants into the vegetable garden plot is critical to success. The gardener who plants a crop too early runs the risk of losing the crop due to frost damage. Cloches, row covers, caps, and mulches can moderate the risk. Likewise, planting too late in the season may result in no harvest if there is an early winter. See back of seed packet for crop planting information.

## **Cool and Warm Season Crops**

Cool-season crops are those that germinate and grow at lower temperatures of spring and fall and

are not injured by light frost. They generally perform poorly during periods of extended hot temperatures. Leaf lettuce and other greens bolt and produce flowers and the foliage tastes bitter. Peas stop producing pods.

Cool-season crops not injured by light frost such are asparagus, broad bean, broccoli, brussel sprouts, cabbage, collard, garlic, horseradish, kale, kohlrabi, leek, onion, pea, radish, rhubarb, shallot, spinach, turnip.

Crops such as onions, garlic and potato require cool weather to become established before producing the harvest during the summer months. Insulating techniques, like cold frames, hot beds, row covers, and cloches, are often used to further extend the harvest of cool-season vegetables.

Warm-season crops do not grow well at temperatures below 50°F and are killed by frost. Seeds of these vegetables will often rot if planted in cold, damp soil. Not only is their growth retarded by cool weather, but also fruit set will be delayed.

Warm-season crops for planting after danger of frost is past are cantaloupe, cucumber, eggplant, lima bean, pepper, pumpkin, snap bean, squash, sweet corn, sweet potato, tomato, and watermelon.

### **Succession Planting**

Succession planting is done so garden space is put to its most efficient use. With this method, there is never an unplanted area in the vegetable plot. As soon as one crop is harvested, the space is immediately replanted with a different crop. This method of succession planting uses groupings of cool-season and warm-season crops. In the simplest scheme, succession planting involves planning for spring, summer, and fall crops.

Another method is to make several plantings of a vegetable. Bush beans, for example, can be planted every two weeks from mid-May to the beginning of August. A third type of succession planting involves a single planting of several different cultivars with varying maturity dates. This method works well for cabbage and corn. These methods allow for a continuous harvest over a longer period.

Vegetable harvest can be extended into the fall by growing the faster growing, cool-season crops. The quality of many of the cool-season crops is exceptional when they mature in the fall. Plant so there is adequate time for the crop to mature.

When planting seeds for a fall crop, you must water the seeds more often than in the spring because the summer soil is usually warm and dry. Provide some shade to help retain moisture. Cover the seedbed with cardboard or newspaper. Check the seedbed daily and remove the covering when the first seed sprouts. Keep the bed consistently watered until all the seedlings are established. Pre-sprouting also ensures good germination of cool-season crops in the hot, dry soil of August.

### **Plant Spacing**

Drawing a garden plan on paper has several advantages. It saves money because excess seeds and transplants are not purchased. A plan ensures continuous harvest when the gardener pencils in the crops that will follow the first planting.

Using reference materials, gardeners can plant the exact amount of seeds or transplants needed for a

desired, per-person harvest.

Use graph paper or indicate exactly how to space plants in terms of feet and inches. This promotes neatness and manageability. Garden plans kept from year to year serve as a valuable record from which to learn. A garden plan helps with proper crop rotation to control disease.

The perennial crops of rhubarb and asparagus should be placed so they will not be disturbed.

How each gardener chooses to space plants in the vegetable garden is affected mostly by how much space is available. The tendency of gardeners with small plots is to squeeze too many plants into the space. The result is that nothing does well. On the other hand, some people with large plots normally waste space. The goal is to match the spacing plan to the plot size.

### **Traditional Layout**

The traditional method of garden layout follows recommendations commonly found on most seed packets. This method involves planting vegetables in widely spaced rows, such as those seen in cornfields on farms. This method is fine for gardens where space is not a limiting factor and where cultivation is to be done largely by mechanical means.

### **Row Planting**

Row planting is the most common planting method. Single rows of crops are separated by wide bands of bare soil. On farms, this allows space for cultivating, fertilizing, and harvesting with large equipment. To plant in straight rows, use a string stretched between two stakes as a guide. Sow seed according to the seed packet directions, cover, tamp, and water. When seedlings have their first true leaves, thin according to spacing recommended on the packet.

### **Hill Planting**

Hill planting is another traditional planting layout. A hill does not need to be a mound, but mounding by adding organic matter is beneficial to most crops. Larger vegetables, such as melons, squashes, and cucumbers, are planted in mounds of soil about one foot in diameter and six to 10 feet apart depending on the crop. Generally, four plants are allowed to grow from a hill.

Mounded soil heats sooner and hastens the germination of these warm-season crops. Plants grown in hills are allowed to sprawl as they mature. Mature plants, particularly winter squashes and pumpkins, require considerable space.

### **Intensive Planting**

The goal of intensive planting is to use space more efficiently for the longest possible time. Plants are spaced carefully so they can mature without competing for nutrients and water with adjacent plants. Production and quality of some crops may be sacrificed. Intensive gardening also involves succession planting to replace crops when they begin to decline.

Intensive techniques are particularly suited for small urban plots where space is limited. Intensive gardening demands more careful planning than traditional methods, but the rewards are a greater variety of crops and a surprisingly large harvest from a small area.

### **Square-foot Gardening**

One of the most widely known intensive techniques is the square-foot gardening concept that was

developed by Mel Bartholomew. The square-foot method utilizes individual plots of soil four feet square. These plots are subdivided into one-foot squares by stakes and string. The amount of space required for different vegetables is based on the size of the mature plants.

Square-foot gardening reduces thinning and cuts down on watering and weeding through the efficient use of space. Seeds and plants are spaced carefully so they shade the soil. This reduces evaporation of water and the amount of sunlight available for weed growth. It is promoted as using one-fifth of the space, time, and money used by conventional methods.

Layouts are designed to use exact numbers of seeds or transplants. These layouts are created to grow only as many plants as needed per person. Because the growing area can be easily reached from all sides, no special gardening equipment is required. Because the garden is sectioned, maintenance is less threatening. New gardeners and youths benefit from this method.

Resources: Square Foot Gardening, by Mel Bartholomew; Square foot gardening website [www.squarefootgardening.com.](http://www.squarefootgardening.com/); Mel Bartholomew on You Tube found at [www.youtube.com/watch?v=N5Lu-7FIj\\_9](https://www.youtube.com/watch?v=N5Lu-7FIj_9)

### **Space-saving Varieties**

To save space select cultivars that offer high productivity in the allotted space. Bush-type plants of typically vining vegetables, such as squashes, cucumbers, tomatoes, and beans, are good choices for intensive gardens.

These cultivars are ideal for container gardening. A five-gallon container provides adequate space for most vegetables. Vegetables grown in containers will require more frequent watering and fertilization.

### **Wide-row Planting**

Wide-row planting is best suited to small plants, such as spinach, bush beans, beets, lettuces, greens, and carrots. Spread small seeds thinly over growing area. Rake, tamp, and water. Thin plants according to recommendations on the seed packet, or in gardening references.

For large plants, such as bush beans, plant staggered rows to fill the area allotted. Keep the space between the rows the same as the space between the plants in a row. For example, if the packet directions say to thin seedlings to 8 inches apart in the row, space them so they're separated by 8 inches in all directions. A little extra space can be provided by staggering rows within the wide row or bed. Careful planting and thinning will result in crops reaching their potential.

### **Raised-bed Planting**

Raised beds are a gardening technique that offers solutions to many gardening problems and are a key component to intensive techniques. Raised beds should be considered if the following problems exist:

- Poor drainage that is too difficult to remedy.
- Garden soil that is very heavy (high clay content) or very sandy.
- No space is available except rooftop or patio.

Raised beds should provide the following advantages:

- Soil warms earlier in spring
- Soil has good drainage.
- Cultivation is easier because soil is loose.
- Deeper soil permits closer spacing of plants.
- Beds look neat, encouraging good sanitation.

## **Vertical Space Gardening**

To further save space, grow plants vertically. For example, cucumber and winter squash take up too much space to be justified in a small plot. However, the intensive gardener can use trellises, cages, stakes, tepees, twine, and nearby fences as support for these plants. Additional support may be required as large, heavy fruit matures. Expandable nylon netting placed around the maturing fruit and tied to the trellis can provide the extra support. This prevents fruit from prematurely breaking from a vine.

Trellises do not need to be expensive; they can be made from scrap lumber and other discarded materials. Vertically grown vining crops can be positioned closer together when a trellis is used. Otherwise, sprawling vining crops can take up too much room in the garden.

Place tall and trellised crops on the north side of the garden to avoid shading other crops. Plants tolerant of shade, like lettuce and other greens, can be grown on the north side of these tall crops to take advantage of shade provided during the hottest part of the summer.

## **Interplanting**

Interplanting involves growing two different vegetables in an area at the same time. This method of planting is another way to save space. Interplanting flowers and herbs among vegetables can add interest to a backyard vegetable garden that often looks too plain. Furthermore, the planting of flowers and herbs in the vegetable garden may attract beneficial insects that will help control pests.

To successfully interplant, consider plants with similar nutrient and moisture requirements. A common example is to plant radish and carrot seeds at the same time. Radishes germinate and grow quickly. They mark the rows of the carrots that take much longer to germinate and mature. Radishes are harvested as the carrots are just getting established. Leaf lettuce is a good crop to interplant among larger vegetables since it tolerates shade and has few pest problems.

Leeks may be planted among sweet potatoes. The sweet potato leaves help shade the developing stem. Surplus onion sets may be placed around other plants as a source of scallions. Young tomato plants or pole bean seeds may be planted among declining pea vines to replace them on the trellis. The spent pea vines may be used to mulch the new crop. See publication Intercropping Principles and Production Practices found at <http://attra.ncat.org/attra-pub/intercrop.html>

## **Companion Planting**

Companion planting is based on the idea that certain plants can benefit others when planted in near proximity. Companion planting can be described as the establishment of two or more plant species in close proximity so that some cultural benefit (pest control, higher yield, etc.) is derived. The concept embraces a number of strategies that increase the biodiversity of agroecosystems. See publication Companion Planting: Basic concepts & Resources found at <http://attra.ncat.org/attra-pub/complant.html>

## **Garden Plan**

After considering the planning issues and planting options, draw a garden plan to scale on graph paper. Planning results in an orderly garden. It helps you determine how many seeds and transplants to purchase. The plan also serves as a partial record of the year's vegetable gardening.

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Adapted from: Ohio State University <http://hcs.osu.edu/mgonline/Vegetables/pla02/09pla02.htm>

For more information contact WSU Chelan County Extension Master Gardeners (509) 667-6540 or [www.ncw.edu/mg/](http://www.ncw.edu/mg/)