

## **Food Gardening in the Pacific Northwest** By Allen Wilson

The long growing season in the Pacific Northwest makes it possible to grow a very wide range of vegetables and fruits including repeat plantings of the quick maturing vegetables. Many cold tolerant vegetables can also be planted in the fall for early spring harvest. More advanced growing techniques such as succession planting, plastic mulch and row covers are not required for successful gardening. They are included for those who want to try new ways to reduce work and increase production.

### **Why grow your own food?**

There are many reasons to grow your own fruits and vegetables besides the obvious one of cost savings. Perhaps most important is that you control what materials are applied so you can be assured of a clean, safe food supply. Previous generations learned gardening skills from their parents. In difficult times we may need to have those skills when the ready availability of inexpensive food cannot be taken for granted. Gardening is an excellent form of exercise and recreation. Teaching our children and grandchildren the joy and satisfaction of watching seeds grow into mature plants and tasting the produce as it is picked are special opportunities. There is no better way to learn self-reliance and the “law of the harvest” than to nurture plants from planting to harvest.

### **What should I plant?**

The best guide to what vegetables and fruits to plant is “what do we like to eat”. It is all right to plant a small amount of unfamiliar things in order to try something new, but the kinds and amounts to plant should be largely geared to our established tastes. Another consideration is how much space is available. Some vegetables such as pumpkins can sprawl 10 feet or more in diameter. Sweet corn needs to be planted in multiple rows for adequate wind pollination. Tall vegetables like corn may shade smaller ones if planted too close. Many salad vegetables can be planted in small spaces among ornamental plants or even in containers on a deck or patio.

### **Where should I plant?**

Although some fruits and vegetables will tolerate partial shade, best production comes when plants receive as much sunlight as possible. A minimum of 6 hours or a half day of sun is normally required. Good drainage is also important. Soggy soil is not conducive to good growth. Raised beds can improve drainage. South and west facing walls and fences can be good locations for heat loving vegetables because of the extra reflected light and heat. It is not necessary to have a dedicated vegetable plot. A few vegetables can be planted in shrub and flower beds or in containers. A number of vegetables can be quite ornamental: mixed leaf lettuce, Swiss chard, carrots, beets. Strawberries make an attractive ground cover.

### **Warm and Cool Season Vegetables**

Vegetables divide themselves into two major groups based upon their tolerance of cold temperature and preference for cool or warm weather. It is easy to remember which group vegetables fit into based upon the part which is eaten. All leaf, stem, flower bud, and root

vegetables except potatoes and sweet potatoes fit into the hardy or cool season group. All fruit vegetables except peas and fava beans are warm season vegetables. Because of our cool night temperatures, most cool season vegetables can be planted throughout the summer in the Pacific Northwest. Cool season vegetable seeds will sprout when soil temperature is 50 degrees or less. They will tolerate frost and a few can be overwintered. Tender or warm season vegetables will not tolerate frost and grow best during warm weather. Warm season vegetable seeds will not germinate until soil temperature reaches 60 to 65 degrees. They grow very slowly if planted before May. However, there are some growing aids which will allow earlier planting.

### **How to Improve Your Soil**

Any garden soil can be improved by the yearly addition of organic amendments. Organic amendments open up heavy clay soils so water can flow into them more readily. Amendments add water and nutrient holding capacity to sandy soils. They add fertility to all soils as organic matter is turned into humus by earthworms and other soil microbes. The cheapest and best organic amendments are lawn clippings and leaves. Lawn clippings can be used as mulch around vegetables and then tilled or spaded into the garden along with leftover vegetable plants in the fall. Leaves can also be tilled into the garden in the fall after vegetables are harvested. Walnut leaves are toxic to plants and should not be used. Another inexpensive and valuable soil amendment is bark dust. It is normally clean and weed free and does not tie up nitrogen in the soil. Sterilized manure is also an excellent source of both fertilizer and organic matter. Beware of bulk unsterilized manure which may contain noxious weed seeds. Sawdust will rob nitrogen from the soil as microorganisms convert it to humus. It can be applied in the fall or extra nitrogen should be added when applied just before planting. Northwest soils are naturally acidic because of our heavy rainfall. Irrigation water is also usually slightly acidic. Adding lime to garden soil every year will reduce acidity and improve vegetable growth. Blueberries, and to a lesser extent strawberries and raspberries, prefer acid soils.

### **Fertilizer**

Most vegetables do best with vegetable garden fertilizer, typically 5-10-5 or 6-10-4 nitrogen-phosphorus-potassium ratio, or general purpose fertilizer, typically 12-12-12 or 16-16-16 ratio. Manure or other organic fertilizers typically contain a smaller amount of phosphorus and should be supplemented with super phosphate or bone meal. Usually one application of fertilizer at planting time is sufficient for quick maturing vegetables. Long season vegetables such as tomatoes, corn, and squash may need a second application about 2 months after planting.

### **Determining Space Needs**

Spacing between rows and between plants in the row is determined by the size of the vegetable. The smaller vegetables can be planted closest to each other, with the larger ones needing more space to grow. Spacing suggestions are listed below. Minimum

spacing between rows or blocks may also be dictated by the width of power tillers or cultivators. Power equipment usually works best with single rows.

### Vegetable Space Requirements, Planting Distances and Seed or Plant Requirements per Adult Person

Vegetable	Space Requirements				Seed/plants Required
	Length of Row per Person 1 ft Wide Row	Single Row	Between Rows	Distance in the Rows	
Asparagus	*	10-15 ft.	5-6 ft	18-24 in	5-10 crowns
Bean, Bush	5-10 ft	12-25 ft	2-3 ft	1-3 in	1 packet
Bean, Pole #	*	10-15 ft	3-4 ft	1-24 in	1 pkt seed
Beet	2-3 ft	5-10 ft	12-20 in	2-4 in	1 pkt seed
Broccoli	**	3-5 ft	2-3 ft	12- 18 in	4 seeds, 2 plants
Brussels Sprouts	**	3-5 ft	2-3 ft	12-18 in	4 seeds, 2 plants
Cabbage	**	3-5 ft	2-3 ft	12-18 in	4 seeds, 2 plants
Cantaloupe #	*	8-12 ft	4-6 ft	1-5 ft	6 seeds, 1-2 plants
Carrot	2-3 ft	5-10 ft	1-2 ft	1-3 in	½ pkt seed
Cauliflower	**	3-5 ft	2-3 ft	12-18 in	2 plants
Celery	**	3-5 ft	18-24 in	10-12 in	9 seeds, 3 plants
Corn, Sweet	*	20 ft	2-3 ft	10-20 in	1 pkt seed
Cucumber #	*	5-10 ft	4-6 ft	6-36 in	6 seeds, 1-2 plants
Eggplant	**	2-4 ft	2-3 ft	12-18 in	4 seeds, 1-2 plants
Kohlrabi	1-2 ft	3-5 ft	16-24 in	3-6 in	¼ pkt seed
Lettuce	2-3 ft	5-10 ft	18-24 in	6-14 in	½ pkt seed
Onion	4-5 ft	10-15 ft	12-20 in	3-6 in	½ pkt seed, 1 lb sets
Pea	6-10 ft	15-25 ft	18-24 in	1-2 in	1 pkt seed
Pepper	**	2-4 ft	2-3 ft	12-18 in	1-2 plants
Potato	*	30-60 ft	3 ft	9-15 in	2-5 pounds
Pumpkin #	*	6-12 ft	5-10 ft	1-8 ft	3-6 seeds, 1-2 plts
Radish	1-2 ft	3-6 ft	1-2 ft	1-2 in	½ pkt
Spinach	1-2 ft	3-8 ft	1-2 ft	3-6 in	½ pkt
Squash (Summer)	*	3-6 ft	3-4 ft	1-2 ft	3-6 seeds, 1-2 plts
Squash (Winter)	*	6-12 ft	5-10 ft	1-8 ft	3-6 seeds, 1-2 plts
Swiss Chard	1-2 ft	3-6 ft	1-2 ft	4-8 in	½ pkt
Tomato	*	3-10 ft	3-5 ft	1-3 ft	1-2 plts
Turnip	1-2 ft	4-8 ft	1-2 ft	3-4 in	½ pkt
Watermelon #	*	10-20 ft	4-6 ft	1-5 ft	3-6 seeds, 1-2 plts

\*These vegetables are not suitable for wide row planting.

\*\* Because of the larger size of these vegetables, wide rows (usually a double row) are more than one foot wide. Use the “in the row” spacing guide to determine how far apart to space between the double rows.

# These vegetables are often planted in hills with 2-4 seeds per hill. The longest “in the row” spacing is the suggested distance between hills.

### Intensive Planting

Intensive planting (wide row, broad band or grow box gardening) greatly increases the productivity of small and medium size vegetables. Yields can be increased by twice or more over the conventional single row method. With this method, seed is broadcast or plants are spaced across a band or row a foot or more in width at the usual spacing used down the row, For example, carrot seed is planted at ½ inch intervals in a wide row one foot wide. After thinning to a 2 inch spacing in all directions, you have the equivalent of 6 rows of carrots in the same space where you would have had only one or two rows. This method can be used for about half the vegetables commonly grown. Large seeds like beans and peas can be planted in two or more single file rows spaced 12 to 18 inches apart. Onions can be spaced an inch or two apart and gradually thinned and used for green onions until there is enough space for full size bulbs to develop.

Rows can be as much as 4 feet across. The width is only limited by cultural practices such as cultivation, weeding, watering, and harvesting. How far can you reach to pull or hoe a weed? If using furrow irrigation, what is the maximum distance between furrows to adequately reach the plants with water? The amount of space needed for intensive planting is shown in the table above.

### **Raised Beds**

In our high rainfall climate, raised beds can be a very important way to improve vegetable growth. Soil dries out and warms up more quickly, which makes earlier planting possible and speeds early growth. More air (oxygen) is available for the roots, resulting in more vigorous plant growth. Raised beds usually vary in width from 30 to 48 inches. New temporary beds can be prepared each year or permanent beds with side supports can be made. Permanent beds with a special soil mixture may be the best choice when soil is poor quality or dries out too slowly. Either single row or intensive methods can be used on raised beds. However, intensive methods are more common.

**Do not use ordinary garden soil in permanent raised beds.** Many nurseries and garden stores have special grow box soil mixes which provide excellent drainage for growing vegetables. Most stores will deliver soil mix. It requires about one cubic yard of soil mix to fill a 4X8 grow box with 10 inch depth. Soil should be added every couple of years to keep grow boxes full to the top.

Mel Bartholomew has developed a unique system of intensive, raised bed gardening which he calls “Square Foot Gardening”. Each raised bed is 4 feet wide, which is divided into one square foot blocks. Each square foot is treated as a separate mini-plot with from one to 9 plants of a separate vegetable, depending upon plant size. Larger plants can be trained on a trellis at one end of the block. Bartholomew claims that two 4X4 foot blocks are sufficient for one person.

### **Succession Planting**

For vegetables which do not require the full spring and summer growing season, a succession of small plantings can spread the harvest period and increase usable harvest. Unless you want to can or freeze a large quantity, smaller amounts over a longer period are much easier to use. Fewer vegetables go to waste so the total usable harvest is greater. More vegetables are available at peak quality, rather than over ripe or tough. With some of the quick maturing vegetables, the same ground can be planted twice in succession to the same or a different vegetable, In most cases, however, you have to “save” space for later plantings. With vegetables which are easily transplanted, such as lettuce, spinach, and beets, a small seed bed can be planted. Then after some early maturing vegetable is harvested, the seedlings can be transplanted to an open space. The succession planting table lists common vegetables which can be planted more than once. The first and last sowing dates are based on an average last spring frost of about April 15 and a first fall frost of about November 1.

## Succession Planting Table for the Pacific Northwest

Vegetable	Approx. first Sowing date	Interval between Plantings	Approx last Sowing date	Days to Maturity (1)
Bean bush	April 15	3-4 weeks	Aug 1	55-65
Beet	March 1	3-5 weeks	Sep 1	50-65
Broccoli (2)	March 1	4-6 weeks	Aug 15	60-85
Cabbage (2)	March 1	3-6 weeks	Aug 15	60-100
Carrots (3)	March 1	2-3 weeks	Sep 1	65-75
Cauliflower (2)	March 1	2-4 weeks	Aug 15	65-100
Corn	April 15	2-3 weeks	Aug 1	60-100
Kohlrabi	March 1	2-4 weeks	Sep 1	45-55
Lettuce leaf (2,3)	March 1	3-4 weeks	Oct 1	45-65
Lettuce head (2)	March 1	3-4 weeks	Aug 15	70-90
Onion bunching (2,3)	March 1	3-4 weeks	Oct 1	60-75
Pea	March 1	3-4 weeks	Sep 1	55-65
Radish	March 1	2-3 weeks	Sep 15	23-30
Spinach (2,3)	March 1	3-4 weeks	Oct 1	40-55
Turnip	March 1	3-4 weeks	Sep 1	30-60

- (1) Days to Maturity is the time required from seed planting to first harvest. Different varieties have different maturity periods
- (2) These vegetables can be started in a seed bed early and transplanted 2 to 5 weeks later as space becomes available.
- (3) These vegetables can be planted in the fall for overwintering and early Spring harvest.

The interval between successive plantings is determined by the length of harvest period. For example, radishes are at their best for only 10 days to 2 weeks, so successive plantings must be quite frequent to obtain continuous harvest. Bush beans can be harvested for about 3 weeks, so the planting interval is longer. Peas, radishes, lettuce and spinach do not grow as well where mid-summer weather is hot. Because of our cool night temperatures we can grow these vegetables right through the summer. In hotter areas, plants should be given some afternoon shade from a building or other vegetables and irrigated more frequently.

### Interplanting

Fast maturing vegetables like radishes and leaf lettuce can be planted between slow or late maturing ones like cabbage and squash. Radishes and lettuce can be harvested before the slower vegetables need the full growing space.

### Planting Varieties with Different Maturity Dates at the Same Time

Another way to spread the harvest is to plant two or more varieties with different maturity periods at the same time. This is commonly done with corn, lettuce, cabbage, and cauliflower which have a wide range of maturity periods with different varieties. Succession planting is the best way to spread harvest with most of the other vegetables in the table.

### Plastic Mulch

Plastic Mulch will increase yields of warm weather vegetables. It speed growth, increases plant size, and produces an earlier and larger harvest. Plastic mulch works fairly well for weed control in transplanted cabbage, cauliflower, broccoli and Brussels sprouts. It

conserves water as well as shading out weeds. Black plastic can be obtained from nurseries, hardware and other stores. Row covers (see below) and Brown, Red and Green horticultural plastic usually have to be ordered from mail and internet providers such as territorialseed.com or johnnyseeds.com. Colored plastics are more effective in raising soil temperature and increasing plant growth rate.

Soil preparation is the same with or without plastic mulch. Amendments should be thoroughly mixed with the soil and raked into a fine seed bed. I usually make planting furrows before applying the plastic where the seeds or plants are to be planted. This serves as a catch basin for water when plants are small. Fertilizer can be broadcast or applied in the furrows before laying the plastic down. Plastic is laid down in strips. Two to 3 foot or wider uncovered areas are left between 3 to 4 foot plastic strips. Plastic strips are secured by placing soil along all edges. Important not to leave any exposed edges for the wind to catch.

The uncovered areas of soil serve as walkways and wider spaces provide more room for larger plants such as winter squash and melons to expand. They also serve as a means to irrigate. Once plants are established, there is sufficient lateral water movement from the uncovered strips to reach roots growing under the plastic. Water evaporation is also reduced under plastic.

Either furrow or sprinkler irrigation can be used. Drip or trickle tubes can be laid down before applying plastic. This is the most efficient irrigation method. The uncovered strips then remain dry and very little weed cultivation is needed between rows. If plastic is applied a few days before planting, soil will already be warmed and seeds will sprout or plants grow more quickly.

X holes are made in the plastic with a trowel or knife at appropriate intervals for the seed or plants. Two or 3 corn seeds are placed in holes at 10 to 12 inch intervals. Cucumber, squash and melon seeds or plants are spaced one to 3 feet apart. Tomato plants are spaced one to 4 feet apart depending upon type. I use a double row of peppers and eggplant one foot apart with plants spaced at one foot intervals in the rows. If a little indentation is made in the soil where seed or plants are placed, they can be watered easily while small. Water should run toward the holes. Soil should be placed around holes to prevent wind from lifting the plastic. Small plants sometimes begin growing underneath the plastic and have to be directed toward the holes. Weeds which sprout near holes must be pulled.

### **Wall O' Water**

Wall O' Water is a series of interconnected plastic tubes, which when filled with water, provide cold protection for frost sensitive plants such as tomatoes, peppers and melons. They provide an insulated teepee-like enclosure around individual plants. The water absorbs heat during the day and gives it off at night. Temperature inside the Wall O' Water is 10 degrees or more warmer on a sunny day. For maximum protection on cold nights, the top of the enclosure should be covered. Wall O' Water makes it possible to seed or transplant heat loving vegetables outside 4 to 6 weeks earlier than normal.

## **Row Covers**

Clear plastic and spun fiber row covers improve seed germination, speed plant growth and increase total yield. The fiber covers also protect against some insects. Both trap radiant heat, increasing the growth rate of plants underneath. Vegetables can be planted up to three weeks sooner, which results in earlier harvest. Although they do offer a degree or two of frost protection, blankets or some other insulating material placed over them will provide 5 to 6 degrees of frost protection.

Plants can be covered with any clear plastic supported by various materials. The best for growing plants is slitted row covers or plastic tunnels with slits supported by wire hoops. They are fast and easy to install and slits in the cover provide ventilation so plants do not overheat. They are also somewhat wind resistant since the wind has an exit as well as an entrance. Their biggest limitation is watering. Plants cannot be watered by rain or sprinklers. They must either be hand watered or drip or furrow irrigated. For best results, black or colored plastic mulch is first laid down and vegetables are seeded or transplanted. Then the hoops and row covers are put into place over the plastic mulch and held down with soil along the edges.

Translucent white spun fiber row cover materials look like cheese cloth. They permit 75 to 90% of the light to pass through. They are also porous so that water passes through readily. Pores are too small for insects to pass through. They offer very little wind resistance. They are so light that no support is needed. These "floating" row covers are simply bunched loosely over the plants, which hold them up as they grow. Insect pollinated vegetables such as squash, cucumber, and melon should have row covers removed as soon as they begin to flower so that insects can pollinate them.

## **Berries and Other Small Fruits**

Strawberries are the easiest small fruit to grow in the vegetable garden. For home gardeners the day neutral or continuous bearing varieties are the most practical. Best varieties are Tristar, Tribute and Seascape. Plant a double row of plants spaced a foot apart with plants a foot apart in the rows. Leave a foot or more space on the outside of each row to allow for runner plant production. Runner plants are sometimes removed the first year to increase fruit yields on continuous bearing varieties. Strawberries bear the most fruit when plants are no closer than 6 inches apart. After 3 years, plants produce less fruit. Older plants should be removed each year leaving newer runner plants. Strawberries can be used as a ground cover in ornamentals.

Raspberries are usually planted in a double row with 2 feet between rows. Everbearing varieties bear a crop in June-July on last year's growth followed by a second crop in August-September on the current year's growth. Heritage (red) and Anne (yellow) are 2 popular everbearing raspberries. Posts and wires or twine are used to hold plants upright. Blackberries (including Marion berries) are grown in single rows with post and wire trellis on which to support vines.

Blueberries are attractive shrub-like plants which can be grown anywhere in the landscape. Two or more varieties are required for cross pollination. Currants and gooseberries are also shrub-like plants which are easily grown in the home landscape.