

PLANNING YOUR FRUIT GARDEN



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Homegrown fruit provides many rewards to Kansas gardeners, including tasty fruits that supply essential minerals and carbohydrates.

Some fruits are not available to buy fresh, but your fruit garden can be a source of freshly picked fruit from May to October. Caring for the plants can be a relaxing diversion for many gardeners. An added benefit of the fruit garden is its complement to the landscape with the spring fruit blossoms, screening effect from closely planted dwarf-type trees or grape and apple trellis, and color from the fruit. Gardeners should not overlook the challenges of fruit growing. Fruit diseases, insects, birds and weather can cause disappointments and reduce fruit quality. Plant only what you can care for easily. Overplanting can result in too much garden work.

Type of fruit

The fruit that your family enjoys growing and eating the most is a good place to start when deciding what to plant. Some families may wish to grow only two or three kinds of fruits such as strawberries and raspberries. Other families may decide to grow bush fruits, grapes and tree fruits. Some fruits will not grow well in some Kansas locations, so become familiar with the fruits that are most and least likely to grow well.

Space available

Space may be the limiting factor, and only a few grape vines, raspberry shrubs or a small strawberry bed will fit in the available space. In a larger space, more plants of each kind of fruit can be grown. Some trees are grafted onto dwarfing or semi-dwarfing rootstocks, so the number of square feet required for each tree is less than that for standard-size trees.

Planting site

Roots of fruit plants require oxygen, so they grow best in well-drained soil. Wet soil excludes oxygen and is not good for growing fruit. Pears somewhat tolerate poorly drained

soil, but other fruits require good drainage. Drainage can be improved on small sites by using railroad ties or other materials to elevate the planting area with a retaining wall.

A percolation test is used to measure the rate water is absorbed by the soil. Dig small diameter holes with a posthole digger. Presoak the hole by filling it with water. Later, re-fill the hole and measure the distance from a known point (often a stick inserted in or laid across the top) to the water level. Ten minutes later, record another measurement. Repeat every ten minutes for more than an hour as the water level drops. The final reading determines the percolation rate.

Percolation rates are stated as 10-minute intervals, the best rate being 1 inch in 10 minutes. That means that the water in the percolation hole dropped at least 1 inch during the final 10-minute segment. The next best rate is 1 inch in 20 minutes and so on until water percolation slows to 1 inch in 60 minutes. Soils that percolate slower than 1 inch in 60 minutes are not suitable for a fruit garden.

Low temperatures, especially in early spring during bloom, can kill fruit flowers and reduce or eliminate the crop for that season. Cold air from higher elevations settles at lower elevations, so fruit plants grown where cold air accumulates are more likely to have blossom injury.

Hot winds reduce plant yields, especially in small fruits such as blackberries, raspberries and strawberries. Plant the fruit garden where it is protected by natural barriers or buildings from cold north winds and south summer winds.

Fruit plants require full sunlight for growth, fruit development and maturity. Plant the fruit about 20 to 30 feet from medium-size shade trees and 40 to 50 feet from large trees to reduce competition for soil moisture and nutrients.

Soil types

Deep, rich, loam soil is most suitable for a fruit garden. However, in many instances the garden soil may be a heavy clay or a "builder's fill" of subsoil. You can modify the soil so it is more suitable for fruit plants by mixing in some form of

Table 1. Fruit types and description^a

Fruit crop	Approximate space per plant (sq.feet)	Minimum spacing (feet)	Average bearing (year)	Yield per plant	Expected life (years)
Small fruits					
Blackberry					
Erect	20-25	7 x 3	2nd	1.5-2 qt.	10-12
Trailing	40-50	8 x 5	2nd	3-5 qt.	10-12
Blueberry					
High bush	40-45	4 x 10	3rd-4th	10 lb.	8-10
Currant	20-30	5 x 5	2nd	3-5 qt.	10-15
Elderberry	75-85	9 x 8	2nd	2-4 qt.	15-20
Gooseberry	20-30	6 x 5	2nd	5-8 qt.	10-15
Grape	60-80	8 x 8	3rd	10-20 lb.	25-30
Raspberry					
Red	15-25	6 x 2.5	2nd	1.5 qt.	8-10
Black and purple	15-25	7 x 2.5	2nd	1.5-2 qt.	8-10
Strawberry					
June bearing	6-8	4 x 2	2nd	1 qt.	3-5
Everbearing	6-8	3 x 2	1st	0.5 qt.	3-5
Tree fruits					
Apple					
Dwarf	40-100	8 x 6	3rd-4th	3-5 bu.	15-20
Semi-dwarf	250-400	20 x 15	4th-5th	5-10 bu.	15-20
Standard	700-900	30 x 25	5th-7th	10-25 bu.	30-40
Apricots	700-900	25 x 25	5th-6th	2-4 bu.	20-30
Sweet cherry	600-900	24 x 25	5th-7th	30-60 qt.	20-30
Tart cherry					
Dwarf	175-225	15 x 15	3rd	10-15 qt.	12-15
Standard	250-400	20 x 20	4th	30-50 qt.	15-20
Peach and nectarine					
Dwarf	40-80	8 x 8	3rd	1-1.5 bu.	8-12
Standard	300-500	20 x 20	4th	3-5 bu.	10-15
Pear					
Dwarf	200-300	15 x 15	3rd-4th	1-3 bu.	10-15
Standard	500-700	25 x 25	5th-7th	4-6 bu.	30-40
Plum					
Dwarf	200-300	15 x 15	3rd-4th	1-2 bu.	10-15
Standard	500-700	25 x 25	4th-5th	3-5 bu.	15-20

^aThe listed values are approximations and may vary with varieties, locations and the care given to the fruit plants. Where space is not limited, plants can be spaced farther apart. The suggested spacing is for space between rows and between plants in the row; for example, blackberries (erect) would be spaced 7 feet between rows with plants spaced 3 feet apart in the row.

organic matter such as compost, manure, old silage, hay or peat throughout the planting area and not just in the planting holes. Soil with 2 to 3 percent organic matter content is best for fruit gardens.

Soil preparation

Before planting, the garden site should be plowed and harrowed or rototilled the same as for a vegetable garden. Control weeds by working the ground (preferably the fall before planting) before setting out the fruit. Perennial weeds such as bindweed may need to be controlled before planting. If the garden area is on a hillside and includes several hundred square feet, leave grass strips to prevent erosion.

Fertilizing

The pH and available nutrients in the soil should be determined by a soil analysis. Information on soil sampling procedures is available through your local K-State Research and Extension office. The soil analysis is a guide for adding nutrients to the soil and adjusting pH. In fruit gardens, the needed nutrients should be added to the soil and worked in before plants are set out. Fertilizer pellets that can be placed

in the bottom of the planting hole are available from nurseries and garden stores.

Plan for fruit garden

Develop a garden plan to use as a guide for ordering fruit plants and designing a planting area. Choose and record the fruit varieties you plan to grow.

Before you buy, ask local residents about the kinds and varieties of fruit that grow well locally. Request a list of recommended fruit varieties for Kansas from your local K-State Research and Extension agent (see K-State Research and Extension publication MF-1028, *Small- and Tree-Fruit Cultivars*). Local nursery and garden store employees are other sources of information about performance of fruit plants. Buy plants from a seller who purchases adapted varieties to retail and knows how to handle plants to keep them in good condition for buyers.

Some fruits require a second variety for pollination and fruit set (self-sterile) while others are self-fertile so only one variety is needed. Table 2 lists fruits that are self-fertile, partially self-fertile and self-sterile.

Table 2. Considerations for fruit crop

Fruit crop	Pollination requirement ^a	Bearing season ^b	Cold hardiness of fruit buds ^c
Small fruits			
Blackberry	Self-Fruitful	June–August	Moderately Hardy
Blueberry	Partially Self-Fruitful	July–September	Moderately Hardy
Currant	Self-Fruitful	July	Hardy
Elderberry	Partially Self-Fruitful	August–September	Hardy
Gooseberry	Self-Fruitful	June–July	Hardy
Grape	Self-Fruitful	August–September	Moderately Hardy
Raspberry	Self-Fruitful	July	Hardy
Strawberry			
June bearing	Self-Fruitful	May–June	Hardy
Everbearing	Self-Fruitful	May–June and September	Hardy
Tree fruits			
Apple	Partially Self-Fruitful	July–October	Hardy
Apricot	Self-Fruitful	July	Extremely Sensitive
Sweet cherry	Self-Sterile	June	Sensitive
Tart cherry	Self-Fruitful	June	Hardy
Nectarine	Self-Fruitful	July–September	Sensitive
Peach	Self-Fruitful	July–September	Moderately Hardy
Pear	Self-Sterile	August–September	Hardy
Plum			
European	Partially Self-Fruitful	August–September	Moderately Hardy
Japanese	Self-Sterile	August	Very Sensitive

^aSelf-Fruitful—Only one variety needed for pollination.

Self-Sterile—Two varieties are needed for pollination; occasional exceptions with some varieties.

Partially self-fruitful—Fruits generally set a heavier fruit crop with two or more varieties planted together.

^bWill vary according to varieties planted.

^cFruits listed as very sensitive to freezing temperatures are less likely to be productive in northern areas. There are varietal differences in cold hardiness.

Garden Planning Summary

- Plant fruit your family enjoys growing and eating.
- Consider the available space.
- Plant what you have time to properly care for.
- Plant the fruit garden where water drains and moves down into subsoil.
- Place fruit gardens in full sunlight. Blackberries and raspberries will tolerate a limited amount of shade.
- Plant the garden where cold is least likely to injure fruit buds and blossoms.
- Measure the area, determine number of plants required and draw a planting plan.
- Carefully plan and buy varieties of fruit that will grow well in your soil and climate.
- Prepare the ground for planting similar to seed bed preparation for vegetable crops or other small seeds.
- Keep plant roots moist and cool between the buying and planting periods.
- Plan to carry out weed, insect and disease control programs (see publication C-592, *Fruit Pest Control for Home Gardens*).
- Prune tree, vine and bush fruits annually to remove weak wood and provide good sunlight on plant leaf area.

Avoid

- Overplanting, because plants become crowded.
- Planting a large garden that is neglected and produces low quality or no fruit.
- A poorly drained site.
- Planting the fruit garden under shade trees or close to trees that compete for soil moisture and nutrients.
- A garden in a low spot in relation to surroundings.
- Bargain plants that are not adapted.
- Planting in grass or uncultivated ground.
- Total root drying before planting.
- Depending on nature to keep plants healthy.
- Delaying pruning so trees develop poor structure and excess wood shades the inner branches, which results in poor or no fruit set.

FIRST YEAR

Pre-planting from September to March

- Determine planting area.
- Take soil sample for soil analysis.
- Apply organic matter.
- Plow.
- Order plants.

Planting from February to April

- Fertilize area to be planted.
- Apply organic matter if not done earlier.
- Prepare soil – rototill, harrow or disc.
- For strawberries, treat soil for white grubs.
- Hold plants at about 40°F when received if immediate planting is not possible.
- Soak plant roots in water for 4 to 5 hours before planting.
- Prune roots by removing long and broken ends.
- Soil around the roots should be moderately firm.
- Water after planting – about 1 pint for strawberries; 3 to 5 gallons for trees.
- Prune back tops of unpruned plants.

After planting

- Water to maintain soil moisture.
- Control weeds around plants.
- Control insects and diseases.
- Select scaffold branches on trees.
- Tip-back ends of blackberries and raspberries.
- Mulch strawberries in late November.

Dormant period (January to March)

- Prune fruit trees, grape vines and fruit bushes.
- Apply dormant sprays for pest control.
- Apply mulch and fertilizers.

SECOND YEAR

April to December

- Carry out pest control program (see publication C-592).
- Remove part of strawberry mulch about two weeks after growth begins.
- Maintain soil moisture throughout the growing season.
- Renovate strawberries after harvest.
- Tip back new canes on blackberries and raspberries.
- Mulch strawberries in December (see publication MF-598, *Strawberries*).

Second dormant period

- Same as first dormant period.

Additional information

Kadir, S. 2003. *Strawberries*. K-State Research and Extension, MF-598.

Kadir, S. 2004. *Small- and Tree-Fruit Cultivars*. K-State Research and Extension, MF-1028.

Kadir, S. and R. Bauernfeind. 2005. *Fruit Pest Control for Home Gardens*. K-State Research and Extension, C-592.

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