

## Small Fruits Blackberries

<b>Interval From Planting to Fruiting</b>	<ul style="list-style-type: none"> <li>• 1 year</li> </ul>
<b>Season of Ripening</b>	<ul style="list-style-type: none"> <li>• Early June through late July</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>• pH: 5.5 to 6.5</li> <li>• Well-drained soil</li> </ul>
<b>Spacing</b>	<ul style="list-style-type: none"> <li>• Between plants: 2 ft to 8 ft</li> <li>• Between rows: 8 ft to 12 ft</li> </ul>
<b>Harvest</b>	<ul style="list-style-type: none"> <li>• Harvest blackberries when fruit is sweet but still firm.</li> <li>• Blackberries are typically harvested by hand in Missouri, either by pickers or pick-your-own customers. Mechanical harvesters are generally used in larger operations.</li> </ul>
<b>Postharvest</b>	<ul style="list-style-type: none"> <li>• Can be held for 2 to 3 days at 31°F to 32°F and 90% to 95% relative humidity</li> <li>• Highly perishable</li> </ul>
<b>Production Concerns</b>	<ul style="list-style-type: none"> <li>• Pruning is key to production.</li> <li>• Blackberries are very sensitive to water stress.</li> </ul>
<b>Pests and Diseases</b>	<ul style="list-style-type: none"> <li>• Pests: aphids, rednecked cane borers, raspberry crown borers, raspberry cane borers, strawberry weevils, psyllids, white grubs</li> <li>• Diseases: anthracnose, Botrytis blossom, Septoria cane and leaf spot, fruit rot, orange rust, spur blight, root rot, powdery mildew</li> </ul>
<b>Structures and Equipment</b>	<ul style="list-style-type: none"> <li>• Trellis for some varieties</li> </ul>
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• There are thorny and thornless blackberry cultivars.</li> </ul>

## Fruit and Vegetable Production

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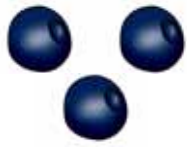
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## Small Fruits

### Blueberries

<b>Interval From Planting to Fruiting</b>	<ul style="list-style-type: none"> <li>• 2 to 3 years</li> </ul>
<b>Season of Ripening</b>	<ul style="list-style-type: none"> <li>• Late May to mid July</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>• pH: 4.3 to 4.9</li> <li>• Sandy loam soil with high organic matter content</li> </ul>
<b>Spacing</b>	<ul style="list-style-type: none"> <li>• Between plants: 4 ft to 8 ft</li> <li>• Between rows: 8 ft to 14 ft</li> </ul>
<b>Harvest</b>	<ul style="list-style-type: none"> <li>• Berries are harvested in June, July, and early August.</li> <li>• Berries turn blue 3 to 4 days before reaching peak flavor and sweetness. Berries that have a reddish tinge are not yet ripe.</li> </ul>
<b>Postharvest</b>	<ul style="list-style-type: none"> <li>• Blueberries can be stored 14 days at 32°F and 90% to 95% relative humidity.</li> <li>• Cellophane covers reduce water loss from fruit.</li> </ul>
<b>Production Concerns</b>	<ul style="list-style-type: none"> <li>• Plants are very sensitive to too much water and too little water because of their shallow root systems. Good drainage is essential, and plants should be mulched and watered regularly.</li> </ul>
<b>Pests and Diseases</b>	<ul style="list-style-type: none"> <li>• Pests: blueberry maggots, blueberry tip borers, cherry fruitworms, cranberry fruitworms, plum curculios, birds</li> <li>• Diseases: cane gall, mummy berry, Botrytis blossom blight, powdery mildew, twig blights, leaf spots</li> </ul>
<b>Structures and Equipment</b>	
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• Plants usually do not need to be pruned for the first three years. Prune dormant plants during the fourth year.</li> </ul>

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## Small Fruits

### Grapes

<b>Interval From Planting to Fruiting</b>	<ul style="list-style-type: none"> <li>• 3 years</li> </ul>
<b>Season of Ripening</b>	<ul style="list-style-type: none"> <li>• Mid August through early October</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>• pH: 5.5 to 6.5</li> <li>• Adequate soil drainage is important</li> </ul>
<b>Spacing</b>	<ul style="list-style-type: none"> <li>• Between plants: 8 ft</li> <li>• Between rows: 10 ft</li> </ul>
<b>Harvest</b>	<ul style="list-style-type: none"> <li>• Size and color are two indicators of maturity.</li> <li>• Grapes harvested for table use can be picked when they taste good. Grapes for wine have specific ranges for sugar content, pH, and acidity that determine quality and acceptability.</li> </ul>
<b>Postharvest</b>	<ul style="list-style-type: none"> <li>• With forced-air cooling, can be stored up to 6 months at 32°F and 85% relative humidity, depending on variety</li> </ul>
<b>Production Concerns</b>	<ul style="list-style-type: none"> <li>• Grapes require more significant and regular pruning than any other fruit crop.</li> </ul>
<b>Pests and Diseases</b>	<ul style="list-style-type: none"> <li>• Pests: grape berry moths, mealybugs, leafhoppers, flea beetles</li> <li>• Diseases: black rot, powdery mildew, downy mildew, crown gall</li> </ul>
<b>Structures and Equipment</b>	<ul style="list-style-type: none"> <li>• Some type of trellising system is needed and plants must be trained to it.</li> </ul>
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• Grapes can do well in a variety of soil conditions.</li> <li>• Grapes are pruned when they are dormant. Late winter is the preferred season for pruning.</li> </ul>

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## Small Fruits

### Raspberries

<b>Interval From Planting to Fruiting</b>	<ul style="list-style-type: none"> <li>• 5 months to 1 year</li> </ul>
<b>Season of Ripening</b>	<ul style="list-style-type: none"> <li>• June through early July for summer bearing varieties</li> <li>• August through October for fall bearing varieties</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>• pH: 5.5 to 6.5</li> <li>• Well-drained soil with high organic matter content</li> </ul>
<b>Spacing</b>	<ul style="list-style-type: none"> <li>• Between plants: 2 ft to 6 ft</li> <li>• Between rows: 8 ft to 12 ft</li> </ul>
<b>Harvest</b>	<ul style="list-style-type: none"> <li>• Harvest raspberries when fruit is firm, has good color, and separates easily from the plant.</li> <li>• Raspberries are typically harvested by hand in Missouri, either by pickers or pick-your-own customers. Berries should be harvested directly into shallow sale containers to minimize handling and damage.</li> </ul>
<b>Postharvest</b>	<ul style="list-style-type: none"> <li>• Can be held for 2 to 3 days at 32°F and 90% to 95% relative humidity</li> <li>• Highly perishable</li> </ul>
<b>Production Concerns</b>	<ul style="list-style-type: none"> <li>• Black and purple varieties grow more heartily and require more pruning than red varieties.</li> <li>• Raspberries are very sensitive to water stress, and well-drained soil is necessary to avoid root rot.</li> <li>• Pruning essential to production.</li> </ul>
<b>Pests and Diseases</b>	<ul style="list-style-type: none"> <li>• Pests: raspberry crown borers, rednecked cane borers, strawberry bud weevils</li> <li>• Diseases: anthracnose, Septoria cane and leaf spot, rust, blight, powdery mildew, fruit rot</li> </ul>
<b>Structures and Equipment</b>	<ul style="list-style-type: none"> <li>• Trellis in “T”, “I”, or “V” formation</li> </ul>
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• Training and pruning are usually the most expensive and time-consuming production concerns. The trellis system and training strategy must be matched to the variety of raspberry being grown.</li> </ul>

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## Small Fruits Strawberries

<b>Interval From Planting to Fruiting</b>	<ul style="list-style-type: none"> <li>• 2 months to 1 year</li> </ul>
<b>Season of Ripening</b>	<ul style="list-style-type: none"> <li>• May through mid October</li> </ul>
<b>Soil</b>	<ul style="list-style-type: none"> <li>• pH: 5.5 to 6.5</li> <li>• Well-drained soil</li> </ul>
<b>Spacing</b>	<ul style="list-style-type: none"> <li>• Between plants: 30 in. to 36 in.</li> <li>• Between rows: 42 in. to 48 in.</li> </ul>
<b>Harvest</b>	<ul style="list-style-type: none"> <li>• Strawberries are ripe when they are fully red.</li> <li>• Harvest ripe strawberries daily and dispose of moldy berries to prevent rot from spreading.</li> <li>• Harvest berries directly into sale containers to minimize handling and damage.</li> </ul>
<b>Postharvest</b>	<ul style="list-style-type: none"> <li>• Can be held 5 to 7 days at 32°F and 95% relative humidity</li> <li>• Highly perishable</li> </ul>
<b>Production Concerns</b>	<ul style="list-style-type: none"> <li>• Strawberries need to be planted in a location that provides full sun.</li> </ul>
<b>Pests and Diseases</b>	<ul style="list-style-type: none"> <li>• Pests: tarnished plant bugs, leaf rollers, mites, strawberry weevils or clippers, nematodes, slugs</li> <li>• Diseases: black root rot, red stele root rot, leaf spot, leaf scorch, Verticillium wilt, gray mold, leather rot</li> </ul>
<b>Structures and Equipment</b>	
<b>Other Considerations</b>	<ul style="list-style-type: none"> <li>• Strawberries should receive at least 1 in. of water per week during the growing season.</li> <li>• Weed control is particularly important in strawberry production. Weeds reduce plant establishment, plant density, budding, and fruit size, as well as make harvesting difficult.</li> </ul>

## Fruit and Vegetable Production

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<b>Interval From Planting to Fruiting</b>	
<b>Season of Ripening</b>	
<b>Soil</b>	
<b>Spacing</b>	
<b>Harvest</b>	
<b>Postharvest</b>	
<b>Production Concerns</b>	
<b>Pests and Diseases</b>	
<b>Structures and Equipment</b>	
<b>Other Considerations</b>	

