

Disease-Resistant Apple Cultivars

Disease infection is a major limitation to growing apples in Missouri. Several cultivars with apple scab immunity or resistance are currently available for planting. Although these cultivars can reduce pesticide usage, apples are susceptible to other diseases and insect pests. All the cultivars listed below are immune or resistant to apple scab. Because temperatures often reach 100 degrees F in August, early-ripening disease-resistant cultivars are excluded. Also, some cultivars have not yet been evaluated in Missouri and may have unidentified limitations to fruit production.

Apple cultivars

Liberty. An older cultivar, released in 1978, that has broad resistance to apple scab, fire blight, cedar apple rust and powdery mildew and, therefore, is highly recommended for planting in Missouri. It has red fruit with a yellow background color that generally ripens around Sept. 10 in central Missouri.

Pixie Crunch. Pixie Crunch is immune to apple scab, moderately susceptible to fire blight and susceptible to downy mildew and cedar-apple rust. Trees have a spreading growth habit with some bare wood on their leggy branches. This red apple ripens about the same time as Liberty and the fruit tends to be small, but it has a crisp texture.

Crimson Gold. Trees of this cultivar have a moderate growth habit and are resistant to apple scab but may be susceptible to other diseases. Apples are yellow with a reddish-orange blush, have a sweet/acidic flavor and ripen around early September.

Crimson Topaz. Trees have an upright, vigorous growth habit and are resistant to apple scab but only moderately resistant to mildew and fire blight. Fruits are medium-size and yellow with reddish-orange striping. Harvest in mid-September.

Freedom. A scab-resistant cultivar released by the New York State Agricultural Experiment Station breeding program. Trees are only moderately resistant to fire blight. The fruit has a spicy flavor and an orangish-red peel. In wet growing seasons, it may be susceptible to black rot.

Galarina. This cultivar has high tolerance to scab, but its susceptibility to other diseases has not been evaluated in Missouri. Apples have a sweet flavor, with medium-size to



Figure 1. Planting apple cultivars that are resistant to prevalent diseases may eliminate the need to apply fungicides. (Sketch by Barbara Barkwell Long)

small reddish orange fruit. Fruit resembles that of Gala and is harvested in mid- to late September.

Florina (Querina). Another scab-resistant cultivar, originating from France. It also has moderate resistance to blight and mildew but is susceptible to cedar apple rust. Its parentage includes Jonathan. The dark red, medium-size fruit has a sweet/tart flavor and ripens in October.

Enterprise. An older, but reliable cultivar that ripens in October. It is immune to scab, resistant to fire blight and cedar apple rust, and moderately resistant to mildew. The fruit is tart and is medium to large with red color, and the peel tends to be tough.

Goldrush. This cultivar is immune to apple scab and moderately resistant to powdery mildew and fire blight but susceptible to cedar apple rust. It has medium to large yellow fruit with sweet/acidic flavor that tends to mellow when cold-stored. The fruit ripens in October after Enterprise.

Common disease symptoms

Apple scab

Apple scab is caused by a fungus that infects the fruit and the foliage of trees under cool, humid conditions in spring. Young, velvety brown lesions can be seen on the underside of leaves. With time, individual lesions may coalesce and infect the upper and lower leaf surfaces. A severe infection of the leaves can cause premature defoliation, which reduces tree growth and yield. Scab lesions on the fruit are brown and corky. As the fruit enlarges, it may grow unevenly, resulting in misshapen, cracked fruit. Fruit losses from apple scab can be severe on susceptible cultivars.

Cedar apple rust

Because plantings of eastern red cedar (*Juniperus virginiana*) are widespread in Missouri, cedar apple rust is another common disease in the state. Eastern red cedar serves as an alternate host to the disease. Under rainy conditions in spring, galls on the cedar branches produce orange, gelatinous horns that release spores. Wind can carry the spores as far as a mile to infect the young leaves and blossoms of apple trees. After infection, orange-brown lesions appear on the upper sides of the foliage or on fruit. On susceptible cultivars, cedar apple rust can cause defoliation and loss of fruit quality. Goldrush, Pixie Crunch, and Florina are susceptible to cedar apple rust and should be avoided in areas where cedar apple rust is prevalent.

Fire blight

Fire blight is a devastating bacterial disease that occurs in most parts of Missouri. This disease infects blossoms, fruit, branches and leaves. Infected tissue appears black, as if scorched by fire. The “shepherd’s crook” symptom, in which the shoot tips are bent over, is the most easily recognized evidence of the disease. Whole branches or trees may be lost after fire blight infection.

favors temperatures higher than 65 degrees F and moisture. Enterprise and Liberty cultivars are very resistant to fire blight, but others are susceptible to the disease.

Powdery mildew

Powdery mildew is caused by a fungus that infects blossoms, fruit and leaves. Whitish, felt-like patches can be seen on the underside of foliage. Infected floral buds open five to eight days later than healthy ones. Later, the developing fruit often exhibits russetting, which appears as brown, corky netting on the surface of the small apples. Powdery mildew infection favors cool temperatures and high humidity.

Summer diseases and insects

Although some apple cultivars have resistance to apple scab, cedar-apple rust, fire blight and downy mildew, they are still susceptible to summer diseases, such as fly speck and sooty blotch, and to insect pests. Fly speck and sooty blotch occur together on the fruit surface under warm, humid weather conditions. Fly speck is identified by distinct groups of tiny, shiny black spots. Sooty blotch appears as olive green to black smudges. Both of these diseases are superficial blemishes that can usually be removed from the surface of the apple with mild scrubbing. In contrast to the summer diseases, control of insect pests on disease-resistant apple cultivars may require trapping, mating disruption or insecticide application.

Rootstocks

Most of these scab-resistant cultivars are available from nurseries on rootstocks that produce relative large to very large trees such as M.26, M.7 and MM.111. However, M.26 is very susceptible to fire blight and, therefore, is not recommended for planting in Missouri.

ALSO FROM MU EXTENSION PUBLICATIONS

G6020 *Fire Blight*
G6022 *Apple Cultivars and Their Uses*

extension.missouri.edu | 800-292-0969

UNIVERSITY OF MISSOURI
 Extension

■ Issued in furtherance of the Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211
■ an equal opportunity/ADA institution ■ 573-882-7216 ■ extension.missouri.edu