

CHOICE FLOWERING CRABAPPLE CULTIVARS FOR THE NORTHERN PLAINS

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The crabapple has been the most popular ornamental tree in the United States for at least 35 years.

There are various reasons for this popularity, several of which are as follows:

1. Very showy specimen trees when in flower and cultivars begin flowering at an early age.
2. Small to medium size tailored trees that fit the scale of urban and residential properties.
3. Broad range of cultivar foliage, flower and fruit coloration.
4. Variation in form or growth habit of cultivars, including narrowly erect, oval, rounded, vase to broad-spreading, and a variety of weeping forms.
5. A majority of cultivars are not difficult to transplant and grow.
6. Retention of colorful fruits (pomes) by some cultivars add landscape value in fall and into winter.
7. An important food source for a variety of wildlife.

North Dakota State University (NDSU) researchers evaluated our entire flowering crabapple collection from 1999 to 2002, including over 100 cultivars. Winter hardiness was an important factor considered. Flower quantity and quality (e.g., color) were evaluated in May. Leaf color quality and retention and fruit color quality, size, and retention were all evaluated in the fall. Leaf retention in late summer and fall is closely correlated with susceptibility of the specific cultivar to apple scab. Fireblight is another important disease in crabapple evaluation. The significance of this disease was reduced substantially because trees in the NDSU Research Arboretum grow under somewhat stressful or hardened conditions since they compete with turf and are not watered or fertilized, except for establishment. Other foliar diseases, usually of reduced significance in the Northern Plains, include cedar apple rust, frog-eye leafspot and powdery mildew.

A flowering crabapple cultivar should no longer retain high popularity or value solely because it has quality flowers. The flowering period is very transitory. If temperatures during the flowering period are seasonably cool (approximately 58 - 70° F), the attractive flowers may provide color for 14 to 16 days. If temperatures are unseasonably warm (approximately 75 - 89° F) during the flowering period, flowers may only last for one week. To merit recommendation, crabapple cultivars should have such additional qualities as disease resistance, desirable growth habits, quality foliage, autumn coloration, and small ($\frac{1}{4}$ - $\frac{2}{3}$ ") showy fruits (pomes), which are retained into the dormant period (fall) or preferably longer (winter).

Several factors should be considered when selecting flowering crabapple cultivars for landscape planting.

1. Select winterhardy cultivars. A substantial number of cultivars lack sufficient winter hardiness in USDA hardiness zones 2 to at least 4a. Select winterhardy cultivars. If choosing a borderline hardy cultivar, grow under "hardening conditions," particularly for the first 2 to 3 years. Wrap trunks in early November to reduce winter sunscald susceptibility; remove wraps by mid to late April.
2. Select disease resistant cultivars. This information is becoming more widely available. However, it is important to note that disease resistance of particular cultivars may break down over time due to changes that occur in the disease organism. Apple scab resistance is particularly important to alleviate unsightly foliage and premature leaf drop.
3. Select cultivars for landscape purposes that preferably do not produce fruits larger than $\frac{2}{3}$ " diameter to reduce messiness if fruits drop. Numerous cultivars are available which bear $\frac{1}{4}$ - $\frac{2}{3}$ " diameter fruits.
4. Select cultivars that produce colorful fruits that cling on the tree in the fall and into winter.

5. Deer, rabbits and mice can be very damaging to crabapples if trees are unprotected and no control measures taken.

The following are the most highly recommended cultivars based upon performance evaluations particularly at the Absaraka Horticulture Farm (NDSU Research Arboretum). Several of these cultivars may not be fully adapted to far northern and western Northern Plains sites. It was not feasible to evaluate over 100 cultivars at numerous sites throughout the region. If your favorite cultivar is not on the list, there is a valid reason, or possibly it was a cultivar which was not evaluated in this study. For example, Radiant Crabapple was rated very highly for several decades, but due to susceptibility to apple scab, we had to remove it from the current recommended list. If grown solely for its floral display, it is superb. Although USDA plant hardiness zone recommendations are normally expressed in whole numbers, the authors elected to use a split number (i.e., 3.5) for cultivars which were more susceptible to winter injury the first few years after transplant. This problem may be accentuated in heavy, rich soils, particularly if plants are routinely watered and fertilized, which may inhibit natural hardening of plant tissues.

Recommended Cultivars

A. Rosy-pink flowers

1. Adams Crabapple - *Malus* x 'Adams' Z3.5 Introduced by Adams Nursery, Westfield, MA. Foliage green, reddish-purple tinted in spring. Dense, rounded tree form. Flower buds carmine, flowers bright pink, fade. Fruits dark glossy-red, 5/8", very persistent. Excellent disease resistance to date. Usually develops orange-red fall color. Grow under "hardening conditions" first several years.
2. Centurion® Crabapple - *Malus* x 'Centzam' Z3 Simpson Nursery selection, Vincennes, IN. Leaves reddish-purple in spring, green with purple-red tint in summer. Upright in form, becoming more open and round-spreading with spire-like branches. Flowers are rosy-red, showy. Glossy cherry-red fruits, 1/2 - 5/8", persist for several months in the fall. Excellent disease resistance to date. Russet coppery fall color develops. Very hardy.
3. Indian Magic Crabapple - *Malus* x 'Indian Magic' Z3 Simpson Nursery selection. Dark green foliage. Open, rounded in form. Flower buds red. Flowers are a rich, deep pink. Glossy, red 1/3 - 1/2" fruits, changing to deep orange, are very persistent. Disease resistance very good to date in Northern Plains. Some reports state good to intermediate apple scab resistance. Red-orange fall color is usually excellent. Hardy.
4. Indian Summer Crabapple - *Malus* x 'Indian Summer' Z3.5 Simpson Nursery, sister seedling of Centurion®. Leaves purple-green in spring, bronze-green summer. Broadly-rounded in form. Rose-red showy flowers. Bright red, 5/8 - 3/4" fruits are very persistent. Excellent disease resistance to date. Grow under "hardening conditions" first several years.
5. Selkirk Crabapple - *Malus* x 'Selkirk' Z2b-3 Introduced at Morden Research Station. Spring leaves bronzy-green, summer leaves dark green. Round, spreading form. Rose-purple buds, rosy-pink flowers. Glossy, dark red 3/4" fruits. They are not persistent beyond the end of October so can be messy. Very good disease resistance, but intermediate for apple scab. Very hardy.

B. Pink Flowers

6. Red Splendor Crabapple - *Malus* x 'Red Splendor' Z3 Bergeson Nursery introduction. Reddish-green spring foliage, becomes mostly green, semi-glossy. Tree form spreading, fairly dense. Flower buds rosy, open bright pink, they do fade. Shiny, cherry-like, 1/2" red, extremely persistent fruits.

Fairly good disease resistance, slight apple scab and moderate fireblight susceptibility. Fall color deep russet coppery shades. Very hardy.

C. White Flowers

7. Beverly Crabapple - *Malus* x 'Beverly' Z3.5 Originated at the Morton Arboretum, Lisle, IL. Leaves are bright green. Dense, rounded in form. Flower buds reddish-pink, opening to white. Bright, glossy red $\frac{1}{2}$ - $\frac{2}{3}$ ", retentive fruits. Very good disease resistance, highly apple scab resistant. Moderate susceptibility to fireblight, but little or none in our trials to date. Leaves turn yellow in fall. Grow under "hardening conditions" first several years.
8. Winter Gem™ Crabapple - *Malus* x 'Glen Mills' Z3.5 Introduced by Peter Overdezet, Glen Mills Nursery in PA. Leaves are bright green. Growth habit is rounded, dense and well-branched. Flower buds are pink, flowers opening to white. Red, glistening $\frac{1}{3}$ " fruits in abundance. Excellent retention in fall. This cultivar is not commonly found in the commercial nursery trade, but was singularly outstanding in fruit display even into the winter. No disease problems to date. Excellent golden, orange-tinged fall color. Grow under "hardening conditions" first several years.
9. Canary Crabapple - *Malus* x 'Canary' Z3.5 Introduced by Simpson Nursery. Leaves green. Open, spreading somewhat, horizontal branching is almost reminiscent of a weeping crabapple. Abundance of small, white flowers. Fruits are $\frac{1}{3}$ ", shiny golden-yellow. Cling through October, but birds favor them so no droppage in our tests. Disease resistant to date. Yellow, tinged orange, autumn color. If evaluations continue to be promising, 'Canary' may be superseded in the near future by recommending Harvest Gold® Crabapple – *Malus* x 'Hargozam'. The latter grows upright-oval with dark green leaves; flowers are white and fruits are yellow, $\frac{1}{2}$ ". Disease resistance has been good to date. Grow both of these cultivars under "hardening conditions" first several years.
10. Donald Wyman Crabapple - *Malus* x 'Donald Wyman' Z3 Arnold Arboretum introduction. Semi-glossy dark-green foliage. Spreading, rounded form. Flower buds rosy-pink, open to near white. Fruits glossy-red, $\frac{3}{8}$ - $\frac{1}{2}$ ", very persistent through winter. Very good disease resistance. Golden-orange fall color develops. Grow under "hardening conditions" for several years.
11. Jack or Korean Crabapple - *Malus baccata* 'Jackii' Z3 Foliage is semi-glossy, green. Trees develop rounded crowns. Flower buds light pink, open pure white. Fruits small, $\frac{3}{8}$ ", variably reddish blushed, semi-persistent. Excellent disease resistance. Yellow fall color. Very hardy.
12. Spring Snow Crabapple - *Malus* x 'Spring Snow' Z3 A Dolgo Crabapple seedling. Bright green, semi-glossy foliage. Narrow, upright-oval form, becoming rounded with age. Pure white fragrant flowers; no fruits, sterile. Good disease resistance to date in Northern Plains, but fireblight can occur and reports of apple scab susceptibility are appearing in the literature. Good heat tolerance. Some yellow fall color develops. Very hardy.
13. White Candle Crabapple - *Malus* x 'White Candle' Z3 Inter-State Nurseries introduction, NJ. Dark green foliage, long leaves. Narrow, erect growth form. Flower buds dark pink, open to near white; many flowers, semi-double. Fruits $\frac{5}{8}$ ", red, medium numbers produced, not heavily set, only semi-persistent. Average to good disease resistance, some susceptibility to apple scab and fireblight. Little or no autumn color. Hardy.

D. Purple foliage

14. Cardinal Crabapple - *Malus* x 'Cardinal' (PP #7147) Z3.5 Princeton Nursery introduction, NJ. Leaves purple-red to purple, glossy. Upright, becoming more spreading to somewhat flat-topped with age. Flower buds deep red; flowers bright red, fade to magenta-pink. Fruits are sparse, deep red, 1/3 to 1/2". Fall color brilliant, showy deep red. Reputed to be the most disease resistant purplish-leaved cultivar. Grow under "hardening conditions" first several years.
15. Purple Prince Crabapple - *Malus* x 'Purple Prince' (PP #8478) Z3.5 A Father John Fiala selection introduced by J. Frank Schmidt and Son Co. Spring foliage purple, summer bronze-green. Young trees oval, becoming rounded. Carmine-red buds, open to bright rosy-red, petals narrow. Fruits abundant, non-showy, glaucous bluish-purple, 1/2", quite persistent in fall. Bark is cherrylike. Purple-red fall foliage. Excellent disease resistance. Grow under "hardening conditions" first several years.
16. Thunderchild Crabapple - *Malus* x 'Thunderchild' Z2b-3 Canadian introduction. Purple foliage is its major asset. Upright, round-spreading in form. Deep rosy-pink flowers. Purple-red 1/2" fruits, produced only in moderate numbers, not very persistent. Fall color is non-showy. Foliage breakdown may occur in fall. Newer cultivars superior in this regard. Very hardy. A severe strain of apple scab has become a major problem in the Prairie Provinces of Canada. 'Gladiator' is a new purplish-foliaged crabapple with glossy leaves and improved disease resistance and is being recommended as a replacement for 'Thunderchild'. 'Gladiator' is narrowly upright in form. Selected by Rick Durand, Prairie Shade Nursery, Portage la Prairie, MB. Jeffries Nurseries introduced Purple Spire™, a new compact, columnar form with showy purple foliage, also in Portage la Prairie.
17. Velvet Pillar® Crabapple - *Malus* x 'Velvetcole' (PP #4758) Z4 Leaves purple to purple-red. Upright, ascending branches, nearly columnar in early years. Flowers pink, somewhat sparse. Fruits also sparse, red, semi-glossy 1/2", fairly persistent. Very good disease resistance, but only fair apple scab resistance reported. Fall color a showy deep red. Grow under "hardening conditions" first several years. Somewhat borderline in hardiness during establishment years. Can grow multiple-trunked, also.

E. Weeping Form

18. Molten Lava® Crabapple - *Malus* x 'Molazam' (PP #6672) Z3 Selected by Father John Fiala and introduced by Lake County Nursery, Perry, OH. Green leaves. A semi-weeper, spreading horizontal branching. Flower buds red, flowers open to white. Fruits 1/3", bright shiny red, quite persistent. Very good disease resistance. Golden-yellow fall color, orange-tinged. Hardy.
19. Royal Fountain® Crabapple - *Malus* x 'Huber' Z3. A small, weeping crabapple. Purple leaves, becoming bronze-green. Flowers are a beautiful rosy-wine. Fruits, deep red-purple, 3/8 - 1/2", good persistence, but not very showy. Fair to good apple scab-fireblight resistance to date. Very striking in flower display.

Several additional cultivars are under consideration for recommendation. Evaluations are still in progress. Examples include *Malus* x 'Prairifire' - Prairifire Crabapple from the University of Illinois, which produces showy rose-red flowers, but it needs to be grown under "hardening conditions" in early years. New foliage is red-maroon, aging to reddish-green. Upright when young, round-spreading with age. Persistent dark red-maroon fruits, 3/8 - 1/2". Very disease resistant. Others include *Malus* x 'Norman' - Norman Crabapple, a hardy seedling of 'Red Splendor'. This Bergeson Nursery introduction from Fertile, MN produces fewer, less colorful fruits, rosy-pink to pink flowers and has a fairly upright form. Evaluation of six dwarf cultivars is also in progress.