

Minnesota Noxious Weed Risk Assessment

Developed by the Minnesota Noxious Weed Advisory Committee

Assessment information

Common name: Japanese barberry

Scientific name: *Berberis thunbergii* DC.

Family name: Berberidaceae

Current reviewer name and organizational affiliation: Jennifer Larson, USDA Forest Service

Date of current review: July 28, 2025

Previous reviewer name and organizational affiliation: Laura Van Riper, Minnesota Department of Natural Resources and Tim Power, Minnesota Nursery and Landscape Association

Date of previous review: August 15, 2013

Species description

Photos



Photo caption: Japanese barberry leaves and egg-shaped berries. Photo credit: Richard Gardner, Bugwood.org.



Photo caption: Japanese barberry infestation in Pickwick, Homer Township, Minnesota. Japanese barberry can produce dense thickets of thorny cover in forested and open areas. Photo credit: Minnesota Department of Agriculture.

Why the plant is being assessed

- Following the 2013 assessment by the Noxious Weeds Advisory Committee, the Minnesota Department began a three-year phase-out period starting January 1, 2015 for cultivars that average greater than 600 seeds per plant. The following cultivars have been listed as Restricted since January 1, 2018: ‘Angel Wings’, ‘Antares’, var. *atropurpurea*. ‘Bailtwo’ (Burgundy Carousel®), ‘Monomb’ (Cherry Bomb™), ‘Crimson Velvet’, ‘Erecta’, ‘Gold Ring’, ‘Bailsel’ (Golden Carousel®; *B. koreana* x *B. thunbergii* hybrid), ‘Inermis’, ‘Bailgreen’ (Jade Carousel), ‘JN Redleaf’ (Ruby Jewel™), ‘JN Variegated’ (Stardust™), ‘Kelleris’, ‘Kobold’, ‘Anderson’ (Lustre GreentM), ‘Marshall Upright’, ‘Painter’s Palette’, ‘Pow Wow’, ‘Red Rocket’, ‘Rose Glow’, ‘Bailone’ (Ruby Carousel™), ‘Silver Mile’, ‘Sparkle’, ‘Tara’ (Emerald Carousel®; *B. koreana* x *B. thunbergii* hybrid). Additionally the Wild Type (parent species — green Japanese barberry) is listed as Restricted.
- Japanese barberry remains a popular landscape plant. Since becoming regulated as Restricted Noxious Weed in 2018, Japanese barberry has continued to spread into new areas in the eastern half of the state. There is concern that new populations may be expanding not only from infestations established before 2018 but also from seed spread from new and existing plantings of cultivars that are not regulated including selections that produce unknown numbers of seeds and vary possibly more than 600 seeds per plant. This is a concern that may need to be addressed through a change in regulation.

- Since 2018, there have been newly developed Worry Free® and Sunjoy® cultivars that produce no seed or have a 98% reduction in seed production, respectively, and might warrant specific exemptions from regulation.

Identification, biology, and life cycle

- Japanese barberry is a small, spiny shrub that can grow 3-6 feet tall.
- Curving branches can root where they touch the ground and allow Japanese barberry to form dense thickets in forested understory.
- Leaves are small, rounded and smooth, and arranged in clusters above single spines.
- Fruits are small, bright red, egg-shaped berries that are single or in clusters. They mature in August and remain on the plant through winter; seeds are dispersed primarily by birds after consuming the fruit.
- Reproduction is mainly by seed, though some vegetative spread can occur when branches take root after touching the ground.
- Similar-looking species include common barberry (*Berberis vulgaris*) which has toothed leaves and three-pronged spines; common barberry also has flower clusters of 10-20 flowers, while Japanese barberry has clusters of 1-4 flowers. Common barberry is Prohibited Control Noxious Weed in Minnesota.
- This and additional information can be found on Minnesota Departments of Agriculture and Natural Resources web pages, as well as University of Maryland Extension (Minnesota Department of Agriculture 2025a, Minnesota Department of Natural Resources 2025, University of Maryland Extension 2025).

Current distribution

Japanese barberry (*Berberis thunbergii*)

EDDMapS
find • map • track



Map created: 1/7/2025

Image caption: National level map from EDDMapS (2025a). Map accessed on 7 January 2025.

Japanese barberry is reported as introduced in the following states: Washington, Wyoming, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana, Kentucky, Tennessee, Ohio, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, and Georgia. Canadian provinces with reports for Japanese barberry include Ontario, Quebec and Prince Edward Island.

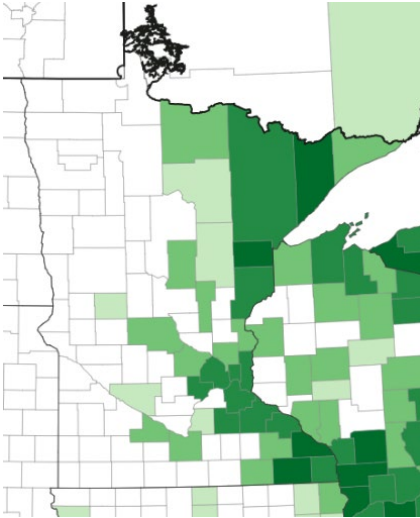


Image caption: State level record-density map of Japanese barberry reports from EDDMapS (2025b). Map accessed on 7 January 2025. Reports of Japanese barberry are mainly in the eastern parts of the Minnesota, with the highest number of records occurring in the northeast, southeast, and metro area.

When querying EDDMapS for distribution information from 2013, when Japanese barberry was last evaluated, there were three confirmed locations. However, reporting in EDDMapS was not as common in 2013 as it is today (Minnesota Department of Agriculture 2025b).

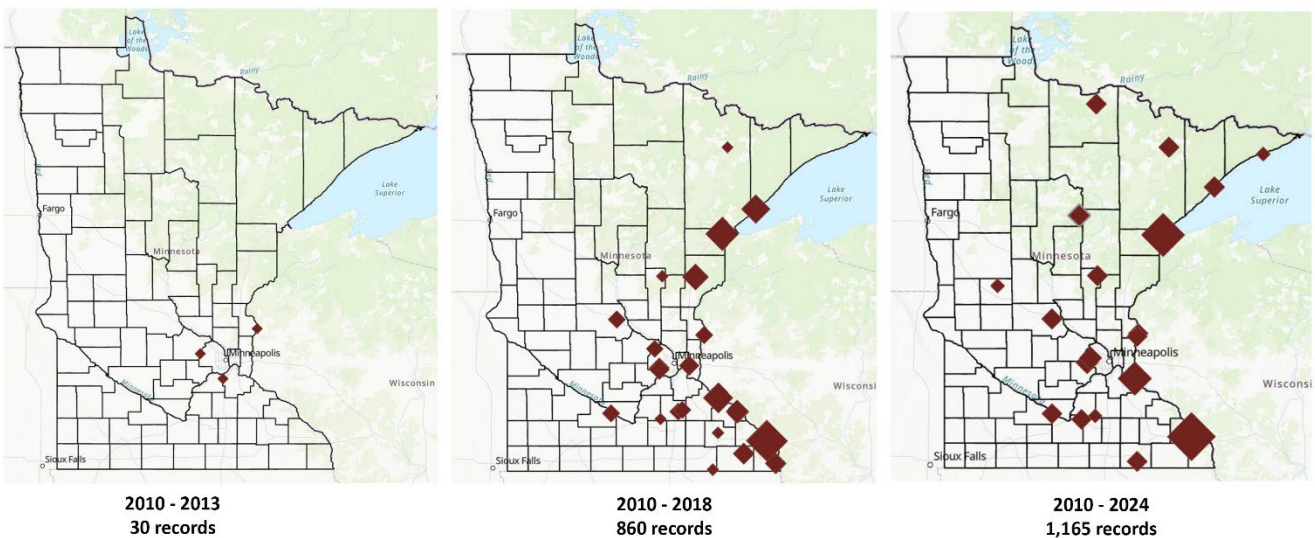


Image caption: State level record map for Japanese barberry during time periods between 2010 – 2024 in Minnesota from the Minnesota Department of Agriculture (Minnesota Department of Agriculture 2025b).

Current regulation

The species and twenty-five cultivars and varieties of Japanese barberry are currently regulated in Minnesota as restricted noxious weeds: ‘Anderson’ (Lustre Green™); ‘Angel Wings’; ‘Antares’; ‘Bailgreen’ (Jade Carousel®); ‘Bailone’ (Ruby Carousel®); ‘Bailsel’ (Golden Carousel® - *B. koreana* × *B. thunbergii* hybrid); ‘Bailtwo’ (Burgundy Carousel®); *B. thunbergii* var. *atropurpurea*; ‘Crimson Velvet’; ‘Erecta’; ‘Gold Ring’; ‘Inermis’; ‘JN

Redleaf' (Ruby Jewel™); 'JN Variegated' (Stardust™); 'Kelleris'; 'Kobold'; 'Marshall Upright'; 'Monomb' (Cherry Bomb™); 'Painter's Palette'; 'Pow Wow'; 'Red Rocket'; 'Rose Glow'; 'Silver Mile'; 'Sparkle'; 'Tara' (Emerald Carousel® - *B. koreana* × *B. thunbergii* hybrid); Wild Type (parent species – green barberry). However, cultivars of Japanese barberry not listed are legal to sell. Japanese barberry is not regulated by the federal government but is regulated in the states of Connecticut, Indiana, Maine, New Hampshire, New York, Vermont, Wisconsin, and West Virginia (National Plant Board 2025).

Risk assessment

Box 1:

Is the plant species or genotype non-native?

Answer: Yes.

Outcome: Go to Box 3.

Kew (2024) states that *Berberis thunbergii* is native to Japan. It is introduced into: "Austria, Bulgaria, Central European Russia, China North-Central, China Southeast, Connecticut, Czechoslovakia, Delaware, Denmark, Finland, Georgia, Germany, Great Britain, Illinois, Indiana, Iowa, Ireland, Kansas, Kentucky, Korea, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Myanmar, Nebraska, New Brunswick, New Hampshire, New Jersey, New York, North Carolina, Norway, Nova Scotia, Ohio, Ontario, Pennsylvania, Poland, Prince Edward I., Romania, South Dakota, Sweden, Switzerland, Tennessee, Uzbekistan, Vermont, Virginia, West Virginia, Wisconsin, Wyoming, Yugoslavia."

Box 2:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production?

Question 2A: Does the plant have toxic qualities that pose a significant risk to livestock, wildlife, or people?

Outcome: Decision tree does not direct to this question.

Question 2B: Does the plant cause significant financial losses associated with decreased yields, reduced quality, or increased production costs?

Outcome: Decision tree does not direct to this question.

Box 3:

Is the species, or a related species, documented as being a problem elsewhere?

Answer: Yes.

Outcome: Go to Box 6.

Japanese barberry is one of 40 invasive plant species that is monitored by the USDA Forest Service, Northern Research Station (NRS), Forest Inventory and Analysis (FIA) program (Kurtz and Hansen 2018). In the 2016 inventory, it was the seventh most commonly observed invasive species on the 4,981 monitored plots in Region 9, which includes Minnesota.

Japanese barberry is regulated in the following states: Connecticut, Indiana, Massachusetts, Maine, New Hampshire, New York, Vermont, Wisconsin, and West Virginia. Minnesota currently restricts the sale of thirteen cultivars (Minnesota Department of Agriculture 2025, National Plant Board 2025).

Japanese barberry is a prohibited invasive terrestrial plant that cannot be sold, gifted, bartered, exchanged, distributed, transported or introduced as indicated by the Indiana terrestrial plant rule (312 IAC 18-3-25; Indiana Department of Natural Resources 2019).

New York's Summary of Plant Protection Regulations lists Japanese barberry as a noxious weed and all cultivars have been prohibited from trade since March 10, 2016 (2019). However, there have been exemptions given to five cultivars (Department of Environmental Conservation 2025).

The summary of plant protection regulations for the state of Vermont lists Japanese barberry as a Class B noxious weed, for which the movement, sale, and/or distribution is prohibited (State of Vermont 2025).

The summary of plant protection regulations for the state of West Virginia (Natural Resources Conservation Service 2010) lists Japanese barberry as a noxious weed and "no person shall move, transport, deliver, ship or offer for shipment into or within this state any noxious weed without first obtaining a permit from the Department of Agriculture and such permit shall be issued only after it has been determined that the noxious weed is generally present throughout the state or is for scientific purposes subject to prescribed safeguards."

Wisconsin's Department of Natural Resources lists Japanese barberry parent type, the variety *atropupurea*, the hybrid of *B. thunbergii* x *B. koreana* and numerous cultivars as restricted, and are prohibited from "transport, transfer and introduction, but possession is allowed" due to the species already being established in the state (Wisconsin State Legislature, NR 40 2025).

New Hampshire lists Japanese barberry as prohibited and "No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1, New Hampshire prohibited invasive species list" (New Hampshire Department of Agriculture, Markets & Food 2018).

Box 4:

Are the species' life history and growth requirements understood?

Outcome: Decision tree does not direct to this question.

Box 5:

Gather and evaluate further information

Outcome: Decision tree does not direct to this question.

Box 6:

Does the species have the capacity to establish and survive in Minnesota?

Question 6A: Is the plant, or a close relative, currently established in Minnesota?

Answer: Yes.

Outcome: Go to Box 7.

Japanese barberry is known to establish and survive in Minnesota. It is widely planted in landscapes and is also known to escape and naturalize, based in part on EDDMapS record density map in the previous section *Current Distribution*. In addition, the percentage of USDA Forest Service permanent Forest Inventory and Analysis (FIA) plots with Japanese barberry increased 0.3% between 2013 and 2018 assessments (Hillard et al. 2022).

Japanese barberry does well in hardiness zones 4 through 9 (Lehrer et al. 2006a), this covers much of Minnesota with the exception of the northern portion of the state.

Question 6B: Has the plant become established in areas having a climate and growing conditions similar to those found in Minnesota?

Outcome: Decision tree does not direct to this question.

Question 6C: Has the plant become established in areas having a climate and growing conditions similar to those projected to be present in Minnesota under future climate projections?

Outcome: Decision tree does not direct to this question.

Box 7:

Does the species have the potential to reproduce and spread in Minnesota?

Question 7A: Are there cultivars of the plant that are known to differ in reproductive properties from the species?

Answer: Yes.

Outcome: Go to Question 7B and follow the questions and also answer Question 7J.

Brand and Durocher (2022) developed four compact cultivars described as “sterile or nearly sterile” over the 2006-2021 study period, with red, green, or yellow foliage. In addition, the four cultivars marketed as WorryFree® due to their lack of or low fecundity were deemed resistant to infection by *Puccinia graminis* (black stem rust), which can affect wheat.

Question 7B: Does the plant reproduce by asexual/vegetative means?

Answer: Yes.

Outcome: Go to Question 7C.

Japanese barberry can spread by means of creeping roots, and branches can root when they touch the ground (Czarapata 2005).

Question 7C: Are the asexual propagules - vegetative parts having the capacity to develop into new plants - effectively dispersed to new areas?

Answer: No.

Outcome: Go to Question 7D.

Vegetative spread is local and is not part of plant dispersal into new areas (Czarapata 2005).

Question 7D: Does the plant produce large amounts of viable, cold hardy seeds? For woody species, document the average age the species produces viable seed.

Answer: Yes.

Outcome: Go to Question 7G.

Seeds are a primary form of recruitment (Ehrenfeld 1999) and seed production can vary by cultivar (Lehrer et al. 2006a and b).

Question 7E: For species that produce low numbers of viable seeds, do they have a high level of seed/seedling vigor or remain viable for an extended period (seed bank)?

Outcome: Decision tree does not direct to this question.

Question 7F: Is the plant self-fertile?

Answer: No. **This information is supplemental and is not part of the flow chart pathway for this risk assessment.**

Japanese barberry has an anther-tripping mechanism that deposits pollen on insects that visit flower nectaries; this mechanism would favor outcrossing (Lebuhn and Anderson 1994). The author found no evidence of self-compatibility in this species. Studies on congeners indicate self-incompatibility (Ebadi 2010) or require insect pollination for fruit production even with genetic self-compatibility (U.S. Fish and Wildlife Service 1997).

Question 7G: Are sexual propagules – viable seeds – effectively dispersed to new areas? List and consider all vectors.

Answer: Yes.

Outcome: Go to Question 7I.

Yes. Seeds are in small berries which are eaten by birds and rabbits and subsequently dispersed (Czarapata 2005, Silander and Klepeis 1999). Mule deer, white-tail deer, turkeys, and grouse can be agents of long-distance seed dispersal, in addition to passerine birds (Ehrenfeld 1997).

Question 7H: Can the species hybridize with native species (or other introduced species) and produce viable seed and fertile offspring in the absence of human intervention?

Answer: Yes. **This information is supplemental and is not part of the flow chart pathway for this risk assessment.**

Minnesota does not have any native *Berberis* species. The non-native common barberry (*Berberis vulgaris*) is present in Minnesota. Japanese barberry and common barberry can hybridize and form *Berberis x ottawensis* which can produce some viable seed and pollen (Connolly et al. 2013). Common barberry is a Prohibited Control Noxious Weed in Minnesota.

Question 7I: Are there natural controls (species native to Minnesota) which have been documented to effectively prevent the spread of the species in question?

Answer: No.

Outcome: Go to Box 8.

Authors in 2013 and 2025 did not find any literature documenting natural controls.

Japanese barberry is not palatable to deer, possibly due to the numerous sharp spines, and does well in areas of high deer density (Silander and Klepeis 1999). The North American native lepidopteran *Coryphista meadii* (barberry geometer) has been observed to defoliate new shoots of Japanese barberry (not leaves on older stems), but it was unclear if it impacts barberry on a population level (Ehrenfeld 2009). In a Michigan study, Katz and Ibáñez (2016) found that seedlings transplanted to higher latitude locations experienced greater insect herbivory, but the herbivory only led to minor effects on survival.

Question 7J: Was the answer to Question 7A (Are there cultivars that differ in reproductive properties from the original species) “Yes”?

Answer: Yes.

Outcome: Document those cultivars and differences here.

After the 2013 review of Japanese barberry, those cultivars listed as the “seediest” by Connecticut and Wisconsin were listed as Specially Regulated Plants by the Minnesota Department of Agriculture. Following a 3-year phase out period these cultivars became Restricted (January 1, 2018) due to their average production of more than 600 seeds per plant: ‘Angel Wings’, ‘Antares’, var. atropurpurea. ‘Bailtwo’ (Burgundy Carousel®),

'Monomb' (Cherry Bomb™), 'Crimson Velvet', 'Erecta', 'Gold Ring', 'Baisel' (Golden Carousel®; B. koreana xB. thunbergii hybrid), 'Inermis', 'Bailgreen' (Jade Carousel), 'iN Redleaf' (Ruby Jewel™), 'iN Variegated' (Stardust™), 'Kelleris', 'Kobold', 'Anderson' (Lustre GreentM), 'Marshall Upright', 'Painter's Palette', 'Pow Wow', 'Red Rocket', 'Rose Glow', 'Bailone' (Ruby CarouselT), 'Silver Mile', 'Sparkle', 'Tara' (Emerald Carousels; B. koreana xB. thunbergii hybrid), Wild Type (parent species — green barberry).

The 600 seeds per Japanese barberry plant benchmark is based on the Brand et al. (2012) study that evaluated 46 cultivars and hybrids of the species. Other states, namely Oregon, use a reduction rate in seed production of 98% to help guide regulation. This reduction rate first guided approval of *Buddleja* cultivars in Oregon (Still and Contreras 2024). In early 2025, the NWAC listing subcommittee began to consolidate resources on exempting low fecundity cultivars. At the time of this writing, standard regional guidelines have not been developed. In addition to the cultivars listed previously, Wisconsin Department of Natural Resources also places Japanese barberry parent type as Restricted under their Invasive Species Rule – NR 40. The Illinois Terrestrial Plant Subcommittee will recommend regulation in Illinois through the Exotic Weed Act, with a 4-year phase out period excluding low-fecundity cultivars discussed in the next section.

WorryFree® cultivars were developed by the lab led by Dr. Mark Brand at the University of Connecticut. The selected cultivars were evaluated over a 14 or 16-year period in container and field settings for female fertility with interplanted control plants (Brand and Durocher, 2022). Fruit and seed production did not occur in two cultivars, and two others produced 1 – 1.5 seeds per plant in study years 2006-2021, summarized below:

- a. 'UCONNBTCP4N' (PP30,095): Crimson Cutie® produced ≤ 1.5 seed/plant 3/16 years under evaluation
- b. 'UCONNBTB039' (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
- c. 'UCONNBTB048' (PP30,127): Lemon Glow® produced no seeds between 2008-2021
- d. 'UCONNBTB113' (PP30,094): Lemon Cutie® produced no seeds between 2008-2021

Based on a web search, Crimson Cutie® is available from one grower in Minnesota (Nolt's Garden Center 2025) and from multiple online retailers. Mr. Green Genes®, Lemon Glow®, and Lemon Cutie® are also available from multiple online retailers.

Sunjoy® cultivars were developed by Spring Meadow Nursery and marketed through Proven Winners® (Spring Meadow Nursery 2025; Proven Winners® 2025). The cultivar 'NCBT1' (PP30,330): Mini Maroon® was selected for a reduced female fertility observed as a 98.8-100% reduction in seed production, though the patent does not list the number of fruits/seeds produced by the parent plant or Mini Maroon® cultivar (Ranney, T., inventor; North Carolina State University 2019). Mini Maroon® is available from at least two Minnesota retailers (Gertens 2025, Pahl's Market 2025) and multiple online retailers. In addition, the cultivar 'NCBX1' (PP29,504): Todo® was selected for no observed female fertility, though the patent also states that the cultivar "has not been observed under all possible environmental conditions" (Ranney, T., inventor; North Carolina State University 2017). In addition, the cultivar 'NCBX1' (PP29,504): Todo® was selected for its glossy purple foliage, very compact habit and "very low" observed female fertility; the patent uses language including "very low female fertility" and "no observed female fertility" but lists no information on age of plants or the time period (age of plants) over which observations took place. The cultivar 'NCBX1' (PP29,504): Todo® was not recommended for exemption by the Illinois Terrestrial Plant Subcommittee.

The Pennsylvania Department of Agriculture (PDA) (2025) regulates Japanese barberry under their noxious weed act and have exempted four cultivars from the noxious weed regulation. They state "PDA has approved the four sterile cultivars for sale and planting in Pennsylvania as exemptions to the Japanese barberry ban. The approved infertile, seedless barberry varieties from SynRG, LLC., Raleigh, North Carolina, are listed below:

Parent species: *Berberis thunbergii*

These are in the WorryFree® Series of barberries from the company SynRG, LLC.

- Crimson Cutie®(UCONNBTCP4N)
- Lemon Cutie®(UCONNBTB113)
- Lemon Glow®(UCONNBTB048)
- Mr. Green Genes®(UCONNBTB039)”

Box 8:

Does the species pose significant human or livestock concerns or have the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?

Question 8A: Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?

Answer: No.

Outcome: Go Question 8B.

Authors in 2013 and 2025 did not find any literature documenting toxic or detrimental qualities of Japanese barberry that pose a risk to livestock, wildlife, or people. However, studies in Maine and Connecticut found that black legged ticks were twice as abundant in Japanese barberry invaded forests than non-invaded forests which could lead to increases in tick-borne diseases such as Lyme disease (Elias et al. 2006, Williams and Ward 2010, D’Antonio et al. 2023). These increases in black legged tick abundance could be due to an increase in their common host (Linske et al. 2018) or a reduction in generalist arthropod predators (Clark and Seewagen 2019) in areas that Japanese barberry has invaded. At this time, it does not appear that this effect rises to the level of “significant” toxic threat to people.

Question 8B: Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?

Answer: No.

Outcome: Go to Question 8C.

Authors in 2013 and 2025 did not find any literature documenting financial loss due to Japanese barberry invasion. However, USDA Natural Resources Conservation Service mapped a 923-acre infestation in Wabasha County, where there was a loss of wooded pasture.

Question 8C: Can the plant aggressively displace native species through competition (including allelopathic effects)?

Answer: Yes.

Outcome: Go to Box 9.

Japanese barberry can produce dense stands that can shade out native plants in a variety of habitats including “deciduous forests, abandoned fields, and roadsides” (Silander and Klepeis 1999). Ward et al. (2009) state that “Dense Japanese barberry (*Berberis thunbergii*) stands ... are associated with a paucity of both tree regeneration and herbaceous plants in some forest stands.” In addition, Link et al (2018) model outputs “predicted that *B. thunbergii*-invaded plots had 82% lower seedling densities compared with uninvaded plots.” Models were based on data collected in secondary forested areas near a suburban landscape but provided insight into the impact potential of Japanese barberry on native seedling recruitment in a forested setting. Authors in 2013 and 2025 did not find any literature documenting allelopathy.

Question 8D: Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?

Outcome: Decision tree does not direct to this question.

Question 8E: Does the plant have the potential to change native ecosystems (adds a vegetative layer, affects ground or surface water levels, etc.)?

Answer: Yes. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Soil under Japanese barberry has higher pH and higher nitrogen (higher nitrification and mineralization rates) than soils under a common native shrub (Ehrenfeld et al. 2001). Greenhouse studies showed that Japanese barberry leaf litter was higher in nitrogen than native species and decomposed more rapidly (Ehrenfeld et al. 2001). Soils under Japanese barberry also differ in microbial community structure and function from that under a native shrub (Kourtev et al. 2002). Altering soil functions in an ecosystem could have ecosystem level effects (Ehrenfeld et al. 2001). Additionally, the timing of nutrient uptake and deposition differs from native species, also contributing to ecosystem level changes (Ehrenfeld et al. 2001, Ehrenfeld 2004). Ehrenfeld et al. (2001) note that while densities of Japanese barberry start out low, over time they alter the soil to be higher in nutrients, which then makes the site more favorable for additional Japanese barberry plants, leading to dense populations and altered soil over time. Cassidy et al. (2004) found that Japanese barberry does better in sites with higher nitrogen.

Question 8F: Does the plant have the potential to introduce or harbor another pest or serve as an alternate host?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

This has not been documented, but there is some concern.

Common barberry (*Berberis vulgaris*) has been widely eradicated as it serves as a host to wheat rust. Japanese barberry is not a host of wheat rust. However, Connolly et al. (2013) note that *Berberis* × *ottawensis* (*B. thunbergii* × *B. vulgaris*) is relatively common in the wild in Connecticut and Massachusetts and those hybrid plants are capable of producing some viable seed and pollen. Researchers at University of Minnesota have developed of a tool to accurately identify *B. x ottawensis*. Using this tool, Dr. Pablo D. Olivera Firpo and colleagues confirmed the presence of the hybrid barberry in Minnesota. In addition, their lab identified stripe rust of Kentucky bluegrass on hybrid barberry, which suggests that *B. x ottawensis* may be susceptible to stem rust (Minnesota Invasive Terrestrial Plants and Pests Center 2024). In addition, a recent study by Rodriguez-Algaba et al. (2022) found aecial infections of stem rust were found in European *B. x ottawensis*. Furthermore, Barataula et al. 2018 found that experimental full sibling crosses of *B. x ottawensis* displayed a clear (63%), intermediate (18%) or resistant (19%) reaction to stem rust emphasizing the importance of monitoring naturalized hybrids.

There is an emerging wheat rust (first documented in Uganda in 1999) called Ug99. There is great concern that if this rust strain reaches North America it would cause extensive damage to US crops and cause millions/billions in crop losses. Ug99 has now been identified in five African countries, including Uganda, Iran (Shahin 2022), and most recently in Nepal (Patpour 2024). At this time there is no evidence that Japanese barberry can serve as a host to the stem rust fungus Ug99. Current regulation in Canada allows for importation from the United States of “cultivars that have been tested as highly resistant to black stem rust” (Government of Canada, effective date 2012).

Box 9:**Does the species have clearly defined benefits that outweigh associated negative impacts?**

Question 9A: Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?

Answer: Yes.

Outcome: Go to Question 9B.

Japanese barberry is produced and sold in the horticulture industry in Minnesota.

It is considered a staple in the industry because of its unique colors, forms, toughness and deer resistance. A single Minnesota wholesale grower produces and sells 100,000+ Japanese barberry plants nationwide. A 2011 poll by the Minnesota Nursery and Landscape Association (MNLA) showed the most popular cultivars in Minnesota to be ‘Crimson Pygmy’, ‘Rose Glow’, ‘Concorde’ (may be a selection of *B. × ottawensis*; *B. thunbergii* × *B. vulgaris*), ‘Bailtwo’ (Burgundy Carousel®), ‘Helmond Pillar’, ‘Tara’ (a selection of *B. thunbergii* × *B. koreana*; Emerald Carousel®), ‘Bailsel’ (Golden Carousel®), ‘Bailone’ (Ruby Carousel®), ‘Gentry’ (Royal Burgundy®), ‘Kobold’, ‘Monlers’ (a selection of *B. thunbergii* × *B. koreana*; Golden Nugget™) and ‘Moreti Select’ (Cabernet®), in that order.

A more recent 2025 poll by MNLA indicated that “the wholesale value of the Japanese barberry cultivars being grown in Minnesota (regardless of the type of nursery stock produced and sold, and including sales to both Minnesota and outstate customers) is estimated to be \$1,162,159/year based on 2024 sales information provided by the primary Minnesota wholesale growers that currently grow this species. It should be noted that some wholesale growers also sell Japanese barberry at the retail level. Although the wholesale growers surveyed account for most of the wholesale production of Japanese barberry in Minnesota, this estimate of wholesale value is not representative of every grower and is, therefore, a conservative estimate of the wholesale value of Japanese barberry to nursery growers and the Minnesota economy. Sales of Japanese barberry to Minnesota customers accounted for 13% of sales while sales to outstate customers accounted for 87% of sales in 2024. Based on this information and using a conservative retail markup factor, the estimated value (wholesale plus value-added retail) of Japanese barberry plants sold in Minnesota would be in the range of \$3,102,511 to \$3,683,590/year. Once again, this is only a conservative estimate because the data set is not complete; the value to all Minnesota wholesalers is not included and retailers may also purchase Japanese barberry plants from outstate wholesalers. It should also be noted that these estimated monetary values do not account for the value of Japanese barberry in the product mix of individual growers and retailers and does not include the unique landscape value of Japanese barberry in designed landscapes” (Calkins 2025).

The Minnesota Department of Agriculture Commissioner accepted the Noxious Weed Advisory Committee’s recommendation and signed an order to list the following cultivars as Specially Regulated, to begin a phase-out period starting January 1, 2015, and then move to Restricted Noxious Weeds starting January 1, 2018: ‘Angel Wings’, ‘Antares’, var. atropurpurea. ‘Bailtwo’ (Burgundy Carousel®), ‘Monomb’ (Cherry Bomb™), ‘Crimson Velvet’, ‘Erecta’, ‘Gold Ring’, ‘Bailsel’ (Golden Carousel®; *B. koreana* × *B. thunbergii* hybrid), ‘Inermis’, ‘Bailgreen’ (Jade Carousel), ‘iN Redleaf’ (Ruby Jewel™), ‘iN Variegated’ (Stardust™), ‘Kelleris’, ‘Kobold’, ‘Anderson’ (Lustre Greent™), ‘Marshall Upright’, ‘Painter’s Palette’, ‘Pow Wow’, ‘Red Rocket’, ‘Rose Glow’, ‘Bailone’ (Ruby Carousel™), ‘Silver Mile’, ‘Sparkle’, ‘Tara’ (Emerald Carousels; *B. koreana* × *B. thunbergii* hybrid), Wild Type (parent species — green barberry). The recommendation was due to these cultivars producing more than 600 seeds per plant.

Question 9B: Is the plant an introduced species and can its spread be effectively and easily prevented or controlled, or its negative impacts minimized, through carefully designed and executed management practices?

Answer: No.

Outcome: Go to Question 9C.

There were no special regulations identified that make sense for this plant.

Question 9C: Is the plant native to Minnesota?

Answer: No.

Outcome: Go to Question 9D.

The plant is native to Japan.

Question 9D: Is a non-invasive, alternative plant material or cultivar commercially available that could serve the same purpose as the plant of concern?

Answer: Yes.

Outcome: Go to Box 10.

Brand (2013) reports that long-term observation is necessary to ensure sterility or extremely low seed counts in new Japanese barberry crosses, and that his sterility trials now reflect ten years of research. See question 7J for low fecundity cultivar discussion.

The Minnesota Department of Natural Resources (2025) suggests the following alternatives: *Dirca palustris* (Leatherwood), *Viburnum rafinesquianum* (Downy Arrowwood), *Corylus americana* (American hazelnut), *Corylus cornuta* (beaked hazelnut), and *Sambucus canadensis* var. *canadensis* (common elderberry).

University of Illinois Extension (2025) suggests the following alternatives: *Ilex verticillata* (winterberry holly) and *Cornus racemosa* (gray dogwood). Other species they list are not native to Minnesota according to the USDA Plants Database.

Question 9E: Does the plant benefit Minnesota to a greater extent than the negative impacts identified at Box #8?

Answer: No. ***This information is supplemental and is not part of the flow chart pathway for this risk assessment.***

Japanese barberry's deer resistance, unique colors and forms, suitability for specimen or mass plantings and adaptability to varied planting sites have made it a landscape staple for many years. Seed quantity and color have been significant selling points for Japanese barberry cultivars in the past. Unfortunately, the seediness of many Japanese barberry cultivars and the parent species engender their invasiveness in forested settings, especially those settings previously exposed to agricultural disturbance. This invasiveness is exacerbated by feral Japanese barberry's eventual tendency to form thickets in naturalized populations. Japanese barberry is of high horticultural value and the benefit/negative impact equation would be significantly improved by reduction or elimination of seed in future selections.

Box 10:**Should the species be regulated as Prohibited/Eradicate, Prohibited/Control, or Restricted Noxious Weed?**

Question 10A: Is the plant currently established in Minnesota?

Answer: Yes.

Outcome: Go to Question 10D.

See “Current Distribution” section and Question 6A.

Question 10B: Would prohibiting this species in trade prevent the likelihood of introduction and/or establishment?

Outcome: Decision tree does not direct to this question.

Question 10C: Does this risk assessment support this species being a top priority for statewide eradication if found in the state?

Outcome: Decision tree does not direct to this question.

Question 10D: Does the plant pose a serious human health threat?

Answer: No.

Outcome: Go to Question 10F.

See Question 8A.

Question 10E: Is the health threat posed by the plant serious enough, and is the plant distribution sufficiently small enough to be manageable, and are management tools available and effective enough to justify listing as Prohibited / Eradicate species?

Outcome: Decision tree does not direct to this question.

Question 10F: Is the plant known to cause significant ecological or economic harm and can the plant be reliably eradicated (entire plant) on a statewide basis using existing practices and available resources considering the distribution, reproductive biology and potential for spread?

- *For distribution, note if the distribution is well documented, the number and acreage of known infestations and how widespread they are in the state. Note if there are infestations in border areas.*
- *For reproductive biology, note if there are reproductive biology factors that make the plant easier to control and eradication more likely (for example, long pre-reproductive period, self-incompatible pollination, short-lived seed bank).*
- *For potential for spread and re-invasion of controlled areas, note its potential to spread beyond places where it is being controlled such as deliberate planting by people, wildlife vectors, re-infestation from border states, or other factors that facilitate spread.*

- *For known management tools, note what management tools are available, potential non-target impacts, and the reasonableness of state management or mandating that landowners throughout the state use the management tools to eradicate or control existing plants.*
- *For available resources, consider the capacity of state and local personnel and availability of funding to respond to new and existing infestations.*

Answer: No.

Outcome: Go to Question 10G.

Japanese barberry is too widely distributed in Minnesota (as both planted specimens and plants that have spread away from cultivation) to be considered for the Prohibited Eradicate Noxious Weed category.

Distribution: Japanese barberry has been widely planted throughout Minnesota as a landscaping plant. In EDDMapS there is documentation of plants that have spread from where they were planted. EDDMapS records include many of the counties in the eastern half of Minnesota.

Reproductive biology: Japanese barberry reproduces by seed. The seeds are in berries which can be eaten and spread by wildlife.

Potential for spread and re-invasion: Animals that have eaten the berries could spread seeds to new areas.

Known management tools:

Quoted from the Minnesota Department of Natural Resources (2025):

- Mechanical control can be done by digging out the plant with a shovel or hand pulling small plants.
- Herbicide control can be done using systemic herbicides, which are taken up by plants and move within the plant, killing leaves, stems, and roots. Cut plants will resprout if the stump is not treated with herbicide after cutting. Immediately after cutting (within 2 hours), apply an herbicide containing triclopyr (Garlon 3A/Vastlan, Garlon 4, or other brush killers with triclopyr) or glyphosate to the cut stump to prevent re-sprouting. Always follow label instructions for herbicides. Herbicides can be applied to cut stumps with a paintbrush, wick applicator such as a dauber or "buckthorn blaster," or a low volume sprayer.
- In cases where more than a few plants are treated, add an indicator dye (available where pesticides are sold), such as Mark-It Blue, to the herbicide to mark which cut stumps you have sprayed.
- For basal stem treatment, a method that applies chemical through the bark, low volume spray applications can be made with Garlon 4, Pathfinder II and similar oil-based products. This application method uses triclopyr ester mixed with an oil diluent (i.e. Bark Oil Blue, kerosene) applied directly to the bark of Japanese barberry from the root collar up about 12-18 inches. An ultra-low volume spray wand should be used to minimize herbicide use and reduce the potential for non-target injury.

Additional tools used for Japanese barberry include foliar treatments, forestry mowing followed by foliar treatments, directed flame and prescribed fire (Ward et al. 2013).

Available resources: There are no additional resources specific to Japanese barberry. As a woody shrub, management is labor intensive and can be costly.

Question 10G: Is the plant known to cause significant ecological or economic harm and can the plant be reliably controlled to limit spread on a statewide basis using existing practices and available resources?

Would the economic impacts or other hardships incurred in implementing control measures be reasonable considering any ongoing or potential future increase of ecological or economic harm?

- Also consider all bullet points listed under 10F when evaluating 10G

Answer: No.

Outcome: Go to Question 10H.

Japanese barberry is a woody shrub that widely distributed in the state and cannot be reliably controlled to limit spread on a statewide basis using existing practices and available resources.

Question 10H: Would prohibiting this species in trade have any significant or measurable impact to limit or reduce the existing populations or future spread of the species in Minnesota?

Answer: Yes.

Outcome: LIST THE PLANT AS A RESTRICTED NOXIOUS WEED.

The spread of Japanese barberry cannot be easily prevented or controlled once it is introduced. Offspring of cultivars (such as purple- or yellow-leaved forms) can be green, making it difficult to tell phenologically which cultivar was a parent to a naturalized barberry plant (Lehrer et al. 2006c). Use of genetic markers through tools such as amplified fragment length polymorphism (AFLP) can identify feral barberry parents (Lubbell et al. 2008). Though cultivar influence in invasive populations of Japanese barberry was shown via AFLP to be small, it was present and therefore important (Lubbell and Brand 2008).

Japanese barberry cultivars with low or no seed production are likely to be less invasive (Brand 2013, 2022), though Knight et al. (2011) note that large changes in fecundity result in relatively small changes to the population growth rates of long-lived species like Japanese barberry. This question comes down to whether a plant needs to be “safer” or “safe” in order to have its “negative impacts minimized”.

It is difficult to control the spread of woody species once they are widely distributed. Methods for Japanese barberry control are similar to those for buckthorn or other woody invasives – very time and labor intensive. Management includes applying glyphosate to Japanese barberry during early spring leafout (Silander and Klepeis 1999). Silander and Klepeis (1999) recommend control of small, newly expanding populations as the most effective landscape-level control.

The wild-type Japanese barberry and 25 cultivars and varieties are currently prohibited in Minnesota. As mentioned previously, these cultivars produce greater than 600 seeds per plant. No known assessment of other cultivars is currently underway, though we mention the low-fecundity cultivars that have been assessed in question 7J. Brand et al. (2012) suggest that cultivars “producing as few as 100 seeds per year have the potential to contribute to a few seedlings each year to a natural area.”

The Noxious Weed Listing Subcommittee reviewed the potential species to be exempted. The following discussion is from the Noxious Weed Listing Subcommittee:

The subcommittee recommends simplifying the Japanese barberry regulation so that Japanese barberry and all varieties, cultivars, and hybrids are Restricted Noxious Weeds unless specifically exempted. The subcommittee reviewed the information available for low fecundity cultivars and recommends that the following cultivars be exempted from regulation and that their sale is allowed:

- The following four WorryFree® cultivars:
 - ‘UCONNBTCP4N’ (PP30,095): Crimson Cutie® produced ≤ 1.5 seed/plant 3/16 years under evaluation

- 'UCONNBTB039' (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
- 'UCONNBTB048' (PP30,127): Lemon Glow® produced no seeds between 2008-2021
- 'UCONNBTB113' (PP30,094): Lemon Cutie® produced no seeds between 2008-2021
- The following Proven Winners® Sunjoy® cultivar:
 - 'NCBT1' (PP30,330): Mini Maroon®

The next update of the Minnesota Noxious Weed List species is scheduled for January 1, 2026. At that time, the Minnesota Department of Agriculture could announce a three-year phase out of all Japanese barberry sales besides the above exempted cultivars. During that three-year period, the currently restricted cultivars and the species should remain Restricted Noxious Weeds. Then on January 1, 2029, the regulation would go into effect that all Japanese barberry are Restricted Noxious Weeds with the exception of the 5 cultivars above.

The Noxious Weed Advisory Committee is willing to assess new cultivars for requested exemptions if data on their fecundity is published. The Committee will include requested cultivar assessments in annual work plans and as staff capacity allows. The cultivar exemption information and committee recommendation will be documented. New low fecundity cultivars can be added to the exemption list without updating the entire species risk assessment.

Question 10I: Are there any other measures that could be put in place as Special Regulations which could mitigate the impact of the species within Minnesota?

Outcome: Decision tree does not direct to this question.

Box 11:

The species is being proposed to be designated as a Specially Regulated Plant. What are the specific regulations proposed?

Answer: Decision tree does not direct to this question.

Final outcomes of risk assessment (2025)

NWAC Listing Subcommittee

Outcome: Restricted Noxious Weed, exempting the following cultivars:

- The following four WorryFree® cultivars:
 - 'UCONNBTCP4N' (PP30,095): Crimson Cutie® produced <= 1.5 seed/plant 3/16 years under evaluation
 - 'UCONNBTB039' (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
 - 'UCONNBTB048' (PP30,127): Lemon Glow® produced no seeds between 2008-2021
 - 'UCONNBTB113' (PP30,094): Lemon Cutie® produced no seeds between 2008-2021
- The following Proven Winners® Sunjoy® cultivar:
 - 'NCBT1' (PP30,330): Mini Maroon®

Comments:

NWAC Full Committee

Outcome: Exempt the following cultivars:

- The following four WorryFree® cultivars:
 - 'UCONNBTCP4N' (PP30,095): Crimson Cutie® produced ≤ 1.5 seed/plant 3/16 years under evaluation
 - 'UCONNBTB039' (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
 - 'UCONNBTB048' (PP30,127): Lemon Glow® produced no seeds between 2008-2021
 - 'UCONNBTB113' (PP30,094): Lemon Cutie® produced no seeds between 2008-2021
- The following Proven Winners® Sunjoy® cultivar:
 - 'NCBT1' (PP30,330): Mini Maroon®

All other cultivars of Japanese barberry that were previously allowed for sale under the Noxious Weed Law will begin a three-year phase out, meaning they can be sold to deplete any stock on-hand through December 31, 2028, after which they will become restricted noxious weeds. Beginning on January 1, 2029, only approved cultivars will be allowed for sale in Minnesota.

Comments: The vote on 12/16/25 was 19 to 1 in favor of the recommendation.

MDA Commissioner

Outcome: Exempt the following cultivars:

- The following four WorryFree® cultivars:
 - 'UCONNBTCP4N' (PP30,095): Crimson Cutie® produced ≤ 1.5 seed/plant 3/16 years under evaluation
 - 'UCONNBTB039' (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
 - 'UCONNBTB048' (PP30,127): Lemon Glow® produced no seeds between 2008-2021
 - 'UCONNBTB113' (PP30,094): Lemon Cutie® produced no seeds between 2008-2021
- The following Proven Winners® Sunjoy® cultivar:
 - 'NCBT1' (PP30,330): Mini Maroon®

All other cultivars of Japanese barberry that were previously allowed for sale under the Noxious Weed Law will begin a three-year phase out, meaning they can be sold to deplete any stock on-hand through December 31, 2028, after which they will become restricted noxious weeds. Beginning on January 1, 2029, only approved cultivars will be allowed for sale in Minnesota.

Comments: No comments

Risk Assessment Current Summary (07-28-2025)

- Following an initial assessment by the Noxious Weeds Advisory Committee in 2013, a three-year phase-out period began on January 1, 2015 for specific cultivars that had been found average greater than 600 seeds per plant in research studies.
- Japanese barberry remains a popular landscape plant. Since 2018, Japanese barberry has continued to spread into new areas in the eastern half of the state. There is concern that new populations may be establishing not only from existing infestations but also from seed spread from new and existing plantings of cultivars that produce seed.
- Since 2018, there have been newly developed Worry Free® and Sunjoy® cultivars that produce no seed or have a 98% reduction in seed production, respectively.

- Evaluating low-fecundity cultivars is a relatively new process. The Noxious Weed Listing Subcommittee will continue to work to refine a process for evaluating low fecundity cultivars for regulatory exemption.
- The evaluation leads to keeping Japanese barberry as a restricted noxious weed, exempting the following cultivars:
 - The following four WorryFree® cultivars:
 - ‘UCONNBTCP4N’ (PP30,095): Crimson Cutie® produced ≤ 1.5 seed/plant 3/16 years under evaluation
 - ‘UCONNBTB039’ (PP30,128): Mr. Green Genes® produced 1 seed per plant in years 2012 and 2013
 - ‘UCONNBTB048’ (PP30,127): Lemon Glow® produced no seeds between 2008-2021
 - ‘UCONNBTB113’ (PP30,094): Lemon Cutie® produced no seeds between 2008-2021
 - The following Proven Winners® Sunjoy® cultivars:
 - ‘NCBT1’ (PP30,330): Mini Maroon®
- The Noxious Weed Advisory Committee is willing to assess new cultivars for requested exemptions if data on their fecundity is published. The Committee will include requested cultivar assessments in annual work plans and as staff capacity allows. The cultivar exemption information and committee recommendation will be documented. New low fecundity cultivars can be added to the exemption list without updating the entire species risk assessment.

Final outcomes of risk assessment (2013)

NWAC Listing Subcommittee

Outcome: Specially Regulated

Comments: First Review – 5/24/2011; Second Review 10/10/2012; Third Review 8/12/2013- List as a Specially Regulated Plant with a management plan that seeks to phase out the sale of the seediest cultivars using the list from CT and WI. After phase out period, sale of these cultivars would be prohibited. See list of cultivars in Appendix 1. If new cultivars are developed and they have fecundity levels 600 seeds/plant or greater, then the new cultivars should be examined for inclusion in the Specially Regulated Plant category listing of phased out plants in Appendix 1.

NWAC Full Committee

Outcome: Specially Regulated

Comments: Reviewed 12/28/2014

Vote 13 -0 to recommend as a specially regulated plant with Listing Subcommittee’s suggested management plan.

MDA Commissioner

Outcome: Specially Regulated

Comments: Reviewed 2/24/2014

Accepted NWAC’s recommendation.

Commissioner requested that MNLA and MDA Nursery Staff meet to determine an acceptable management plan that will be accepted by the nursery industry. No regulation of Japanese barberry will occur until the commissioner approves a management plan/regulatory phase-out.

Commissioner order signed 09/22/14.

These plants average greater than 600 seeds per plant and will begin a three-year phase-out period 01/01/15.

These cultivars become Restricted 01/01/18.

'Angel Wings', 'Antares', var. *atropurpurea*. 'Bailtwo' (Burgundy Carousel®), 'Monomb' (Cherry Bomb™), 'Crimson Velvet', 'Erecta', 'Gold Ring', 'Bailsel' (Golden Carousel®; *B. koreana* x *B. thunbergii* hybrid), 'Inermis', 'Bailgreen' (Jade Carousel), 'JN Redleaf' (Ruby Jewel™), 'JN Variegated' (Stardust™), 'Kelleris', 'Kobold', 'Anderson' (Lustre Greent™), 'Marshall Upright', 'Painter's Palette', 'Pow Wow', 'Red Rocket', 'Rose Glow', 'Bailone' (Ruby Carousel™), 'Silver Mile', 'Sparkle', 'Tara' (Emerald Carousels; *B. koreana* x *B. thunbergii* hybrid), Wild Type (parent species — green barberry)

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