

**Japanese Barberry***Berberis thunbergii* DC.

Barberry family (Berberidaceae)

**NATIVE RANGE**

Japan

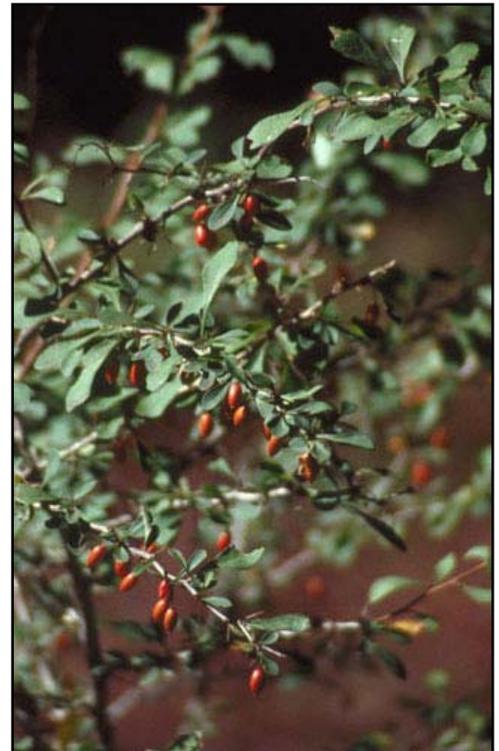
**DESCRIPTION**

Japanese barberry is a dense, deciduous, spiny shrub that grows 2 to 8 ft. high. The branches are brown, deeply grooved, somewhat zig-zag in form and bear a single very sharp spine at each node. The leaves are small ( $\frac{1}{2}$  to  $1\frac{1}{2}$  inches long), oval to spatula-shaped, green, bluish-green, or dark reddish purple. Flowering occurs from mid-April to May in the northeastern U.S. Pale yellow flowers about  $\frac{1}{4}$  in (0.6 cm) across hang in umbrella-shaped clusters of 2-4 flowers each along the length of the stem. The fruits are bright red berries about  $\frac{1}{3}$  in (1 cm) long that are borne on narrow stalks. They mature during late summer and fall and persist through the winter.

**NOTE:** Japanese barberry may be confused with American barberry (*Berberis canadensis*), the only native species of barberry in North America, and common or European barberry (*Berberis vulgaris*) which is an introduced, sometimes invasive plant.

**ECOLOGICAL THREAT**

Japanese barberry forms dense stands in natural habitats including canopy forests, open woodlands, wetlands, pastures, and meadows and alters soil pH, nitrogen levels, and biological activity in the soil. Once established, barberry displaces native plants and reduces wildlife habitat and forage. White-tailed deer apparently avoid browsing barberry, preferring to feed on native plants, giving barberry a competitive advantage. In New Jersey, Japanese barberry has been found to raise soil pH (i.e., make it more basic) and reduce the depth of the litter layer in forests.

**DISTRIBUTION IN THE UNITED STATES**

Japanese barberry has been reported to be invasive in twenty states and the District of Columbia. Due to its ornamental interest, barberry is still widely propagated and sold by nurseries for landscaping purposes in many parts of the U.S.

**HABITAT IN THE UNITED STATES**

Barberry is shade tolerant, drought resistant, and adaptable to a variety of open and wooded habitats, wetlands and disturbed areas. It prefers to grow in full sun to part shade but will flower and fruit even in heavy shade.

**BACKGROUND**

Japanese barberry was introduced to the U.S. and New England as an ornamental plant in 1875 in the form of seeds sent from Russia to the Arnold Arboretum in Boston, Massachusetts. In 1896, barberry shrubs grown from these seeds were planted at the New York Botanic Garden. Japanese barberry was later promoted as a substitute for common barberry (*Berberis vulgaris*) which was planted by settlers for hedgerows, dye and jam, and later found to be a host for the black stem grain rust. Because Japanese barberry has been cultivated for ornamental purposes for many years, a number of cultivars exist.

## BIOLOGY & SPREAD

Japanese barberry spreads by seed and by vegetative expansion. Barberry produces large numbers of seeds which have a high germination rate, estimated as high as 90%. Barberry seed is transported to new locations with the help of birds (e.g., turkey and ruffed grouse) and small mammals which eat it. Birds frequently disperse seed while perched on powerlines or on trees at forest edges. Vegetative spread is through branches touching the ground that can root to form new plants and root fragments remaining in the soil that can sprout to form new plants.

## MANAGEMENT OPTIONS

Do not plant Japanese barberry. Because it is a prolific seed-producer with a high germination rate, prevention of seed production should be a management priority. Because barberry can resprout from root fragments remaining in soil, thorough removal of root portions is important. Manual control works well but may need to be combined with chemical in large or persistent infestations.

### **Biological**

No biological control organisms are available for this plant.

### **Chemical**

Treatments using the systemic herbicides glyphosate (e.g., Roundup®) and triclopyr (e.g., Garlon®) have been effective in managing Japanese barberry infestations that are too large for hand pulling. For whole plant treatment, apply a 2% solution of glyphosate mixed with water and a surfactant. This non-selective herbicide should be used with care to avoid impacting non-target native plants. Application early in the season before native vegetation has matured may minimize non-target impacts. However, application in late summer during fruiting may be most effective. Triclopyr or glyphosate may be used on cut stumps or as a basal bark application in a 25% solution with water, covering the outer 20% of the stump.

### **Manual**

Because Japanese barberry leafs out early, it is easy to identify and begin removal efforts in early spring. Small plants can be pulled by hand, using thick gloves to avoid injury from the spines. The root system is shallow making it easy to pull plants from the ground, and it is important to get the entire root system. The key is to pull when the soil is damp and loose. Young plants can be dug up individually using a hoe or shovel. Hand pulling and using a shovel to remove plants up to about 3 ft high is effective if the root system is loosened up around the primary tap root first before digging out the whole plant.

### **Mechanical**

Mechanical removal using a hoe or Weed Wrench® can be very effective and may pose the least threat to non-target species and the general environment at the site. Tools like the Weed Wrench® are helpful for uprooting larger or older shrubs. Shrubs can also be mowed or cut repeatedly. If time does not allow for complete removal of barberry plants at a site, mowing or cutting in late summer prior to seed production is advisable.

**USE PESTICIDES WISELY:** Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

**NOTICE:** mention of pesticide products on this page does not constitute endorsement of any material.

## CONTACTS

For more information on the management of Japanese barberry, please contact:

- Ian Shackelford, Ottawa National Forest, E6248 U.S.2, Ironwood, MI 49938; (906) 932-1330 x508
- Jessica Murray, Ecological Restoration Coordinator, Berkshire Taconic Landscape Program, The Nature Conservancy, PO Box 268, Sheffield, MA 01262; (413) 229-0232 x228; jmurray at tnc.org

## SUGGESTED ALTERNATIVE PLANTS

Many attractive native shrubs are available that make great substitutes for Japanese barberry. A few examples include bayberry (*Myrica pensylvanica*), ink-berry (*Ilex glabra*), winterberry (*Ilex verticillata*), arrow-wood (*Viburnum dentatum*), mountain laurel (*Kalmia latifolia*), ninebark (*Physocarpus opulifolius*) and hearts-a-bustin' (*Euonymus americana*). Please check with your state native plant nursery for suggestions for plants appropriate to your area.

## OTHER LINKS

- <http://www.invasive.org/search/action.cfm?q=Berberis%20thunbergii>
- <http://nbii-nin.ciesin.columbia.edu/ipane/icat/browse.do?specieId=26>

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## PHOTOGRAPH

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