

BLACK LOCUST

Robinia pseudoacacia L.

Plant Symbol = ROPS

Alternative Names

Common Names: yellow locust, white locust, common locust, false acacia

Description

General: Black locust is short lived (50 – 75 yrs.) tree. It has a shallow, aggressive root system which is capable of nitrogen fixation. It is a hardwood tree that is fast growing (2 – 3 feet annually). The deeply furrowed bark is dark reddish-brown to black. Pairs of ½ to ¾ inch long stout thorns grow at each node along the twigs, branches and near the axils of former leaves. Pinnately compound leaves are 8 to 14 inches long with 7 to 19 leaflets. The dull green oval leaflets are 1 to 2 inches long. Flowers are sweetly fragrant, creamy white blooming in May to mid-June (Figure 1). Brown to black, flat seed pods are 2 to 4 inches long (Dirr 2009, Hightshoe 1988). There are three other locusts occurring in the United States and northern Mexico: bristly locust (*R. hispida* L.), clammy locust (*R. viscosa* Vent.) and New Mexico locust (*R. neomexicana* A. Gray) (DeGomez 2001).

Distribution: Black locust’s native range follows the Appalachian Mountains from Pennsylvania to Alabama with secondary populations in the Ozark Mountains (Figure 2).

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

Habitat: Black locust is typically found in mountains and piedmont, usually on disturbed sites. It grows best on deep, well drained limestone derived soils. Tolerating a pH range of 4.6 to 8.2, it is commonly found on south and west slopes in West Virginia (Kurtz, 2017). Black Locust is hardy to -37° F, and requires 16 to 65 inches of annual precipitation, a minimum of 140 frost free days and at least 36 inches rooting depth (Kurtz 2017).

Adaptation

It has been planted widely and has become naturalized worldwide (GBIF, 2023).



Figure 1. Black Locust in flower.

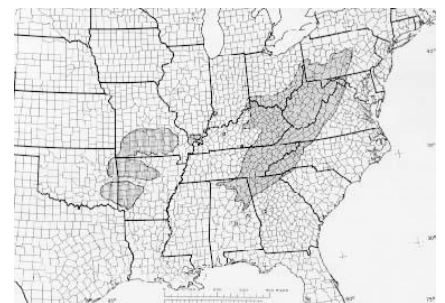


Figure 2. Black Locust's Native Range (Huntley 1990).

Uses

Erosion Control: This tree serves as a good erosion control plant on critical and highly disturbed areas (mine spoils, road cuts) due to its easy establishment, fast growth, and soil building abilities.

Wildlife: The seeds are a minor food source for some upland gamebirds (bobwhite quail, ruffed grouse, and ring-necked pheasant) (Whitaker 2004, Edwards 1969, Stephens 1973). Ruby throated hummingbirds, bumblebees, and honeybees visit the flowers for nectar (Hunter 2004).

Silvopasture: Black locusts leaf out in the late spring and cast a mild shade benefitting understory grasses. The leaves contain high amounts of crude protein, which is nutritionally comparable to alfalfa (Morton 1981). Excessive consumption can lead to toxicity, but most ruminants naturally limit intake (except horses). The highest toxicity (condensed tannins) is in the seeds and bark (Vanschandevijl et al, 2010). Plants are highly variable in toxicity depending on growing conditions and if animals are not accustomed to locust browse, they should be gradually acclimated and monitored. Animals are partial to the fresh sprouts when the thorns are newly developing and soft.

Post, Pole Production: Since the wood of black locust is strong, hard, and extremely durable, it is used for fencing, mine timbers, and railroad/landscaping ties. Some black locusts have relatively straight, un-forked trunks, making them good for post and pole production (see Steiner locust releases in Cultivars Improved and Selected Materials section). Early pruning is important in establishing straight clean trunks.

Ornamental Tree/Urban: Several varieties have attractive leaves and flowers (see Cultivars, Improved and Selected Materials), but Black Locust should be used only in difficult urban areas. Root sprouts can penetrate patios and branches fall easily (Dirr, 1998, Bir 1992). It is salt, drought/heat and sulfur dioxide (SO₂) pollutant tolerant, however is sensitive to soil compaction, and ozone (O₃) pollution (Hightshoe, 1988).

Firewood/Biomass: Black locust firewood splits well, burns slowly and very hot. It is among the hottest burning woods, comparable heat production to hickory and white oak (Huhnke). In Central Europe, where locust borers are absent, black locust plantations are grown for biomass.

Ethnobotany

People of the Cherokee Nation use the inner bark and root bark to induce vomiting (Hamel 2002). In China, cooked flowers are eaten and used to treat eye ailments (Duke 1985).

Status

Threatened or Endangered: Black locust is not a threatened or endangered species.

Weedy or Invasive: Although black locust is native to part of the U.S, in many other regions, including in the West, New England, and the Midwest, it is considered an invasive species (Rice 2004). It may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please consult with your local NRCS Field Office, Cooperative Extension Service office, State Department of Natural Resource, State Department of Agriculture, or the PLANTS Web site (<http://plants.usda.gov/>) for information on black locust's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines

Black locust is considered a pioneer species colonizing areas before other forms of vegetation. Plant bare rooted seedlings or container material in full sun (preferably more than 6 hours/day) in the early spring (before leaves emerge) or late summer/early autumn. It does not tolerate wet or shady locations. To reduce the risk of borer damage, black locust should not exceed twenty percent (20%) of all trees planted in one contiguous area (Briggs 1987).

Management

During the first two years after planting, weed control and deer protection are the main priorities. Site preparation should include weed control (herbicides, mulch and/or mowing), with continued weed control after planting. In areas with high deer pressure tree tubes or other protection may be required. Since it's a fast-growing tree, black locust doesn't need active management for more than two years after planting unless straight trunks are desired for fence posts- (see Pests and Potential Problems section for information about controlling locust borers).

Pests and Potential Problems

Two insects inflict most of the damage on black locust: locust leaf miner and black locust borer. The leaf miner attacks in the spring, turning the leaves brown by mid-summer or early fall. Locust borer larvae carve tunnels through the trunk and branches, weakening the tree such that wind/ice breakage is frequent, which is problematic in urban plantings. Planting black locust on good quality soils with other hardwood species may discourage locust borer infestation. (Briggs 1987). Fast growing trees have the best borer resistance (Dirr 2009). Other potential issues are powdery mildew, canker, witches' broom and damping off (Hightshoe 1988).

Environmental Concerns

Black Locust is considered an invasive species in some U.S. states and in many parts of the world, including Europe, Asia, and Oceania (reviewed by Li et al 2014)

Control

Cutting: Cutting alone is ineffective at controlling black locust due to prolific root suckering (Zimmerman 1984).

Herbicide: Cut stump and basal bark herbicide applications (2% triclopyr, 20% glyphosate) are generally effective on small trees (six inches or less DBH (Diameter at Breast Height is a standard form of measuring tree diameter 4.5 feet above the ground). Cut stump and basal bark treatment from mid-July until December minimizes root suckering, follow-up treatment(s) may be necessary (MO Dept. of Conservation 2023).

Mature Tree Control: Bull dozing mature black locust stands may be practical in some instances. Removing as much root material as possible will limit subsequent root sprouting. Monitoring areas afterwards for root sprouts and/or seedlings is important since this can be delayed for years. Sheep and goats are effective in grazing young root suckers/seedlings. Smother crops (soybeans, sudan grass, hemp) may limit suckers/seedlings growth since black locust is shade intolerant. Black locust is not controlled by fire and its spread is encouraged by burning (Anderson 1980, Stone 2009)

Please contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for each control method. Trade names and control measures appear in this document only to provide specific information. USDA NRCS does not guarantee or warranty the products and control methods named, and other products may be equally effective.

Seeds and Plant Production

Seed: Black locust seeds have high dormancy due to an impermeable seed coat and light requirement for germination (Stone, 2009). Germination can be achieved by scarifying the seed mechanically. The seed should then be soaked in water overnight. Sufficiently scarified seed will swell. There is an average of about 25,500 seeds per pound. Budding, dormant root cuttings and tissue culture are viable clonal propagation methods (Davis & Keathley 1992, Dirr 2009).

Cultivars, Improved, and Selected Materials (and area of origin)

Cultivars should be selected based on the local climate, resistance to local pests, and intended use. Black locust should be used only in difficult urban areas (see Uses *Ornamental Tree/Urban* section). Consult with your local land grant university, local extension, or local USDA NRCS office for recommendations on adapted cultivars for use in your area.

Conservation Releases	Attributes	Origin
'Algonquin'*	Vigor, good borer resistance	Near Thornwood, WV
'Allegheny'*	Vigor, straight trunks, above average Diameter at Breast Height/growth rate	Near Bartow, WV
'Appalachia'*	Vigor and form	Between Appalachia and Blackwood, VA
Ornamental Varieties		
'Aurea'	Yellow new leaves	
'Decaisneana'	Pinkish Flowers	
'Frisia'	Yellow leaves	
'Inermis'	Thornless	
'Purple Robe'	Rose pink flowers, new bronze leaves, borer issues	
'Pyramidalis'	Upright form	
'Semperflorens'	Flowers throughout summer	
'Tortulosa'	Small tree with contorted branches	

*The [Steiner group](#) black locusts were selected and released by NRCS Plant Materials Program for critical area revegetation.

Literature Cited

- Anderson, R. C., & Brown, L. E. (1980). Influence of a prescribed burn on colonizing black locust. (pp. 330–336) [Proceedings, 3rd central hardwood forest conference]. USDA, Forest Service, North Central Forest and Range Experiment Station.
- Bir, R. E. (1992). Growing and propagating showy native woody plants. University of North Carolina Press.
- Briggs, J. A. (1987). Steiner Group Black Locust Release Notice. U.S.D.A., Soil Conservation Service.
- Davis, J. M., & Keathley, D. E. (1992). Micropropagation of Black Locust. *Biotechnology in Agriculture and Forestry*, 18, 25–39.
- DeGomez, T., & Wagner, M. R. (2001). Culture and Use of Black Locust. *Hort Technology*, 11(2), 279–288. <https://doi.org/10.21273/HORTTECH.11.2.279>
- Dirr, M. (2009). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation, and uses* (6th ed). Stipes Pub.
- Duke, J. A., & Ayensu, E. S. (1985). *Medicinal plants of China*. Reference Publications.
- Ellis, J., & Edwards, W. (1969). Responses of bobwhites to management in Illinois. *Journal of Wildlife Management*, 33(4), 749–762.
- Gabriel, S. (2018). Six Key Principles for a Successful Silvopasture (p. 8). Cornell University. <https://smallfarms.cornell.edu/2018/06/six-key-principles-for-a-successful-silvopasture/>
- Global Biodiversity Information Forum2023. (2023). <https://www.gbif.org/species/5352251>
- Hamel, P. B., & Chiltoskey, M. U. (2002). Cherokee plants and their uses: A 400-year history. publisher not identified.
- Hightshoe, G. L. (1988). *Native Trees, Shrubs and Vines for Urban and Rural America—A Planting Design Manual for Environmental Designers*. Van Nostrand Reinhold.
- Horton, G. M., & Christensen, D. A. (1981). Nutritional Value of Black Locust Tree Leaf Meal (*Robinia pseudoacacia*) and Alfalfa Meal. *Canadian Journal of Animal Science*, 61(2), 503–506. <https://cdnsiencepub.com/doi/10.4141/cjas81-060>
- Huhnke, R., & Craighead, M. (n.d.). Heating the Home with Wood (Cooperative Extension Fact Sheet F-9441; p. 4). Oklahoma State University.

Literature Cited (continued)

- Hunter, C. G. (2004). *Trees, shrubs & vines of Arkansas* (3rd ed). Ozark Society Foundation.
- Huntley, J. C. (1990). Black Locust (ag_654). U.S. Department of Agriculture, Forest Service. https://www.srs.fs.usda.gov/pubs/misc/ag_654/volume_2/robinia/pseudoacacia.htm
- Global Biodiversity Information Forum (GBIF.Org. (2023)). GBIF Backbone Taxonomy [dataset]. GBIF Secretariat. Retrieved August 17, 2023, from <https://www.gbif.org/species/5352257>
- Kurtz, C., & Patterson, P. L. (2017). An Assessment of Black Locust in Northern U.S. Forests. (U.S. Dept. of Agriculture, Forest Service, Southern Research Station NRS-248; p. 5).
- Li, G., Guo, K., & Du, S. (2014). Mapping the Global Potential Geographical Distribution of Black Locust (*Robinia pseudoacacia* L.) Using Herbarium Data and a Maximum Entropy Model. *Forests*, 2773–2792.
- Missouri Department of Conservation. (2023). Black Locust Control [Online publication]. <https://mdc.mo.gov/trees-plants/nuisance-native-plants/black-locust-control>
- Rice, S. K., Westerman, B., & Federici, R. (2004). S.K. Rice, B. Westerman, R. Federici Impacts of the exotic, nitrogen-fixing black locust (*Robinia pseudoacacia*) on nitrogen-cycling in a pine-oak ecosystem. *Plant Ecology*, 174, 97–107.
- Stephens, H. A. (1973). *Woody Plant of the North Central Plains*. University Press of Kansas, Lawrence, KS.
- Stone, K. R. (2009). *Robinia pseudoacacia*. Fire Effects Information System. USDA, Rocky Mountain Research Station, Fire Sciences Laboratory. <https://www.fs.usda.gov/database/feis/plants/tree/robpse/all.html>
- Vanschandevijl, K., Van Loon, G., Lefere, L., & Deprez, P. (2010). K. Vanschandevijl, G. Van Loon, L. Lefère, P. Deprez Black locust (*Robinia pseudoacacia*) intoxication as a suspected cause of transient hyperammonaemia and enteral encephalopathy in a pony. *Equine Vet. Edu.*, 22, 336–339.
- Whitaker, D., Stauffer, D., Norman, G., & Woodrow, C. (2004). Effect of prescribed burning of clearcuts on ruffed grouse brood habitat. *Proceedings, Annual Conference of the Southeastern Association of Fish and Wildlife Agencies*, 58, 312–322.
- Zimmerman, R. W. (1984). *Growth and development of black locust coppice stands in eastern Kentucky*. University of Kentucky.

Citation

Belt, S. V. 2023. Plant Guide for Black Locust (*Robinia pseudoacacia*). USDA-Natural Resources Conservation Service, Norman A. Berg National Plant Materials Center. Beltsville, MD 20705. Published November 2023

Edited: NH 10-23, AC 10-23

For more information about this and other plants, please contact your local NRCS field office or Conservation District at <http://www.nrcs.usda.gov/> and visit the PLANTS Web site at <http://plants.usda.gov/> or the Plant Materials Program web site:

<http://plant-materials.nrcs.usda.gov.>

PLANTS is not responsible for the content or availability of other Web sites.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

Helping People Help the Land