

Hazelnut (American and Hybrid) – *C. americana*, *C. avellana* x *americana* x *cornuta*

Climate								Soil						
Min Optimal Temp (°F)	Max Optimal Temp (°F)	Min Absolute Temp (°F)	Max Absolute Temp (°F)	Growing Degree Days (°F base)	Chilling Hours (32-45 °F)	Min Rainfall (in/year)	Max Rainfall (in/year)	Min pH	Max pH	Optimal Soil Texture	Absolute Soil Texture	Optimal Soil Drainage	Absolute Soil Drainage	Soil Depth (in)
-30 ^{b, l, o}	88 ^{l, 1}	-40 ^{b, l, o}	91 ^{l, 1}	N/A	N/A	43 ^{i, o}	90 ^{i, o}	5.0 ^{a, e, o}	8.0 ^{a, e, o}	clay loam, silty clay loam, sandy clay loam, loam, silt loam, sandy loam ^{e, m, o}	muck, clay, sandy clay, silty clay, loamy sand, silt, sand ^{e, m, o}	well drained ^{a, e, p}	excessively drained, somewhat excessively drained, moderately well drained, somewhat poorly drained ^{a, e, p}	20 ^{a, i, o}

	Key Months for Crop Development and Thresholds											
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Stage of growth (under current conditions)	Dormant	Dormant	Flowering ^{c, g, n}	Flowering, Budbreak ^{c, g, n}	Leaf Out ^{c, g, n}	Vegetative Growth ^{c, g, n}	Nut Development ^{c, g, n}	Nut Development ^{c, g, n}	Nut Ripening ^{c, g, n}	Nut Ripening, Harvest ^{c, g, n}	Nut Ripening, Harvest, Leaf Drop ^{c, g, n}	Leaf Drop, Dormant ^{c, g, n}

Key Cultivars: ^{c, h, k}

Hazelnut cultivars planted in Wisconsin need to be both cold hardy and resistant to Eastern Filbert Blight (EFB). Currently, the Upper Midwest Hazelnut Development Initiative (UMHDI) is working on developing and testing a series of hybrid hazelnuts hardy to zone 3/4. They are not yet commercially available. The cultivars listed below originated from Grimo Nut Nursery, Rutgers University, and Oregon State University. They are semi-cold hardy and may be successfully grown in warmer microclimates of WI.

Hazelnut is also wind pollinated and self-incompatible. At least two cultivars that are compatible with each other will need to be planted. Alternatively, growers could also include intermittent or edge-of-field rows of wild American Hazelnut seedlings into their planting to meet pollination needs.

- 'Aldara' (Grimo, hybrid, shrub form, precocious, smaller nut)
- 'Andrew' (Grimo, hybrid)
- 'Frank' (Grimo, hybrid, upright form)
- 'Marion' (Grimo, hybrid, shrub form, precocious)
- 'Northern Blais' (Grimo, hybrid, shrub form, precocious, high yielding, large nut)
- 'Grand Traverse' (Michigan selection, hybrid, vigorous)
- 'The Beast' (Oregon State, mostly European, upright form)

Climate Risk Notes: ^{c, d, n}

Pure European hazelnut (*C. avellana*) is adapted to mediterranean climates. While they have been successfully grown in the milder climate of Oregon, they are not cold hardy enough for Wisconsin winters. In addition, European hazelnut is susceptible to Eastern Filbert Blight (*Anisogramma anomala*), an endemic fungal pathogen, that can kill trees and is the main reason why a hazelnut industry has not existed in the midwest. Efforts are being made to cross European hazelnut with our native American hazelnut (*C. americana*) and beaked hazelnut (*C. cornuta*) to develop hybrid hazelnuts that are both resistant to EFB and cold hardy.

Hazelnut flowers, catkins, vegetative buds, and stem tissue can be injured by extreme winter temperatures. Hazelnut plants are resilient and roots are typically protected under an insulating snow layer. While winter injury may cause stem dieback, hazelnuts are typically able to recover and resprout readily in the spring. However, hazelnut catkins are especially vulnerable to cold temperatures. Atypical warming in late winter and early spring can signal catkins to elongate prematurely and then be killed by a late frost. In northern states, hazelnut plants have been reported to grow well but fail to produce nuts in certain years.

Due to their sensitivity to extreme winter weather, hazelnut plantings will benefit greatly from windbreaks. It's recommended to plant a windbreak, perpendicular to prevailing winter winds, that includes at least a single row of conifers.

References

- ^a Braun, L., & Jensen, J. (2015, January). *Growing hybrid hazelnuts*. Rural Advantage. https://www.midwesthazelnuts.org/uploads/3/8/3/5/38359971/hazel_production_guide_v_3_jan_2015.pdf
- ^b California Rare Fruit Growers (n.d.). *Fruit cultural data*. <https://crfg.org/home/library/crfg-fruit-list/fruit-cultural-data-2/>
- ^c Capik, J. M., & Molnar, T. J. (2014). Flowering phenology of eastern filbert blight-resistant hazelnut accessions in New Jersey. *HortTechnology*, 24(2), 196-208.
- ^d Dale, A. (2014, March). Developing a hazelnut industry in Ontario. *The Nutshell*, 68(1), 15. www.nutgrowing.org
- ^e Fischbach, J., & Braun, L. (2019). *Hazelnuts 101: A fact-sheet series for beginning hazelnut growers in the Upper Midwest. Fact sheet #2—Planting and establishment*. Upper Midwest Hazelnut Development Initiative. https://www.midwesthazelnuts.org/uploads/3/8/3/5/38359971/fact_sheet_series_2_establishment_final_jan_22.pdf
- ^f Fischbach, J. & Braun, L. (2020, January 14). *Hazelnuts 101: A fact-sheet series for beginning hazelnut growers in the Upper Midwest Fact sheet #1—Choosing hazelnut plants*. Upper Midwest Hazelnut Development Initiative. <https://www.midwesthazelnuts.org/publications.html>
- ^g Fischbach, J. (2020, December 1). *Hazelnut research bulletin: Effect of harvest timing on kernel quality in hybrid hazelnuts*. Upper Midwest Hazelnut Development Initiative. <https://www.midwesthazelnuts.org/publications.html>
- ^h Fischbach, J. & Braun, L. (2022, February 1). *Hazelnut research bulletin: Upper Midwest hazelnut joint performance trials - 2021 results*. Upper Midwest Hazelnut Development Initiative. <https://www.midwesthazelnuts.org/publications.html>
- ⁱ Heavy, J., & Volk, T. (2013). *Living snow fence species selection*. SUNY College of Environmental Science and Forestry. <https://digitalcommons.esf.edu/lisffs/8>
- ^j Johnson, G., Zinns, M., Shippee, M., & Petters, D. (2020, April). *Tough trees and shrubs for tough sites*. University of Minnesota Department of Forest Resources. https://mntca.umn.edu/sites/mntca.umn.edu/files/files/media/tough_trees_shrubs_for_tough_sites_final_4.28.2020.pdf
- ^k Molnar, T. (2010, June). Eastern Filbert Blight: Does genetic resistance hold up across different regions? *The Nutshell*, 64(2), 16-24. www.nutgrowing.org
- ^l Morton Arboretum (2025). *American hazelnut*. <https://mortonarb.org/plant-and-protect/trees-and-plants/american-hazelnut/>
- ^m Natural Capital LLC (n.d.). *Natural Capital Plant Database*. <https://permacultureplantdata.com/>
- ⁿ Ontario Ministry of Agriculture, Food and Rural Affairs. (2024, January 16). *Publication 863: Guide to hazelnut production in Ontario*. <https://www.ontario.ca/page/publication-863-guide-hazelnut-production-ontario>
- ^o U.S. Department of Agriculture Natural Resources Conservation Service. (n.d.). *Corylus americana Walter*. PLANTS Database. <https://plants.sc.egov.usda.gov/plant-profile/COAM3>
- ^p Wilson, M. (2018). *Perennial pathways: Planting tree crops*. Savanna Institute. <https://www.savannainstitute.org/planting-tree-crops/>