



United States Department of Agriculture
Natural Resources Conservation Service
Plant Materials Program

'Cardan' Green Ash

Fraxinus pennsylvanica

A Conservation Plant Release by USDA NRCS Plant Materials Center, Bismarck, North Dakota



Cardan green ash, *Fraxinus pennsylvanica* Marsh., is a medium to tall tree. The crown is rounded with small, slender, spreading branches. Cardan is recommended for farmstead and field windbreaks, as a deciduous hardwood component of wildlife habitat and natural area plantings, and to revegetate surface-mined lands, flood plains, and other areas.

Description

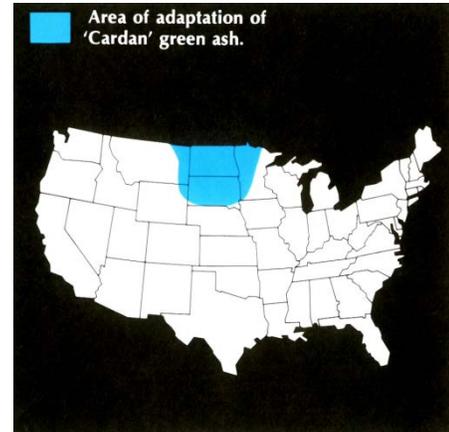
Cardan may grow to 50 feet on favorable soils. The bark is ashy gray, shallowly furrowed, with narrow interlacing ridges. The leaves are opposite, pinnately compound with seven (rarely five or nine) leaflets. The leaflets are ovate to elliptic, with slightly toothed margins that are often smooth below the middle. The upper part of the leaflet is dark green and smooth; the lower part is pale green with minute scattered hairs on the midrib. Individual trees are either male or female. The nonshowy flowers appear early in May. The seed matures by September and often remains on the tree well into the winter. The winged fruit is about 1/8 to 1/6 inch long and 1/6 to 1/4 inch wide with a pointed, or slightly notched, apex.

Source

This selection of green ash has been tested as Mandan-12002 at the Northern Great Plains Research Center, Mandan, North Dakota. It originated from open-pollinated seed collected in 1954 from several trees growing in a farmstead windbreak near Carlyle, Montana. Advanced evaluation testing showed excellent survival and growth rate superior to that of common green ash.

Area of Adaptation and Use

Cardan performs well on a wide range of soils throughout the northern Great Plains. It is not recommended for use south or east of its primary area of adaptation (see the adaptation map below.)



Establishment and Management for Conservation Plantings

In the temperate zone, Cardan should generally be planted in the spring as soon as the ground is frost free. The recommended spacing between plantings is 8 to 16 feet. Two-year-old seedlings are suitable for mechanical planting. Cardan has performed well within a wide range of soils and climatic conditions typical of the Northern Great Plains. Performance data show that weed control is the primary factor affecting survival and rate of growth. Performance may be adversely affected by drought or injury caused by animals, insects, disease, and herbicides.

Ecological Considerations

Green ash produces plentiful amounts of seed which may result in a thicket of ash seedlings when deposited on bare or sparsely covered soils. Amount of regeneration is dependent upon optimum moisture conditions and minimal weed pressure. Though green ash is easy to propagate and establish, the threat of emerald ash borer reaching the Great Plains should be addressed. Green ash should only be a portion of any planting design. Certain grassland nesting birds are negatively impacted when tall trees such as green ash are planted on or near their preferred habitat.

Seed and Plant Production

Cardan green ash is best propagated by planting stratified seed. The dry seeds are soaked 21 days in cold water, placed for 10 days in moist sand or peat moss at 32 to 41 degrees F or until seed germinates, and then planted immediately. Seed should be covered with $\frac{3}{4}$ inch of soil at a bed density of 10 to 20 seed per square foot.



Availability

For conservation use: Cardan green ash seedlings are available from conservation nurseries in the Upper Midwest. For information on availability, contact the local NRCS or conservation district office.

For seed or plant increase: For the purpose of establishing a seed orchard, limited quantities of seed may be available from the NRCS Plant Materials Center.

For more information, contact:
USDA-NRCS Plant Materials Center
3308 University Drive
Bismarck, ND 58504
Phone: (701) 250-4330
Fax: (701) 250-4334
<http://Plant-Materials.nrcs.usda.gov>

Citation

Release brochure for Cardan green ash (*Fraxinus pennsylvanica*). USDA Natural Resources Conservation Service, Plant Materials Center. Bismarck, North Dakota 58504. Published May 1984, revised August 2012.

For additional information about this and other plants, please contact your local USDA Service Center, NRCS field office (www.nrcs.usda.gov) or Conservation District and visit the PLANTS Web site (www.plants.usda.gov) or the Plant Materials Program Web site (www.plant-materials.nrcs.usda.gov).

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