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PLANT MATERIALS TECHNICAL NOTE

ROCKY MOUNTAIN JUNIPER
Juniperus scopulorum

A Native Conservation Tree for Use in the Northern Great Plains and Rocky Mountains

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Figure 1. Bridger-Select Rocky Mountain juniper seed orchard

General Description

Rocky Mountain juniper is a native, perennial, evergreen tree found over broad expanses of Montana and Wyoming. It is a long-lived, shallow-rooted, winter hardy and drought tolerant species with an average 20-year height of 12 to 15 feet on fertile soil with adequate precipitation. It has scale-like, pointed foliage varying in color from light to dark green to bluish-green, or yellow to brownish-green. The foliage may turn a brownish-green to dark purple color in the winter – depending on climatic conditions and the individual plant. Female and male flowers are found on separate plants. Female plants produce fleshy, purplish-blue-black, berry-like fruit requiring two years for maturation. The species grows slowly the first two to four years after germination and planting, after which, growth accelerates to a modest pace depending on site and climatic conditions. Rocky Mountain juniper grows well, given other favorable site conditions, in areas receiving as little as nine inches of annual precipitation. Seedlings vary widely in their mature size, shape, and rate of growth. Rocky Mountain juniper hybridizes with other native *Juniperus* resulting in a variety of forms across Montana and Wyoming.

Adaptation/Range

Locations: Rocky Mountain juniper grows well under proper cultivation in most of Montana and Wyoming on southerly aspects below 6,000 feet and northerly aspects below 5,000 feet, given other favorable site conditions. It becomes increasingly susceptible to various fungal pathogens as it is moved easterly from western North Dakota and South Dakota.

Soils: Rocky Mountain juniper grows best on excessively well- to well-drained, coarse to medium-textured soils. It is tolerant of $CaCO_3$ and grows in soils with a pH ranging from 5.0 to 8.5, but grows best on fertile soil with a pH measuring 6.5 to 7.0. It grows well on various soil types including basalt, limestone, and shale-derived materials. These soils are typically stony, shallow, and erodible, with poor moisture-holding capacity.

It is recommended in Montana for Conservation Tree/Shrub Suitability Groups 1, 2, 3, 4, 5, 6, 7, and 9, and all Plant Adaptation Zones. Soil salinity tolerance data is limited, but Rocky Mountain juniper tolerance of salt-affected soils is generally reported to be low.

Hardiness: Rocky Mountain juniper grows well in USDA Winter Hardiness Zone 3b, [-34 to -37°C (-30 to -35°F)] and may tolerate Zone 3a [-37 to -40°C (-35 to -40°F)].

Conservation Uses

Rocky Mountain juniper is an excellent choice as tall shrub to small tree component in windbreaks and shelterbelts, offering year-round protection. It is also suited to field borders, living snow fences, wildlife applications (food, nesting, loafing, cover), riparian restoration projects, mine-land reclamation, carbon sequestration, and native landscaping.

Figure 2. Rocky Mountain juniper first year fruit (left) and second year fruit (right)

Establishment

Rocky Mountain juniper establishes very well given proper site conditions and preparation. Control of rhizomatous grasses and forbs one to two years prior to planting is highly recommended, as is the use of high quality woven weed fabric. Supplemental water at planting time increases soil:root contact, prevents root desiccation, and increases seedling survival. Preferred stock type includes various sizes of 1- and 2-year-old container plants, although 1-0 and 2-0 bareroot stock works well given proper handling and storage. Dormant spring planting is recommended.

Limitations

Rocky Mountain juniper is shade intolerant, and should be planted in full sun for best performance. It is not recommended for excessively wet, compacted or poorly-drained sites, heavily saline or sodic soils, or soils classified as “unsuitable” for tree and shrub planting. It is increasingly difficult to transplant as it matures. Rocky Mountain juniper is an alternate host of cedar apple rust which also infects apple species. Although generally considered low maintenance and hardy, it is susceptible to numerous and sometimes serious foliar diseases, and is a favored host of red spider mites. It is very difficult to propagate as a rooted cutting, and asexual propagation is by grafting. Germination of seeds requires 120-day warm:moist stratification followed by a 150-day cold:moist chilling period in order to break seed dormancy.

Releases

Bridger-Select Rocky Mountain juniper was released in 1998 by the Bridger Plant Materials Center in cooperation with the agricultural experiment stations of Montana State University and the University of Wyoming. It was selected for superior rate of height growth, form (uniform pyramidal shape and freedom from snow breakage), crown density, and vigor rating (winter hardiness and freedom from insects and disease), primarily for use in windbreaks, shelterbelts, and living snowfences from among 37 seed sources and 740 trees. Bridger-Select is a composite from 26 seed sources from Montana, North Dakota, Wyoming, Nebraska, and South Dakota. Heights of 13 to 15 feet can be expected with this selection at 20 years-of-age given clean cultivation and a minimum of 10 to 12 inches of annual precipitation on a well drained site.

Additional Information

Windbreaks for Montana – a landowner’s guide. 1986. Cooperative Extension Service, Montana University, Bozeman, MT. Bulletin 366.

Creating Native Landscapes in the Northern Great Plains and Rocky Mountains. USDA NRCS Montana State Office, Bozeman. Available at http://www.mt.nrcs.usda.gov/technical/ecs/plants/xeriscp/index.html.

Plant Fact Sheet for Rocky Mountain juniper *Juniperus scopulorum*, electronic availability at http://plants.usda.gov.

Plant Guide for Rocky Mountain juniper *Juniperus scopulorum,* electronic availability at http://plants.usda.gov.

For proper seedling storage and handling, see Montana Technical Note MT-51, *Temporary Storage and Handling of Container, Bareroot, and Cutting Stock* on the Montana NRCS or national Plant Materials web sites.

For proper bareroot and container seedling planting, see *Hand-Planting Guidelines for Bareroot Trees and Shrubs* and *Planting Guidelines for Containerized and Balled and Burlapped Stock* on the Montana NRCS web site.