

Ekalaka Germplasm Selected Class Bur Oak

Scientific Name

Quercus macrocarpa Michx.

Alternate Common Name

mossycup oak

Origin

The original Ekalaka Germplasm bur oak (accession number 9087732) seed collections were made in 1991 and 1992 in various northern plains locations in Montana, North Dakota, and South Dakota from individual trees demonstrating superior phenotypic characteristics. These characteristics included single, straight stems with strong apical dominance, and well-formed crowns. These collection sites were primarily undisturbed native populations growing at the western edge of the native range for bur oak.

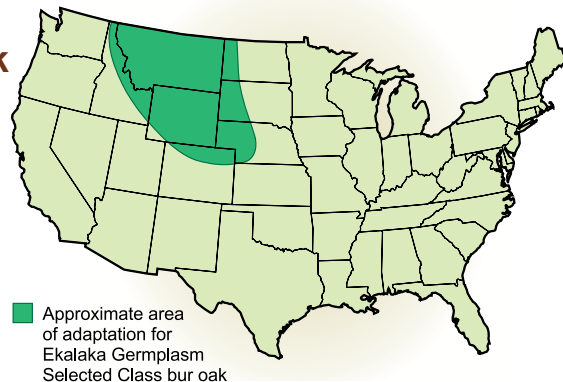
Description

Ekalaka Germplasm bur oak has the same general botanical (floral, foliage, fruit, and seed) attributes as the species. It is a medium- to tall-stature deciduous tree with several desirable attributes including strong branches, drought tolerance, winter hardiness, and freedom from serious insect or disease problems.

Bur oak is capable of growing over a wide range of soil conditions. It is found growing well on rocky hillsides, limestone soils, droughty soils, clayey sites, and other marginal locations -- given full sun conditions. Bur oak is intolerant of flooding and prolonged soil saturation. A combination of high water use efficiency and a fast growing tap root enable this species to withstand the dry, windy conditions characteristic of the northern plains. Most references list bur oak as hardy to USDA Winter Hardiness Zone 4, although bur oak grows well in many locations in Montana in Hardiness Zone 3.

On good sites, bur oak has a spreading habit with a broad crown; massive bole; and low, large branches. In Montana and Wyoming, the anticipated maximum bur oak height is about 50 feet. At 10 years-of-age, Ekalaka Germplasm bur oak averaged 11.3 inches of annual height growth, although some individual trees grew as much as 33.4 inches per year.

No serious insect and disease problems have been observed on Ekalaka Germplasm bur oak, although



aphids are a common nuisance pest at Bridger, Montana. Oak webworm, oak skeletonizer, leaf miner, variable oakleaf caterpillar, oak lacebug, and June beetles are listed as pests of bur oak.

Plant Distribution and Adaptation

Bur oak has a large, native range extending from Nova Scotia, west to Manitoba, south through Kansas to Texas, east to Alabama, and northeast to Virginia and New England. In Montana, it is indigenous only in Carter County (which is in the extreme southeastern corner of the state) in uncultivated, natural stands. Landscape specimens can be found in many Montana communities over much of the state. Since this selection represents a bulk of several seed sources found occurring naturally in the northern Great Plains, it should perform well in most regions east of the Continental Divide at elevations below approximately 5,500 feet, given other favorable site and climatic conditions.

Using Ekalaka Germplasm Bur Oak in Woody Plant Conservation Plantings

Ekalaka Germplasm bur oak is recommended for a variety of woody plant conservation practices including windbreaks, shelterbelts, riparian forest buffers, wildlife plantings, woody draw restoration plantings in native range, Xeriscapes®, and other practices. This species and selection may be used to replace Russian olive in several designs, as well as provide an alternative for green ash should emerald ash borer limit green ash use in the future.

Plant Selection Process

Ekalaka Germplasm bur oak is released as a 'Natural-Track' germplasm, i.e., it is being increased without purposeful manipulation. This selection resulted from field testing of twenty-four bur oak seed sources from Montana, North Dakota, and South Dakota. All seed sources were field tested for 10 years in a replicated dryland study at Bridger, Montana, prior to selection.

Selection Attributes

Ekalaka Germplasm bur oak exhibits superior seedling survival, rate of height growth, and vigor rating when

compared to other well-adapted seed sources under ambient climatic conditions at Bridger, Montana. Bur oak is a strong-wooded species that is not susceptible to breakage from ice and snow storms or heavy winds.

Application and Use

Ekalaka Germplasm bur oak can be used as a medium- to tall-stature tree in windbreaks and shelterbelts. It provides food for numerous forms of wildlife, as well as nesting, loafing, and roosting sites for many species of birds including turkeys. It can be used in combination with other species in riparian forest buffers, creating shade and providing soil stabilization via an aggressive taproot.

Production and Propagation from Seed

Ekalaka Germplasm bur oak began acorn production at approximately 8 to 9 years of age under fallow, dryland conditions at Bridger, Montana, with substantial production at 10 years of age. In some cases, late spring frosts in Bridger have reduced acorn production. Acorns ripen in 1 year and can fall as early as August or as late as October depending on the individual tree. Peak production and ripeness normally occurs around mid-September. Seeds are relatively short lived (6 to 12 months), and are best stored under high humidity conditions in a cooler or refrigerator maintained at 33 to 35 degrees F. Ekalaka Germplasm bur oak acorns usually germinate without pretreatment, although cold:moist stratification may improve germination rate. Heavy crops usually occur every 2 to 3 years, although some seed is produced each year. It may be necessary to monitor seed-bearing trees regularly in order to assure harvesting acorns before wildlife. Ekalaka Germplasm bur oak averages 279 seeds per pound.

Seedlings grow well in a peat-lite mix with modest fertility. Ideal planting depth ranges from 1/2 to 3/4 inches. Use 10-cubic-inch or larger containers for 1-0 stock and 40-cubic-inch containers when seedlings are held for two or more growing seasons. Tall, narrow pots that do not restrict normal taproot development are preferred. Bur oak can be field grown as bareroot stock; however, undercutting of taproots for root pruning or during lifting may restrict top growth for 2 to 5 years.

Establishment for Conservation Use

It is recommended that Ekalaka Germplasm bur oak be produced in tall, narrow containers for use in conservation plantings. It is generally not recommended to directly sow this selection in field applications (other than for production purposes) because seed loss to

animal predation is typically high. Since this species is highly preferred browse, seedling protectors or other wildlife deterrents are suggested. Reducing competition from herbaceous vegetation through cultivation, chemical control, or woven fabric barrier is also beneficial.

Obtaining Plant Materials

G₁ seed stock (equivalent to Foundation) will be available in the spring of 2010. Cuttings for grafting and research are available by contacting the Bridger Plant Materials Center. Seed of Ekalaka Germplasm bur oak for commercial seedling production is available by contacting one of the following sources:

Foundation Seed (for commercial seed production)

Plant Materials Specialist
USDA-NRCS
Federal Building – Room 443
10 East Babcock Street
Bozeman, Montana 59715-4704

Plant Materials Center
USDA-NRCS
98 South River Road
Bridger, Montana 59014
Phone: 406-662-3579
Fax: 406-662-3428

Foundation Seed Stocks Program
Department of Plant Sciences and Plant Pathology
Montana State University
Bozeman, Montana 59717-3150
Phone: 406-994-5687
Fax: 406-994-7600
Website: <http://plantsciences.montana.edu/Foundation-Seed/default.htm>

Wyoming Seed Certification Service
Powell Research & Extension Center
University of Wyoming
P.O. Box 983
Powell, Wyoming 82435-9135
Phone: 307-754-9815

Commercial Certified Seed (for reclamation and revegetation projects)

A list of commercial seed producers can be obtained by contacting:

Montana Seed Growers Association
Montana State University
PO Box 173416
Bozeman, MT 59717-3146
Phone: 406-994-3516

Wyoming Seed Certification Service
Powell Research & Extension Center
University of Wyoming
P.O. Box 983
Powell, Wyoming 82435-9135
Phone: 307-754-9815

Commercial production of two generations (G2 and G3) beyond G1 are allowed.

Technical Information Available

For additional information on this release or other Bridger Plant Materials Center products, see the contact information below or visit our websites at:

<http://www.mt.nrcs.usda.gov/technical/ecs/plants/> or
<http://www.plant-materials.nrcs.usda.gov/mtpmc/>

Contact Information

USDA-NRCS Plant Materials Center
98 South River Road
Bridger, MT 59014
Phone: 406-662-3579
Fax: 406-662-3428

Authors*:

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* References for this brochure available upon request.

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Natural Resources Conservation Service
Bridger Plant Materials Center

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A Conservation Plant
for Montana and Wyoming



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