

PLANT MATERIALS TODAY

A Quarterly Newsletter of the Montana-Wyoming Plant Materials Program

Volume 4 Number 3

July 1997

This is a quarterly field office newsletter to transfer plant materials technology, services, and needs. The plant materials personnel will be featuring short articles on project results, new cultivar releases and establishment techniques, seed collection, and field planting needs, etc. All offices are encouraged to submit articles about plant material-related activities relative to plant performance, adaptation, cultural and management techniques, etc.

Seed and Plant Collection Time

The Seed and Plant Collection Bulletin was sent to Montana and Wyoming Field Offices the week of June 2, 1997. Three forb species are targeted and assistance in obtaining a representative sample of their range of distribution would be greatly appreciated. As Smokey the Bear would say, "Only you can help"! The wildflowers are: (1) beardstongue (*Penstemon* species), (2) silverleaf phacelia (*Phacelia hastata*) and, (3) scarlet globemallow (*Sphaeralcea coccinea*). A detailed plant description and line drawing of each species was included in the Bulletin. The description includes scientific and common name, life form and growth habit, vegetation and flower characteristics, approximate seed maturity dates, and general habitat type. Send along with your **large** seed collection, a fully completed Collection Information form (SCS-PM-580). Please feel free to call (406-662-3579) with questions or comments about this collection reminder. Be sure and get your collections to the Center for inclusion in the Initial Evaluation Planting scheduled to proceed late autumn 1997.

Susan R. Winslow

Cooperative Efforts Save Seedlings

Chuck Martin, Forestry Technician, Custer National Forest/Beartooth Ranger District, stopped in at the Center with a request for permission to park a refrigerated reefer and to set up a processing table to store, sort, and bundle approximately 33,000 Douglas fir and lodgepole pine

seedlings, for planting on US Forest Service land in the Pryor Mountains.

A high spot was found for the reefer and the seedbarn was used as the site for processing and wrapping the baby trees. We never really got used to the self-starting refrigerator diesel engine that would come to life with a roar when least expected.

The week of rain was perfect for the little trees to be planted, but it was muddy during all the activity - in and around the yard, equipment operation, road access, and for the tree planters.

As a result of this effort, the PMC was awarded a USDA, US Forest Service "Certificate of Appreciation" for our participation, cooperation, and use of the facility. Special recognition and thanks was extended to two Center employees, Bruce Thompson and Lynnel Hoffman, for helping set up and accommodating the planter's rigorous work schedule.

Lynnel Hoffman

Hot Off The Press!

If you're interested in additional plant materials reading, check out these articles that are currently in print from the PMC staff. Mark has an article entitled "Restoration of Disturbances in Yellowstone and Glacier National Parks" appearing in the July/August issue of the *Journal of Soil and Water Conservation* that discusses the use of native, indigeneous plants in the National Park Service's restoration efforts. As you probably are aware, a large portion of the Bridger PMC's work involves the use of native plant materials for ecosystem restoration purposes. Joe has articles in both the January 1 and July 15 issues of *American Nurseryman* in their "Field Notes" section featuring bur oak and Amur maple, respectively. Replicated studies of both species have been established at Bridger for the purpose of selecting superior trees and seed sources for windbreak and shelterbelt applications.

PLANT PROFILE: Bur Oak

The third feature in our new Plant Profile column is the bur or mossycup oak (*Quercus macrocarpa*). In recent years, interest has surfaced in our region over this species because, although it has some limitations, it is well adapted to conditions in the Northern Plains. Bur oak is a hardy, drought-tolerant tree capable of growing over a wide range of soil conditions, and a combination of high water use efficiency and a fast growing tap root enable it to withstand the dry, windy conditions characteristic of the Northern Plains. On the plus side, bur oak is a strongly wooded, deciduous species that remains dormant until well after most other broad-leaved plants have leafed out. This adaptive strategy is well suited to eastern Montana and eastern Wyoming where warming winter winds and extreme temperature fluctuations take their toll on deciduous trees. On the down side, late bud break means that utilization of the growing season is less than optimal resulting in a fairly slow growing species.

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 occurs in uncultivated, natural stands in Carter, Prairie, and Powder River Counties. Landscape specimens can be found in many Montana communities over much of the state. Most references list bur oak as hardy in Zones 4 to 8, although Zone 2 is given in at least one source. Bur oak is considered only intermediate in its tolerance of shade.

Although it favors rich bottomland alluvials, bur oak can grow well on rocky hillsides, limestone soils, dry clays, and other marginal sites -- given full sun conditions. This species even performed better than most others tested on coal-mine spoils of pH 5.6 in eastern Kansas. In the western United States, bur oak is considered a pioneer species and is capable of invading prairie grasslands. In the eastern Great Plains it occurs primarily along stream bottoms and stream terraces in association with green ash, boxelder, and cottonwood. Bur oak is, however, intolerant of flooding. Beautiful stands can be seen along Interstate 90 from the eastern edge of Wyoming to Rapid City and beyond. Its form and rate of growth improve in an easterly and southerly direction as the growing season and annual precipitation increase.

On good sites, bur oak has a spreading habit with a broad crown, massive bole, and low, large branches. It is capable of reaching heights of 90 ft, and individual trees up

to 100 ft are common on good sites. An individual tree with a height of 170 ft and a d.b.h. (diameter breast height) of 84 inches has been reported in the lower Ohio Valley. In Montana, heights of 50 ft can be considered about the upper limits of growth.

Although bur oak is monoecious, with both male and female flowers on the same plant, cross-pollination between individual trees appears to be favored. Acorns ripen in one year and can fall as early as August or as late as November, depending on the tree and location. Acorns can usually germinate immediately without pretreatment but may require some cold stratification when collected from sources in northern climates. The average minimum seed-bearing age is approximately 35 years with best production typically between 75 and 150 years. Good crops usually occur every 2 to 3 years. It may be necessary to check seed-bearing trees regularly in order to assure getting to the acorns before the wildlife do.

Serious insect and disease problems are relatively limited for bur oak in the western United States. Reported insect problems include oak webworm, oak skeletonizer, leaf miner, variable oakleaf caterpillar, June beetles, and oak lacebug. Oak lacebug can be a serious problem in shelterbelt plantings, especially during drought conditions. Fungal pathogens are also known to occur, but disease does not appear to be a major problem with this species.

In addition to its windbreak and shelterbelt applications, bur oak has several other positive attributes and uses. This species makes an impressive street tree and large landscape plant. Individual trees exhibit wide variation in fall color with some plants turning brilliant shades of red and orange. The wood of bur oak is quite valuable and is often marketed as white oak. Bur oak acorns are a favored food for numerous wildlife species.

Despite its tolerance of a wide range of site conditions, bur oak has not been widely used in conservation plantings. As mentioned earlier, a primary limiting factor has been a slow rate of height growth, which is about 15 to 20 ft per 20 years. In an attempt to overcome this limitation, the Bridger PMC installed a 400-tree study in 1994, representing 24 accessions from Montana and North Dakota. Selections will be made over time with an emphasis on form and rate of height growth.

Joe Scianna

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).
To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.