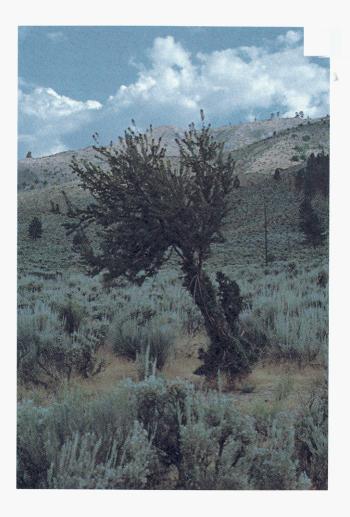
United States Department of Argriculture

Soil Conservation Service

Program Aid Number 1378

Lassen' antelope bitterbrush



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'Lassen' antelope bitterbrush, *Purshia* tridentata (*Pursh*) OC, is recommended for restoring depleted rangelands, burned areas, mined lands, and other disturbed sites in the Intermountain West. It is mainly valuable for improvingforage production and quality for big game on fall and winter ranges. It was selected for seedlingvigor, productivity, upright growth habit, palatability, forage availability, seed production, and retention of overwintering leaves. Winter crude protein content averages 8 percent, with 30 percent digestibility.

Lassen was released in 1984 by the U.S. Department of Argiculture's Forest Service, Shrub Sciences Laboratory, and Soil Conservation Service, and the Utah Division of Wildlife Resources. Seven other agencies in California, Idaho, Nevada, and Oregon cooperated.

Description

Mature plants are large, leafy shrubs with few basal stems. They havespreadingcrowns, heavy lateral spur production, and longascendingleaders. The average height is 8 feet with a 10-foot crown. Floral andvegetativemorphologyistypical for antelope bitterbrush, with little introgression from Stansbury cliffrose, an unpalatable related species native to the Southwest.

Flowers are small, varying from white to yellow, and produced profusely along each leader. The seeds are large for the species—15,500 per pound. They are about one-fourth inch long and obovate. Seeds, stems, and leaves are nontoxic.

Lassen's uniform, erect growth habit contrasts with more decumbent, layeringforms. Users are encouraged to consider the various forms of bitter brush in choosing as train best suited to their needs.

Adaptation

Lassen originates from seed collected from native stands near Janesville in Lassen County, California. It is a representative ecotypethat lies in a narrow, 50-mile strip at the base of the eastern sideofthe Sierra Nevada Mountains from Susanville to Doyle. It is associated with big sagebrush and rabbitbrush. It occurs naturally ondry lake beds, alluvial fansorterraces, and low foothills. The soils are deep, gravelly, loamy coarse sands derived from granite, with pH ranging from 6.0 to 7.0.

Tests have shown that Lassen has high potential for use on deep, coarse, well-drained, neutral to slightly acidic soils in

areasthathave 12 to 24 inchesofannual precipitation. It is not well adapted to basic, fine-textured, or poorly drained soils. Lassen has performed well at sites in eastern Oregon, central and southern Idaho, northern California, and western Nevadaatelevationsof 3,000 to 6,000 feet. It performs best on sites that support antelope bitterbrush-grass, basin big sagebrush-grass, mountain brush, and ponderosa *pine-an*telope bitterbrush plant communities.

Lassen has also performed adequately in Utah and is probably adapted wherever antelope bitterbrush occurs naturally. Another strain, however, is being developed for the eastern partoftheareaofadaptation and a layeringform for very sandy sites that are subject to blowing.

Establishment

On rangeland sites, Lassen antelope bitterbrush should be seeded in late fall or winter to permit field stratification. Pretreatment with hydrogen peroxide is required to break



Lassen at the Elysian Valley collection site

dormancy for spring seeding. Seedlings are susceptible to late frosts. Plants develop very slowly and must be protected from competition during the first two seasons. Recommended seeding rates are 1 to 3 pounds of pure live seed per acre. Antelope bitterbrush seedlings are often transplanted on critical sites. In such cases, moisture must be adequate to ensure survival in the first year. One-year-old bareroot or containerized seedling stock, 6 to 24 inches tall, is recommended.

Several insects and diseases are known to damage the foliage, seed, and seedlingsofantelope bitterbush, and Lassen is nomore or less susceptible than otherspecies. High-density grasshopper populations can destroy Lassen seedlings.

Management

Lassen is used by biggame and livestockduringall seasons and remains productive despite heavy browsing. Stand conditions generally deteriorate, however, when annual use



Lassen growing near Janesville.

exceeds 60 percent of the annual growth. Lassen is not fire-tolerant and resprouts only infrequently following burning.

Propagation

The area where Lassen originates contains large, dense populations of this ecotype, as many as 200 plants per acre covering hundredsofacres. Since 1954, privateseed dealers and state agencies have collected large quantities of seed from thisarea — a primarysourceofantelope bitterbrush seed used for reseeding in the entire Western United States. In some years, more than 10,000 pounds of seed have been harvested. Recent development in the area, however, threatens to significantly reduce the availability of this area for seed collection, which is one of the reasons the Lassen strain has been formally released. Seed dealers and state agencies will continue to collect from thisareaandcan now certify seed meeting purity and germination standards.

Afoundation seedexclosureisbeingmaintainedtoprovide seed for establishing seed orchards outside the collection area. A 12- by 12-foot to 16- by 16-foot spacing is recommended for Lassen seed orchards. Plants in wild-land stands reach full production in 8 to 20 years, but this period may be reduced to about 5 years for seed orchards. Seed matures evenly and is harvested by hand in early July. Mature seed must be harvested within 3 to 10 days of ripening, as it is quicklydispersedfrom theshrub. Seedcollection and orchard maintenance are simplified by the upright growth habit. Experience has shown dryland seed orchards produce as much as 200 pounds per acre, but the potential is problably somewhat higher.

Seeds are easily cleaned to 95 percent purity, using a two-screen fanning mill and barley debearder. Germination usually exceeds 80 percent and seeds remain viable for several years under good storage conditions.

Availability

Plants for seed or chard establishment are available from the Nevada Division of Forestry (201 S. Fall Street, Carson City, NV 89710). Iriformation on certification of wild-land collections can be obtained from the California Crop Improvement Association (Agronomy and Range Science, University of California, Davis, CA 956161.

For more information on the availability and use of Lassen antelope bitterbrush, contact your local Soil Conservation Serviceofficeorthe Forest Service, Shrub Sciences Laboratory (735 N. 500 E, Provo, UT 84601).

Assistance is available without regard to race, creed, color, sex, age, national origin, or handicap condition.

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