

## ANTELOPE BITTERBRUSH

*Purshia tridentate* (Pursh) DC.

Plant symbol = PUTR2

Contributed by: Upper Colorado Environmental Plant Center



Photo by Steve Parr

### Alternate Names

Antelopebrush, buckbrush, quininebrush

### Uses

Antelope bitterbrush is one of the most important palatable native shrubs in the western United States. It provides high quality, important spring and winter browse for domestic livestock, antelope, deer, and elk. Its seed is an important source of food for small animals and the plant provides cover for small animals and birds. It is considered medium quality coverage for sage-grouse. The shrub is also used for reclamation and erosion control of mined areas and has the potential for use as a living snow fence, roadside beautification, and xeriscape plantings.

### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

### Description

*General:* Antelope bitterbrush is a slow growing shrub that is moderate to very deep rooted with wide ecotypic variations. It is normally 2 to 6 feet in height and up to 8 feet in width with wedge shaped, three lobed leaves (some are persistent in winter). Leaves can vary in color from grey green to bright green. Some plants have branches near the soil that layer (branches that touch the soil develop roots) providing additional rooting for the plant. Flowering occurs in late spring to early summer with yellow to white blossoms. The spindle-shaped seed shatters easily at maturity.

*Distribution:* Antelope bitterbrush is an important native browse shrub in the intermountain Western United States. It occurs from New Mexico north to Colorado, Wyoming, Montana, and British Columbia, west to Idaho, and Washington, south to Oregon, California, and Nevada.

*Habitat:* Antelope bitterbrush occurs most often as part of a mixed shrub community, but occasionally is found in nearly pure stands. It is associated with a variety of understory grasses and forbs. It can also be an understory plant in association with taller growing trees.

### Adaptation

Antelope bitterbrush is adapted to a wide range of soils with 8 to 34 inches of annual precipitation. It is normally found at elevations of 4000 to 8500 feet, but has been noted at 11,000 feet in California. The shrub has good tolerance to drought and cold.

### Establishment

Natural establishment of antelope bitterbrush occurs in years with good seed production when rodents cache seed and do not use all of the caches. Moisture is necessary the first few years of seedling growth for establishment. Late fall or winter seeding is recommended and competition can be a problem for establishment. Seeds should be drilled about 1 inch deep at a rate of 1/2 to 2 pounds per acre. Rates are doubled if broadcasting and seeds do need to be covered. Plants should not be used for the first four years and seedlings need protection until they are 8 to 10 inches tall. Rodents normally cache seeds within

50 to 75 feet of an existing seed source. Suitable environmental conditions may allow natural revegetation in only one out of 20 years. Antelope bitterbrush can also be established with tubling plants. These should be planted in the spring or early summer. Establishment can be slow; however, stands tend to be long-lived.

### **Management**

Since antelope bitterbrush is a very palatable shrub for big game and livestock, its use should be controlled or it can be easily eliminated by overuse. The shrub is most often used by big game in the fall, winter, or early spring when other plants are still covered by snow. Livestock tend to use the shrub during the growing season when use is more detrimental to vigor. Stands of bitterbrush can become decadent with no use and mature plants should be browsed for good forage production and vigor. However, no more than 50 to 60 percent of current annual growth should be removed. The literature indicates that bitterbrush is not a fire resistant shrub, but is fire dependent and light to moderate fires may enhance stands.

### **Pests and Potential Problems**

Many species of insects and mites inhabit antelope bitterbrush, several of these are beneficial. It should be noted that bitterbrush is insect pollinated. Insects that cause problems include defoliators such as mountain mahogany looper and Western tussock moth. Some of the noted seed insects are bitterbrush seed midge, Say's stinkbug, dark bitterbrush leaf tier, and flower thrips. Large numbers of seedlings and small plants have been destroyed by cutworms and false wireworms. Diseases associated with bitterbrush include root rot, root and stem wilt, and root-stem canker. Seedlings have been damaged by damping off (a disease caused by fungi).

### **Environmental Concerns**

There are no known environmental concerns associated with antelope bitterbrush.

### **Seeds and Plant Production**

Seed may not be produced in wildland stands for 8 to 20 years depending on existing conditions. Browsing should be reduced to 30 percent or less to obtain good seed production. Seed may not be produced from mature plants when stressed from drought or late freezes. Seed can be collected by hand by shaking branches and allowing the seed to fall in hand held collectors. Seeds vary in size from 15,000 to 33,000 per pound and germination normally ranges from 85 to 95 percent. A cold moist stratification period of up to six weeks may be required to obtain

good germination. Tublings can be grown in a greenhouse for planting in a period of six months to one year.

### **Cultivars, Improved, and Selected Materials (and area of origin)**

'Lassen' is a cultivar of antelope bitterbrush released in 1984 by USDA Forest Service, Shrub Sciences Laboratory, Provo, Utah, Soil Conservation Service, and Utah Division of Wildlife Resources, Ephraim Utah. Seven other agencies in California, Idaho, Nevada, and Oregon cooperated. Its origin is near Janesville in Lassen County, California.

Fountain Green germplasm is a source identified release of antelope bitterbrush. It was released in 1990 by the USDA Forest Service, Shrub Sciences Laboratory, Provo, Utah, and the Utah Division of Wildlife Resources, Ephraim, Utah. Its origin is North of Fountain Green, Utah.

Maybell germplasm was released in 1997 as a selected class release by Upper Colorado Environmental Plant Center. Five other agencies participated in the release. Maybell's origin is Moffat County in Northwest Colorado, near the town of Maybell.

### **References**

- Giunta, Bruce C., Richard Stevens, Kent R. Jorgensen, and A. Perry Plummer 1978. *Antelope Bitterbrush – An Important Wildland Shrub*. Utah State Div. of Wildlife Resources. 48 pp.
- Plummer, A. Perry 1968. *Restoring Big –Game Range in Utah*. Utah Div. of Fish and Game. 183 pp.
- Wasser, Clinton H. 1982. *Ecology and Culture of Selected Species Useful in Revegetating Disturbed Lands in the West*. U.S. Dept. Int., Fish Wildl. Serv. FWS/OBS-82/56. 347 pp.
- USDA- Soil Conservation Service 1991. *Conservation Tree and Shrub Cultivars in the United States*. Ag. Handbook 692. U.S. Govt. Printing Office. 50 pp.

Release information for 'Lassen' and Maybell Select Class.

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Edited:

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