

## GRAY EPHEDRA

### *Ephedra nevadensis* S. Watson

Plant Symbol = EPNE

Contributed By: USDA NRCS National Plant Data Center & Tucson Plant Materials Center

**Warning: Ephedra is considered toxic and should be used with caution.**

**Alternative Names**  
Mormon tea, jointfir

#### Use

*Ethnobotanic:* Some tribes steeped the twigs and drank the tea as a general beverage including the Kawaiisu in California, the Zuni in New Mexico, and the White Mountain Apache of Arizona. The plant is still prepared as a beverage and drank today. The Panamint and Owens Valley Paiute of California ate the seeds. The Moapa Paiute and Shoshone in the Great Basin brewed a tea from the twigs to treat venereal diseases. The Shoshone also imbibed a tea to stimulate urination and made the powdered twigs into poultices for sores. The Kawaiisu steeped a tea of the twigs for backache. The Cahuilla in southern California made a tea to cure stomach and kidney ailments and to cleanse their system. The Zuni prepared and drank a tea from the plant, minus the root, to treat the first stage of syphilis.

Ephedra's unique and attractive evergreen or gray foliage makes it a desirable species for environmental plantings. It is also used in preparation of herbal teas (Keeler 1989).

*Wildlife and livestock:* Mountain quail eat Ephedra seeds. Deer, bison, and antelope browse the plant. Gray ephedra is usually grazed heavily and seems to be perfectly safe for grazing livestock since it induces neither toxicity in ewes or cows, nor congenital deformities in lambs (Keeler 1989). New seedlings should be protected from grazing based on the key species in the mix. Proper use is based on one-half the current year's growth (USDA 1983).



Alfred Brousseau  
@ Brother Eric  
Vogel, St. Mary's  
College  
@ CalPhotos

#### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status, such as, state noxious status and wetland indicator values.

#### Description

*General:* Ephedra Family (Ephedraceae). Gray ephedra is a dioecious, xerophytic shrub with jointed or fluted stems and scale-like leaves. Leaf scales are in twos, 2-6mm long, sheathing to about the middle, and obtuse to acute at the apex. The inflorescence is conelike and the staminate flowers have united filaments. The ovulate spikes are distinctly stalked and the seeds are usually paired.

#### Distribution

Gray ephedra occurs naturally on flats and slopes in all the creosote bush deserts at mostly 1,000 to 4,000 ft (305-1,220 m) elevation and sometimes it is found in the desert grassland up to 5,000 ft. (1,524 m). It inhabits California in the eastern Mojave and Colorado deserts, southern Nevada in Clark and Lincoln counties, southwestern Utah, Arizona in the Grand Canyon area and in the Mojave. It also occurs in Arizona and Colorado deserts, New Mexico along the Gila and Pecos river drainage, TransPecos Texas, the Edwards Plateau, and at scattered locations on the Rio Grande Plain, Baja California to Coahuila and Central Mexico (Benson and Darrow 1981). Characteristic species are creosotebush, white bursage, Joshua tree, blackbrush, catclaw, burrobush, big galleta, Indian ricegrass, black grama, bush muhly, and desert needlegrass.

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

#### Establishment

On good seed years abundant collections of ephedra seeds can be obtained by flailing the fruiting branches over an open tray (Young 1986). Seed is harvested by hand from native stands. No seed fields have been established and no work has been done to determine the best method of mechanically harvesting the seed. The plants' response to clipping for harvest is also undetermined (USDA 1983). Collected seed was cleaned with ease to a high purity with a fanning mill equipped with a No. 12 top screen and a No. 1/12 bottom screen (Kay 1975a).

The seeds germinate best at alternating temperature requirements with quite cold nighttime temperatures. Seedlings grow rapidly and can be easily transplanted (Young 1986). Germination of gray ephedra seed was optimal when the temperature alternated between 20 C (16 hours) and 25 C (2 hours). It germinates well in the range of 10 and 20 C, but is highest at 20 C (Kay 1977).

Gray ephedra should perform best on limy sites, most textures, excluding clay and silty clay textures. According to Young, Evans, and Kay (1977), Ephedra nevadensis appears to have an adaptation for seed germination under osmotic potentials as low as -12 bars and thus could be seeded in salt-desert conditions. Depth-of-planting studies resulted in the emergence of 30% (42% on a viable-seed basis, with insect damaged seed removed) from a depth of 1 cm over a 10-day period with temperatures averaging about 10 C. Total emergence was similar at 2 cm, though slightly delayed. Roughly 13% (18% viable seed) emergence, delayed further, was recorded for 4 cm (Kay 1975). Seed storage at room temperature for 12 months after maturity reduced germinability (Young 1977).

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

EPNE is available through native plant nurseries and seed companies within its range. Seeds and plants of selected *Ephedra* cultivars are available from many nurseries. It is best to plant species from your local area, adapted to the specific site conditions where the plants are to be grown. Contact your local Natural Resources Conservation Service (formerly Soil Conservation Service) office for more information. Look in the phone book under "United States Government." The Natural Resources Conservation Service will be listed under the subheading "Department of Agriculture."

#### **References**

Benson & Darrow 1981. *Trees and shrubs of the southwestern deserts*. The University of Arizona Press, Tucson, Arizona.

Fowler, C.S. 1986 *Subsistence*. pp. 64-97, IN *Handbook of North American Indians Vol. 11 Great Basin*. Warren L. D'azvedo [Ed.]. Smithsonian Institution, Washington D.C.

Jordan, G.L. *Range seeding and brush management of Arizona rangelands*. Cooperative Extension Service, Agricultural Experiment Station, University of Arizona, College of Agriculture.

Kay, B.L. 1975. *Test of seeds of Mojave Desert shrubs*. Progress report. BLM Contract No. 53500-CT4-2 (N). 24pp.

Kay, B.L. C.M. Ross, W.L. Graves, & C.R. Brown 1977. *Mojave revegetation notes*. Agronomy and Range Science No. 19.

Kearney, T.H. & R.H. Peebles 1960. *Arizona flora*. University of California Press, Berkeley, California.

Keeler, R.F. 1989. *Investigation of material and embryo/fetal toxicity of Ephedra viridis and Ephedra nevadensis in sheep and cattle*. Journal of Range Management 42(1).

Martin, A.C., H.S. Zim, & A.L. Nelson 1951. *American wildlife and plants: A guide to wildlife food habits*. Dover Publications, New York, New York.

Pater, M. 1991. *Documentation of a plant accession selected for advanced testing*. USDA, NRCS, Tucson Plant Materials Center, Tucson, Arizona.

Reagan, A.B. 1929. *Plants used by the White Mountain Apache Indians of Arizona*. Wisconsin Archeologist 8(4):143-160.

Stevenson, M.C. 1915. *Ethnobotany of the Zuni Indians*. Pages 35-102 IN: *Bureau of American ethnology thirtieth annual report 1908-1909*. Smithsonian Institution. Washington, D.C.

Strike, S.S. & E.D. Roeder 1994. *Ethnobotany of the California Indians. Volume 2. Aboriginal uses of California's indigenous plants*. Koeltz Scientific Books, Champaign, Illinois.

Train, P., J.R. Henrichs, & W.A. Archer 1941. *Contributions toward a flora of Nevada, No. 33. Medicinal uses of plants by Indian tribes of Nevada*. USDA, The Division of Plant Exploration and Introduction, Bureau of Plant Industry, Washington, D.C.

USDA, Soil Conservation Service 1983. *Management and uses of mormon-tea*. Arizona State Office, Phoenix, Arizona.

Wyman, L.C. & S.K. Harris 1951. *The ethnobotany of the Kayenta Navaho*. University of New Mexico Publications in Biology 5. University of New Mexico Press, Albuquerque, New Mexico.

Young, J.A. & C.G. 1986. *Collecting, processing and germinating seeds of wildland plants*. Timber Press, Portland, Oregon.

Young, J.A., R.A. Evans, & B.L. Kay 1977. *Ephedra seed germination*. *Agronomy Journal* 69.

Zigmond, M.L. 1981. *Kawaiisu ethnobotany*. University of Utah Press, Salt Lake City, Utah.

**Prepared By**

*M. Kat & Anderson*

USDA, NRCS, National Plant Data Center

*Mark Pater*

USDA, NRCS Tucson Plant Materials Center  
Tucson, Arizona

**Species Coordinator**

*M. Kat Anderson*

USDA, NRCS, National Plant Data Center  
c/o Plant Science Department, University of  
California, Davis, California

Edited 05dec00 jsp; 19may03 ahv; 05jun06 jsp

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

*The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family 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 USDA's TARGET Center at 202-720-2600 (voice and TDD).*

*To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.*

*Read about [Civil Rights at the Natural Resources Conservation Service](#).*