Fabaceae—Pea family

Psorothamnus Rydb.

indigobush

Jane E. Rodgers and Carol Miller

Ms. Rodgers is a vegetation specialist and Ms. Miller a former propagationist at the USDI National Park Service's Joshua Tree National Park Center for Arid Lands Restoration and Native Plants Nursery, Twenty-nine Palms, California.

Other common names. dalea.

Growth habit, occurrence, and use. The indigobush genus—*Psorothamnus*—includes 9 species that are spread throughout the southwestern United States into Mexico (table 1). The majority of these perennials are ornamental and many of them also contribute to the forage value of stock ranges. Branches of dyeweed have been used by Native Americans in southwestern Arizona and southern California for dye, medicine, and basket construction (Bean and Saubel 1972; Kearney and Peebles 1951).

Flowering and fruiting. Flowering occurs during the summer months (Benson and Darrow 1954). Calyx lobes are usually unequal, with the upper pair often largest. Petals emerge from the receptacle in violet, blue, or purple and white together (Jepson 1993). Fruits are indehiscent, included in or protruding from the calyx. The fruits are usually glandular and produce just 1 seed (Jepson 1993).

Seed collection can begin in July and continue through September for Schott dalea and smoketree as seeds get plump and change color (CALR 1993). Insect-infested seeds on the ground should be avoided. Seeds of this genus are orthodox in storage behavior and have been stored successfully under a variety of conditions (table 2).

Pregermination treatments and germination tests. Various seed treatments have been used at the Joshua Tree National Park (JTNP) Native Plants Nursery; however, Emery (1988) does not suggest any pre-treatments. At JTNP, Schott dalea has been germinated by clipping and leaching seeds for 12 to 24 hours, with an average germination rate of 50%. Success with indigobush tree using a soak in 1:1 bleach–water solution for 30 minutes, followed by leaching for 3 to 4 hours, has resulted in an average germination rate of 40% (CALR 1993).

Other trials by Kay and others (1988) included in table 2 refer to initial germination of seeds using 4 replications of 100 seeds each wrapped in damp paper toweling and stored in a growth chamber at 15 EC. Test conditions were maintained for 28 days, with germination percentages recorded every 7 days. Germination tests, conducted annually to test the effects of storage, were then averaged to a "best germination." These annual tests consisted of 4 replications of 50 seeds using the same initial testing methods.

Nursery practice. Seedlings can be successfully grown in a variety of containers. At JTNP, Schott dalea and smoketree have been successfully grown in tubes that are 76 in (30 in) long and 15 cm (6 in) in diameter and 36 cm (14 in) high 3.8-liter (1-gal) containers. Outplanting survival has been moderate, depending on rainfall and planting conditions (CALR 1993).

Seedling care. Seedlings can be very susceptible to damping-off. Keeping seedlings

where air circulates freely and avoiding over-watering will help boost survival (CALR 1993).

References

Bean LJ, Saubel KS. 1972. Temalpakh (from the earth): Cahuilla Indian knowledge and usage of plants. Morongo Indian Reservation, CA: Malki Museum Press. 225 p.

Benson L, Darrow RA. 1954. The trees and shrubs of the southwestern deserts. Tucson: University of Arizona Press. 437 p.

CALR [Center for Arid Lands Restoration]. 1993. Seed test data filed 1989–1993. Twenty-nine Palms, CA: USDI National Park Service, Joshua Tree National Park.

Emery DE. 1988. Seed propagation of native California plants. Santa Barbara, CA: Santa Barbara Botanical Garden. 115 p.

Jepson WL. 1993. The Jepson manual: higher plants of California. In: Hickman JC, ed. Berkeley: University of California Press . 1400 p.

Kay BL, Graves WL, Young JA. 1988. Long-term storage of desert shrub seed. Mojave Reveg. Notes 23. Davis: University of California Department of Agronomy and Range Science.

Kearny TH, Peebles RH. 1951. Arizona flora. Berkeley: University of California Press. 1032 p.

Munz PA. 1962. California desert wildflowers. Berkeley: University of California Press. 122 p.

Munz PA. 1974. A flora of southern California. Berkeley: University of California Press. 1086 p.

Table 1—*Psorothamnus,* indigobush: nomenclature and occurrence

Scientific name & synonyms	Common name	Occurrence
P. arborescens **(Torr. ex Gray) Barneby** *Dalea arborescens* Torr. ex. Gray. *Parosela arborescens* Heller *Parosela neglecta* Parish	**indigobush,** Mojave dalea	San Bernadino Mtns, Mojave Desert, S Nevada, Mexico
P. arborescens **var. *arborescens*** **(Torr. ex Gray) Barneby**	**Mojave indigobush,** Saunder dalea	SW Mojave Desert, Mexico
P. arborescens **var. *minutifolius*** **(Parish) Barneby**	**Johnson dalea**	Mojave Desert, S Nevada
P. arborescens **var. *simplifolius*** **(Parish) Barneby** *P. californica* *Dalea californica* S. Wats.	**California dalea**	Mojave Desert & San Bernadino Mtns.
P. emoryi **(Gray) Rydb.** *Dalea emoryi* Gray	**dyeweed***, dyebush	Mojave & Sonoran Deserts
P. fremontii **(Torr. Ex Gray) Barneby** *Dalea fremontii* Torr.	**Fremont dalea**	Desert mtns to S Utah, Arizona
P. polydenius **(Torr. ex S. Wats.) Rydb.**	**Nevada dalea,** Nevada smokebush	Mojave Desert
P. schottii **(Torr.) Barneby** *Dalea schottii* Torr. *Parosela schottii* Heller	**indigobush**, Schott dalea	Sonoran Desert of Arizona & Mexico
P. spinosus **(Gray) Barneby** *Dalea spinosa* Gray *Parosela spinosa* Heller	**smoketree,** smokebush	California deserts to Arizona & NW Mexico

Sources: Jepson (1993), Munz (1962, 1974).
* Not the source of the true indigo dye.

Table 2—*Psorothamnus,* indigobush: seed weight, initial and best germination, and storability of seeds

Species	Seeds/weight /kg	Seeds/weight /lb	Percentage germination Initial	Percentage germination Best	Storability
P. emoryi	600	275	58	75	Stores well
P. fremontii	35	16	41	97	50% hard seed, stores well
P. polydenius	460	210	2	99	90% hard seed, stores well
P. schottii	22	10	90	88	Good storage
P. spinosus	50	23	22	58	17–47% hard seed, stores well

Source: Kay and others (1988).