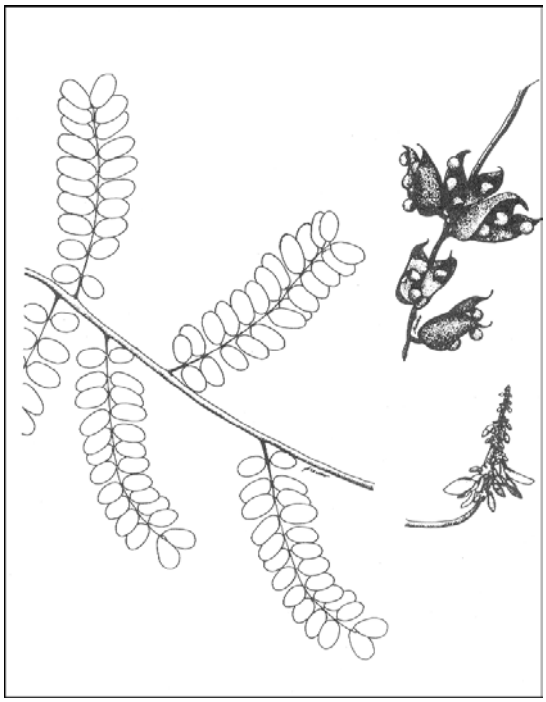
***Abrus precatorius* L.** crab's eye
FABACEAE

Synonyms: *Abrus abrus* (L.) W.F. Wright
Glycine abrus L.



General Description.—Crab's eye, also known as jumbie bean and licorice plant in English, peronías and ojos de cangrejo in Spanish, and guen léglise in French (Howard 1988, Liogier 1988), is a slender woody vine that climbs shrubs and low trees. Its older stems are dark gray and the younger ones are green and very fine. The alternate, pinnately compound leaves are 5 to 10 cm long and have five to 20 pairs of leaflets. The racemes have tight clusters of white to purple flowers (Howard 1988, Liogier 1988). The most notable thing about this species is the 6-mm, spherical red and black seeds. Crab's eye produces a tap and lateral root system with abundant fine roots. The larger roots are dark reddish brown. The lateral roots produce white nodules.

Range.—Crab's eye is possibly native of India (Acevedo-Rodríguez 1985) or of Guinea in Africa (Neal 1965), but today has naturalized throughout most of the tropics (Acevedo-Rodríguez 1985).

Ecology.—In Puerto Rico, crab's eye grows in subtropical moist (1000 to 2000 mm of precipitation), subtropical dry forest (below 1000 mm of precipitation), and the lower extreme of the subtropical wet forest type on all drainage classes except very poorly drained and on soils of all textures and parent materials. All types of topography are colonized from near sea level to 1,000 m in elevation (in India) (Parrotta 2001). Crab's eye competes well with weeds and brush in abandoned farmland, disturbed areas, and early secondary forest. It requires disturbance to maintain itself in dense, closed stands. Although crab's eye produces relatively few root nodules compared to other legumes, nitrogenase activity is comparatively high by nodule weight (Pokhriyal and others 1997).

Reproduction.—A sample of crab's eye seed from Puerto Rico averaged 0.1088 $\pm$ 0.0091 g/seed. These seeds, which were not treated in any way, germinated at a final rate of 61 percent between 11 and 182 days after sowing. Germination is epigeous. Seeds are produced in abundance. Seedlings are common in suitable habitat, but few gain access to sufficient sunlight to survive. Humans have been responsible for the long-distance transport that has resulted in the current pantropical distribution. Birds may move the seeds short distances either through curiosity or by being momentarily deceived into thinking that they are edible (personal communication with Joseph Wonderly, IITF, Río Piedras, Puerto Rico). Lateral extension of the vines also disperses the seeds short distances. These plants can be controlled by heavy grazing, hand removal, and with herbicides.

Growth and Management.—Seedlings grow at a moderate rate. It takes about 6 months after germination for them to reach 30 cm in height. Mature plants may grow 2 m or more per year in each leader. They eventually reach 5 to 10 m into the canopy or a similar distance laterally (Acevedo-Rodríguez 1985). The longevity of crab's eye is not reported, but certainly it lives longer than 3 years. New plants are easily grown in the nursery and probably can be established by direct seeding into prepared seed spots. Because the species is exotic in all of the U.S. Territories

and because it becomes a weed in range and semimanaged pastures (Velez and von Overgeek 1950), it is difficult to see a justification for the establishment of plantations.

Benefits.—Crab's eye seeds were used anciently as balance weights in the Eastern countries (Neal 1965) and as rosary beads by the Buddhists (Bailey 1941) because they were so uniform in weight, as well as durable. Today, the seeds are used to make necklaces and other jewelry and for the sounding weights in maracas. The seeds contain a protein-based poison called abrin (Parrotta 2001). One seed contains enough poison to kill a human, but the seeds are very hard and must be chewed or ground to release the poison (Acevedo-Rodríguez 1985). However, cooking destroys the poison so that the seeds may be eaten (Neal 1965). The leaves and roots contain glycyrrhizin, the principal component of licorice. These tissues prepared in various ways are used to treat coughs and a number of other ailments (Parrotta 2001). Crab's eye holds out promise in the treatment of *schistosoma haematobium* infections. Extracts of the plant were shown to be lethal to adult schistosomes in hamsters (Ndamba and others 1994). Crab's eye vines are sometimes grown for vegetative screens (Bailey 1941).

References

Acevedo-Rodríguez, P. 1985. Los bejucos de Puerto Rico. Vol. 1. Gen. Tech. Rep. SO-58. U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station, New Orleans, LA. 331 p.

Bailey, L.H. 1941. The standard cyclopedia of horticulture. Vol. 1. The MacMillan Co. New York, NY. 1,200 p.

Howard R.A. 1988. Flora of the Lesser Antilles, Leeward and Windward Islands. Dicotyledoneae. Vol. 4. Arnold Arboretum, Harvard University, Jamaica Plain, MA. 673 p.

Liogier H.A. 1988. Descriptive flora of Puerto Rico and adjacent islands, Spermatophyta. Vol. 2. Editorial de la Universidad de Puerto Rico, Río Piedras, PR 481 p.

Ndamba, J., N. Nyazema, N. Makaza, C. Anderson, and K.C. Kaondera. 1994. Traditional herbal remedies used for the treatment of urinary schistosomiasis in Zimbabwe. Journal of Ethnopharmacology 42(2): 125-132.

Neal, M.C. 1965. In gardens of Hawaii. Spec. Pub. 50. Bernice P. Bishop Museum Press, Honolulu, HI. 924 p.

Parrotta, J.A. 2001. Healing plants of Peninsular India. CAB International, Wallingford, UK. 944 p.

Pokhriyal, T.C., S.P. Chaukiyal, and H.B. Naithani. 1997. Nodule biomass and nitrogen fixation studies in some leguminous nitrogen fixing plants. Indian Forester 123(12): 1197-1198.

Vélez, I. and J. von Overgeek. 1950. Plantas indeseables en los cultivos tropicales. Editorial Universitaria, Rìo Piedras, PR. 497 p.

John K. Francis, Research Forester, U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, Jardín Botánico Sur, 1201 Calle Ceiba, San Juan PR 00926-1119, in cooperation with the University of Puerto Rico, Río Piedras, PR 00936-4984