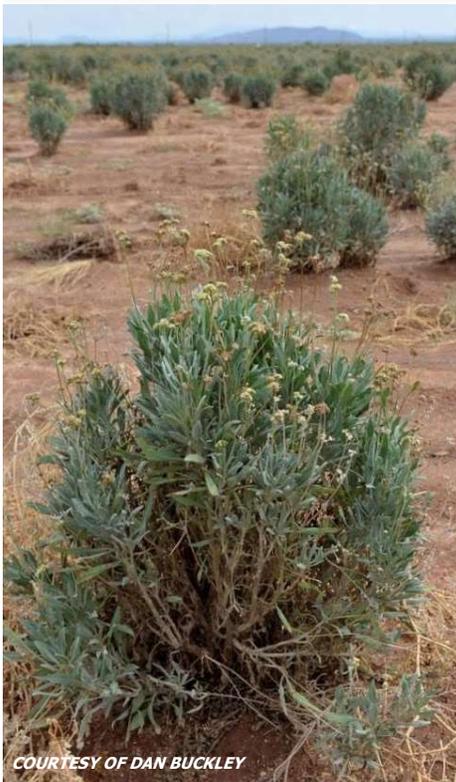




SUSTAINABLE BIOECONOMY FOR ARID REGIONS

GUAYULE

COURTESY OF YULEX CORPORATION



COURTESY OF DAN BUCKLEY

BENEFITS OF GUAYULE

- > Resistant to drought and enters a semi-dormant state until water returns
- > All parts of the plant can be processed; there is little to no waste
- > Herbicides and insecticides are only needed for seedling establishment

APPEARANCE & CHARACTERISTICS

> Guayule (why-oo-lee) (*Parthenium argentatum*) is native to the North American Chihuahuan desert, and it produces natural rubber. The rubber and resin produced by the plant are stored in the branches and roots, and both are extracted during processing. After extraction, the ground-up stems and branches left behind are called "bagasse," which can be a source for bioenergy and other by-products.

> Guayule is a small, woody, multi-branched perennial shrub, with relatively small grayish leaves. Flowers are at the branch tips, and are pollinated by wind and insects. Each flower head contains five seeds that are shed as the flower matures.

GROWING GUAYULE

> Traditionally established using transplants, guayule are directly seeded, which greatly reduces planting costs. Seedlings grow slowly and are susceptible to weed competition that is reduced by applying a registered preemergence herbicide.

> Guayule can be grown with standard cultural equipment for tillage, planting, cultivation, irrigation, harvest/ baling, and transport.

> It is a two-year crop. Intermediate harvests are possible at the end of year one, but the highest rubber content is found in year two harvests.



USDA-ARS

KEY CHARACTERISTICS

- > Grows well under desert conditions
- > Each flower head contains 5 achenes (seeds)
- > Contains hypoallergenic rubber, unlike other types of natural sources
- > Easy to harvest
- > First harvest at two years; may be re-harvested

~682,000

ACRES OF AVAILABLE
GUAYULE-FRIENDLY LAND
ACROSS ARIZONA

~895,000

ACRES OF AVAILABLE
GUAYULE-FRIENDLY LAND
ACROSS NEW MEXICO

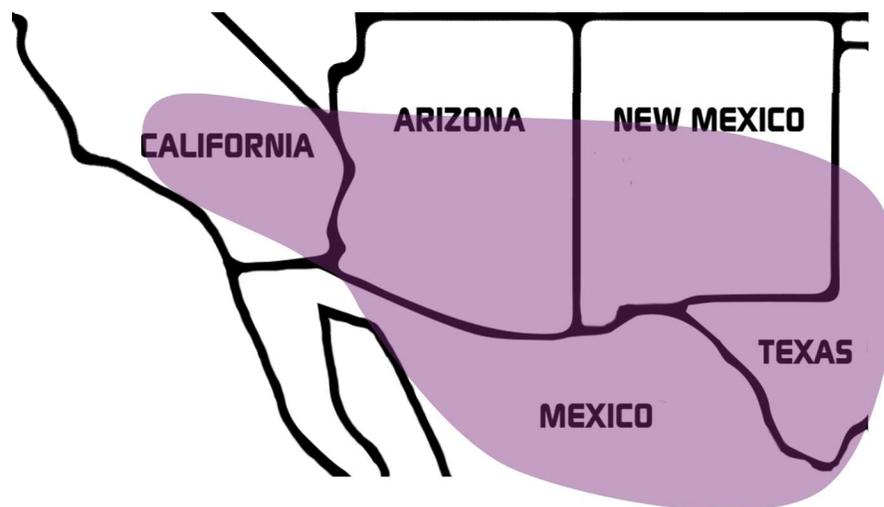
HISTORY IN NORTH AMERICA

> Guayule has been known as a source of rubber since pre-Colombian times when native populations in Mexico used it to form balls for their games. In the early 1900s, it was an imported source of natural rubber in the United States.



> About 1400 tons of rubber were produced in the late 1920s, and again in the 1940s. After years of research and development, guayule is again a reliable domestic source of natural rubber.

GENERAL GROWING LOCATION



THE SBAR PROJECT

> The Sustainable Bioeconomy for Arid Regions (SBAR) project is evaluating raw material development, production, and delivery in the southwestern United States to generate a self-sustaining regional economy. Our approach is to optimize guayule and guar production to support the economies of the southwestern United States. As water becomes less available for agriculture, it is important to identify and test drought and heat tolerant crops that grow well in arid regions, and provide positive economic returns.

For more information: energy.arizona.edu/SBAR



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