



**SUSTAINABLE BIOECONOMY**  
FOR ARID REGIONS

# SUSTAINABLE BIO-ECONOMY FOR ARID REGIONS

## EXECUTIVE SUMMARY

> The SBAR Center of Excellence brings together the University of Arizona, Colorado School of Mines, Colorado State University, New Mexico State University, USDA-ARS, and Bridgestone Americas to understand and improve all aspects of producing natural rubber and valuable co-products from guayule (*Parthenium argentatum*), a perennial shrub that is a domestic source of natural rubber.

> The team consists of agronomists, weed specialists, soil scientists, and biosystems engineers that work to improve feedstock production in a sustainable manner; chemical engineers that work to characterize guayule resins and bagasse while exploring new uses for these components of the plant; mechanical engineers and economists to ensure that new technologies are implemented in an economically viable and environmentally friendly way; and educators and extension agents to assure a steady supply of trained professionals to build a robust bio-economy in the arid southwest.

## SBAR ACCOMPLISHMENTS

> Completed direct seeding germplasm trial of 45 diverse lines in 2 soil types that resulted in 10 lines with stable yields and high rubber content.

> Obtaining 24cSLN herbicide labels for guayule in Arizona.

> Studying relationships between nitrogen, irrigation, the soil microbiome, and rubber yield.

> Developed an integrated techno-economic and lifecycle assessment model from field to rubber production, resin and bagasse.

> Characterized guayule resin. Separated guayule resin into terpenes, terpenoids, and fatty acid components.

> Investigated high-value co-products from guayule resin.



## KEY DETAILS

> Diverse team of researchers working on all facets of the guayule value chain

> Focus of research and development is on a clear path to commercialization

> Workforce development is a key element to building a sustainable bio-economy

## QUEST FOR PARTNERSHIPS

- > Growers to establish test plots of guayule
- > Companies that market terpenes, adhesives, and/or insect repellents
- > Industry and commercial entities interested in biofuels from bagasse

## POINT OF CONTACTS

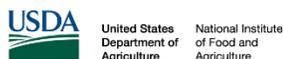
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## FUTURE WORK AND POSSIBILITIES

- > Communicate project results to a broad range of audiences.
- > Complete stress irrigation studies to understand the minimum amount of water needed to support a guayule crop.
- > Obtain herbicide labels that can facilitate guayule establishment.
- > Scale-up production of co-products from guayule resin and bagasse.
- > Identify industrial partners to commercialize co-products.
- > Partner with community colleges to strengthen workforce development training and activities.



For more information: <https://sbar.arizona.edu>



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