



SBAR OVERVIEW

(SUSTAINABLE BIO-ECONOMY FOR ARID REGIONS)

Alix Rogstad

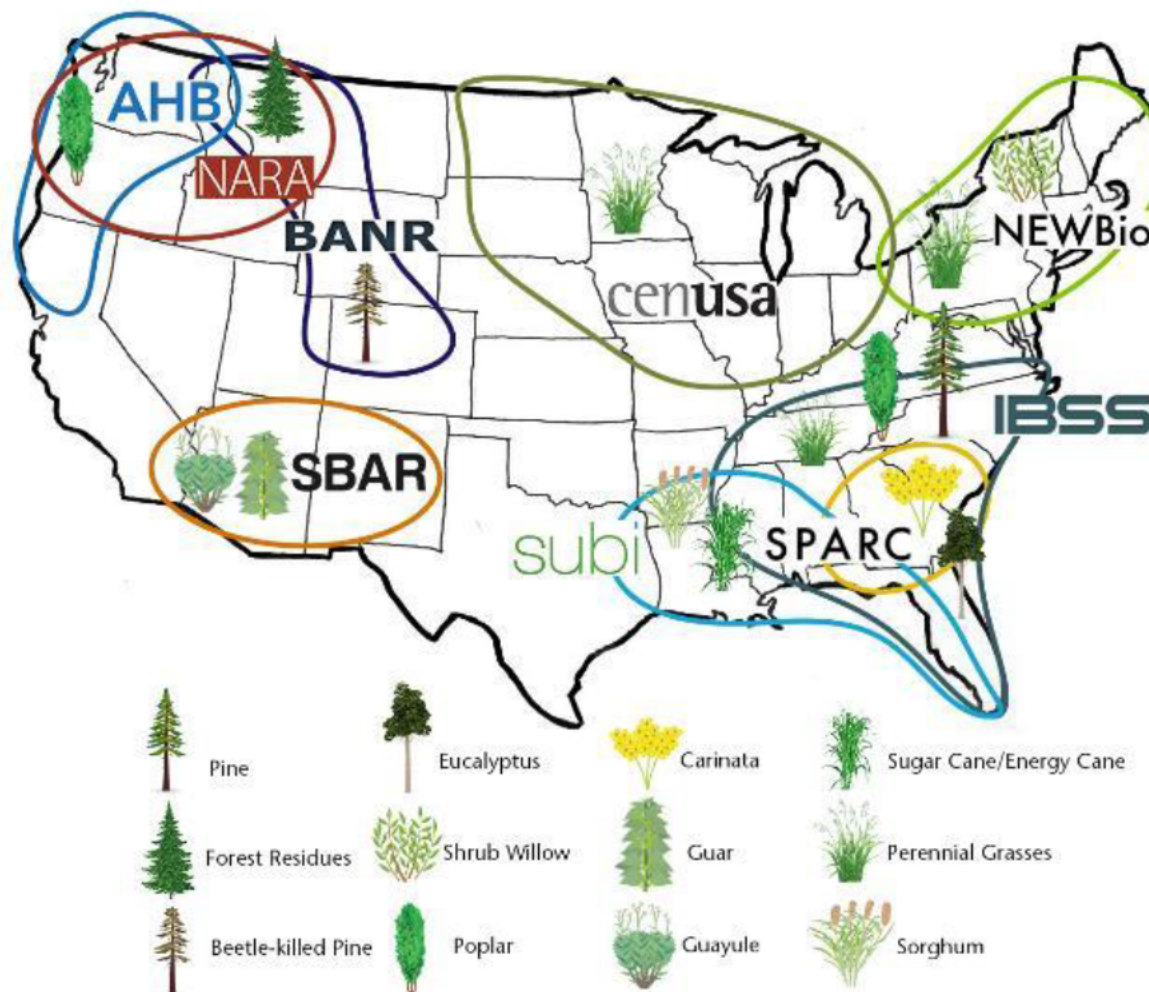


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USDA-NIFA Network

(CAP coordinated agriculture projects)



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Project Mission

Build a sustainable bio-economy for arid regions to improve quality of life in rural communities and Native Nations.

We Achieve This by:

- Optimize production of guar and guayule as a viable source for biofuel and bioproducts in arid regions of the Southwest
- Engage growers, producers, and industry in new crop production within the region
- Training the next generation of scientists, producers, and researchers to accept and generate jobs in bioproduct and biofuel fields



Guayule flower



Guar flower

Partners



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Management Team

- Kim Ogden – Principal Investigator & Project Director
- Alix Rogstad – Project Director (Operations)
- Colleen McMahan – Associate Project Director
- Dennis Ray – Feedstock Development & Production
 - *Pete Waller*
- Catie Brewer – Post-Harvest Logistics & Co-products
- Jason Quinn – System Performance & Sustainability
- Sara Chavarria – Education
- John Idowu – Extension & Outreach (NM)
- Blase Evancho – Extension & Outreach (AZ)

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Major Accomplishments

- Updated Major Project Goals
- Finalized Management Team – hired outstanding people
- Developed Reporting and Evaluation Plans
 - *First round of project evaluation occurred Aug 2018*
- Advisory Board – initial board formed; secondary products in process
- Successful Outreach
 - *Directly through workshops/presentations (971 ppl)*
 - *Tabling events (1,457 ppl)*
 - *Website visits since July-September 2018 (575)*
 - *Summer youth camps and internships (22)*
- Initiated all aspects of research plan – 5 Components

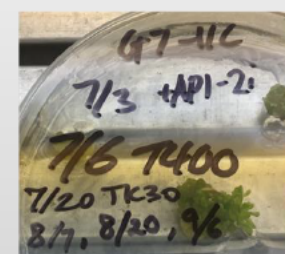
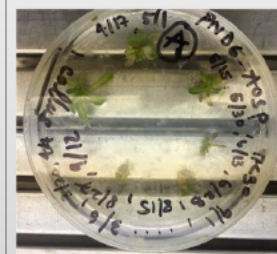
Highlights: Feedstock Development & Production

- Field trial methodology was finalized
- Guayule and guar field experiments were established in 7 locations
- Irrigation field experiments were established in 3 locations
- 4 preemergence and 5 postemergence herbicide studies were initiated
- 28 unique candidate guayule genes were identified as promising targets for genetic modification



Guar field measurements

Transformation of guayule leaf cell DNA: Shoot formation



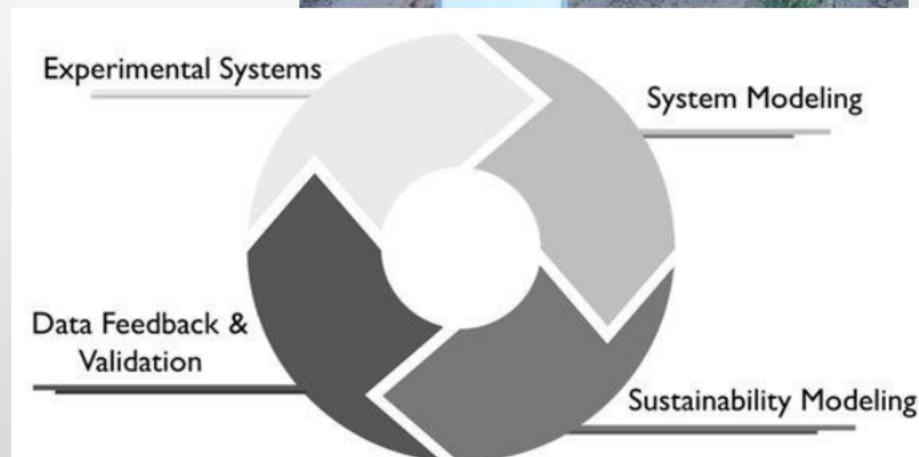
Highlights: Post-Harvest Logistics & Co-Products

- Completed initial literature review of possible bagasse-to-fuel conversion routes
- Preliminary mixed-integer harvest and economic models completed (base for future large-scale algorithms)
- Isolated and characterized major metabolites of guayule
- Initiated chemical characterization of guayule resin; identified 17 major terpenes in the resin
- Established protocols for guar and guayule bagasse characterization



Highlights: System Performance & Sustainability

- Literature review completed; info gathered formulates the Comprehensive Life Cycle dataset
- High fidelity engineering process modeling is under way
- Presentation of results at conferences
- Increased understanding of economics affecting guar and guayule production
- Initial data integration; established process for data feedback to SBAR Team



Highlights: Education

- Comprehensive review of existing classroom lessons and activities completed
- Dry-run completed in an agricultural (high school) class for all selected lessons
- Developed and hosted a summer professional development workshop
- Recruited 1st cohort of SBAR Fellows and Teacher Mentors
- Teaching/Learning evaluation tools generated to facilitate future implementation adjustments



Highlights: Extension & Outreach

- Deployed grower needs assessment in AZ and NM
- Developed 3 fact sheets to inform the public about guar and guayule
- Presented at Extension Field Days and various conferences; staffed tabling events to answer questions
- Established Extension Advisory Committee in NM
- First cohort of *Project Puente* interns completed summer session
- Designed and hosted a one-week biofuel summer camp for 4-H participants in Tucson, AZ





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Next Steps & Future Plans

- On-going Research
 - *Year 1 field trial results anticipated this summer (AZ & NM)*
 - *Potential co-products identified within guayule resin*
 - *Preliminary integration of sustainability models completed*
- Education and Extension & Outreach
 - *Phase 2 of Teacher Professional Development (Jun 2019)*
 - *8-10 interns supported this summer (2019)*
 - *4-H Train-the-Trainer workshops hosted in NM*
- Annual SBAR Retreat
 - *Hosted in Tucson area, September 2019*
 - *Collaboration with Association for the Advancement of Industrial Crops (AAIC)*

