Extension & Outreach Newsletter

September 2022; Volume 3, Issue 3

Contents

SBAR Updates
> Page 1

Research Updates
> Page 2

Extension Updates
> Page 2

Youth Development Updates
> Page 3

Education Updates
> Page 3

Contact Info
> Page 4

Connecting with Schools and Communities

During the summer months, SBAR faculty and staff have been actively connecting with communities, schools, teachers and students. The goal of these connections is to share the real world STEM materials and curriculum that have been developed by SBAR.

Outreach activities have included hosting professional development workshops for Tucson Unified School District, welcoming middle and high school students to NMSU, teaching students about combustion and biopolymers, attending school curriculum nights, and hosting a successful summer internship program.

SBAR Teacher Partners and SBAR Fellow Shermal Fernando will be presenting at the New Mexico Science Teachers Association Conference in Socorro, NM on September 24th.

Continue reading, and visit our website to learn more: https://sbar.arizona.edu/.

NMSU Fellows Expand SBAR Curriculum

SBAR Fellows at New Mexico State University have had a busy summer. They welcomed students from Hatch and Alamogordo School Districts to campus. Fellows taught students about biopolymers and the science of combustion. Both lessons are available on the SBAR website with presentations, detailed lesson plans and student worksheets. Find the lessons here: https://sbar.arizona.edu/education/educational-resources/lesson-plans/technology-engineering-chemistry.

SBAR Symposium at ASA, CSSA, SSSA Annual Meeting

The SBAR team will be hosting a symposium at the 2022 ASA, CSSA, SSSA annual conference. The symposium is titled "Development and Management of Multi-Institutional and Interdisciplinary Grant Projects – Examples from USDA Coordinated Agricultural Projects". The symposium will be held in Baltimore, MD on November 8, 2022 from 10 am - 12 pm ET.

SBAR will co-present with colleagues from SPARC, a CAP project focused on carinata (Ethiopian mustard). Conference information: https://www.acsmeetings.org/. See you in November!

Research Updates

Seeding Density Effect on Two Guar Varieties

As part of the SBAR project, we are fine-tuning the agronomic conditions required for the optimal production of guar in New Mexico. We evaluated two varieties of guar (Kinman and Monument) in New Mexico at three seeding densities. The seeding densities that we tested were 2 seeds/ft, 4 seeds/ft, and 8 seeds/ft planted along the row on the seedbed. The trial sites were in Central (Los Lunas), Eastern (Clovis), and Southern (Las Cruces) New Mexico. Guar was planted in early June and harvested in October at all trial sites.

Seeding density trial at Clovis Agricultural Science Center, Clovis, NM

Guar at midseason, Clovis, NM

Results of the first trial year show that the guar bean yield at 8 seeds/ft was higher than the yields at 2 and 4 seeds/ft. Also, the Kinman had an 18% higher yield than the Monument variety from the average yields across all the sites, while Las Cruces seed yields were higher than those at the Clovis and Los Lunas sites. The number of pods per plant was lower for 8 seeds/ft compared to 2 and 4 seeds/ft treatments and significantly higher for Kinman compared to Monument. The Clovis site recorded a higher number of pods per plant compared to the other sites.

The trial will be repeated for another year to evaluate the performance of these two varieties across the sites in New Mexico.

Dr. John Idowu, Extension Agronomist, NMSU

Extension Updates

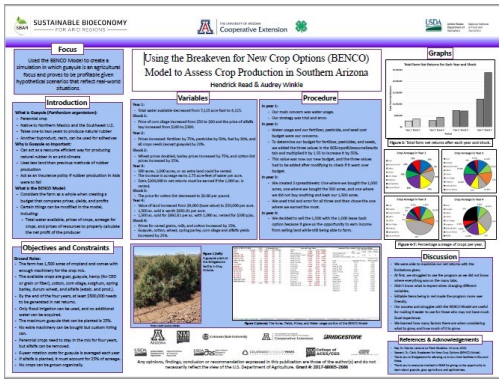
BENCO: A Resource for Growers

The Break-Even for New Crop Options model, or BENCO, is an interactive tool that allows growers to compare the profitability of adopting alternative crops into an existing cropping system. BENCO has been in developed to assist growers with complex decisions.

The results of a BENCO analysis are two-fold. The first analysis shows the per-acre net returns (gross returns minus cash and fixed costs) specifically for one or two new crops. It then includes existing crops for a whole-farm analysis. The second analysis shows the breakeven price and yields for new and existing crops and the increase or decrease in inputs and resources used on a whole-farm basis.

TOTAL ACRES IN FARM		1,500	% Irrigation Type		
CROP	% of farm	Acres	Flood	Drip	Sprinkler
Guayule	5.0%	75	100%	0%	0%
Guar	5.0%	75	100%	0%	0%
Hemp for CBD Oil	0.0%	-	100%	0%	0%
Hemp for Grain	0.0%	-	100%	0%	0%
Hemp for Fiber	0.0%	-	100%	0%	0%
Irr. Water Reduction: Set-aside	34.1%	512	100%	0%	0%
Cotton	13.7%	206	100%	0%	0%
Corn Silage	3.0%	45	100%	0%	0%
Sorghum	0.0%	-	100%	0%	0%
Spring Barley	6.0%	90	100%	0%	0%
Durum Wheat	12.1%	181	100%	0%	0%
Alt Crop #1	0.0%	-	100%	0%	0%
Alt Crop #2	0.0%	-	100%	0%	0%
Alt Crop #3	0.0%	-	100%	0%	0%
Alt Crop #4	0.0%	-	100%	0%	0%
Alfalfa Hay Estab.	5.3%	80	100%	0%	0%
Alfalfa Hay Prod.	15.8%	236	100%	0%	0%
	100%	1,500	100%	0%	0%

BENCO crop input and irrigation screen



Example of a BENCO analysis poster from the SBAR Explorer Internship. Interns used BENCO to model scenario based decisions including reduced water availability, increased fertilizer costs, and fluctuating commodity prices.

The model is dynamic. When a crop is added, replaced, or acres increased or decreased, the costs of producing other crops in the model also change. Users can modify existing information.

The BENCO Model was designed as an easy-to-use tool. For those new to Excel, there is a series of bilingual Excel for Agribusiness video lessons available on our website.

BENCO will be available to download from the SBAR website, along with informational and training videos, in the Growers and Producers pages.

Clark Seavert, SBAR Sustainability and Extension

Youth Development Updates

SBAR Summer Internship a Success

SBAR successfully launched a summer internship program in June. SBAR hosted a group of Explorer Interns at the University of Arizona campus for 2 weeks and hosted Research Interns for 6 weeks, one based at the Maricopa Agricultural Center and two at the University of Arizona.

Explorer interns attended seminars taught by an impressive group of SBAR faculty and researchers. From an introduction to guayule genotypes by Dr. Ray, to exploring adhesive properties of guayule resin with Dr. Ogden, students saw real world STEM in action. Students also worked in the soil lab of Dr. Neilson, and learned about the WEST Center from Dr. Achilli. A full day was spent at the Bridgestone research facility in Eloy, and their Biorubber Process Research Center in Mesa. Explorers spent the second week diving into BENCO, Break Even for New Crop Options model developed by Dr. Seavert. Students investigated current agricultural scenarios and made decisions based on BENCO modeling of their farming situation.

Two Research Interns produced a video based on the importance of connecting faculty with students. Dr. Rock (Professor & Water Quality Specialist, University of Arizona) shared in the video, "I am once again reminded how powerful it is when we connect students to scientists and researchers working in emerging STEM technologies. SBAR's Summer 2022 Internships highlight the importance of this work."

Education Updates

Professional Development Seminar for Tucson Unified Teachers

Nearly 3,000 Tucson Unified School District students will benefit from their teachers' participation in an SBAR professional development seminar held in August. The course, "Secondary Science Resources from Sustainable Bioeconomy for Arid Regions Project", was led by Matt Swanson, 4-H Curriculum Specialist with assistance provided by Jacqueline Bruhn, SBAR Program Coordinator. The 90 minute seminar covered the extensive curriculum materials currently available.

One lesson introduced, the Southwestern Soil Exploration, was enthusiastically received by teachers. This lesson links Native American cultural traditions with soil types. While students wait for soil samples to settle, they research how pottery and soil are connected at the American Southwest Virtual Museum. This is one example of SBAR's unique culturally responsive curriculum. Also presented was the recently published SBAR Lotería game. The game can be played to enhance, and expand on, curriculum concepts. Each set contains with 57 cards, 26 player boards and instructions. All text is in both English and Spanish.

Teacher feedback was very positive. In their evaluations, teachers shared their excitement about using the lessons and appreciation for the culturally responsive materials.

Curious about these lessons? Find them on the SBAR website under the Education tab: https://sbar.arizona.edu/education/educational-resources/lesson-plans.

Connect with SBAR

Recruiting: Growers for Guayule Trial Plots

Contact: Trent Teegerstrom

Recruiting: AgriScience Advisory Committee

Dr. Miller is seeking members for a statewide Agricultural Science Committee.

Contact: Dr. Miller

Plant Guides for Guar and Guayule on SBAR website

Check our website for updates.

https://sbar.arizona.edu/extension/growers-producers

SBAR Agronomics on Guayule

Available 2022

SBAR Whole Farm Analysis Tool for Evaluating the Adoption of Guayule (BENCO)

Available Fall, 2022

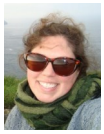
Contact: Dr. Miller, Clark Seavert

Extension, Education, and Outreach Team Arizona and New Mexico

Catie Brewer
New Mexico
Co-Products, Education
cbrewer@nmsu.edu

John Idowu
New Mexico
Extension
jidowu@nmsu.edu

Frannie Miller
New Mexico
Educ., Youth Dev., Sustainability
franniem@nmsu.edu

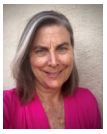


Natalie Brassill
Arizona
Extension
nbrassill1@arizona.edu

Clark Seavert
Arizona
Sustainability, Extension
clark.seavert@oregonstate.edu

Matt Swanson
Arizona
Curriculum Specialist
mswanson@arizona.edu

Trent Teegerstrom
Arizona
Sustainability, Extension
tteegers@arizona.edu



Jacqueline Bruhn
Arizona & New Mexico
Education, Youth Development
jmbruhn@arizona.edu

We would love to hear from you! Contact our team directly at the email addresses provided.

Check out the SBAR website for more information about the program, research, and resources: https://sbar.arizona.edu

Any opinions, findings, conclusions or recommendations expressed in this publication/work are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.
Grant #: 2017-68005-26867