June 2023
Quarterly

Agricultural Research Service
Small Farm Research Agri-news

Dale Bumpers Small Farms
Research Center
Booneville, Arkansas

Greetings from the Research Leader, Dr. Phillip Owens

Dr. Phillip Owens

Welcome to our Spring 2023 Edition of the Dale Bumpers Small Farm Research Center Newsletter. I am feeling grateful because I returned to the Center from a second detail in the Southeast Area Office in Stoneville Mississippi on April 1. It is an honor to serve as the Acting Associate Area Director and learn about research activities and operations at 66 different research units in 10 states across the US. I have new tools and ideas to bring back to our Center to better serve our stakeholders.

I want to thank Dr. Joan Burke for stepping up again to fill the role as Acting Research Leader for our Center. Also, our dedicated employees kept operations and research moving forward which made all transitions seamless. Our mission which focuses on finding economic solutions for small holder farmers drives each of us every day. We also have great research partners which include the University of Arkansas, University of Tennessee, Tuskegee University, Fort Valley State University, New Mexico State University, University of Texas-Arlington, Purdue University, Louisiana State University, University of Missouri, USDA ARS in Fayetteville, USDA ARS Temple Texas, USDA ARS Byron GA, USDA ARS Ames IA, Winrock International, Natural Soybean and Grain Alliance, and Pacific Northwest National Laboratories to name a few. Linking up with other scientists at other institutions help bring a wide variety of expertise to help with our mission. I would like to see improvement in communication with stakeholders (you). To fulfill our mission, we need to hear your thoughts, concerns and issues that you are dealing with on the farm. (continued on page 2)

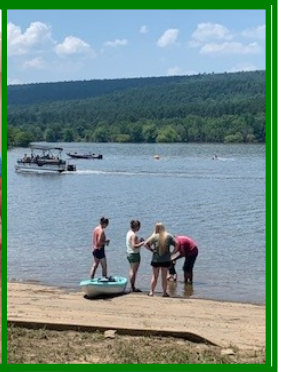
In this issue:

(continued from page 1) We had a wonderful turnout Saturday April 29 for the Arkansas Small Ruminants Field Day held in conjunction with the University of Arkansas, Animal Sciences Department. The day was packed with educational material ranging from fencing, forages, parasite control to overall management of sheep herds. It was great to see all of the engaging producers with lots of interest and questions. We are always looking for ideas to serve you better so please reach out to me or others on the staff if you have ideas for future demonstrations or workshops. Also, please save the date for a stakeholder event scheduled for August 2 where we will host the Research Education and Economics (REE) Deputy Under Secretary Sanah Baig. We will be sending out invitations for this event very soon.

As summer approaches, you will see lots of activities at the research center. We will be replacing a barn that was damaged by a fire last fall. The contract has been issued and work should commence soon. Planting has started for our grazing, cover crop and alternative crop research. As we explore and learn about new practices, we will publish in scientific journals but also add lessons learned in the newsletter. I hope you have had a successful spring and will have a great transition into summer!

Booneville SEA Award Winners-Southeast Area Outreach, Diversity, and Equal Opportunity award

Recently the DBSFRC Employee Engagement Committee won the Southeast Area Outreach, Diversity, and Equal Opportunity award for their post-pandemic efforts. Returning to work after the pandemic was a challenging transition for many ARS employees. The DBSFRC Employee Engagement Committee is an employee run committee at the Center that focuses on managing employee morale. The committee chair is Jennifer Keatts and Kolten Wright is the co-chair. The committee organizes meaningful events and activities for employees with the goal of improving camaraderie and developing and maintaining a collaborative work environment. Past events include monthly pot-luck style staff meetings, door decorating contests, cookouts, and more.



Dr. Joan Burke's Small Ruminant Research Spotlight

Dr. Joan Burke

Field Day at the Center

Dale Bumpers Small Farms Research Center (DBSFRC) was the location for the Arkansas Small Ruminant Field Day, organized by Dr. Dan Quadros, Small Ruminant Specialist at the University of Arkansas System Division of Agriculture (UADA). Sheep and goat producers from across the state came to learn techniques to increase feed efficiency, productivity and profitability through group talks and animal demonstrations. Dr. Quadros lined up an all-star cast of guest speakers throughout the day to speak on subjects including fencing, nutrition, gastrointestinal parasites, reproductive efficiency, five-point check, health management, and forage and pasture management. The morning started off with breakout sessions on the farm followed by a Lamb burger lunch. After lunch, the meeting continued with talks on health management and forages before a group round table discussion which concluded the day. The partnership of DBSFRC with UADA and multiple sponsors made the event a huge success. The staff at DBSFRC take pride in their location and enjoyed meeting the producers and showing off the research that comes from all their hard work.

Check out this video on the Field Day! https://www.youtube.com/watch?v=_ijQIlmC8i0

Small Ruminants Field Day - 2023

The Arkansas Small Ruminant Field Day aims to increase producer knowledge and understanding of sheep and goat husbandry/ health, production, and marketing. Th...

www.youtube.com

Sheep Update

Spring is winding up, that means it's time for summer breeding. At the Dale Bumpers Small Farms Research Center, we prioritize breeding for fall lambing with mature ewes. Fall lambing helps take advantage of fall forages when the ewes are in late gestation and early lactation. Dr. Burke has developed a breeding program that works well on the farm by exposing ewes to teaser (vasectomized) rams before introducing multiple intact rams to the group of ewes. A breeding soundness exam is performed on breeding rams both before and after breeding season to a evaluate the ram's physical condition and evaluate the semen. An ultrasound will be used to determine pregnancy and approximate age of the fetus 2-4 weeks after ram removal.

Dr. Christine Nieman Cattle Research Spotlight

Dr. Christine Nieman

Cropping and Grazing Studies

Two major projects have restarted this spring, an organic cropping systems study and a tall fescue/native warm season grasslands grazing study. A description of the organic cropping system study can be found in Newsletter from May of 2022 . The objectives of the study are to develop best management practices for organic cropping systems in the mid-south. Briefly, the study involves 4 organic cropping systems, two no-till systems and two tilled systems, all of which include fall planted cover crops. One no-till system utilizes grazing as the termination strategy for the cover crop and the other no-till system utilizes crimping of the spring cover crop for termination. Crimping of a cover crop is a common strategy used in organic farming that is implemented around anthesis (or pollen shedding). The plant stem is broken or crushed, and the crimper rolls the biomass over the soil surface to serve as a living mulch (**Figure 1**). Planting with a no-till drill can be completed before or after crimping. Generally, we plant before crimping to avoid “hair-pinning”. Hair-pinning is an issue for no-till practices and occurs when there is excessive residue on the soil surface, followed by inadequate cutting by the drill discs, finally resulting poor germination because the seed is placed on top of the residue in the trench with poor seed to soil contact.
(Continued on page 5)

Figure 1. Wheat after roller-crimping

(continued from page 4)

For the tilled treatments: one system utilizes grazing followed by tillage as the termination strategy and the other tilled system involves harvest of the winter annual as grain followed by tillage. **Figure 2** shows the plots after the termination strategies and planting, except for the treatment with harvest of wheat grain (wheat harvest is anticipated in early to mid-June). In fall of 2021, cereal rye was planted and served as the cover crop for spring of 2022, followed by soybeans as the summer cash crop. In 2022, prolonged drought, high temperatures, and weed pressure from Johnsongrass resulted in failures for all systems. The current rotation includes wheat followed by sorghum as the summer cash crop. With the topography of the research site and drought of last year, we hope to have better results with sorghum as the cash crop.

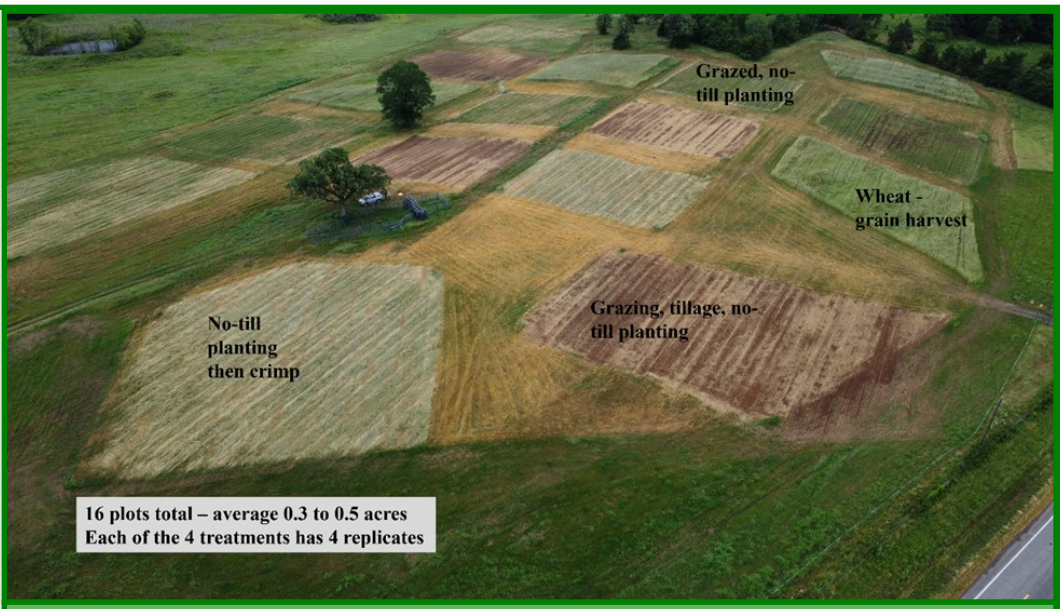


Figure 2. Image of the cropping systems plots.

The tall fescue/native warm season grasses grazing study restarted in 2023 on May 15. A description of the study is included in the February 2022 Newsletter. The objective of the study is to test the potential of native warm season grasses in a complementary system with tall fescue. In the complementary systems, cattle graze tall fescue in the early spring and, on May 15, are moved to one of two native warm season species – switchgrass or a mix of bluestem and indiangrass. A third group stays on tall fescue pasture all season. We aim to evaluate forage production and nutritve value, cow reproductive performance, and calf weaning weights. Last year, gamagrass was used as one of the native warm season grasses, but due to low stand density, we changed to switchgrass in 2023 (**Figure 3**). We are still early on in the study this season, but we anticipate another successful grazing year for this study.

Figure 3. Cattle grazing switchgrass pasture.

Dr. Zamir Libohova

Cacao for Peace Planning Workshop

Dr. Libohova traveled to the Alliance Biodiversity-International Center for Tropical Agriculture (CIAT) located in Cali, Colombia, South America from March 1-3, 2023. The purpose of the trip was a planning/inception workshop for Cacao for Peace Project Phase II (CfPII) to identify the project area, partnerships, roles, responsibilities and timelines for project activities and deliverables.

The CfPI, a 5-year, $5 million project funded by USAID and USDA started on January 15, 2016, and was a joined initiative with the Colombian government to improve the cacao value chain in Colombia by strengthening agricultural institutions in the public and private sectors through cooperative research and technical assistance. The project was implemented in the Sierra Nevada de Santa Marta Region, a complex ecosystem that straddles the most northern coast of Colombia. The major focus of the project was to provide technical assistance to farmers by creating high resolution and detailed maps of soils, properties and suitability for cacao growing as well as an Arc-GIS Web Tool for Soils and Cacao genomics GIS Platform in English and Spanish. The average farm size for small holders in cacao growing regions in Colombia is about 1.5 hectares, requiring much higher resolution maps for soil information to benefit farmers than currently available soil information which is at 1:100,000 or 1:500,000 scales. Upon the successful completion of the CfPI, USAID awarded an additional $5 million to expand the project in the municipalities of Tierra Alta and Valencia in the Department of Cordoba (Figure 1). In addition to the production of detailed maps for soils, properties, and cacao suitability, the CfP_II aims at building research capacities in Colombia for digital soil mapping (DSM) and cacao breeding. As part of the capacity building for research, the project will fund scholarships for PhD and research fellowships for the Colombian scientists for collaborative research between University of Cordoba and universities in the US and USDA-ARS. (Continued on page 7)

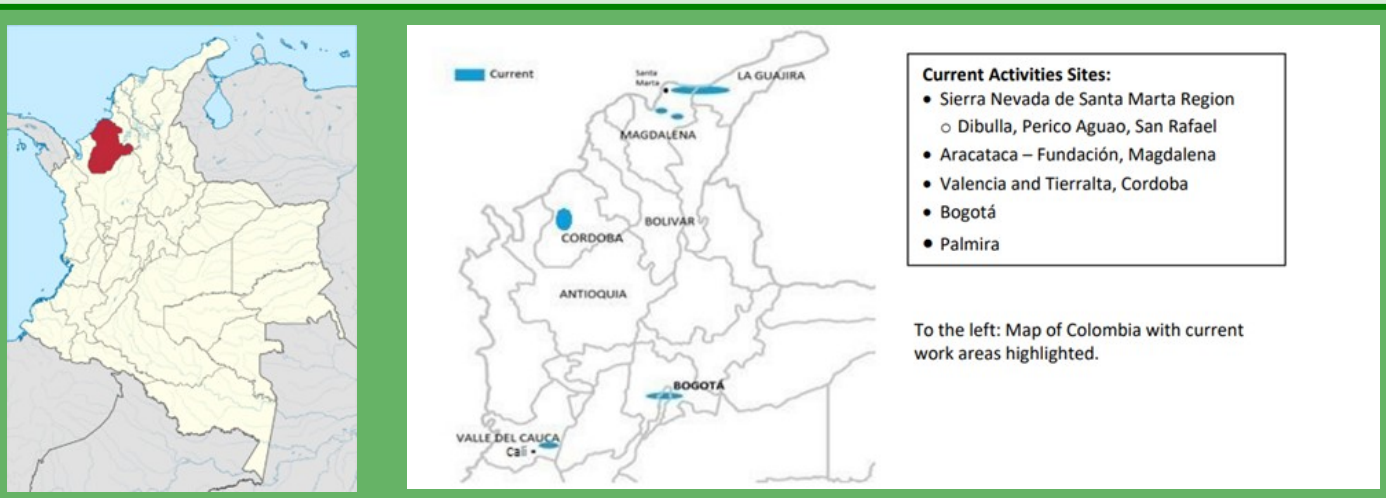


Figure 1. Location of the Department of Cordoba (left) and the potential sites for the CfPII project (right).

(Continued from page 6) The CfP_II is a multi-partnership collaboration with CIAT - Centre Internationale d'Agriculture Tropicale; UNODC - the United Nations Office against Drugs and Crime; FEDECACAO - Colombian Cacao Producers Federation (Spanish acronym); UPRA - Colombian Rural Agricultural Planning Unit (Spanish acronym); IGAD – Colombian Soils Science Service (Spanish acronym); University of Cordoba; USAID-Colombia, USDA-FAS, USDA-NRCS, USDA-ARS, and farmers in the Cordoba Department.

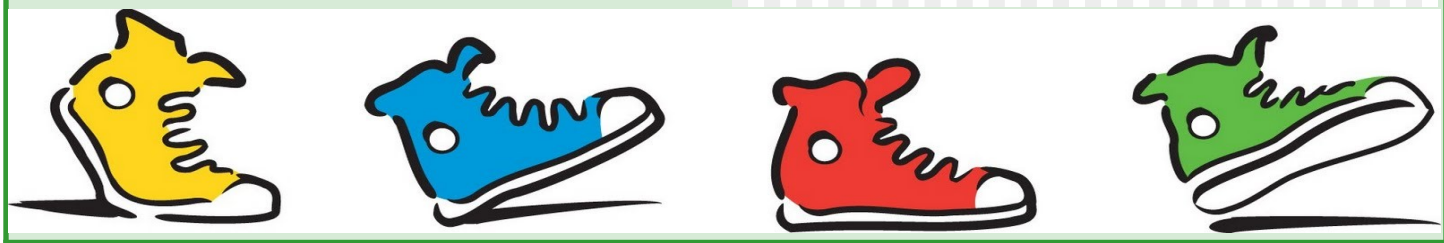
The 3-day planning workshop started with a visit at the state-of-the-art CIAT seed bank facility for the tropics and subtropics followed by a visit to the Soil and Plant Laboratory (Figure 2). The second part of the 1st day included presentations from collaborators of the project. The presentations were focused on project-related aspects. Dr. Libohova provided two overviews, one about the digital soil mapping and another one about cacao suitability rating of the CfP_I project and discussed some of the lessons learned and ways to improve project efficiency and deliverables for the CfP_II. During the next two days more than 20 participants were divided into two working groups. One of the groups focused on soil and cacao sampling, as well as mapping, while the second group on cacao suitability and web-based platforms for making the soil information available to the farmers. Items such as sampling strategies, activities and timelines, tools and resources, methodologies as well as roles and responsibilities were discussed. The University of Cordoba expressed interest in cooperating with the USDA-ARS, Dale Bumpers Small Farms Research Center, and the University of Arkansas in Fayetteville on DSM research and training as well as building teaching capacities at the University of Cordoba. The next steps for moving the project forward were identified and consisted of: (i) preliminary soil mapping to identify the target areas and farms for cacao and soil sampling; (ii) field sampling campaign tentatively in October-November; (iii) preparing the research agenda for the capacity building component of the project (PhD and visiting scholars).

Figure 2. A group of participants from the workshop visited the state-of-the-art CIAT seed bank facility for the tropics and subtropics (left) and the Soil and Plant Laboratory (right).

Step Counter Challenge

A favorite spring event at the Center is the step counter challenge. This event started in 2021 and after a break in 2022, continued in 2023. For this event, employees record their daily average steps from a phone app or smart watch and report them to the committee for 4-weeks. The event is always well received by the competitive employees at the Center! As a bonus, this event also inspires healthy activity. Many employees reported adopting the habit of afternoon walks to improve their (already impressive) number of daily steps. The challenge has a team event and an individual award. The 2021 Team Winners were Team Nieman, and the individual award went to Joie Bogart. The 2023 winners were Team Owens and individual Michelle Armstrong.

This challenge was led by chair, Jennifer Keatts, and co-chair, Kolten Wright of the Employee Engagement Committee. Thanks to the committee for their efforts to create exciting engagement events and activities at the Center.



To view archived newsletters or to find more publications, please visit our website at :

https://www.ars.usda.gov/southeast-area/booneville-ar/dale-bumpers-small-farms-research-center/

USDA, Natural Resources Conservation Service

Booneville, Arkansas Plant Materials Center

Training Spotlight: Plant Identification in the Field for Planning Conservation Practices

Dr. Rajesh Chintala

The one-day training on "Plant Identification in the Field for Planning Conservation Practices" was held at the Booneville Plant Materials Center (Arkansas) on March 1, 2023. Training participants were comprised of soil conservationists, district conservationists, resource conservationists, and conservation technicians. Plant identification skills are critical for conservation planners to identify resource concerns of the land, formulate alternatives, and guide management decisions of landowners for implementing cost-share best management practices. The broad objective of this training was to educate participants about hands-on approaches to identify plants in the field and how to utilize user-friendly tools/resources for plant identification.

Stephen Haller (PMC Manager) provided PMC overview of activities to the participants. Plant identification basics were presented by Rajesh Chintala (PMC study leader) (Photo 1). Claire Whiteside (NRCS Grassland Specialist, Harrison Technical Service Center) led the on-the-ground plant identification training to attendees in the field (Photo 2a). Benjamin Holleman (PMC Technician) demonstrated the calibration of a herbicide sprayer to meet the requirements of a specific recommended application rate (Photo 2b). At the closing of the training, Stephen Haller congratulated participants and distributed certificates for successfully completing the plant identification training.

Photo 1: a). Stephen Haller (PMC Manager) presented PMC overview b). Plant identification presentation was given by Rajesh Chintala (PMC study leader)

Photo 2: a). Claire Whiteside was helping the attendees in the field to identify plants b) Benjamin Holleman demonstrated the calibration of herbicide sprayer

The Plant Materials Center has published their Annual Progress Report of Activities. To read the full report please visit their website. PMC Information is available online at: http://www.plant-materials.nrcs.usda.gov/arpmc/