

# SMALL FARM RESEARCH AGRI-NEWS

## Agricultural Research Service

### Dale Bumpers Small Farms Research Center Newsletter



#### Greetings from the Research Leader,

#### Dr. Phillip Owens

The Dale Bumpers Small Farms Research Center is making international impacts! Dr. Joan Burke presented at the Livestock Helminth Research Alliance and the Combatting Anthelmintic Resistance/American Consortium for Small Ruminant Parasite Control conference in Ghent, Belgium. Her talk was titled “Building parasite resistance in Katahdin sheep” and was seen by more than 100 international scientists. In her talk, Dr. Burke discussed how parasites can be devastating to sheep production and she highlighted her approach using improved genetics combined with other management options.



I have been leading a soil mapping project for the nations of El Salvador, Honduras, Guatemala, and Nicaragua. This work is directly funded by the Howard G. Buffett Foundation and is focused on helping small farmers in Central America improve yields while sustaining soil health. This high-tech approach to mapping is inexpensive and can provide information on soils and how to use soils for the greatest benefit to society. The process is based on NASA’s satellite data and high throughput computer processing to give fine detailed soil maps. The project stemmed from work we are doing in Booneville and is based on similar ideas for matching soils to the best options for forages, crops, or trees. Our team at Booneville are using our talents to find economic solutions for small-holder farmers in Arkansas and around the world.



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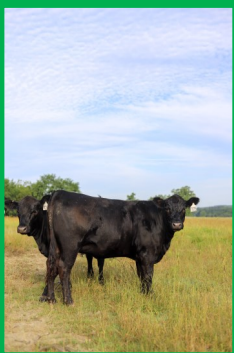
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Harvesting Organic Wheat



## Cattle Spotlight



### Fall Cattle Update

Cattle breeding season is over and all of the bulls have been pulled from the pastures. All cattle are moving to fall grazing areas. Soon the cows and heifers will be checked for pregnancy and this year's calves will be weaned and vaccinated. The cows and heifers will begin calving in early 2020.

This summer we renovated three ponds and constructed four water tank-less pads. These new pad areas will reduce environmental issues and give cattle clean, cool, and fresh water to drink.

We continue our research on the watershed project. The watershed project is a study that is conducted on 15 one acre watersheds in Booneville, AR using five management practices: hayed, continuous grazing, rotational grazing, rotational grazing with an unfertilized buffer strip, and rotational grazing with a fenced unfertilized riparian buffer. This is the 16<sup>th</sup> year of rotating cattle on the study. The study has many points of interest including the effects of cattle on water quality. To read more go to: [Dale Bumpers Small Farms Research Center : USDA ARS](#)



## Dr. Jose Franco Research Spotlight



### Kernza Study

Dr. Jose Franco has been with us for not quite six months. He has been busy planning agroforestry, organic field crop, and other research, and meeting with collaborators with the University of Arkansas and other collaborators within the state and around the country.

Dr. Franco attended the North American Agroforestry Conference in Corvallis, OR in June and the Native Youth in Food and Agriculture Leadership Summit in Oklahoma in July. He recently returned from a trip to visit with collaborators and observe field plots at The Land Institute's 40<sup>th</sup> annual Prairie Festival in Salina, KS. There he sampled unique products (cookies and pancakes) made from Kernza (intermediate wheatgrass).



With the help of his technicians, Kolten Wright and Karen Chapman, Dr. Franco is starting a Kernza project this fall. This is a collaboration between DBSFRC, the University of Minnesota, Montana State University, and Texas A&M University. We will be evaluating the environmental limitations of two breeding

cycles of Kernza, another grain variety called "MN Clearwater", and a USDA-developed forage variety called "Rush". This will be the first of several trials evaluating the feasibility of growing this dual-use crop in the Arkansas River Valley, along with other perennial dual-use crops currently under development at The Land Institute.

## Dr. Joan Burke Sheep Spotlight



### Sheep Sale Success

Another sealed bid sale of replacement rams and ewes occurred in August. Individuals from Arkansas, Pennsylvania, Oklahoma, Missouri, and Texas, purchased 9 rams and 46 ewes. The sheep arrived safely to begin their fall breeding or lambing, as there were 16 ewes due to lamb in October. The next sealed bid sale is expected to occur next June and may feature retired ewes and October and January born lambs. Information and sale catalog will be available next spring on our website: <https://www.ars.usda.gov/southeast-area/booneville-ar/dale-bumpers-small-farms-research-center/>

DBSFRC also took three rams and four ewes to the Katahdin Hair Sheep International Expo in Cookeville, TN in August 15-17. The rams sold in the top ten of the consignment sale. Higher prices were paid for better parasite resistance noted by their NSIP (National Sheep Improvement Center) estimated breeding values. The Expo was attended by nearly 300 people from all over the U.S. including Puerto Rico, Canada, Mexico, and Dominican Republic. Temple Grandin, Animal Science Professor, Animal Behaviorist and featured in a HBO film, was the key note speaker, and Dr. Joan Burke gave an invited presentation, "Katahdins at the leading edge of USA sheep genetics – using DNA, data collection, and genetics." She briefed the audience on highlights of results obtained from the USDA NIFA Organic Research and Extension Initiative grant, particularly the objective that involves 20 farms across the U.S. that contributed data and DNA to search for genomic tools to control parasites.



### Sheep Research Update

Fall breeding will soon begin, which is part of Dr. Joan Burke's out-of-season breeding research. Research aimed to determine limitations to successful breeding in spring. Sheep are normally short day breeders (breed in the fall). There did not appear to be many limitations as pregnancy rate of mature ewes was approximately 80%, still below that expected for fall breeding, but higher than most spring breedings.



In other research, Dr. Mohan Acharya conducted a study to examine the effects of endophyte-infected tall fescue on blood metabolites that indicate degree of fescue toxicosis. Ewes with fescue toxicosis may have lower pregnancy rates and their lambs lower growth rates.

## Staff Spotlight



### Darwin "GoGo" Jones, Welder

GoGo has worked for USDA since 1988, 17 years with the livestock crew where he helped with the day to day care of the sheep and cattle. The livestock crew back then rode horses and roped cattle. Over the years he got to milk beef cows, pull calves, work on reproduction issues and maintain a healthy herd of cattle and sheep.

Since 2005, he has worked as a Welder Worker doing various jobs for the Research Station Operation Manager, Larry Huddleston. On the farm crew GoGo conducts jobs using tractors and heavy equipment such as; Bush hogging, dozer work, using a dump truck, and ditch witch.

GoGo has built corrals, repairs to fencing, and improves structures. He keeps the station running by fixing equipment and helping anyone that may need it.



GoGo has his own farm life; in which, he calls ranching a passion more than a business. He helps run a ranch with friends in the Waldron area. They enjoy the old way of ranch life. GoGo says, "horses still have a place on the ranch." On the ranch they still ride horses and pull wagons. They work cattle and take care of the land. They hunt and fish, and GoGo loves to fireside cook meals.



GoGo has lived in the Booneville area all of his life. He has been married to his wife, Tammy, for 21 years. Tammy and GoGo enjoy bowling and playing pool.

## New Post-Doc Position



### Mohan Acharya, University of Arkansas

Mohan graduated with a Bachelor in Veterinary Science and Animal Husbandry from Institute of Agriculture and Animal Science, Chitwan, Nepal in 2010. After completion of his bachelor's degree, he worked in a non-government organization for rabies control until April 2012 and then came to the U.S. He completed his Master's degree from the University of Arkansas Animal Science Department with a research focus on ruminant nutrition and parasitology in 2014. He got his PhD from the same university in 2017; in which, he focused on development of optimal semen extenders, storage temperatures, and artificial insemination in sheep. He was co-advised by Dr. Joan Burke. Mohan also worked on other projects that involved testing endocrine markers to correlate reproductive performance in small and large ruminants.

After completion of his PhD, Mohan worked as a post-doctoral researcher at USDA ARS in Fayetteville until July, 2019. This two year duration provided an opportunity for planning, conducting experiments to identify and understand the mode of action of "antibiotic alternatives" in poultry production utilizing both in vivo and in vitro techniques such as but not limited to, biochemical and "omic" technologies.



Currently, Mohan is working with Dr. Joan Burke with a research focus on finding factors limiting off season breeding in ewes. For this, he will be collaborating with scientists in the Animal Science department. Apart from research studies, he loves watching European soccer and spending time with his family. His wife, Roshani Sharma Acharya, is working on her PhD, and they have a one year old son Rohan.

## Organic Summer Planting



After the organic wheat was harvested this summer, planting started again.



The new organic field was planted with soybeans and okra.

## Visit from Langston University



Dr. Art Goetsch, Research Leader of the American Institute for Goat Research at Langston University lead a group of international scholars to tour research sites and farms. On September 17 the group visited the DBSFRC. Scholars included a visiting scientist, Farida Belkamsi, from Algeria supported by the Borlaug Fellowship program administered by USDA FAS. Her program focuses on sheep nutrition and reproduction. Other students were Luana Ribeiro from Brazil, Wei Wang from China, and returning post-doc Yoko Tsukahara from Japan. We also recently sent a ram with good parasite resistance and growth traits to be included in Langston's Katahdin breeding flock for sheep research as part of our collaborative studies.



Plant Materials Center (NRCS)

## Natural Resources and Conservation Service

USDA, NRCS has a Plant Material Center co-located with the USDA ARS Dale Bumpers Small Farms Research Center.

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