The mission of the Dale Bumpers Small Farms Research Center is to develop scientific principles and technologies to enhance the profitability and sustainability of small-scale farms.

Dale Bumpers Small Farms Research Center
6883 South State Highway 23
Booneville Arkansas 72927
Precision management practices have been increasing at a rapid pace on large row crop farms across the USA. Of the farms in the USA, small scale farms are represented by 88%, yet small farms have been slow to adopt technology. This research evaluates different technologies and focuses on the potential investment related to economic gains.

GPS guided auto-steer tractors increased efficiency – 20-30% decrease in gaps and overlaps

Having precise understanding of soil function allows optimization of nutrient applications which decreases costs of fertilization. This saves fertilizer costs and increases profits.
Utilizing Alternative Forages for More Productive Beef Systems
Christine Nieman, christine.c.nieman@usda.gov

Problem
- Cow-calf and stocker cattle operations often face shortages of high-quality grazable forage on pastures during summer, early fall, and winter.
- High quality forages are available for hay making in spring, but frequent rains prevent adequate time for dry down.

Accomplishments
- Increased forage production in mid-summer and fall with summer annuals
- Improved summer and fall weight gains for stocker cattle grazing summer annuals compared to bermudagrass
- Greater production and persistence of high-quality cool season forages and legumes, such as orchardgrass and white clover, in silvopasture systems
- Baleage from winter annual species increases the quality of stored forage
Producing More Efficient and Healthy Sheep
Joan Burke, joan.burke@usda.gov

Problem
- Worm parasites cost the livestock industry billions of dollars each year due to dewormer resistance. Alternative control is essential. A holistic approach improves health and efficiency of grazing livestock and ensures healthy meat products for consumers.

Accomplishments and Impact
- Increased parasite resistance in ARS and farm sheep flocks in NSIP (see plot). Selection included other economically important traits (growth and dam milk production).
- Genomic enhanced estimated breeding values by the National Sheep Improvement Program (nsip.org) were introduced last fall to increase accuracy of breeding values and selection responses. There are > 10,000 sheep genotyped for a reference population in collaboration with > 21 farms, University of Nebraska, University of Idaho, and others; funded by USDA, NIFA, OREI.
- Alternatives including COWP and fungus markedly improves worm control, efficiency of production, and health and well-being of animals.

Genetic selection for parasite resistance

Copper oxide wire particles

Nematode-trapping fungus

WFEC: -72
PFEC: -97

NSIP WFEC averages by year

WFEC EBV flock average
ARS Rock Katahdin Rock average

Mention of trade names or commercial products in this manuscript is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the U.S. Department of Agriculture. USDA is an equal opportunity provider and employer.
The Dale Bumpers Small Farms Research Center is located in Booneville, AR and is part of the Southeast Area. The Research Leader is Phillip Owens.

www.ars.usda.gov/southeast-area/booneville-ar

Email: Phillip.Owens@usda.gov
Phone: (479) 675-3834
Fax: 479-675-2940

For general inquiries, contact
Jennifer.Keatts@usda.gov