

USDA ARS Dale Bumpers Small Farms Research Center Booneville, AR



Mission: To develop scientific principles and technologies to enhance the sustainability of small-scale farms.

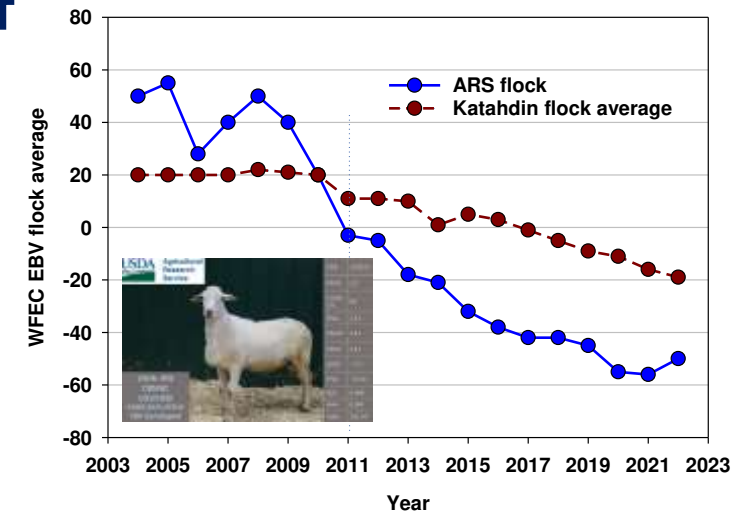


- West central AR
- 2,300 acres - pastures, agroforestry/pines, certified organic animals and crops
- ~120 cow/calf and 150 Katahdin ewes
- 25 employees (4 Research Scientists, 2 post docs, 3 grad students and support staff)

Alternative control of worm parasites in sheep and goats.



NSIP WFEC averages by year



Parasites - GEMS



Fecal egg count (FEC)

- An indication of parasite infection.
- To determine parasite resistance within a group



McMaster FEC

- Quick, easy to perform (see tutorial by Dr. Zajac on www.wormx.info)
- Diagnostic labs listed under ACSRPC website (~\$5/sample)
- Useful for high FEC, but not accurate at lower end (or when GIN infection low).

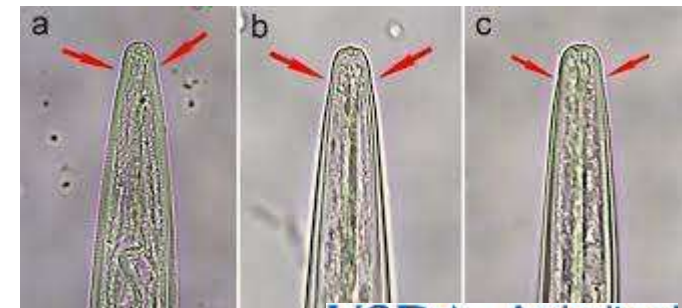
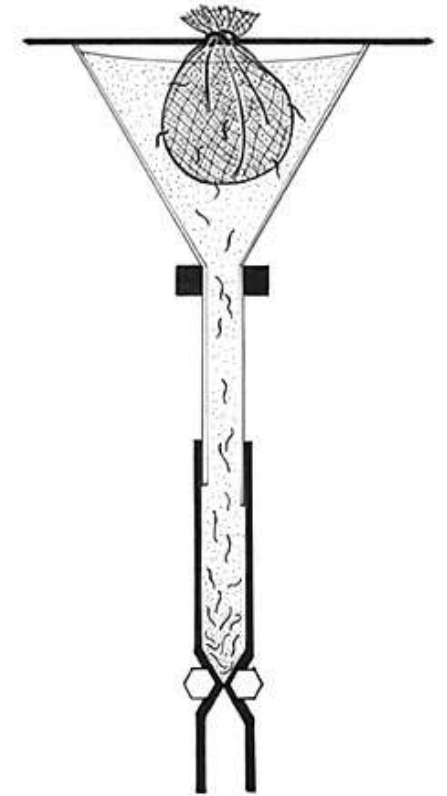


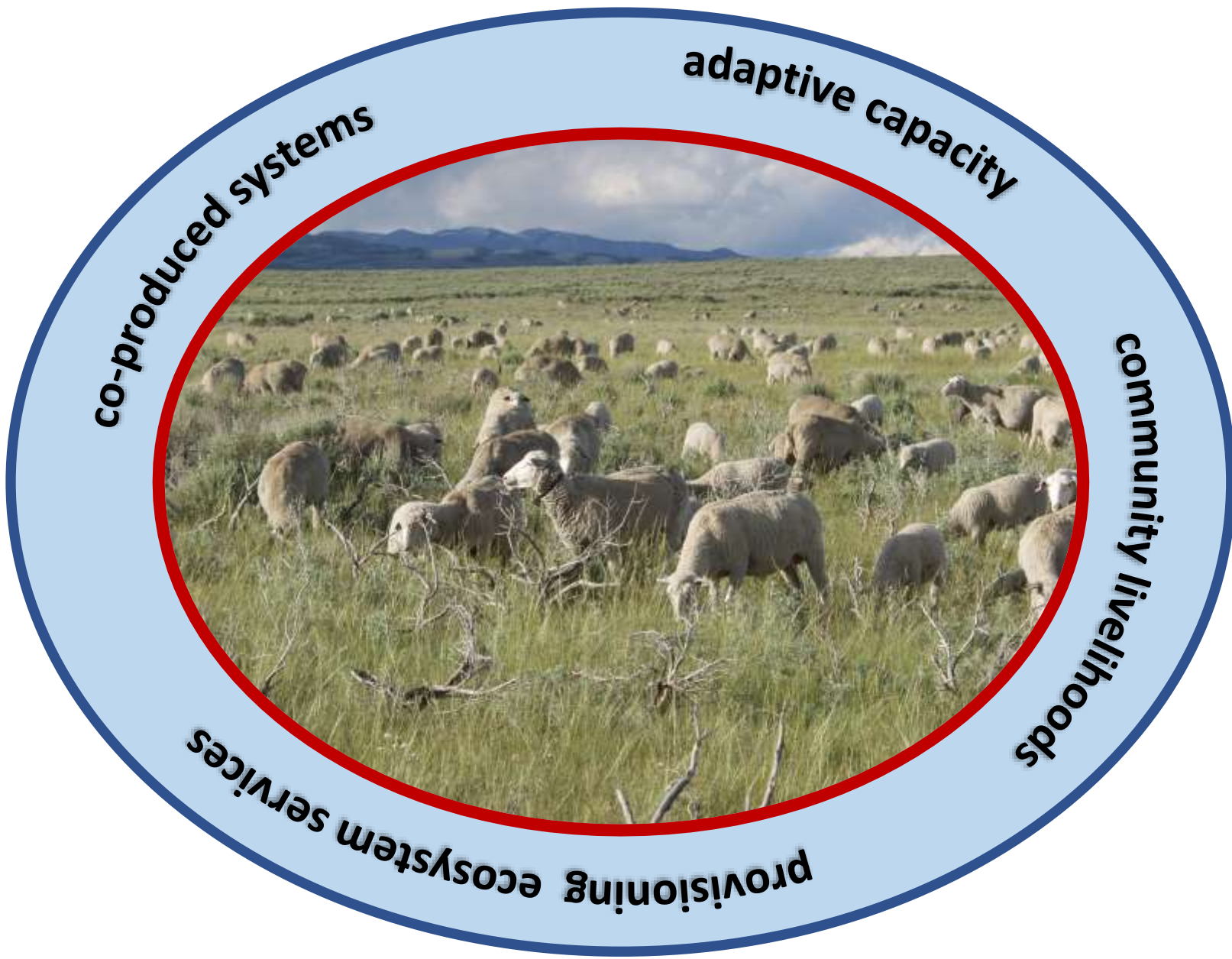
Parasight Push-button FEC analyzer

- Quick, easy to perform
- Greater precision than McMasters because of increased sensitivity
- System needs to be leased, consumables need to be purchased
- Mini-FLOTAC similar precision

Diagnosis of GIN genera

- Coproculture – culture of fecal material (pooled fecal sample) with FEC > 500 eggs/g at room temperature (~80°F ideal) to develop L3 larvae.
- Why? To determine pathogenicity of worms on farm.
- Larvae can be stained, counted, identified to genera by experienced technician:
- *Haemonchus contortus*, *Trichostrongylus/Teladorsagia* spp., *Cooperia* spp., *Oesophagostomum* spp.
- *Strongyloides* (threadworm), *Trichuris* (whipworm), *Nematodirus*, *Dictyocaulus* (lung worm), *Eimeria* (coccidia) can be identified in FEC method.





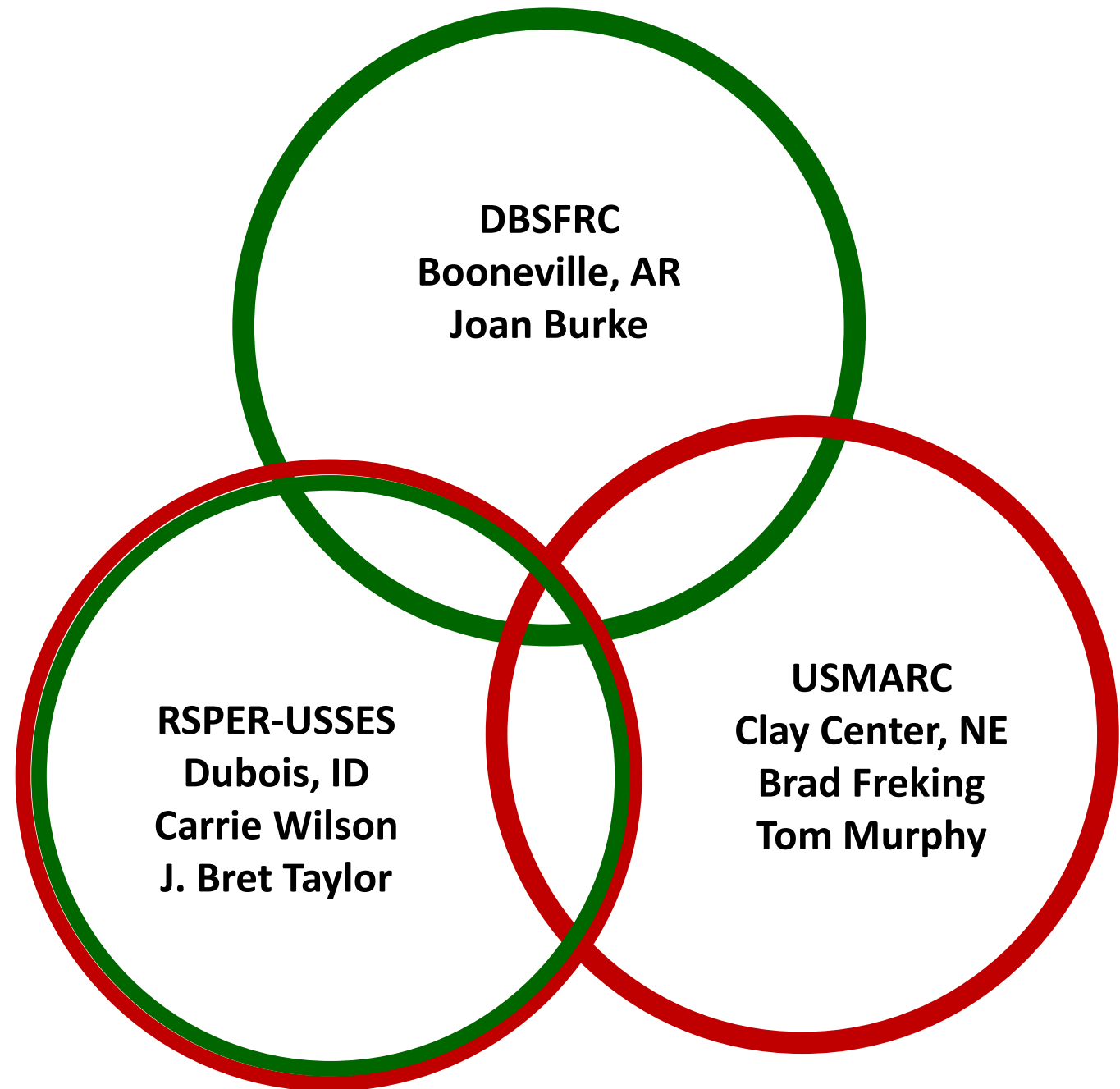
U.S. Sheep
Experiment
Station, Dubois ID

Beyond
environmentally
adapted, towards
ecologically
purposed

Carrie Wilson
J. Bret Taylor

Research Programs

- Address both USDA National Projects **101** - Food Animal Production and **215** - Grass, Forage, and Rangeland Agroecosystems
- Common research link with fellow ARS labs is the Sheep Genetics Reference Flock



NP 101 Project – Agroecological Approach to Enhance U.S. Sheep Industry Viability and Rangeland Ecosystem Conservation (Taylor, Wilson, Wilmer)

- Obj. 1 – Ecologically-oriented sheep genetic resources applicable towards increasing grazing utility of sheep.
- Obj. 2 – Non-antibiotic solutions for increasing sheep longevity.
- Obj. 3 – Novel tools for sheep breeders to increase the effectiveness of participation in national genetic evaluation.
- Obj. 4 – Estimated Breeding Values for lamb survivability and ewe longevity

Our cooperators out West (and mid-West)

- Dr. Lindsay Wright-Piel, Dr. David Herndon & Dr. Michelle Mousel, USDA, Animal Disease Research Unit, Pullman, WA
 - *Mycoplasma ovipneumoniae* shedding in sheep
- Dr. Brenda Murdoch & Dr. Melinda Ellison, University of Idaho,
 - Genomics in herbivory, ewe longevity, and *M. ovipneumoniae* shedding
 - Techniques in identifying and classifying herbivory phenotypes
- Dr. Ron Lewis
 - Genetic evaluations, cross-breed modeling, NSIP direction, GEMS!