

Identifying ewes resistant to gastrointestinal parasitic worms during gestation and lactation

Introduction

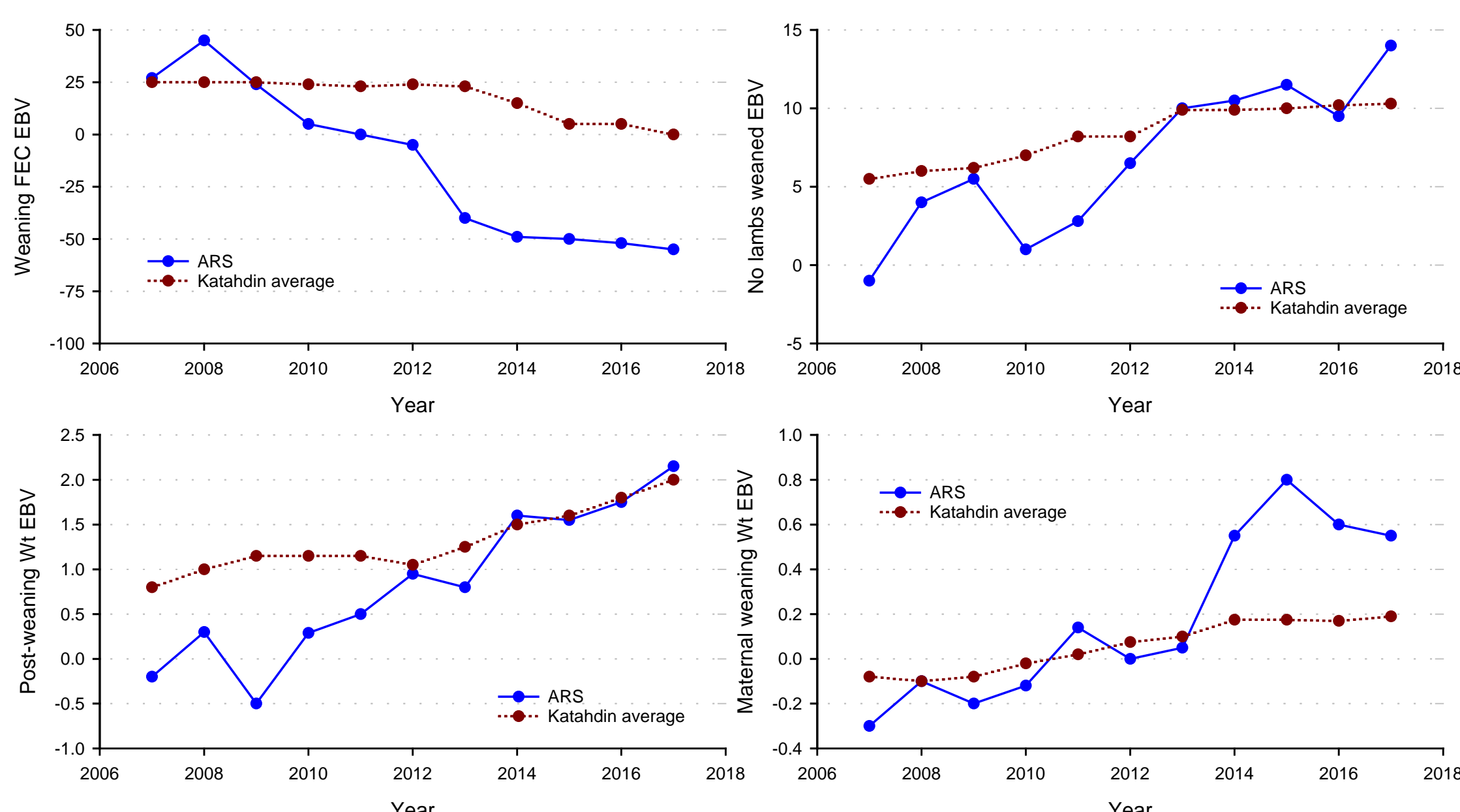
- Parasite resistance to multiple dewormer classes is highly prevalent. Control of gastrointestinal parasites that cause anemia and death is difficult.
- Selection for low fecal egg counts (FEC) can be used to genetically enhance parasite resistance in lambs, thereby reducing the need to deworm and slowing dewormer resistance.
- Recording lamb FEC has become more widely used in sheep genetic evaluation programs such as the National Sheep Improvement Program (NSIP).
- Ewes in late gestation and early lactation are also vulnerable to parasite infection and commonly experience a peri-parturient rise in FEC, and are the major source of parasite transferred to offspring.

Objective

- To assess factors associated with the peri-parturient rise in FEC in Katahdin ewes and associated changes in FEC in their lambs.



Accomplishments



Genetic trends after selecting for parasite resistance and other production traits (NSIP 01/15/2018; Sheep Genetics, Austr).

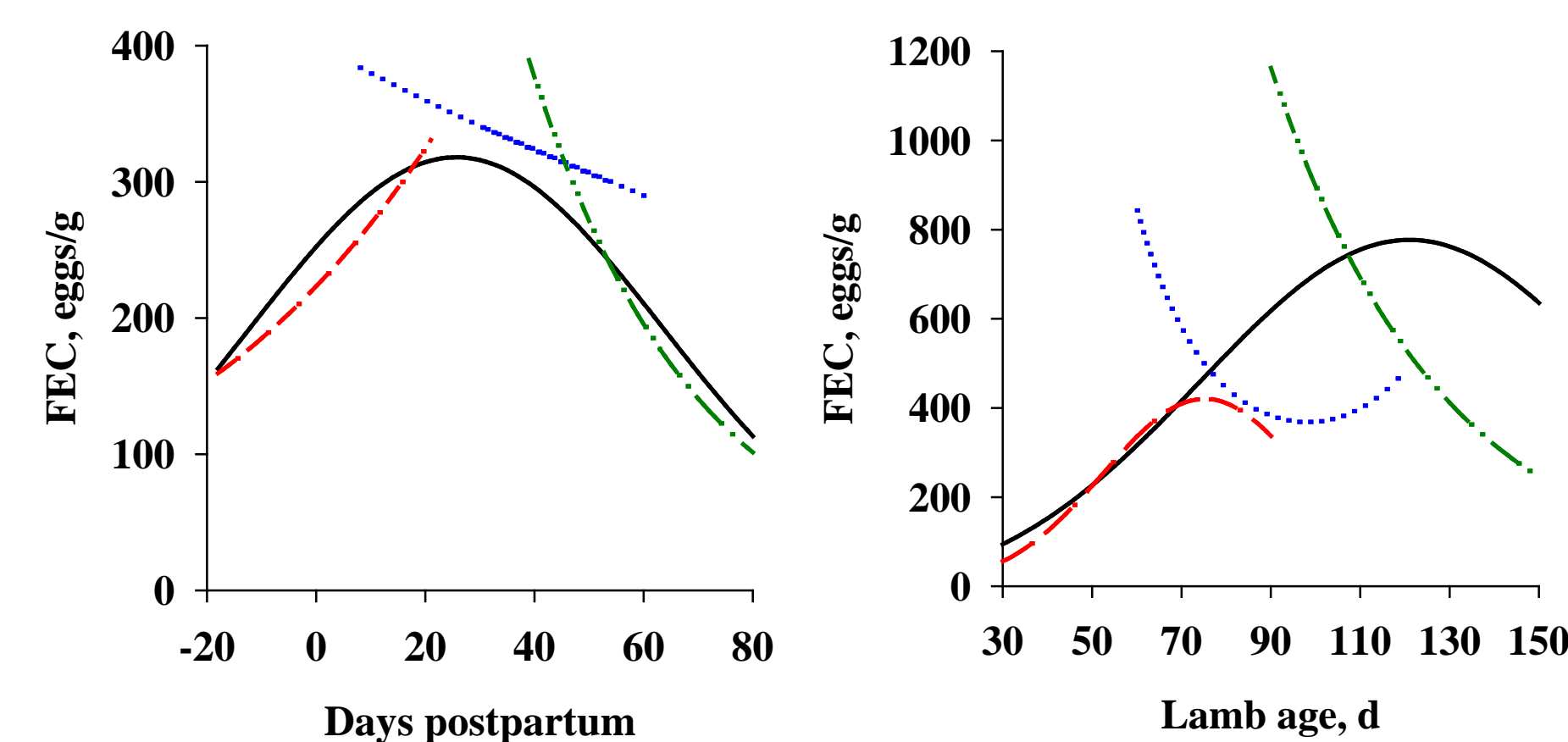
- Subsequent grants funded: USDA, NIFA, OREI 2010-01884; 2016-51300-25723.
- NSIP sales of sheep with parasite resistance has increased with higher demands on farm.

Methods

- Initial grant project used 4 farms (AR, GA, OH).
- Evaluate parasite infection using FEC and FAMACHA (ewes: 0, 30, 60 d post-lambing; lambs: 60, 90, 120 d of age).
- Records collected from 931 ewes, 3,572 FEC, 1,487 lambings.
- Records collected from 2,271 lambs (FEC) from 873 dams/ewes, 1,373 litters, 94 sires/rams.
- Regional differences overcome by using same breed, connected genotypes, moderate parasite infection.

Results

- Significant relationship between dam PPR FEC 0-30 days post-lambing and offspring weaning and post-weaning FEC.
- Yearling and older ewes more susceptible to parasites.
- Rearing multiple lambs increases risk to parasites in both ewes and lambs.
- Determined that FAMACHA score is heritable and EBV possible.
- We determined that slight antagonisms exist between reproductive traits and parasite resistance, but genetic progress can still be made (see Accomplishments).



Left: FEC of ewes during the peri-parturient period, peaks at ~30 days post-lambing. Right: FEC of lambs; peaks at ~120 days of age.



Next Steps

- Currently collecting additional FEC, FAMACHA, and production data along with DNA from lambs on 19 farms from 10 states (AR, GA, ME, MO, NY, OH, TX, VA, WA, WI) to examine relationships between highly parasite resistant and highly susceptible lambs and genotypes (USDA NIFA OREI 2016-51300-25723).
- Goal is to identify genetic markers so that farmers can collect blood on young lambs, submit for genotyping and select replacements before weaning, and ultimately eliminate need for deworming.