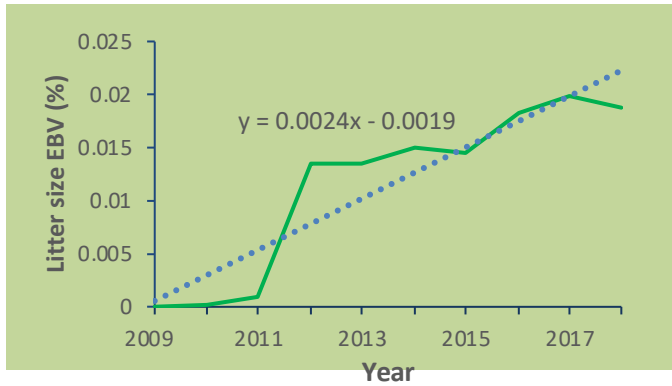


Context

- Prolific reproductive performance is one of the target breeding traits in Bonga sheep for which selection has been ongoing for 10 years.
- A positive and significant genetic trend was achieved through the community-based breeding programs.



- Here, we determine the physiological and genetic basis of the inherent variability in litter size in Bonga sheep to better inform breeding objectives and selection strategy.

Our innovative approach

- We employed a multi-disciplinary approach incorporating reproductive physiology, quantitative genetics and cutting-edge genomic tools to investigate the basis of high fecundity in Bonga sheep in Ethiopia.
- The Bonga CBBP provided the infrastructure to undertake the investigations without which it would not have been possible.



NUTRITION & FOOD SECURITY

Enhancing the reproductive performance in Bonga sheep in Ethiopia

- Bonga sheep are highly prolific but inherent variability for the trait is also high
- Successful breeding for this trait will allow sheep-producing communities to produce more sheep and increase the returns from their flocks
- Higher prolificacy in the breed is explained by:
 - **Genetics:** in contrast to Eurasian sheep, prolificity is under the control of *BMP15* while *GDF9* plays a minor but significant role.
 - **Physiology:** they can maintain large, non-atretic follicles and, unlike most sheep breeds, medium follicles are also recruited to ovulate.

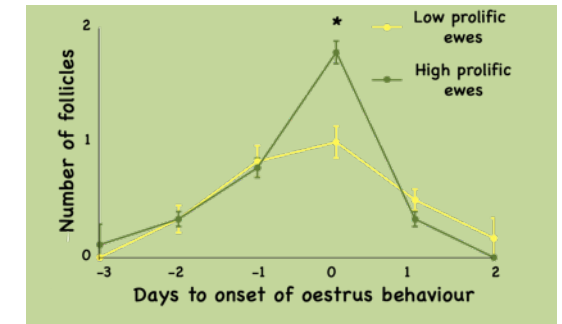
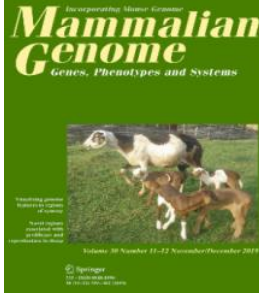


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Bonga ewe with quads featured on the cover page of *Mammalian Genome*

<https://doi.org/10.1007/s00335-019-09820-5>



<https://doi.org/10.1111/asj.13384>

Future steps

- Identify the causative variants in *BMP15* and *GDF9* in Bonga sheep
- Introgression of fecundity gene into local sheep population

Partners

Southern Agricultural Research Institute, Ethiopia;
Bonga CBBP, Iowa State University



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