

## INFLUENCE OF THE BOORoola FEC<sup>B</sup> ALLELE ON FOLLICULAR DYNAMICS

J. R. Gibbons, K. Kot, D. L. Thomas, M. C. Wiltbank and O. J. Ginther  
University of Wisconsin-Madison  
Department of Animal Health and Biomedical Sciences  
Department of Meat and Animal Science  
Department of Dairy Science

Sheep carrying the Booroola Merino fecundity allele (Fec<sup>B</sup>) have increased ovulation rates and litter sizes. Transrectal ultrasonography was used to compare follicular growth patterns between Fec<sup>B</sup> carriers and non-carriers during the estrous cycle. A follicular wave was defined as one or more follicles growing to at least 5 mm in diameter. The day of emergence of a wave was defined as the day when a follicle was 3 mm and grew to at least 5 mm. An ovulatory wave was a wave in which at least one follicle ovulated; all other waves were designated as anovulatory. The ovaries of 2-3 yr old ewes were scanned daily and the day-to-day identity of follicles maintained. Two groups were compared: carriers (3/4 Rambouillet; 1/4 Booroola Merino with the Fec<sup>B</sup> allele) and non-carriers (3/4 Rambouillet; 1/4 Booroola Merino without the Fec<sup>B</sup> allele). Nine interovulatory intervals were examined in 6 carriers and 12 intervals in 6 non-carriers.

The anovulatory follicular waves of carriers differed from non-carriers as follows: 1) fewer (P=0.013) detected waves per interovulatory interval (1.2±0.3 vs 2.3±0.3), 2) later (P=0.021) day of emergence (ovulation = d 0) of the first wave of the interval (4.1±1.6 vs 0.7±0.3), and

3) smaller (P<0.001) maximal diameter of the largest follicle (5.1±0.1 vs 6.2±0.2 mm). No difference (P=0.680) was found in number of follicles per wave. The ovulatory follicular wave of carriers differed from non-carriers as follows: 1) more (P=0.006) ovulations (2.8±0.1 vs 1.8±0.2), 2) smaller (P=0.005) maximal diameter of ovulatory follicles (5.5±0.1 vs 6.4±0.2 mm) and 3) smaller (P<0.001) diameter of the resulting corpora lutea 7 d after ovulation (9.3±0.4 vs 12.4±0.3mm). During the interovulatory interval, the carriers had more (P=0.005) identified follicles growing from 3 to no more than 4 mm (5.3±0.6 vs 2.8±0.5). No difference (P=0.382) was found between groups in the length (d) of interovulatory intervals (carriers, 16.9±2.0; non-carriers, 18.8±1.0).

Fewer detected anovulatory waves, a longer interval between ovulation and the first detected wave, and a greater number of follicles growing to no more than 4 mm in the carriers are compatible with the interpretation that folliculogenesis in Fec<sup>B</sup> carriers was characterized not only by more ovulations but also by smaller follicles during both anovulatory and ovulatory waves.