Can diet influence the sex of lambs

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Researchers from the NSW Department of Primary Industries have found sheep producers may be able to improve profits by selectively increasing the proportion of male or female lambs through managing the diet of ewes. Research conducted at the Wagga Wagga Agricultural Institute investigated if commercial and stud producers could increase their productivity by skewing the sex ratio of progeny towards a preferred gender.

Preliminary evidence in mice, uncovered by Ph.D student Catherine Gulliver, indicated that the sex of offspring was skewed in favour of males when their mothers were fed a diet high in omega-3 fatty acids at joining. Research trials conducted at the WWAI have subsequently found that feeding a diet high in omega-3 (low in omega-6) to ewes at joining was associated with a higher proportion of male lambs, while a diet low in omega-3 (high in omega-6) was associated with a higher proportion of female lambs.

When ewes were fed a high omega-3 diet based on cereal silage, which represented the omega-3 content of fresh pasture, the proportion of female lambs was approximately 42%. When ewes were fed a high omega-6 diet based on oats (70% of the diet) and cottonseed meal (8% of the diet), however, the proportion of female lambs was approximately 14% higher at 58%. It is unclear at present whether these proportions can be altered to a greater extent with different sources of omega-3 or omega-6. Supplementation with cereal grains or cottonseed meal to provide higher levels of omega-6 or the incorporation of silage (higher in omega-3) into feed rations of ewes at joining may be a practical way to influence the proportion of male and female lambs.

Ongoing research aims to examine the physiological mechanisms linking these diets with the observed alteration in sex ratio. Research funded by Meat and Livestock Australia also aims to examine how the timing and duration of feeding pre and post conception influences the sex ratio of the lambs. In addition, further research will identify the best sources of omega-3 and omega-6 to incorporate into practical on-farm rations. Some of the results examining feeding pre or post-conception will be available mid 2014 and on-going studies examining alternate feed sources will continue into 2015.

Prime lamb producers using terminal sires typically prefer males as male prime lambs grow approximately 20% faster than females and have increased muscle accumulation, thereby reaching a higher market weight over a set time period. Conversely, maternal first cross enterprises prefer breeding females, which may lead to a $30-50/head higher sale price at weaning. Therefore, if producers want more male lambs for prime lamb production systems, they might consider feeding a diet high in omega-3 at joining. Alternatively, for a self-replacing ewe flock or for first-cross ewe breeders, a diet high in omega-6 could be fed at joining to increase the proportion of females.

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