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**Czech Journal of Animal Science**

**Breeding for sustainability: Effect of breed on cultural energy expenditure of lamb production**

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**Czech J. Anim. Sci., 51 (2006): 391-399**

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Two-year data from terminal study conducted to evaluate post-weaning growth and carcass traits of Texel, Suffolk and Columbia sired offspring were used to evaluate the effect of breed on cultural

energy expenditure of lambs production. Each year whiteface ewes ( $n = 82$ ) composed of primarily Polypay  $\times$  Dorset ewes were exposed to Texel, Suffolk or Columbia rams for 35 days in the breeding season. The ewes were wintered outdoors on average-quality lucerne hay according to NRC (1985) requirements and were not provided any concentrate during late gestation or lactation. A total of 279 lambs were born with an average of 1.7 lambs per ewe and weaned lambs were used in the study. The lambs were weaned on average at 70 days of age and lambs from each sire breed were placed either in feedlot or on pasture. Texel and Suffolk sired lambs had higher weaning weight than Columbia sired lambs ( $P < 0.01$ ). Lambs in the feedlot were fed shelled maize and pelleted protein supplement. Lambs on pasture grazed for 63 days and received 455 g concentrate daily and later they were placed in the feedlot. For the cultural energy analysis, pasture establishment and maintenance, feed in feedlot and on pasture, transportation, labour, machinery, electricity and other inputs were calculated and corresponding values for each input were obtained from

literature. It was assumed for the analysis that 20 percent of ewes were culled and lambs sold after weaning were included in the analysis. Texel and Columbia breeds had a higher energy input per kg live weight than Suffolk breed ( $P < 0.04$ ). There was no difference between breeds in terms of energy input per kg carcass ( $P > 0.4$ ). Suffolk breed had a lower cultural energy ratio for the protein energy output than Columbia and Texel breed ( $P < 0.02$ ). Energy output ratio defined as kjoule input/kjoule output was better for Suffolk breed and it was different from that of Columbia and Texel breed ( $P < 0.03$ ).

## Keywords:

cultural energy; sustainability; breed, sheep; Texel; Columbia; Suffolk

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