

HORN GROWTH DOES NOT CONTINUE AFTER FULL BODY GROWTH IN CATALAN GOAT BREED

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Summary. In animals, horn length as an exaggerated sexually selected trait should impair functional capabilities and impose fitness costs. Then, it would be logical that a limit to horn growth exists, even in domestic ungulates. Our objectives were (1) to find out the limit of horn growth in Catalan goat (2) to investigate whether this growth could be adjusted to a mathematical model; in other words, if there was a non-linear model that could parametrise horn growth. The current study included data (body weight and horn length) from 66 animals (6 males, 53 females and 7 wethers) belonging to the ‘Catalan goat’ population. Four non-linear models (logistic, von Bertalanffy, Michaelis-Menten and Gompertz) were compared based on the degree of fit and estimation of the growth patterns of horns according to body weight. The logistic model $y = a/(1+be^{-cx})$ best fitted the data. In this model, horn growth starts in a low acceleration phase, which has a slight inflection, making horn growth slow until the animal reaches its complete body weight (57 ± 6.5 kg), when this rate keeps reducing, approaching zero. The asymptotic growth level indicates that horn growth does not continue after full growth. Early individual development would seem not to affect definitive horn length, because of apparent compensatory growth. This has substantial implications for management and conservation of the breed, because of the potential current impact on selection of adults by only taking into account horn length.

Keywords: allometry, Caprinae, Catalan goat, morphometry, skull.