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Rumination and activity data during beef cattle conditioning period

Giorgio Marchesini¹, Davide Mottaran¹, Eliana Schiavon², Severino Segato¹, Elisabetta Garbin¹, Massimo Mirisola¹ and Iginio Andrighetto¹

¹University of Padova, Italy

²Istituto Zooprofilattico Sperimentale delle Venezie, Italy

Precision farming requires the collection of detailed data on feed, environmental conditions, physiological parameters, activity and performance of the animals throughout the production cycle. For some years there have been some devices which make possible some measurements on single animals, such as activity level and rumination time. While these tools are widespread in dairy farms, their application in the beef sector is still limited. The aim of this study was to measure the level of activity (from 0 to 253 every 2 h) and daily rumination during the conditioning period of young bulls and to check whether these data can be used as indicators in predicting weight gain and in early detection of diseases. The study was conducted on 108 young bulls coming from France, with an average age of 390±49 days and an average weight of 453±21 kg. Upon arrival in the farm the animals were weighed and fitted with SCR collars (HRLDn Tag; SCR Engineers Ltd., Netanya, Israel). Animals were checked daily to verify their health condition and the right position of the collar. Any symptoms and therapies have been regularly recorded. The animals were raised in 11 pens for 70 days in loose housing on deep litter and were weighted at the end of the conditioning period. Data on rumination and activity were recorded by collars every 2 hours and then summarized as values of total daily rumination and activity. As regard to activity and rumination data, statistical descriptors and some indices of dishomogeneity were also calculated. After checking for normality, Pearson's correlation coefficients were assessed between average daily gain (ADG) and activity and rumination variables. Data were submitted to one-way ANOVA according to the fixed effect of ADG (3 levels: low, LWG, medium, MWG, and high, HWG). Animals on the whole were healthy, in fact only two had fever, 16 suffered of sporadic cough and 14 showed nasal discharge. The animals had an average daily gain of 1.56±0.33 kg/day (0.68-2.33). The animals showed an average level of daily rumination and activity equal to 366±78 minutes and 481±88, respectively. Daily rumination and activity increased gradually up to three weeks after the arrival (from 336 to 413 minutes and from 427 to 493, respectively) and then decreased gradually over time, probably because of the reduction of fiber in the ration. Significant correlations with ADG were found for some variables. Among them there were minimum daily rumination and the rumination dishomogeneity index, but *r* values were very low: 0.25 (*P*=0.009) and -0.25 (*P*=0.008), respectively. However some parameters were found to be significantly different among ADG categories. Among them the minimum value of daily rumination (DMR) and the rumination range (RR), for LDG, MDG and HDG categories were 142, 170, 197minutes (*P*=0.0184) and (366, 336 and 315 minutes (*P*=0.045), respectively. Although there is a great individual and daily variation in activity and rumination, such parameters promise to be useful in daily growth forecasting and in recognition of alterations of the health status.

Biography

Giorgio Marchesini has graduated in Veterinary Medicine from the University of Padova in 2000. He has worked at University of Udine with a scholarship on Wildlife. He has been working as an Assistant Professor at the Department of Animal Medicine, Production and Health, at University of Padova. He has published more than 20 papers in reputed journals. His research activity is mainly focused on Cattle Management and Feeding Techniques to improve the production and Animal Welfare. Some studies are also focused on the diagnosis and prevention of few cattle metabolic diseases and on milk sanitization and transformation technology.

giorgio.marchesini@unipd.it

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