

Assessment of kinetic activity in slow- and fast-growing organic chickens by GPS monitoring and with visual observation

C. CASTELLINI¹, A. DAL BOSCO¹, M. GUARINO² and C. MUGNAI¹

¹Department of Applied Biology, Borgo XX giugno, 74, Perugia Italy

²Centro di Ricerca per le produzioni delle carni e il miglioramento genetico di Monterotondo – Roma

E-mail: dalbosco@unipg.it

The organic poultry system provides specifications for housing conditions, nutrition, breeding and animal care, but the real advantage of this method is the use of pasture that could improve the sanitary status and the nutritional quality of meat. Such improvements are deeply affected by the genetic strain of birds which shows different foraging and kinetic behaviour. This behaviour could be assessed by visual observation or by video-camera, but results from these methods are unlikely perceptible by consumers. The aim of this research was to verify the applicability of a GPS monitoring system in order to evaluate the effect on kinetic activity of different genotypes in organically reared broilers. Five hundred of two genotypes (slow- and fast-growing) were assigned to an organic rearing system (indoor pen, 0.12 m²/bird, provided with access to a grass paddock, 10 m²/bird). At 80 days of age, the chickens of the two genotypes were monitored to estimate their kinetic activity using two different methods: 1. Visual observation - all birds outdoors were counted and observed by two operators for 3 days in the morning and afternoon, during two periods of three hours each, with the Focal Scan Sampling (FSS) method. Percentage of birds observed to stay indoor and outdoor was calculated; 2. GPS monitoring - five birds per genotype were provided with GPS for 3 days using SuperTrackstick; this system was equipped with a USB port for quickly viewing on Google Earth's 3D model where it is possible to read date, hour, environmental condition (relative humidity and temperature) and coordinates of monitored birds. FSS observations showed that slow-growing birds performed more active behaviours, less standing and more time spent outdoor than indoor ($P < 0.05$), even if this method presents temporal (time availability for observers) and spatial (high pasture, bushes, trees) restrictions. On the other hand, the GPS method guarantees continuous spatial monitoring of activity over the life (3-6 days) of batteries, continuously updating records of the distance covered, stop times, speed and direction and other valuable information. In particular slow-growing chickens covered an average daily distance of 1,130 m while fast-growing ones covered only 220 m. In conclusion, on the basis of this preliminary results, it is possible to affirm that GPS method could be a suitable approach to evaluate the kinetics of organic chickens and easily transferable in software (bar code, screen, etc.) near to the place of purchase.

Keywords: organic chickens, kinetic activity, GPS monitoring