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Characterization of the Creole goat population of Guadeloupe (FWI) by pedigree data analysis, morphological measures and microsatellite markers

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Goat breeding in the French West Indies is oriented toward meat production, and others features such as cultural traditions, gastronomy or leisure. In Guadeloupe, the goats belong to an admixed population, called Creole goat, inherited from the colonial history of the region, from various origins. This breed has very good adaptation traits and maternal characters, and achieve good level of productivity in semi-intensive grazing systems locally managed. Creole goat exhibit also a useful genetic variability for susceptibility to internal parasites, and is a model for studies on genetic resistance against these illness. Recently, a breeder association, particularly aware of the interest of this breed, decided to implement a selection program based upon this breed. The first step of this program consisted in a characterisation study of this population, mainly based on the flock maintained by INRA research station. This flock has been maintained isolated from years, with little introductions. The pedigree of the flock has been traced until the base population, around 1975. Coancestry coefficient and inbreeding of the animals were estimated using the PEDIG software. Based on the pedigree, a sample of 92 adults representative of the flock, from both sex (66 females and 26 males), and aged between 2 and 10 years, has been selected for a morphological description. 12 linear measures and 4 classifiers have been used to describe each individual. Blood samples were collected upon 25 individuals, and treated in LABOGENA facility; after DNA extraction, 12 microsatellites markers used for parentage testing in goat in France were analysed. These results were analysed with GENETIX software to describe the genetic diversity of the flock. The main results obtained on each type of information are presented and compared to published references. The mean inbreeding coefficient within the flock was around 3 % in the last generation. The Creole goat population is of medium size, compared to West African and Iberican breeds from which it is supposed to be derived. Genetic markers show a good diversity, with a mean number of allele of 5.8, smaller than indigenous breed from Africa but comparable to European breeds. The mean observed heterozygosity was 0.75 (upon the 12 markers), higher than the expected one (0.70), resulting in a Fis coefficient of -0.07. Despite the observed inbreeding, the genetic diversity appears to be maintained within the flock.