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The Moka cattle, an element of the Reunion Island heritage to preserve

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Introduction

To satisfy the needs in animal pulling, in particular for cane sugar transport, cattle were introduced onto the Reunion Island during the 18th and 19th centuries. The animals originated from Madagascar and West Africa. With the mechanization of transport, the use of draught animals was gradually reduced while choices were made to develop a meat production sector with “improved” breeds imported from the mother country. Consequently, the local “Moka” population became residual. Neither conservation action nor recognition has been undertaken for this population which does not benefit from an official status, although rare and at risk. Some breeders preserving this heritage, created an association in 2006 whose general purpose is to preserve and promote the breed, and to defend the interests of Moka breeders. In order to help the breeders in their initiative, we undertook a first characterization study of the Moka breed.

Material and methods

Because of the lack of data on this population, we took action in order to complete a recognition file. Firstly, we explored bibliographical sources and collected information among experts in order (I) to provide information on the history, the situation, uses, animal performance and (II) to carry out an exhaustive inventory of the breeders owning animals from this population. Secondly, eleven identified herds were surveyed to characterize their structure and the main breeding operations. These site visits enabled us to locate animals described as the Moka type according to the view of breeders. Thirty-three animals were the subject of a phenotypical description, linear measurements (height at withers, rump width, thoracic perimeter) and weight. The genetic characterization of the breed was also carried out. Blood samples were taken from 38 animals, between November 2005 and March 2006 for analysis of the 16 microsatellite markers used for parentage testing in France. Different datasets were constituted and statistically analysed according to the type of data.

Results

The breeding practices of the surveyed herds differed little between farms. Moka herds are bred on very poor savannahs, almost without supplementation. They are kept for their hardiness, their capacity to withstand very strong seasonal variations in forage availability. These variations of forage resources lead to a natural season of calving from December to March, when savannahs are green and the grass is of good quality. The mating season extends from mid-February to June, with several males in the herd. According to the breeders, the Moka cows have good reproductive capacity and great longevity: they produce one calf per year, on average, along a productive life which can last 15 years. Calving is easy, without supervision or intervention. Marketing is done mostly by direct sale of live or slaughtered animals. Three-hundred twenty-five animals were listed on the survey, on 11 farms, with an average of 30 animals per herd.

Thirty-three animals typed as Moka by their owners were the subject of a phenotypical description and measurements. The mean value for the thoracic perimeter, the height at withers and the rump width are respectively 162.6 ± 15.2 cm, 116.8 ± 8.3 cm and 120.1 ± 17.6 cm; the mean liveweight of males and females are 430.6 ± 85 kg and 340.6 ± 45 kg respectively. These results constitute the initial values of a zootechnical description of the breed. They show the underaverage development of the animals, which can be qualified as medium sized. A photographic database of individual animals was created and could be used for the definition of the standard of the breed.

The genetic analysis showed that the population presents a good allelic richness (6.7 alleles/locus) and genetic diversity (measured by an unbiased heterozygocity of 0.75), and a low estimated consanguinity (3.3%). Some specific features have been identified, such as the presence of zebu specific alleles, but few admixtures of taurine cattle. The relationship of this breed with African breeds, especially from Madagascar, or with European or Creole cattle will be studied in more detail in the future.

Conclusion

This first approach provided initial results on breeding systems and the Moka cattle population to build a file of national recognition. It also put forward the many constraints with which breeders are confronted, such as land constraints and transmission problems. Beyond the difficulties of organization of these breeding activities, which are not part of official programmes, it seems to us that the present breeding model will not be able to continue because of the disappearance of savanna following rapid urbanization. So, the question is the following, is conservation of this breed anyway compatible with a less pastoral breeding model? However, this breed shows some original characteristics that make it a valuable genetic resource for tropical environments. The presence of a selection signature for adaptation to tropical constraints that could be present in this breed will be investigated.