Short Communication

Artificial Insemination Using Local Cattle Breeds in Niger

F. Cristofori1*, M. Issa2, A. Yenikoye3, G. Trucchi1, G. Quaranta1, M. Chanono2, C. Semita1, H. Marichatou3 and M. Mattoni4
1Department of Animal Pathology, University of Turin, Via Leonardo da Vinci, 44, 10095 Grugliasco (Torino), Italy; 2Centre de Multiplication du Bétail, Toukounous, Niger; 3Faculty of Agronomy, Abdou Moumouni University, Niamey, Niger; 4Department of Animal Productions, Epidemiology and Ecology, University of Turin, Italy
*Correspondence: E-mail: francesco.cristofori@unito.it


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Abbreviations: AI, artificial insemination; CMB, Centre de Multiplication du Bétail

INTRODUCTION

Large parts of Niger are classified as arid zones where locally available genotypes of ruminants appear well adapted to the harsh environmental conditions and represent the only practical means to convert pasture and water resources into food and income (Winrock International, 1992). Despite their ability to live under hostile conditions, their productivity remains low, owing partly to a scarcity of feed resources but also to a lack of modern breed selection programmes and management.

Although artificial insemination has been a powerful means of increasing and improving cattle populations, it does not play a significant role in many African areas (Chupin, 1992; N’Diaye et al., 1996), although in Niger the Nigerien authorities now encourage implementation of bull semen production and distribution throughout the country. The following study was undertaken at one of the national centres for livestock selection and multiplication, the Toukounous station, Centre de Multiplication du Bétail (CMB).

MATERIALS AND METHODS

Created in 1931, the Toukounous station covers 4474 ha and is situated 180 km from Niamey, 17 km from Filingué, in Tillabéri district (14.5°N, 3°E). The area is characterized by high temperature (range 24–35°C < T < 33–64°C), low relative
humidity in the dry months, generally dry conditions, with an extended dry season of 5–7 months and a single rainy season, with rainfall averaging 200–600 mm annually.

The CMB station was selected because of its relative accessibility and better production potential: since the late 1950s a nucleus herd of Azawak cattle (*Bos indicus*) has been established there under a controlled and improved management system. The animals are kept on a ranching system, but the presence of many fences permits management of cattle by groups. The station has also been the site of various educational activities for young livestock holders of this Sahelian region.

The Azawak is the predominant shorthorn zebu breed distributed in Niger (Simoulin, 1965; Pagot, 1985): the name is derived from the Azawak (or Azouagh) Valley, a depression lying between Niger and Mali. The selection operated at Toukounous station resulted in a standard type of cattle of harmonious conformation (Pagot, 1943), with good adaptive qualities (Seydou, 1981; Achar and Mogueza, 1995). In this type, the coat is homogeneously fawn brown-coloured, the extremities being darker and the eyes circled by black hairs. The Azawak is a medium-sized animal (height at withers about 120–125 cm in females, 130 cm in males); its neck and head are both long, but the head is thin, with a concave profile. It has sturdy horns with circular transverse section. The top line is straight to concave; the hump is present and developed, particularly in the males, and the dewlap is also developed. Udders and teats are well developed. The limbs are long and thin and the gait is elegant. The Azawak have a docile temperament, so that they are easy to handle (Pagot, 1943; Simoulin, 1965). The Azawak cattle are kept primarily for milk (mean daily production 4 litres over 285 ± 41 days), but the meat is highly prized in some areas of Niger as well as in Burkina Faso and Mali.

In the last months of 2000, some financial resources from the project were directed to restoring pre-existing premises and setting up a laboratory equipped with suitable simple tools and instruments. The harshness of the environment and the hot climate meant locating this laboratory close to an open-air area, where bull semen collection was to be performed. This area, shaded with thorny acacias, surrounds the building so that it is possible to transfer the semen to the laboratory immediately after collection.

The selected animals were provided with suitable shelters to protect them from inclement climatic conditions and to enable the operators to handle and feed the bulls easily. Each bull had adequate space and a dry area to permit the animals to lie down comfortably and to permit both visual and social interaction.

Once these concerns were accomplished, it was possible to start the choice of the bulls for semen production from a herd of males tagged for individual identification. A data sheet was constructed for each animal, containing individual records (date of birth, weight gain) and details of reproductive career (age at first calving, parturition intervals) and lifetime milking performances of their dams. Twelve bulls, 3 years old, were selected to be trained to semen collection. The characteristics taken into account were outstanding phenotypic features and above all the milking performances of the dams, according to selection criteria adopted at the station.

In June 2001 each bull had a ring put in its nose to enable better handling and in July 2001 the bull training programme was started. The adopted guidelines, adjusted on the basis of similar experiences (Chicoteau *et al.*, 1990) were as follows: