adaptation options that are appropriate for specific contexts, and that can contribute to environmental sustainability as well as to economic development and poverty alleviation.

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# Contribution of research to a breeding programme for Creole goats in Guadeloupe

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### Introduction

The Creole goat in Guadeloupe is a local meat breed well adapted to tropical climates. This breed came from the natural mixing of goats imported from Africa, Europe and India during slavery. It evolved under natural selection and got adapted to its environment. This small-sized prolific breed shows resistance characteristics to gastro-intestinal nematodes (GIN) (Mandonnet *et al.*, 2006). Farmers want to increase the meat production of this breed. They have expressed a strong willingness to develop a selection scheme for the Creole goat. Breeder organisations, extension services and INRA are collaborating to implement a breeding programme for the Creole goat. An innovating project of selection for production and adaptation traits in the tropics has begun. This was made possible by the previous studies on GIN resistance of Creole goats at INRA.

### Farmer survey

As a first step, a survey of goat farmers was conducted by INRA (Gunia *et al.*, 2010a). Herd management was studied. A special emphasis was given to the practices and opinions of farmers that are relevant for the breeding programme. Farmers interested in participating in this project were also identified.

### Identification grid of Creole goats

Many crossbreds in Guadeloupe results from uncontrolled mating between Creole and a recently imported breed. A tool was needed to distinguish Creole goats from crossbreds. Phenotypic description of the Creole goats of the INRA experimental flock was conducted. The main traits of the Creole goat were identified and reported on a grid (Mandonnet *et al.*, 2010). This grid was evaluated and adapted by extension services and farmers. In the field, goats are marked according to the grid to determine if they belong to the Creole breed. This grid proved to be an efficient tool to quickly determine if a goat could be considered as Creole.

### Selection objective

The definition of the selection goal for the Creole goat is the subject of a PhD at INRA. The originality of the selection objective is to take into account adaptation and production traits. The good maternal qualities and adaptation traits (mainly resistance to GIN) need to be maintained. Maternal qualities ensure that enough kids will be born and reared. Genetic resistance to GIN is also an important trait as parasitism leads to higher pre-weaning mortality and slower growth. Production traits (growth, dressing percentage) will also be improved. They are important traits for farmers who are looking for fast growing heavy bucks for butchery. A bio-economic model of a typical goat farm was created. The economic weight of each trait of the animal was calculated.

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### Selection Index

The selection index will include traits measured during performance recording. These traits can be the same as in the objective or correlated to them. They will be adapted from the French sheep performance recording. Pre-weaning growth and reproduction parameters such as fertility and litter size will be recorded. In addition to these traits, post-weaning growth and faecal egg count (FEC) will also be recorded. FEC gives an indication of the level of parasitism of the animals.

### Genetic parameter estimation

The genetic parameters were estimated to calculate the weighting of the traits in the index (Gunia *et al*., 2010b). The experimental Creole goat flock at INRA Gardel provided enough data for the calculation of the genetic parameters. More than 20 years of data about growth and reproduction traits were available.

### Organisation of the breeding programme

The mating scheme will be designed. A sample of interested farmers (owning 300 does in total) will select the Creole goat. They will sell improved reproducers to a "user" group of farmers. These users will rear Creole goats and sell them for meat purpose, either in totally pure breed systems, or by using Creole does as a maternal line for crossbreeding. The different organisations of the programme will be studied with extension services to choose the most adapted solution.

### Conclusion

As it happened for other indigenous breeds, the value of the Creole goat was long underestimated (Gauly *et al*., 2010). Technical, economical, and genetic factors were taken into account in this programme to allow a more efficient selection of the Creole goat. The disease resistance characteristic of Creole goat was emphasised along with growth and reproduction traits. All participants (farmers, research, extension services) were integrated in this project.

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# Genetic parameters of litter size in Creole goats and their implication for a breeding programme including adaptation traits

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### Introduction

The Creole goat of Guadeloupe is a small-sized breed reared for meat. This breed, well adapted to its environment, has strong reproductive qualities (Alexandre *et al*., 1997). The prolificacy of this breed is high, around 2.1. Farmers want to maintain this prolificacy, but without increasing it. Studies were needed to determine how to analyse this trait.

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