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Towards a better understanding of adaptation of local breeds to livestock farming systems : an exploratory methodological proposal

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Abstract. Local breeds are often described as adapted to local conditions, but we noticed a lack of characterization of what this adaptation refers to, in particular for breeders themselves. Moreover a single local breed can be involved in a diversity of livestock farming systems types and fodder systems. We proposed a specific research method, aiming to explore adaptation of Corsican sheep local breed to livestock farming systems. We consider that breeders are the first breed managers and as a consequence that the attempt to understand their own point of view on adaptation and their corresponding managing practices is of first importance. We present our method, based on semi structured interviews conducted through a sample of breeders chosen among types of farming systems made up thanks to a preliminary agrarian diagnosis. The analysis of the first results of this survey allows us to discuss this exploratory method proposal.

Keywords. Local breed – Adaptation – Livestock farming systems – Breeders points of view – Sheep – Corsica.

Vers une meilleure appréhension de l'adaptation des populations animales locales aux systèmes d'élevage : une proposition d'approche exploratoire

Résumé. Les populations animales locales sont souvent décrites comme adaptées aux conditions d'élevage locales, mais cette adaptation est peu caractérisée. Ces populations animales peuvent de plus être mobilisées dans une diversité de systèmes sur un même territoire. Nous proposons une approche méthodologique donnant une place centrale aux points de vue des éleveurs sur cette adaptation et à leurs pratiques associées. Nous présentons cette méthode qui s'appuie sur des entretiens semis directifs puis nous en montrant les intérêts et les limites.

Mots-clés. Populations animales locales – Adaptation – Système d'élevage – Points de vue d'éleveurs – Ovin – Corse.

I – Introduction

Local breeds are often described as adapted and fitted to local conditions, but we noticed a lack of characterization of what this adaptation refers to (Hubert, 2011). Moreover a single local breed can be involved in a diversity of livestock farming systems types and fodder systems, as we observed on the case of the Corsican sheep breed. To finish with we noted that the official selection scheme of this local breed only involves a small part of the breeders and the reasons of this phenomenon are not well known (Carayol Costa, 2011). Because of those three statements we proposed a specific research method, aiming to explore adaptation of this local breed to livestock farming systems. We made the hypothesis that exploring this question will also help us to understand the involvement or not of breeders in the official selection scheme, assuming that their involvement in the scheme depends on what they consider an animal well adapted to their livestock farming system. We also consider that breeders are the first breed managers and as a consequence that the attempt to understand their own point of view on adaptation and their corresponding managing practices is of first importance.

We will present the material and methods we propose to understand better the breeders points of view on adaptation on local breeds, the way they manage this adaptation, and how it is linked to the farming systems they are involved in. We will then present the various steps to build this methodological approach, the first elements of results and a discussion of this method.

II – Material and methods

Our aim is to understand how breeders consider the adaptation of their own breed and how they manage it. As a consequence we chose to conduct semi structured interviews with a guide concerning points of views and practices in breed management (scale of the farm and collective scale).

Moreover we consider as a key question the links between how adaptation is considered, how animals are managed from a genetic point of view and what are the corresponding farming systems they are involved in. As a consequence in a preliminary study we identified the main farming systems for sheep farming in Corsica. We used several agrarian diagnosis (Drevon et Pignot, 2003; Carcelle 2007; Faye 2010; Kriegk, 2011; Lafitte, 2012; Descamps, 2012) and crossed the typologies of those different diagnosis to build a new typology.

Our hypothesis was that the more the systems were based on spontaneous food resources (rangeland) the more the question of adaptation was important for the breeders. As a consequence we chose the part of rangeland as the main discriminant factor of our typology.

III – Results and discussion

1. Methodological aspects

Our first identification of the types of systems as allowed to distinguished four types quickly described in the Table 1.

Table 1. The four farming systems identified

System	Description	Geographical area
1	Low intensity system on rangeland with low farm equipment	Slopes of internal valleys and rocky coasts
2	Systems with forage crop intensification limited by tillable areas	Slopes and bottom of internal valleys
3	Low intensity systems on grassland	Coastal plains
4	Systems with forage crop intensification with sold fodder surplus	Idem

We have chosen the breeders interviewed thanks to a snowball sampling. Our aim was to cover a diversity

- of geographical area: mountain and plain,
- of position in reference to the official selection scheme: participating or not,
- of farming system types: each of the four types identified.

So as to be able to characterise precisely the farming system for each breeders interviews we used a questionnaire filled in to have a precise description of farming systems (the structure of the questionnaire was build in the ARIMnet Domestic project with colleagues from other Medite-

rranean areas and under the responsibility of A. Araba). The questionnaire allows to define in wich farming system type each breeder is situated (with an aim of covering all the types) (the questionnaire form was filled in for 30 breeders).

We than completed this information by semi structured interviews with the breeders (20) or for a few of them telephone interviews (4). We had constituted a guide with the following themes: reasons of the choice of the Corsican breed / differentiation whitin the population / selection criteria for breeding animals and renewal / networks to exchange breeding animals / position regarding the official selection scheme. Only the aspects that were not discussed during the information of the questionnaire were adressed so the order the themes were adressed and the time spent in interview was different in each case.

2. Elements of breeding strategies and practices and link with livestock farming system

The first step of the analysis in this survey is to identify and classify the information we can characterize thanks to the interviews. We have, in a first step of the analysis, identified five types of important data (Table 2). The first two concern points of view of the breeders, the following three concern practices.

Table 2. The five types of data gathered thanks to the interviews

Type of data		Why is it considered as important	Examples
Points of view	On adaptation	Aim of the study	One breeder mentioning several kind of dimension for the adaptation: climate, food system, territory (high mountain pasture)
	On the differentiation of the population	Test of the hypothesis that the breeders consider that sheep from different geographical area were different and /or that sheep used in different systems are different	One breeder considering that the "plain sheep" wouldn't resist in their territory (100% rangeland)
Practices	The selection criteria and associated indicators	Characterization and hierarchical structure of the performances and aptitudes considered as important by the breeders. Way used by the breeders to assess the animal for those criteria	One breeders consider among a group of several criteria the richness of the ewe's milk and evaluate it through the lamb's growth
	Intervals for the age when the animals are selected by breeders	Strategies of choice of the breeders. Course of the tests.	One breeder buy ewes of 6-7 years to breeders considered as "good breeders" because he consider that good ewes from the milk can be maintained 6 to 7 milkin periods whereas bad one are eliminated at 3-4 years old. His aim is to keep ewes from those "old" ewes.
	Networks of exchange for the animal	Global management of the population. Links between the official scheme and the population outside of this scheme.	

The first reading of the interviews shows a diversity of positions and practices (for breeders out of the official scheme but also for breeders participating to the official scheme). We can't bring out evident links at first reading with the systems breeders are involved in. However those systems types seem important in the determination of the constitution of breeding animals exchange networks. It is difficult to reconstruct those networks as the information gathered in the interview is not exhaustive but it is interesting to understand factors of choice of the breeders with whom each breeder choose to exchange animals.

3. Discussion of the method: From discourses to practices: an approach that needs to be completed

We mainly present methodological aspects in this paper. As the interviews were completed in may 2013, the first step now will be to make a deep analysis of the five types of data mentioned in Table 2 and to analyze the links with four types of systems.

We consider this approach through interview is good as exploratory approach but it has to be completed. Indeed it has allowed us to identify questions that would be interesting to understand better through interviews of a larger number of breeders, like the networks for exchanging breeding animals. Moreover this method is based on discourse and should be completed by an observation of the breeders practices, choosing a few number of breeders among the interviewed, with a diversity of practices, and made observations of practices on a middle term (several campaigns of animal selection).

To finish with, we consider that it would also be important to consider better the situation of the breeders concerning links with research and dissemination schemes to understand better the impact it can have on their points of views and practices, but also to have the possibility to initiate a collective reflection on the way it took into account or not the diversity of farmers' expectations.

IV – Conclusions

This exploratory approach is the first step of a work in progress which aims at understanding better how breeders consider and manage adaptation of their local breed to livestock farming systems. A more detailed analysis of their vision is currently made and more detailed work to comprehend selection practices linked to this question (networks to exchange breeding animals, selection criteria etc.) should be made. This question of adaptation is particularly relevant in a context of climate change and move towards systems based on synergies between resources in the agroecosystems.

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