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PATUCHEV and REDCap: two additional research and development schemes for high performance and sustainable goat farming

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1 Introduction

The western France concentrates over half of the country's capacity in terms of dairy goat production (64% of national collecte-Agreste, 2013). Between years 2000 and 2010, goat farms have gradually turned into intensive farming, thereby significantly increasing their need for purchased input. To increase productivity, the grazing has been stopped and the indoor breeding has been developed. Now, the consequences are that goat systems are self-sufficient only to 55% (Bossis *et al.*, 2014) unlike dairy cow systems to 88% (Brunschwig *et al.*, 2012). However, in a context of higher input costs, these systems become now unsustainable. Moreover, these intensive systems do not correspond to the social representation of goat breeding by the consumers. It is therefore important to find techniques of management which are efficient, which correspond to the product picture but also which preserve, the goat health and welfare, and maintain their performances, the income of farmers and the sustainability of farms. It is in this context that the French Institute for Agricultural Research (Inra), professionals of goat sector of Poitou-Charentes Region and structures of development have created two additional research and development schemes for high performances and sustainable goat farming.

2 PATUCHEV: an experimental device to assess high-performances and sustainable goat breeding systems

The experimental platform PATUCHEV is an experimental unit of the division “Animal physiology and livestock systems” of INRA. This device is located near Poitiers in the main area of dairy goat industry in France (Poitou-Charentes). In 2013, the French Institute for Agricultural Research has built especially an experimental goat shed with a solar-heated air hay dryer. This device is aimed at assessing and proposing innovative goat farming systems in order to lead to low input and sustainable goat farms and to answer research question: “what kind of systems would a better self-sufficiency in inputs under a production constraint?” This approach associates the research of economic, environment and social performances in trying to apply the principles of agroecology.

The experimental device is based on conception and long-term evaluation of three kind of systems with 60 goats each: two grazing herds, one kidding at the end of the winter and the other one in autumn, and the last one fed hay indoors all year round and kidding in autumn. 10 hectares divided between cultivated grassland and a cereal-protein crops mixture are allocated to each system (Fig 1). To maximize the feed intake and to limit the use of concentrates, multi-specific cultivated grassland and solar-heated air dried hay are the key points of the forage system (Huyghe *et al.*, 2008 ; Delaby *et al.*, 2008). To limit the use of inputs, crops are fertilized with composted manure from the herd.

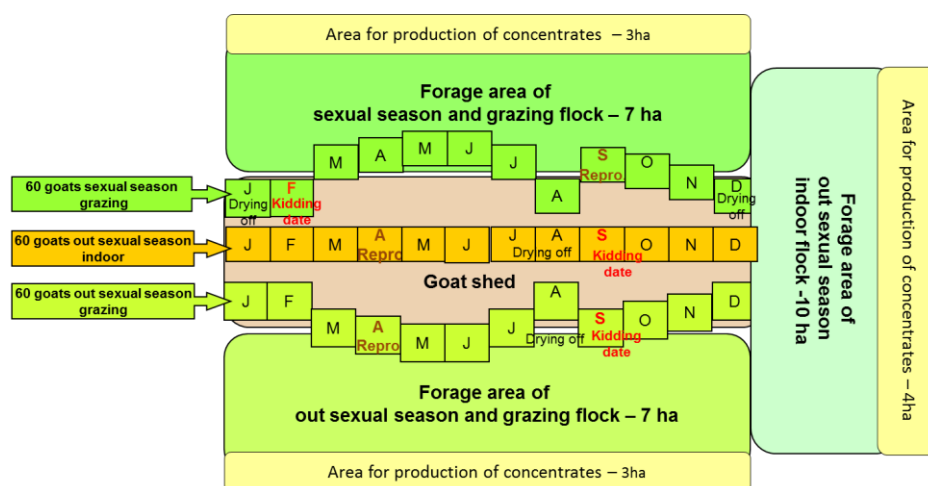


Fig. 1. Scheme of experimental device PATUCHEV

Evaluation and comparison are based on multi-criteria approach with data collected throughout lactation, dairy goats' careers and crop rotations. The functional organization is based on participative approach. Patuchev project is managed by a steering committee composed with scientists from each INRA division participating to the project, engineers from

R&D structures, representants from goat regional professional sector and Région Poitou-Charentes. To improve the diffusion of knowledge, professional goat farming organizations have implemented a coordinated Research and Development scheme called REDCap.

3 REDCap : an experimental and development network in dairy goat production

REDCap is a network of goat breeders, engineers and technicians on the topics of self-sufficiency and grass-use in goat breeding. It was built in 2011 by the regional association of goat's milk producers and processors in Poitou-Charentes and Pays de Loire (West of France). This is a multi-partner network, composed of 15 technicians from 4 regional structures: Chambres d'Agriculture, CIVAM, Contrôle laitier and BTPL. The animation of the project is driven by an engineer of the French livestock Institute (Institut de l'Élevage), which also have to articulate this project with other one existing in France on the same topics. The REDCap is a major place to build references (on self-sufficiency and production costs), to experiment in farms to share knowledges between technician and breeders, and in the same row, to develop a bottom-up approach with researchers. The figure 2 shows the design of the REDCap project, and the articulation between the different partners.

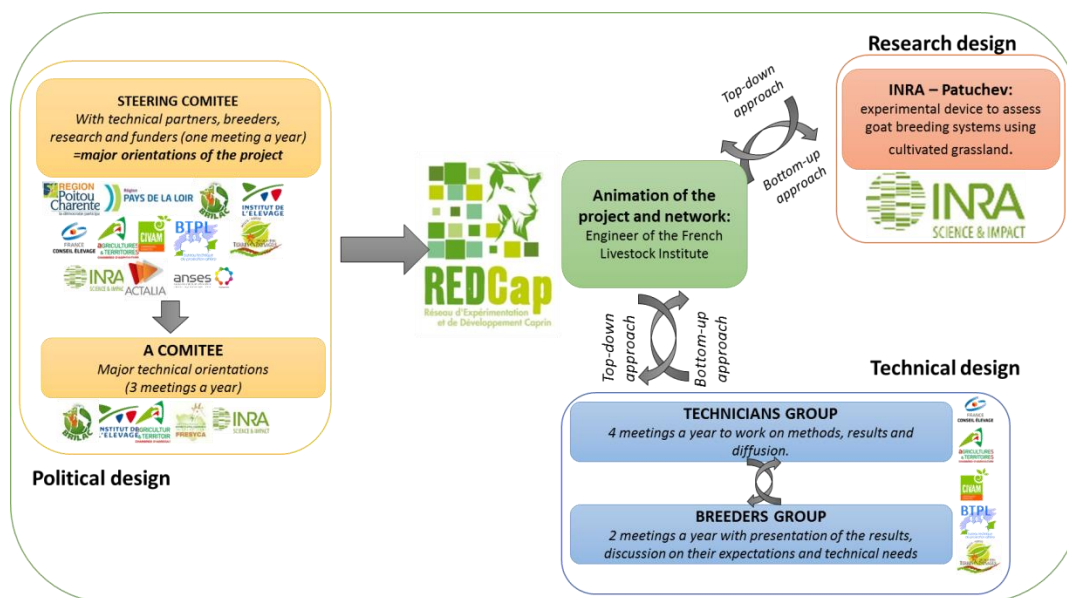


Fig. 1. Design of the REDCap in Poitou-Charentes & Pays de la Loire.

Different kinds of experiments are developed on the experimental device PATUCHEV and in farms (REDCap). The first associated experience between these two projects is a conception and evaluation of a multi-species grassland mixture adapted to specificities of goats, and sown on Patuchev platform and in 10 farms in autumn 2012. Dried hay in barn for goats is a second subject of study with the constitution of a farmers group to exchange and optimize this use.

4 Conclusions

This organization gives a wide place to exchange and thereby eases the emergence of innovative research issues. These two projects are conducted by 2 different organizations, but with a strong wish to work in interaction with each other, and all those involved. Therefore both manager of Patuchev and REDCap participate mutually to consultative and instance decision of each project. This overview shows that the context and tools to support the functioning of Research and Development in the goat sector are structured and operational. All partners have the wish to put these tools to service of goat sector to support its adaptation to the changing expectations and challenges.

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