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# From individual practices to cooperation modes in a collective breeding organisation: the case of local sheep breed management in Western-Pyrenees

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**Abstract:** In France, genetic breed improvement relies on a strong cooperative organisation among farmers, R&D institutes and national policies and institutions. Due to liberalization of breeding activities and to an increasing complexity of breeding objectives, this cooperative regime is threatened. Adopting a practice-based approach, we analyzed the diversity of individual breeding practices of farmers, revealing the various cooperation relationships between farmers and breeding organisations. We identified six types of farmers' individual strategies and their relationship with the collective level which enabled us to unpack commonly used categories such as "breeders". Our results also show that farmers combine the use of scientific tools such as genetic values and traditional practices in various manners to meet their individual objectives. The cooperation breakdown can hence be linked to the difficulty of a standardised breeding organisation to take into account this diversity of practices and strategies, calling for crossed learning and more flexibility in the breeding scheme.

**Keywords:** cooperation, breeding practices, learning, local breeds, strategy

## Maintaining local breeds in a liberalization context

The changes occurring in agriculture and rural management also concern collective breeding activities (Vissac, 2002), threatening the cooperation for breeding management established in the 1960's between farmers, scientists, food-processing industries and R&D organisations. Genetic improvement of breeds does indeed require a collective organisation. This organisation is supported by norms, management tools and knowledge produced by geneticists within R&D organisations on the basis of on-farm data recorded by farmers in their herds (Barillet, 1997). This cooperative regime is thus necessary for the co-production of breeding services such as animal qualification or artificial insemination. However, cooperative management is threatened by individual practices, as has been shown in other organisations, especially when common goods such as breeds are concerned. Moreover, current changes in breeding activities and organisations weaken the necessary participation of farmers in collective breeding (diversification of farming and breeding objectives, competition with more productive breeds, liberalisation of breeding activities...). Maintaining cooperation between R&D organisations and farmers with their wide-ranging and increasing diversity of objectives and practices has thus become a day-to-day challenge as local breeds are the repository of local industries and environment preservation through traditional practices.

Breeding activities have most often been studied from the viewpoint of individual farmers' breeding practices at the farm level, but such work did not connect them with collective action stakes; others focused on the collective level of breeding activities (Vallerand et al., 1994). Nevertheless, studies focused on breeding practices and knowledge within a collective activity, such as Steyaert (2006), are rare. As a consequence, no ready-to-use theoretical framework can be found to jointly analyse individual breeding practices of farmers and collective ones for cooperative breed management.

Using a theoretical framework of cooperation drawn from the management sciences, we then describe cooperative modes existing between R&D breeding organisations and farmers in order to analyse their cooperation weaknesses, on the basis of the case study of local breeds in the Western Pyrenees.

## Analytical framework and method

Among the various approaches on cooperation within the management sciences, we chose a viewpoint focused on collective learning, which has proven to be a key element for maintaining

cooperative activities (Lam, 1997). Following the “practice turn” in the social sciences, we analysed cooperation between farmers and breeding services through the study of their individual and collective practices.

We studied the case of the management of three local dairy sheep breeds raised in the Western Pyrenees to produce cheese (Ossau-Iraty). Thanks to both research work and to the active participation of local breeders, a breeding centre and breeding schemes have been implemented in order to increase breed efficiency and farmers’ incomes as a result. Genetic improvement has been successful, but cooperation between farmers and R&D organisations is difficult to maintain at this time (Labatut et al., 2007), threatening the sustainability of local breeds. We interviewed 35 farmers, both members and non-members of the collective breeding organisation, and formalised their “realised strategies” (Mintzberg and Waters, 1985) using an innovative categorisation method (Girard et al., 2007).

## Results and perspectives

We identified six types of individual breeding strategies of farmers at the farm level, ranging from an intensive use of genetic services (Type 2 “Producing good ewe lambs using genetic gain produced by breeding scheme and accelerating flock replacement”), a moderate use aiming at improving little by little the genetic level of the flock (Type 3 “Increasing progressively the genetic level of the flock, using collective genetic gain while using summer pasture”), to other strategies whose driving forces are not directly genetic improvement but territory use or cheese production (Types 4 “Using mountain pasture and producing cheese while simplifying flock management and using rams from artificial insemination” and 5 “Having simple and natural breeding practices while using moderately collective genetic gain”). Other farmers put forward in their strategy the individual control of breeding for sanitarian and genetic reasons (type 1 “Controlling flock breeding on farm and improving its genetic level solely by artificial insemination”) or the animal standard (type 6 “Having a nice-looking flock without using collective breeding tools, and using mountain pasture as much as possible”). But beyond these individual strategies within the coherence of farm management, describing individual practices such as “ways of obtaining rams” or “use of collective breeding tools” allowed us to characterize the relationship chosen by each farmer with the collective level, i.e. the breeding schemes or local networks of farmers. These results caused us to unpack commonly used categories such as “breeders” and “genetic gain users”. For example, we identified that Type-6 farmers, even if non-members of the breeding organisation, can be qualified as “breeders” both by their individual practices (e.g. choosing ewe lambs from their parents’ characteristics) and by their involvement in a parallel market of breeding animals. Moreover, farmers combine the use of scientific breeding tools such as genetic values and traditional knowledge and practices in various manners to meet their individual objectives, leading to hybrid cooperative modes allowing them to adapt to local constraints:

- In collective mountain pasture, some farmers use rams which are poorly evaluated according to scientific criteria, but with a nice standard in order both to avoid peer criticism about a worse standard, and spreading their genetic gain to non-breeders;
- Type-3 farmers combine artificial insemination with a two-years first lambing, giving ewe lamb the opportunity to be in a good condition for their first lambing. Combining such so-called “traditional” practice with a scientific tool was first seen as incoherent when targeting a speeding up of genetic improvement, but can now be understood as a strategy of increasing progressively the genetic level of the flock.

As a consequence, cooperation weaknesses can be linked to the difficulty of standardised breeding organisation to take into account this high diversity of practices and strategies which were largely unknown by the breeding scheme managers. It puts forward the need for tools and settings enhancing innovative learning in order to increase the flexibility of the collective setting, and thus the sustainability of local breeds. Participatory experiments and innovative and collaborative design workshops could be implemented. These results can help breeding organisations to favour a better appropriateness of the service they offer to the needs of breed users.

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