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ORIGINAL ARTICLE

Developing a typology for local cattle breed farmers in Europe

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Summary

Recognizing cultural diversity among local breed farmers is crucial for the successful development and implementation of farm animal genetic resources FAnGr conservation policies and programmes. In this study based on survey data collected in the EUropean REgional CAttle breeds project from six European countries, a typology of local breed farmers was designed and profiles for each of the farmer types were developed to assist these policy needs. Three main farmer types were constructed: production-oriented, product and service-oriented and hobby-oriented farmers. In addition, seven subtypes were characterized under the main types: sustainable producers, opportunists, multi-users, brand makers, traditionalists, pragmatists and newcomers. These types have many similarities to the 'productivist', 'multifunctional' and 'post-productivist' farmer types. The typology not only reveals the high level of diversity among local cattle breed farmers in Europe, which presents an opportunity for the *in situ* conservation of animal genetic resources, but also a challenge for policy to meet the differing requirements of the farmer types.

Introduction

The conservation and preservation of diversity among domesticated breeds has been considered important from the perspectives of agriculture and the food industry, cultural heritage and nature conservation, rural development and science (e.g. Gandini & Villa 2003; Mendelsonh 2003; Verrier *et al.* 2005; Oldenbroek 2007: 19–22; Soini 2007). Special attention has been given to local breeds, which often have unique characteristics or combinations of characteristics. Most literature sources treat local breeds synonymously with native breeds and indigenous breeds. However, following the EURECA project, we use the term 'local breed' in referring to breeds that are characterized by their limited geographical distribution (Hiemstra *et al.* 2010, 18). These breeds, which have adapted to the local environmental conditions over a long period of time, have in many parts of the world become rare, threatened, and in some cases even extinct (FAO 2007). International conventions and national conservation programmes aim to conserve and develop these breeds by means of *in situ* and *ex situ* conservation measures.

In situ on-farm conservation has been considered the most favourable means to preserve genetic material (Oldenbroek 2007). Most farm animal genetic resources (FAnGr) conserved *in situ* are owned by

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private farmers, and farmers who raise local breeds on their farms can therefore be considered as the main *in situ* conservation actors. On-farm *in situ* conservation implies special challenges for FAnGr, as the success of the conservation depends on many internal and external factors that affect the choice of the breed (Gandini *et al.* 2010). In addition, it is suggested by this article that there are cultural aspects that cannot always be explained by internal or external factors. By cultural aspects, we broadly refer to farmers' values, attitudes, beliefs, motives and interests related to local breeds and with cultural diversity variation of the cultural aspects. Cultural diversity has been considered an important aspect in biodiversity conservation (UNESCO and WCED 2003). Usually, the connection between the cultural diversity and biodiversity is found among indigenous cultures, where biodiversity is highly connected to local cultural practices, traditions and knowledge. However, it is suggested by this article that recognition of the cultural diversity of farmer types is necessary for the successful development and implementation of on-farm *in situ* FAnGr conservation policies and programmes also in the Western countries, as the needs of each farmer type are distinct in terms of policy. In this article, a 'farmer' refers to any person raising a local cattle breed and a 'farm' to the place where the cattle are kept.

This study was a part of the EURECA project (Towards self-sustainability of EUropean REgional CAttle breeds), which was carried out during 2006–2009 with the support of the European Council GENRES programme. The project aimed to elaborate methods and gather data that will be of value when new policies and programmes concerning farm animal genetic resources and rural development are designed. Based on the material collected within the EURECA project, the aim of this study was to (i) examine the profiles of local cattle breed farmers, (ii) develop a typology of local cattle breed farmers, and (iii) consider how the various farmer types can be assessed in terms of 'productivist', 'multifunctional' and 'post-productivist' farmer types identified by Burton & Wilson (2006) and how the types are met by various policy measures and conservation programmes.

Policy measures concerning animal genetic resources

Policy measures are usually classified into three categories: regulatory (sticks), economic (carrots), information (sermons) (Vedung, 2003). These measures are also available for and applied to the conservation of local breeds and their sustainable use. The Convention on Biological Diversity (CBD) (1992) and regulations of the Common Agricultural Policy (CAP) within the European Union are examples of regulatory frameworks for *in situ* conservation. However, the CBD in particular remains very loose in terms of conservation practices, as responsibility for the concretion and implementation of the regulations is mainly delegated to individual nations. Therefore, national strategies and action plans that can consider conservation from the point of view of a respective nation and even a single breed are needed to promote conservation at the national and regional levels (Fimland & Oldenbroek 2007, 196). The conservation law introduced by the Republic of Sakha in 2001 to protect Yakutian cattle is quite a unique example of a national regulatory framework concerning the conservation of a single breed (see Granberg *et al.* 2009; Soini *et al.* 2012).

Economic incentives such as subsidies for local breeds have become quite common, especially in the European Union along with the introduction of agri-environmental policy as a part of the CAP. Incentives that are addressed directly at maintaining local breeds are usually paid per unit of animal. Furthermore, the maintenance of local breeds may indirectly be supported by various rural development programmes connected with landscape management or local food.

Information is considered as the softest measure compared to regulations and economic measures (Vedung 2003). It refers to the raising of awareness thorough the transfer of knowledge, the communication of reasoned argument and persuasion. In this sense, many would view information as democratic governance in its most ideal form. In the context of FAnGr, conservation information often accompanies other policy measures, regulations and economic incentives, as in the case of extension services related to agri-environmental subsidies. It can also be used as a measure of its own, for example, when raising the awareness of traits of local breeds or threats of inbreeding.

The choice of policy instrument is critical, as these instruments have varying effects in terms of effectiveness, efficiency, legality and democracy (Bemelman-Videc 2003, 9). In this respect, it has recently been realized that successful and sustainable conservation of biodiversity requires the engagement of various actors (Berkes 2006; Soini *et al.* 2012). Therefore, emphasis in the conservation of local breeds, similarly to other forms of biodiversity conservation, has started to shift from top-down policies

primarily based on regulations and economic incentives towards community-based management and participatory planning (Köhler Rollefson 2003; FAO 2007) or the self-sustainability of the breeds (Hiemstra 2010, 9). The concept of self-sustainability, which was introduced by the EURECA project, refers to the situation where breeds could exist without any external regulatory programmes or economic support (ibid.). In addition to conservation policies, market is becoming more and more important player in the conservation of local breeds. In particular in the Western countries, the markets for local breed products and services are developing as a result of new trends in food consumption that favour quality, gastronomic characteristics, locality and health aspects (Soini & De Haas 2010). Along with these turns in policy and markets, the use and appreciation of information as a policy measure is increasing. The change in policies and markets calls for more intimate understanding of farming cultures, as farmers cannot be treated only as objects, but rather as actors of conservation policies and the local breed markets.

Farmer typologies

Typology research refers to research that aims at analysing complex reality by grouping objects that are of the same kind and presenting them as a system of types (typology) (Landais 1998). Particularly in Western Europe, there has been an increase in farmer typology research. The increase in farmer typology research can be associated with so-called post-productivist rural development, with diversifying rural livelihoods and populations, as well as the development of multifunctional agriculture with diversifying production styles, tasks and meanings. Along with these developments, there is a need to improve the effectiveness of agricultural, rural or environmental programmes and policies, as well as extension methods (Landais 1998; Emtage *et al.* 2006). Thus, farmer typology research has seriously adopted the notion of Morris and Evans (2004) that farmers are not of one culture, but multiple 'agricultures'.

Farmer typology research can be considered as a form of segmentation research that takes into account the social and cultural values of farmers, as well as their approach to farming and areas of interest within it (Emtage *et al.* 2006). Typologies have been developed, for instance, with respect to landscape management practices (Swagemakers & Wiskerke 2004), the probability to turning to organic farming (Darnhofer *et al.* 2005). Moreover, farmers' adaptation of environmental (Morris & Potter 1995) and technical innovations (Frank 1994), as well as new crops (Vuorio *et al.* 2005) and new farming styles (Thomson 2002; Mesiti & Vanclay 2006), have been examined. Farmer typologies have also been designed according to their identities related to the various strategies in agricultural production Battershill and Gilg 1996).

Burton & Wilson (2006) have examined the productivist, post-productivist and multifunctional farmer types. They have suggested that farmer self-concepts comprised multiple identities, rather than single one: characteristics of an agricultural producer, conservationist, diversifier and agribusiness identity to a varying extent. By an 'agricultural producer', they refer to a conventional productivist farmer who maintains cultural notions of stewardship. An 'agribusiness person' is a farmer who concentrates on agricultural production to the extent that the profit motive dominates and stewardship concerns are lessened. A 'conservationist' focuses on environmental and life-style concerns, and a 'diversifier' shifts the focus away from standard agriculture towards nonagricultural sources of income (ibid. p. 101).

To date there has been relatively little socio-economic or cultural research on livestock keepers who raise local breeds. Most of the existing research has been conducted in developing countries (e.g. Anderson 2003; Ngowi *et al.* 2008; Granberg *et al.* 2009). In these countries the situation is different, as the local breeds might be an integral part of the local food production system, whereas they are at the margin of food production in more advanced societies. Few studies have been conducted, however. Research on the perceptions of Finnish local breed farmers has indicated diversity among the farmers in their opinions concerning local breeds and their usage, as well as in their motives and future plans for keeping local breeds (Takamaa & Soini 2007). Studies have also demonstrated that most local breed farmers are highly committed to keeping a particular breed, even if the subsidies paid for the local breeds were to be reduced or even removed, revealing the noneconomic factors underlying the choice of breed (Takamaa & Soini 2007). Research conducted by Bertaglia *et al.* (2004) on local goat breed keepers in Southern France pointed out a strong link between the perceptions of the farmers concerning the breed and pastoralism and their general values and attitudes towards society. The aims of this study are to develop a preliminary typology of the local cattle

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farmers to promote future research of farmers involved in *in situ* on-farm conservation and to assist policy-making and implementation of FAnGr.

Material and methods

In this study, we focus on a total of 321 farmers in six countries keeping thirteen local cattle breeds analysed within EURECA project (Table 1). The farmers were selected by the participating researchers of each country with the aim of maximizing the diversity of the farmers in terms of herd size, farmers' age, education and use of cattle, among other factors. The farmers were asked 42 questions about their farm, farming activities and perceptions of the breeds (see Gandini *et al.* 2010). The interviews were conducted during 2008, either face-to-face on the farm or by phone, and notes were taken. The questionnaire included five open-ended questions (Table 2), which were used as the main source of data for this analysis. Although the farmers were asked these questions, they raised other issues relevant to local breed farming, providing a good additional source of material for a qualitative analysis of farmer types.

To develop farmer profiles and a typology for local cattle farmers, we utilized qualitative content analysis, which has been characterized as 'a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns' (Hsieh & Shannon 2005, 1278). The method has primarily been developed in anthropology, qualitative sociology and psychology in exploring the underlying meanings of a studied phenomenon. Qualitative content analysis pays particular attention to unique themes that illustrate the range of meanings of the phenomenon rather than the statistical significance of the occurrence of particular texts or concepts. In addition, it aims for reducing the large amount of qualitative material and identifying the core consistencies and meanings (Patton 2002, 453). It should also be noted that characteristically for qualitative content analysis, there is no single 'truth' of final interpretations, as the analysis is always affected by the personal views, emotions and intuition of the researcher (Denzin 1989). The principal authors of this analysis have previous research experience of studying farmers' motives and values keeping local breeds (Takamaa & Soini 2007; Soini & Partanen 2009; Soini *et al.* 2012).

The qualitative content analysis is usually inductive, based on the examination of topics and themes, as well as the inferences drawn from them in the data (Patton 2002; Hsieh & Shannon 2005). It often produces typologies on how the actors view a certain issue, making the given phenomenon more comprehensive (Berg 2001). The method starts from reading and re-reading of the research material, followed by identifying the relevant categories and attributes, aiming to concentrate on the most essential information. Finally, the main types are clustered, re-clustered and named. The types created through this process are ideals: a certain type is not meant to correspond to all of the attributes and categories. Therefore, a certain type may exist in reality, but not necessarily.

The method of qualitative content analysis, as we used it, can be divided into the following five steps:

(i) *Becoming familiar with the data*. We read and re-read the notes made by interviewers.

Table 1 Origins of the data exploited by this study

Country	Breed	No. of herds/farmers analysed	Purpose	No. of cows (Breed population trend)
Belgium	Dual-Purpose Belgian Blue	23	Dual	4400 (stable)
	Dual-Purpose Red and White	18	Dual	3000 (decreasing)
Finland	Eastern Finncattle	30	Dual	700 (increasing)
	Western Finncattle	31	Dual	3000 (decreasing)
France	Ferrandaise	19	Dual	730 (increasing)
	Villard de Lans	15	Dual	340 (stable)
Italy	Bianca Val Padana	26	Dual	650 (stable)
	Reggiana	30	Dairy	1500 (increasing)
The Netherlands	Deep Red	21	Dual	454 (increasing)
	Groningen White-Headed	22	Dual	1500 (stable)
	Meuse-Rhine-Yssel	24	Dual	14 400 (decreasing)
Spain	Avileña-Negra Ibérica	31	Beef	100 000 (stable)
	Alistana-Sanabresa	31	Beef	2000 (increasing)

Dual: milk and meat; dairy: milk; beef: meat.

Table 2 Questions used in analysis

Questions addressed to the farmer
Which are the main reasons (one or more than one) for starting to keep – or continue keeping this local breed?
What kind of opportunities do you think there are for having the local breeds in the future on your farm?
What kind of threats are there related to keeping local breed in the future on your farm?
If the local breed is declining in the country: what are the main reasons for this declining in your opinion?
If the local breed is becoming more popular in the country: what are the main reasons behind this recent popularity?

(ii) *Determination of categories*. We identified the main *categories* that marked differences between the farmers (Table 3).

(iii) *Determination of the attributes for each category*. We considered the farmers' reactions in each category as *attributes* using a phrase as a unit of analysis (Table 3).

(vi) *Construction and description of farmer types*. We determined, described and named the different farmer types based on the different combinations of categories and attributes.

(v) *Finalizing the typology*. We presented the preliminary typology to the members of the research group who had not participated in the construction of the typology and who were representing Italy, Finland, France, the Netherlands and Spain. The group agreed with the typology with minor changes to the names of the types.

Results

Identification of categories and attributes

From the data we identified ten *categories* that marked differences between the farmers: (i) the use of local cattle breeds, (ii) economic aspects in cattle production, (iii) professionalism in cattle farming, (iv) becoming engaged with the breeds, (v) reasons for conserving the breeds, (vi) the appreciation of traits of the breeds, (vii) the scope and scale of thinking, (viii) networking, (ix) support needed and (x) future threats. For each category, two or more attributes were constructed. The ten categories identified and the corresponding attributes constructed are presented in Table 3 and briefly discussed in the following.

The use of local cattle breeds

This category describes the various forms of using cattle breeds on the farm, whether the farmers viewed their cattle only as production animals or whether they mentioned other uses for their animals. The cattle were most often used for milk and/or meat production. In addition, some animals were used in landscape management – some farmers stated that their animals are exceptionally good for that purpose – and also as social companions, therapeutic animals or attractions for farm visitors. Some of the farmers seemed to consider their cows primar-

Table 3 Categories and attributes that define local breed farmers' typologies

Categories	Attributes
(1) Use of the local breed	Milk or meat production
	Diversity of usages (production, grazing, companion animal)
(2) Economic aspects in cattle farming production	Source of profit (quantity or quality)
	Assessment of profitability (in the long or short term)
	Attitudes to the subsidies
(3) Professionalism in cattle farming	Type of profession (farming, other field)
	Need for external support in cattle farming
	Attitudes towards professionalism
(4) Becoming engaged with the breeds	Conscious choice
	Coincidence
	Sudden fancy
(5) Reasons for the conservation of local breeds	Genetic reasons
	Ethical reasons (conservation of nature or cultural heritage)
	Traditions
(6) Traits of the cattle	Purely aesthetic phenotype
	Aesthetic related to production traits
	Adaptation to the local environment and farm conditions
(7) Scope and scale of thinking	Personal
	Farm
	Regional
	National
	Global
(8) Networking	No networks related to cattle
	Networking with actors involved in cattle breed farming
	Networking broadly with consumers, media, researchers
(9) Support needed	Research (e.g. on genetics, traits and productivity, meat and milk quality, added values)
	Developing products and services
	Economic support (subsidies)
	Practical knowledge on cattle breeding and agriculture
(10) Future threats	Inbreeding
	Low prices
	Bureaucracy and sanitary requirements

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ily as pets, or members of their family, although they milked them or used them for landscape management.

Economic aspects in cattle production
This category describes farmers' considerations of cattle farming as an economic activity. Some farmers preferred bulk production and emphasized the quantity of production, whereas for others the economic value of their cattle was derived from the quality of the products and production. For the latter farmers, promotion of the quantity of production through a systematic breeding programme was usually important. Some farmers calculated the costs and benefits of cattle farming, emphasizing factors such as the health and longevity of the animals, the lower feed costs and the value of other uses for the cattle (e.g. landscape management and quality products), while other farmers considered the costs and profits in the shorter term. Our data also revealed that some farmers had started to keep a local breed because of the payment of subsidies, whereas for other farmers, the subsidies were a secondary or even irrelevant aspect. Some farmers appeared to consider the payment of subsidies for the local breeds to simply be a part of modern agriculture, whereas others saw them as a serious constraint and for a very small proportion of farmers, subsidies were the only reason for keeping local breeds.

Professionalism in cattle farming
This category describes the biographical and educational backgrounds of the farmers and their knowledge of cattle farming. There were differences among the farmers in their professional background (see also Gandini *et al.* 2010). Some of the farmers had an education in agriculture or cattle farming, whereas others had come to the profession from outside agriculture and had gained their expertise in cattle farming through practice. There were also farmers who lacked information about modern cattle farming and the bureaucracy related to it, and who were in need of external support. Professionalism in cattle farming does not refer here only to the level of education or professional background of farmers, but also to their perception of the need for experience and capabilities in cattle farming. Some farmers set a requirement for high qualifications among persons keeping cattle, whereas others considered that anyone could raise local breeds, because they were considered easy to handle: *'An inexperienced person can also take care of these cattle'*.

Becoming engaged with the breeds
This category refers to how the farmers had become engaged with the local cattle breeds. Some of the farmers had started keeping the breeds through a conscious decision, and others as a result of coincidence or just out of a sudden fancy.

Reasons for conserving the breeds
There were a variety of reasons for keeping local cattle breeds, which can be clustered in the following way: Some farmers emphasized the genetic reasons, i.e. importance of the preservation of breed traits, whereas others emphasized the ethical perspective ('right thing to do') considering ecological or cultural reasons, or the continuation of farm traditions.

Appreciation of traits
This category describes how the farmers perceived the traits of the local breeds. The aesthetics of animals has been very important in traditional selection as well as in animal breeding (see e.g. Soini & de Haas 2009): breed classifications have been based on the exterior traits of the breed. For some farmers, the aesthetic value of their cattle seems to arise from good production traits such as muscularity, health, size or shape, indicating the farmers' knowledge of the breed and cattle farming, whereas other farmers focused on the phenotype, that is, the colour or the patterns of the coat, viewing cattle more as a 'painting'. The adaptation of the breeds to the local environment or farm conditions and buildings was appreciated by some farmers. A few farmers stated that local breeds were considered easy to handle.

Scope and scale of thinking
This category describes how the farmers located local breeds and their breeding in the wider contexts of society. Some farmers considered their personal interests and preferences for the breeds, or the suitability of a breed in relation to the farm characteristics. Others discussed the local breeds from a broader perspective, for example with respect to their contributions to environmental development or food production at regional, national or even on a global scale.

Networking
There were also differences in how the farmers acted in practice: some of them worked rather independently or in collaboration with other cattle breeders and experts closely linked with cattle breed farming (extension persons, researchers), whereas others were more oriented to the society at large: to the

consumers, media and scientists. Some farmers had no networks related to the local breeds.

Support needed

The farmers had different ideas about what kind of support they or the local breed productions would need. Some of them called for more research on genetics, unique traits of the cattle, the special characteristics of milk and meat or developing value-added products. Subsidies were often mentioned. There were also farmers who were in need of practical information of cattle farming. Some farmers called for respect of local breeds and the farmers' work with their preservation.

Future threats

The farmers had also different ideas as to what are the future threats for the local breeds. Some of them mentioned inbreeding, like small populations and small number of bulls. Others were more concerned of low market prices of the products. Increasing bureaucracy and sanitary requirements were also mentioned as a threat.

Typology of the local breed farmer types

The categories *use of cattle* and *economic aspects in cattle farming*, which marked the clearest differences between the farmers, was used as the first organizational category in developing the typology. Based on these categories, three main types of farmers were identified: production oriented, product and service oriented and hobby oriented. These main types were further divided based on the attributes of the remaining categories into a total of seven subtypes (Figure 1). In the following sections we introduce the three main farmer types and their subtypes.

Production-oriented farmers

The objective of *production-oriented* farmers is to perform economically profitable cattle farming based on local breeds. Farmers of this type are interested in basic milk and/or meat production. Although they are aware of and highly appreciate the quality of milk and meat products, they are not themselves interested in processing or branding products, as they have specialized in primary production in the milk or meat production chain. However, differences were identified between production-oriented farmers in how they considered that economic profitability should be achieved: in the long term through careful and professional cattle farming or in the short term by exploiting subsidies. Based on these differences, production-oriented farmers were further divided into *sustainable producers* and *opportunists.*

Sustainable producers can be characterized as professional local breed farmers, who usually have an education or long experience in cattle farming and who are eager to learn more about the breeds and production. Many of them were also committed to continuing the old traditions of their farm by keeping the local breed. They viewed cattle farming as a serious occupation: '*I don't want to live like Robinson Crusoe; my cows are production animals, not pets,'* or as one female farmer put it: '*Local breeds are more than farm decorations.' Sustainable producers* are particularly interested in improving the quantity of production through breeding and good management: *'If cows are managed correctly, they produce as much milk as other dairy breeds.'* For these reasons, some of the *sustainable producers* consider 'hobby farmers' (3.3.) a threat to local cattle breeding, as they are not necessarily very experienced in cattle farming or interested in breeding. *Sustainable producers* consider that conservation strategies are needed to preserve the good traits of the cattle for future breeding. Aesthetic values of the animals arise from good functional traits, such as health and longevity, which make cattle farming 'sustainable' in their view.

Sustainable producers seek economic profitability in the long term, whereas *opportunists* seek to maximize economic benefits in the short term. They typically

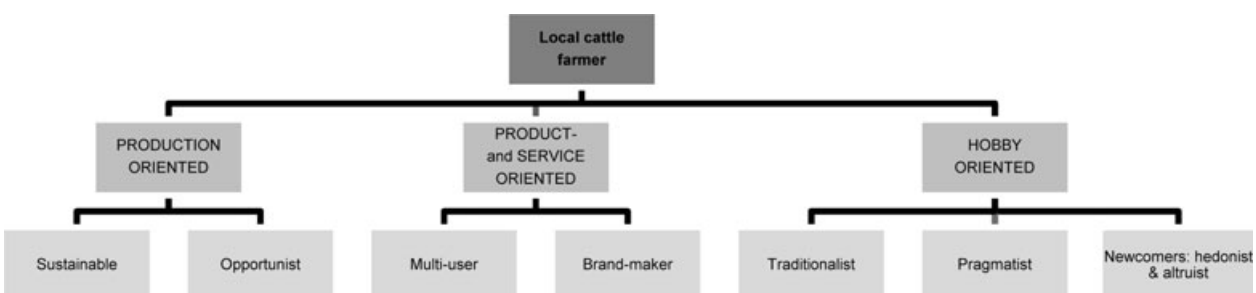

Figure 1 Typology of local breed farmers.

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argue, '*The subsidies should be increased.*' Economic subsidies are extremely important for them, sometimes even the main reason for starting to keep local breeds, maintaining them, or for re-orienting production from other breeds to local breeds. Compared to *sustainable producers*, *opportunists* are not very keen on cattle farming or the traits of the cattle; instead, the cattle represent to them a form of income. Therefore, opportunists concentrate on beef production, which is less labour-intensive than dairy production. Cattle can make it possible to live on the farm or to keep the farm alive. They do not want to put extra effort into cattle production, and they are not therefore interested in processing or branding their products; nor do they have a special interest in conservation issues. They may stop keeping the local breed if economically more attractive ways of earning a living appear.

Product and service-oriented farmers

Product and service-oriented farmers acknowledge the unique and multiple traits of the local cattle as a basis of additional value for various economic activities, tourism, food processing, care farming and environmental education. For this group, two subtypes were distinguished: *multi-users* and *brand makers.*

Multi-users see a local breed as an element of variety for on-farm economic activities such as tourism, on-farm selling, landscape and nature management: *'Local cattle breeds can be combined well with other farming activities.'* Here, the multiple traits of cattle such as an attractive aesthetic phenotype and good grazing abilities become valuable: *'Local cattle are extremely well suited to grazing management in nature reserves: Good use of natural pastures all year around.'* One Dutch farmer who had a lot of visitors argued that *'it is nice to have a cow with nice patterning and that is a Dutch breed.'* They emphasize the quality of the cattle-related products and services instead of quantity, although they are not themselves interested in processing cattle products on a large scale. The reasons for conserving local breeds are multiple, ranging from genetic to cultural and ethical considerations. The scope of thinking and acting of the farmers is usually farm-based.

In turn, for the *brand makers*, cattle farming should be a profitable business. They may have a background in some other sector than farming, but they are active in developing more expertise in cattle farming and especially in the processing and/or marketing of products. They place emphasis on the gastronomic qualities of products rather than production quantity: '*The meat of culled cows and the calves has a good conformation.*' In order to make business work, they actively collaborate with the various actors in the food chain (restaurants, slaughterhouses, dairies, cheese makers, researchers), and they are also active towards the media, which indicates their wide scope of thinking and acting and willingness to network. They want to promote the conservation and preservation of the cattle through the added value of the products and services the breed provides, and they are eager to enhance and preserve the niche character of the cattle. In branding, they consider the needs and expectations of the consumer: '*Food safety and local food has come to the fore via the media. Local breeds are appreciated in this respect.*' Genetic diversity establishes the basis for quality products, while the aesthetic and cultural values of the breed provide tools for marketing. One farmer was searching for a unique local breed product that would fit with the region and the centuries-old farm.

Hobby-oriented farmers

For *hobby-oriented farmers*, the economic profitability of cattle farming is not of importance, as other aspects related to the breeds go beyond profitability. Three subtypes of hobby-oriented farmers can be identified based on other categories and attributes: *traditionalists, pragmatists and newcomers*.

Traditionalists typically represent older farmers or those who are already retired from active cattle farming, but who are strongly committed to maintaining the breed on their farm, as '*The breed represents the traditional prestige of the farm,*' or *'It is a breed that has always been on the farm.'* Although they have expertise in farming, the production system might be old-fashioned and they feel a need for external support, especially to deal with bureaucracy. '*It is too administrative; there are too many documents to fill in.*' Products are used in their household or given away or sold in the neighbourhood. The main reasons for keeping the breed arise from farm traditions and the personal commitment of these farmers to life-long work with cattle, which they would like to transfer to the next generation. From their perspective, modern agriculture constitutes a threat to local breeds.

Pragmatists are professional farmers whose cattle farming is primarily based on mainstream breeds. They do not apply economic rationality to the local breed animals, which are rather considered as pets for themselves and for their family. They might have started to keep local breeds by coincidence. '*We got the first cows by accident, but since then we just haven't been able to get rid of them, because they are so cute.*' They might also have left a few local breeds in the

herd when turning to the mainstream breed, or bought a couple of local breed cows, onto which they can project their values of sustainable farming. They have recognized the genetic and cultural values of local breeds and they want to contribute to the conservation of these breeds by keeping a few local breeds among the mainstream breeds, even if it is not economically profitable to do so.

Finally, there are *newcomers,* who usually have no background in farming. Production or breeding is not as important as the animals themselves, whose other values are highly appreciated. Either these farmers can afford to keep a couple of animals as a hobby or they are ready to keep the cattle, even if they must lower their standard of living. Owing to these two orientations, we can further distinguish two subtypes, *hedonists* and *altruists*. For *hedonists*, the willingness to keep local cattle mainly arises from personal interests: the cattle fit their lifestyle or cows are just so nice and attractive: '*Because I like the breed, I was infatuated with it…'*. These farmers are not necessarily very committed to keeping cattle, but the cattle are kept as long as it is easy and enjoyable to do so. *Altruists* think that it is ethically appealing to have local breeds. They want to contribute to 'saving the world' by keeping these breeds. For both the *hedonists* and *altruists,* farming practices and bureaucracy, such as subsidies and environmental legislation, may cause problems and a need for external support, but they might think that '*Everybody has a right to keep local breeds.'*

Discussion

Productivist, multifunctional and post-productivist local breed farmers

The typology developed and introduced in this article identified three main types and seven subtypes of farmers. These types correspond relatively well with the identities of farmer types in respect to agricultural change reported by Burton & Wilson (2006).

In our study, *sustainable producers* mainly represent the 'productivist' farmer type, which is dominated by a agricultural producer type of identity focusing on production and economic rationality, but also having a conservationist orientation: The *sustainable producers* emphasized the local breeds as a sustainable choice in cattle farming and revealed their respect of traditions. As noted by Burton and Wilson, diversification is considered negatively by 'productivists', which was also the case in our *sustainable producers*. Although the profitability of the cattle farming was important for the sustainable producers, the profit was the clearly dominating motive among the *opportunists,* suggesting a strong agribusiness identity.

Product and service-oriented farmers in our typology were closer to 'multifunctional' farmers. *Multi-users* typify farmers among whom the diversifier, agricultural producer and conservationist characteristics might even co-exist, as suggested by Burton and Wilson. Although *brand makers* also had many of these characteristics, they seem to have a stronger orientation towards agribusiness than multi-users.

As the *hobby farmers* identified by this study were not economically oriented local breed farmers, they could be recognized most closely to the 'post-productivist farmers'. Rather, they represented smaller-scale approaches to local breed farming influenced by multiple values and emotions derived from ethical, cultural and environmental concerns. Therefore, some of the hobby farmers can even be characterized as 'nonproductivists' who can be described as 'lifestylers', 'resource-limited' or 'traditional' farmers (Howden *et al.* 1998) and who had no economic activities related to the local breeds. However, as far as the product and service-oriented farmers and hobby farmers are concerned, the borderline between multifunctional and post-productivist is not easy to determine. This was the case also in study of Burton and Wilson. These concepts are also controversial from the policy discourse point of view (Wilson 2001).

Policy implications of the typology

As expected, regulatory frameworks related to the conservation of local breeds, such as the Convention on Biological Diversity, remain relatively distant for local breed farmers. The only regulations they have to deal with are those concerning economic subsidies. For the local farm animal breeds in question, it is unlikely that there will be any laws for their conservation that would make the conservation of the breeds an obligation as is the case for certain wild animal species. Therefore, it is probable that the role of regulations in FAnGr conservation will remain relatively weak considering their direct effect on farmers. However, the bureaucracy associated with the regulations underlying economic incentives was considered complicated by many local breed farmers, particularly by *newcomers* and *traditionalists*. Consequently, the regulations could even have a negative effect on local breed farming.

Economic incentives are most important for *production-oriented* farmers, and particularly for *opportu-*

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nists. Consequently, an increase in subsidies would most probably increase the relative proportion of farmers who are not committed to or keen on the cattle farming and breeding. This is not necessarily a benefit considering the aims of FAnGr conservation in the long term, and neither does it promote the self-sustainability of local breeds. Economic incentives seem to have less meaning among the *product and service-oriented farmers*, who were more concerned of the added values of the local breeds and even no special meaning for *hobby farmers*, as there were other values behind their decision to maintain local cattle breeds.

Information and all types of communication related to local breeds seem to be important for most of the farmer types. *Sustainable producers* appear to perceive a lack of respect for their work among the stakeholders (administrative persons, extension persons and veterinaries) and society. Publicity in the mass media concerning local breeds, for example, might encourage them to continue. Information on the multiple values of local breeds might help the *opportunists* to reconsider local breed farming from other than a purely economic point of view. *Traditionalists* may need very concrete information and support in bureaucracy issues related to modern cattle farming in general and local breeds in particular, whereas *newcomers* may even need basic information on cattle farming and breeding practices provided by the extension organizations for example. *Multi-users and brand makers* seem to be the most self-sufficient in terms of the information they require for local breed farming.

It should be noted that the farmer types identified by this study are not necessarily ideal, and neither are they static. It might be very difficult, for example, to find a 'pure' *hedonistic* farmer, as compared to farmers that have most of the features of this type. Besides, a farmer might transfer from one type to another as a result of changes in external or internal conditions. For example, a *pragmatist hobby* farmer having a few local breeds among the conventional herds may decide to concentrate on local breeds only and become a *sustainable producer*. Similarly, a *sustainable producer* may change to become a *traditional hobby farmer* when becoming older and a *newcomer* may become a *brand-maker* or *sustainable producer* after gaining experience in cattle farming. Furthermore, entirely new farmer types may emerge.

The results suggest a high degree of cultural diversity among local breed farmers across European countries, confirming the results of the previous Finnish case studies (Takamaa & Soini 2007). The diversity of these farmers can be considered positive for *in situ* FAnGr conservation in the face of changing environmental and political conditions. Therefore, all farmer types should find their place in breed conservation and development activities. Even the hobby farmers are needed, although these farmers have smaller herds of local breeds, but they might have an important role in making the local breeds better known among the general public and therefore it would be important to develop policy measures that also support their work. If one type of farmer gives up local breeds for one reason or another, other types may nevertheless continue. It can also be assumed that some farmer types, such as *sustainable producers* and *traditionalists*, have considerable knowledge of breeds, which should be considered memory bank (Nazarea 1998), which needs to be conserved as well and passed on to the next generation of farmers who keep the breeds.

Conclusions

The typology for local breed farmers developed and introduced in this article can be considered as a pioneering work aiming at providing an overall picture of farmers who are raising local breeds in some European countries. It clearly illustrates the heterogeneity among the farmers, which can be considered an advantage for conservation, but a challenge for *in situ* conservation policies. In short, the results call for variety of policy measures that are sensitive to the different farmer types.

However, further research is needed to make the typology even more efficient in considering policy needs with respect to the following points: The typology was developed from data collected in Western Europe and it is therefore only applicable in a context where the market provides opportunities for farmers to specialize in a certain type of production and where the standard of living may also allow farmers to have production animals as pets. In non-European or developing countries, different farmer types may exist. Therefore, we suggest that the typology should be tested and further developed in different social, political and cultural contexts. Moreover, as this analysis was made based on open-ended answers of a questionnaire, a more intimate cultural analysis of the farmer types should be performed. It would also be interesting to examine the socio-economic characteristics of each farmer type by quantitative means and also to estimate the relative numbers of each farmer type with respect to the breeds they maintain. Research activities of this kind

would be of great importance in the development of community-based and self-sustainable conservation of farm animal genetic resources.

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