

## **Farmers' values, land management and landscape conservation in Galicia, Spain**

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### *Introduction*

Like elsewhere in Europe, in Galicia, rural areas make up a large part of the territory, and also become more diverse in terms of economic activity. Secondary and tertiary activities (services, tourism, SMEs, technology, and industries) become more and more important for (rural) economy and employment, however, primary activities (agriculture and forestry) still determine land-use. Rural development is no longer strictly limited to primary production whilst primary production can respond to new societal demands beyond food production alone. This is reflected increasingly in European policies.

The European Regional Development Fund (ERDF), the European Social Fund (ESF), and the Common Agricultural Policy (CAP) increasingly hold the potential to contribute to rural development objectives, among others the improvement of competitiveness of agriculture in relation to protection of the natural environment. The replacement of the Single Payment Scheme (SPS) by a new system of direct payments that provide income support to farmers partly oriented to young farmers and to remunerate specific behaviour of farmers (the 'greening' of production subsidies). It also represents an attempt to better target payments in the European Agricultural Guarantee Fund (EAGF) (the first pillar of the CAP). This in combination with the utilisation of the European Agricultural Fund for Rural Development (EAFRD) (second pillar of the CAP) are illustrative for the gradual disappearance of production subsidies and a shift in objectives of European agricultural policies. In the current programming period (2014-2020) ERDF, ESF, EAGF and EAFRD policies promote a more balanced and more sustainable 'territorial cohesion', and promote practices that are beneficial to the climate and the environment. The achievement of an adequate territorial balance is among the main objectives of Regulation (EU) No 1307/2013 (new framework of direct support) and Regulation (EU) No 1305/2013 (framework to support farm diversification strategies for farmers and their family members). A well-targeted geographical distribution of funds could relate to endogenous development capital, increasingly perceived in terms of ecosystem services (ES), which consist of supporting services (nutrient dispersal, biodiversity, seed dispersal), regulating services (erosion prevention, air quality regulation, climate control, waste decomposition) and socio-cultural services (non-material benefits: recreational values, community building, aesthetic qualities) (Bolund and Hunhammar 1999). In the implementation of the 2014-2020 programme, in comparison to northern European countries that spend over half of the EAFRD budget on agri-environmental payments Spain especially supports the improvement of production chains and challenges farmers to develop new, competitive business opportunities. In this short paper we explore how Galician dairy farmers and beef cattle breeders perceive and valorise the natural environment, and provide ecosystem services that next to subject of public support can distinguish produce in the market, and generate value added to primary production.

### *Research aim*

In the context of European cohesion policy, an integrated approach to territorial rural development and the provision of a wide range of functions and its relation to the diversification of the rural economy calls for research that enables to understand the heterogeneity in farm practices in relation to sustainable land-use. Social practices that involve sustainable land management and social innovation foster the strengthening of a territorial rural development model (Marsden 2003; Shucksmith 2009; Wiskerke 2009) through the creation of export and market opportunities for locally produced and processed (food) products (see e.g. Jongerden et al. 2014; Dominguez Garcia et al. 2015; Swagemakers et al. 2016). Joint learning on this type of sustainable rural revitalisation (Prager 2010) takes place at the levels of the constitution of functional ties, often the local and regional levels (Rodriguez-Pose 2008), which makes such rural development processes context dependent and problem specific. In this short paper, we aim to provide a preliminary analysis of the interrelations of farming styles and the provision of ecosystem services among Galician dairy farmers and beef cattle breeders. We build our research upon the proposition that sustainable land management anchors in farm practices in which farmers positively valorise the natural environment.

### *Method*

Farming styles delineate different realities as well as different development trajectories that are assumed to be the 'outcome of often highly contrasting underlying patterns' and are defined as the 'distinctive patterns through which agricultural production is organized and developed. Farming styles entail mutually interdependent levels: the level of notions or ideas about how to farm, the farming practices itself, and the network (the market, technology, and administrative and policy frameworks) in which the farm is embedded (Van der Ploeg 2003, p. 111). This implies that a farm practice is an expression of the strategic actions of an actor, and influenced by his or her cultural believes, the farm develops in a certain direction (Domínguez 2007; Swagemakers et al. 2012). From this point of view, we explore how dairy farmers and beef cattle breeders perceive the natural environment. Thereby we build upon Braat and de Groot (2012)'s premise that sustainable land management anchors in practices in which farmers positively valorise the natural environment. Our main research question is: do farmers include next to provisioning services (production of food, fibre, fuel and pharmacy) also other ecosystem services as motivation for the development of their farm practice? And if they do so, how do farmers valorise these functions?

In order to identify perceptions and attitudes towards landscape conservation and wider ecosystem service provisioning among dairy farmers and beef cattle breeders in Galicia we build upon traditions of the farming styles approach and applied Q-methodology, which merges quantitative and qualitative techniques for the analysis of subjectivity ('viewpoints' or 'discourses') (Frantzi et al. 2009). The quantitative characteristic is reflected in the use of statistics and mathematical techniques to collect the data as well as for the analysis. The qualitative characteristic relates to the use of qualitative, subjective data on respondents' values and believes. In an about 40 minutes lasting interview setting, respondents place a selection of statements (Q-sort) in an order on a grid scale from 'strongly agree' to 'strongly disagree' (Brodt et al. 2006).

Since the Q-methodology demanded input in terms of statements on land-use, landscape characteristics and main features of the Galicia farming sector were crucial in the design stage of the research. A first stage of the field research consisted of interviews with key-informants, the participation in a regional event on the future of the rural areas in Galicia, and additional desk study, which provided the researchers with knowledge for developing the statements.

In this initial phase we tested the statements we had developed in pilot interviews, and reduced the total number of statements from 54 to 49. The second stage of the research consisted of the application of the Q-methodology and the on-farm interviews that provided us with additional farm data and interrelations with landscape conservation.

Since the application of agri-environmental schemes in the Spanish governance context is limited the selection criteria of farmers included in this research consisted of expectations on the adaptive capacity of farmers and their farm practice in relation to the natural environment.

In our field research, 24 farmers were interviewed and performed the ranking for the Q-Methodology. The sample included 5 organic dairy farmers (DO), 6 organic beef cattle farmers (BO), 4 conventional dairy farmers (DC) and 9 traditional beef cattle farmers (BC). They were asked to organise the Q-sort in three simple piles: 'agree', 'neutral' and 'disagree'. Next farmers scored the statements in the grid scale where -5 represented 'strongly disagree' and +5 'strongly agree'. Scores around zero meant that farmers were unconcerned to that statement. After that farmers briefly explained why they had selected certain statements in -5/+5.

For the analysis of the Q-sorts of the 24 farmers PQMethod software version 2.35 was applied, available from <http://schmolck.userweb.mwn.de/qmethod/>. The data from the Q-sort (correlation matrix) were used to run a Principal Component Analysis, which resulted in a number of factors that we interpreted as different styles of farming.

Among the diversification activities at the farms were horticulture production (onions, tomatoes), and beef or cheese production in combination with short food chains. In some cases farmers sold their on-farm produce directly to consumers, in other cases they sold specialty products through a cooperative. In a few cases farmers had agro-tourism activities or received on-farm visits.

### *Results*

The outcome of the factor analysis using PCA and subsequent Varimax rotation is presented in Table 1. Four outcome factors (A, B, C, D) represented 63% of the total variance and accounted for 21 of the 24 participants, which represent the different styles of farming: Diversifying farmers (A), Conventional farmers (B), Businessmen (C), and Economical farmers (D).

All organic producers (types DO and BO) were classified as 'Diversifying farmers' (factor A) but also non-organic farmers belong to this farming style (other conventional farmers were distributed among other styles: factors B, C and D). Thus, there was no strict matching of farm types with any of the factors but differentiation in scores on the statements resulted in the distinction of four patterns of coherence on how farmers differently valorise the natural environment.

Table 1. Styles of farming.

	Allocation of farmers to factors (styles of farming)				Unclassified
	Diversifying farmers	Conventional farmers	Businessmen	Economical farmers	
Farm type					
DO	5				
BO	5				1
DC	3	1			
BC	1	1	3	2	2
Total	14	2	3	2	3
Variance explained (%)	32	10	12	9	
Eigenvalue	9,4776	2,9143	1,4550	1,3093	

Source: interpretation of own field data

DO: organic dairy farmers; BO: organic beef cattle farmers; DC: conventional dairy farmers; BC: conventional beef cattle farmers.

#### *Styles of farming and ecosystem service provisioning*

Although the way farmers organise the farm differs, when it comes to the provisioning of ecosystem services farmers in all groups recognise the aesthetic and biodiversity values in the Galician landscape. The integration of these values in daily practice however differs between farmers.

Diversifying farmers (group A) however express most clearly interrelations with the natural environment, and build their farm strategy upon the locally available resource base. They combine productive farm activities (milk and beef production) with values provided by the natural environment both, in terms of marketing food products and agro-tourism activities. Conventional farmers (group B) represent relatively intensive farmers who express a limitation in terms of the productivity of the land, and the need for the input of artificial fertilizers to improve the productivity of their grassland. Businessmen (group C) represent the larger holdings in terms of number of cows and hectares of land in use, and use productive cow breeds but face a limited access to land. Hence they express the need to consider financial matters with regards to feeding their cattle but do not focus on cost reduction (fertilizers, fodder input, medication) and rent land either at distance or from neighbours. Economical farmers (group D) often apply a cost reduction strategy in combination with a less intensive farm practice: they make use of a less productive but more robust animal breeds. They valorise living in the countryside and look for making a living from farming. Whilst in other groups the farmers sometimes ran individual households, in this group farmers most lived in a highly valorised family setting.

Box 1. Examples of what farmers in different farming styles expressed about the provisioning of ecosystem services

#### Diversifying farmers

*'Hedges and trees delimit the plots and restrict the access of the cattle to other areas. They function as natural fences while they create a microclimate, and protect the cattle from the wind.'* (DC9)

*'I believe that our type of production is more oriented to improving our quality of life as well as the quality of life of our animals; hence we enhance the relation with nature.'* (BO12)

*'Working with living beings is a huge responsibility. You could not compare it to work with inert things. In this activity it is essential to give the animals proper conditions to live as well as to take into account animal welfare.'* (DO2)

#### Conventional farmers

*'A reduction in use of chemicals would be better for the human health and the animals but in this area you need a lot of chemical fertilisers in order to produce enough fodder, we spent so much money in chemical fertilisers, since manure it is not enough to fertilise all the plots because the cows are permanently in the paddocks, so there is no chance to collect the manure.'* (BC17)

*'Cows get very sick when they eat pasture sprayed with pesticides but it is not profitable to convert to organic production.'* (DC8)

#### Businessmen

*'We have too many cows but not enough land to maintain them hence we have to rent more land for the cattle, so we rent land in an area nearby to Leon [called 'Las Brañas', distanced pastures located just outside Galicia at an altitude between 1,000 to 1,300 metres where cattle can stay from the end of April to the end of November, AOT]. It is around eight hours from here by foot.'* (BC16)

*'If you have a good income but do not know how to manage it then the farm will have financial problems, so it will collapse. [...] I used to take the cattle to Las Brañas but I consider it too far and too much time consuming so I now rent land nearby my farm.'* (BC19)

*"It is important to re-invest in the farm the money you get."* (BC20)

#### Economical farmers

*"I try not to use pesticides unless is something indispensable, this pesticides are not good for the environment, health nor the animals. I prefer to lose a potato rather than to eat it with sulphates. In the case of animals it is a bit different, if they are sick I prefer to give them the antibiotic instead of let the animal die"* (BC22).

*'[The Vianesa breed, an autochthonous cow breed PS] survives better in our conditions: they do not get sick and do not need much attention nor involve extra work.'* (BC22)

Box 1 provides illustrations on how farmers in the different groups express their relationship to landscape and nature, and how they valorise ecosystem services. Supportive services, so as closing nutrient cycles and improvement of the soil quality, are negatively affected by conventional farmers, for example farmers BC17 and DC8, but positively affected by economical farmers, so as farmer BC22. A supportive service like the conservation of genetic farm animal biodiversity so as provided by farmers B012 and BC22 relates to an optimisation strategy in which soil quality and fertility is related to *how* animals benefit from e.g. grassland conditions, and involves the use of resistant breeds, i.e. breeds that are better adapted to marginal, mountainous grassland areas. An example of a socio-cultural service is expressed by farmer B012, who says his optimisation strategy is inspired on natural production processes and limits, and relates his farm management for example to recreational values, community building, and aesthetic landscape (assets that go into the category of socio-cultural services, and can turn into value added to the primary production of beef). This also relates to the hedges and trees that are of use to farmer DC9 whilst these landscape elements next to socio-cultural services also represent regulating services (they hold the potential to reduce erosion and the runoff of nutrients from the fields, attract insects that are beneficial to control pests, diseases, and pollinators, and provide natural shelter to the animals). The reflection on the styles in terms of ecosystem services provides first insights in how some styles better than others provide ecosystem services, and how these benefit the farmer as well as provide goods and services to society. How farming styles interrelate and/or produce ecosystem services, however, remains subject of further analysis and future research.

In the dairy and beef cattle production practice of farmers in the sample the elements in the traditional landscape are recognised but of the 24 farmers the diversifying farmers provided the most detailed description of the values. Next to supporting services like soil fertility and animal biodiversity they frequently mentioned the provisioning of socio-cultural services so as traditional houses and buildings, stone wall structures, and hedgerow landscapes in relation to provisioning services (in this research limited to food production). However, there is not a strict distinction between ecosystem services provisioning between the farming styles.

From the Box we can learn that ecosystem services are produced in all farming styles but the interrelations with landscape and nature are less emphasized by the conventional farmers. Further, in the interviews we noticed a general trend of accessing land nearby the farm (a parameter that in the Galician context of small, scattered plots is not often the case). For example, one of the large-scaled dairy farmers said he would reduce the number of cows and would downscale the production size in relation to the land available around the farm (saving on transport costs of the grass to the stable) and process the milk on the farm, and in this way realise value added per kg of milk. A conventional beef producer had the opportunity to rent land close to the farm, and consequently had no longer to bring his cattle to the more distanced land higher in the mountains. Although turning higher situated mountainous, marginal areas from forestall use into pastures limits the risk on forest fires, and can be interpreted as regulating service, there is trend that without subsidies this remains a costly strategy, especially in terms of time (for example the time to take the cattle to the land and the time to reach the land to control the cattle).

In the interviews farmers expressed the balance between land and animals to be a major factor in the viability of their farm business. This is both expressed in the relation between the number of animals and available farmland as well as the grassland conditions in relation to the breed. Here we carefully observe an attempt to turn nature's functions into societal value, which is capitalised by the farmers through selling quality products and/or e.g. starting agro-tourism activities but could be further supported through policy measures.

### *Policy implications*

Although rural economies diversify, and secondary and tertiary activities (services, tourism, SMEs, technology, and industries) become important for the economy and jobs, primary activities (agriculture and forestry) still determine land-use. Farmers have different values and goals that result in the constitution of different practices. These practices, each developing in relation to ideas and motivation of the farmer and the linkages of the farm practice to markets, technology and administration and policy frameworks, can be classified in farming styles, which relate differently to the provision of ecosystem services.

In a context in which production subsidies gradually diminish and objectives of European policies shift towards promoting a more balanced and more sustainable territorial development, farmers are challenged to develop new, competitive business opportunities. The first results of the identification of perceptions and attitudes among dairy farmers and beef cattle breeders in Galicia on their ability to adopt strategies that respond to this challenge exhibit that farmers value the provision of ecosystem services positively. Further analysis of the data should further deepen the interrelations between farming styles and the provision of socio-cultural services so as recreational values, community building, and aesthetic qualities.

We carefully draw the conclusion that programmes and projects that would further encourage the provision of ecosystem services, landscape conservation in particular, might enhance the further development of land management that result in improved market opportunities for locally produced and processed (food) products.

Future research on the interrelations between farming styles and the provision of ecosystem services can highlight what type of farmers can deliver nature's function to human society: are these larger, industrial farms, smaller-scaled farms, or does the provision of ecosystem services depend on other factors than size and scale?

Further, future research should clarify how the provisioning of ecosystem services, translated into goods and services, contributes to wider rural development objectives, or in other words, an adequate territorial balance.

- How is EU Regulation 1305/2013 (supporting farm diversification strategies and improvement of environmental performances) translated into local development, i.e. territorial cohesion?
- To what extent does EU Regulation 1307/2013 (the new system of first pillar multiple-purpose payments) enable territorial cohesion in practice?
- To what extent does the Galician RDP provides starting points for a more sustainable land-use in relation to the development of competitive farm business strategies?

## References

- Bolund, P. and Hunhammar, S. (1999). Ecosystem services in urban areas. *Ecological Economics* 29(2): 293-301
- Braat, L. C. and de Groot, R. (2012). The ecosystem services agenda: bridging the worlds of natural science and economics, conservation and development, and public and private policy. *Ecosystem Services* 1(1): 4-15
- Brodts, S., Klonsky, K. and Tourte, L. (2006). Farmer goals and management styles: Implications for advancing biologically based agriculture. *Agricultural Systems* 89(1): 90-105
- Domínguez García, M. D. (2007). *The way you do, it matters: A case study: Farming economically in Galician dairy agro ecosystems in the context of a co-operative* (Doctoral dissertation). Wageningen University, Wageningen, the Netherlands
- Domínguez García, M.D., Swagemakers, P., Wiskerke, J.S.C. and Simón Fernández, X. (2015). Constituting connections and rural revitalization in 'the Comarca de Verín', Galicia (Spain). Pp. 91-106 in: Globalization and Europe's rural regions. J. McDonagh et al. (eds.). Ashgate, Aldershot
- Frantzi, S., Carter, N., and Lovett, J. (2009). Exploring discourses on international environmental regime effectiveness with Q methodology: A case study of the Mediterranean Action Plan. *Journal of Environmental Management* 90(1): 177-186
- Jongerden, J., Swagemakers, P. and Barthel, S. (2014). Connective storylines: a relational approach to initiatives in food provisioning and green infrastructures. *Spanish Journal of Rural Development V (Special 1)*: 7-18.
- Marsden, T. (2003). *The condition of rural sustainability*. Van Gorcum, Assen.
- Prager, K. (2010). Local and regional partnerships in natural resource management: the challenge of bridging institutional levels. *Environmental Management* 46: 711-724
- Rodríguez-Pose, A. (2008) The rise of the "city-region" concept and its development policy implications. *European Planning Studies* 16(8): 1025-1046
- Shucksmith, M. (2010). Disintegrated rural development? Neo-endogenous rural development, planning and place-shaping in diffused power contexts. *Sociologia Ruralis* 50(1): 1-14.
- Swagemakers, P., Domínguez García, M.D., Simón Fernández, X. and Wiskerke, J.S.C. (2012). Unfolding farm practices: Working towards sustainable food production in the Netherlands and Spain. *Journal of Agriculture, Food Systems, and Community Development* 2(2): 1-17
- Swagemakers, P., Milone, P. and Ventura, F. (in print). Resilient farmers' strategies and policy regulations. The quest for modernization on Dutch and Italian dairy farms. Pp. 322-338 in: Agroecological transitions. Changes and breakthroughs in the making. B. Elzen et al. (eds.). INRA, Paris
- Van der Ploeg, J.D. (2003). *The virtual farmer: past, present, and future of the Dutch peasantry*. Van Gorcum, Assen
- Wiskerke, J.S.C. (2009). On places lost and places regained: reflections on the alternative food geography and sustainable regional development. *International Planning Studies* 14(4): 369-387