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Typologies of organic beef farms in Catalonia

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Abstract. Organic livestock farming is going through remarkable increase in the last decades in Europe. This is also the case in Catalonia. However, little work has been done explicitly on the characteristics of the livestock farms undertaking to organic production. In order to filling this lacuna, the nature of organic beef farms has been examined in Catalonia. In 2008 structured interviews to farmers were conducted (n=37, being 16% of the total number of organic beef farms) and data was submitted to PCA and Cluster Analysis. The aim of this study is to characterise the organic beef farms to disclose the different management and adjusting strategies being carried out. Three typologies of organic beef farms have been distinguished: a first group characterised by young farmers with an intensive management (24%); a second group of motivated farmers to produce organically that have the continuity of the farming activity guaranteed (27%); and finally a third group of discouraged farmers that see their continuity threatened (49%). Results suggest that half of the organic beef farms in Catalonia convert to organic production mainly for financial reasons, to continue with the farming activity.

Keywords. Farm typologies – Livestock farming – Calf fattening – Calf rearing.

Typologies de fermes de bœuf biologique en Catalogne

Résumé. L'élevage biologique connaît une augmentation très importante ces dernières années en Europe. C'est également le cas en Catalogne. Cependant, peu de travaux ont été faits explicitement sur les caractéristiques des exploitations d'élevage qui entreprennent la conversion à la production biologique. Afin de combler cette lacune, la nature des exploitations de bœuf biologique a été examinée en Catalogne. En 2008, des entretiens structurés ont été menés auprès des éleveurs (n = 37, soit 16% du nombre total d'exploitations de bœuf biologique) et des données ont été soumises à l'ACP et Analyse Cluster. L'objectif de cette étude est d'analyser les attributs des fermes de bœuf biologique pour révéler les différentes stratégies d'ajustement et de gestion existantes. Trois typologies ont été découvertes : un premier groupe caractérisé par la jeunesse de ses éleveurs et la gestion intensive (24%) ; un deuxième groupe d'éleveurs motivés pour la production biologique dont la continuité de l'activité agricole est garantie (27%) ; et enfin un troisième groupe d'éleveurs découragés qui voient leur continuité menacée (49%). Les résultats suggèrent que les subventions à l'élevage biologique de bœuf œuvrent souvent en tant que dernière option pour poursuivre l'activité agricole.

Mots-clés. Typologies des fermes – Élevage – Engraissement de veaux – Élevage de veaux.

I – Introduction

Organic beef farming is an emergent option in Catalonia. The number of organic beef farms has been steadily increasing in the last years, from 7 in 1995 to 226 in 2008. This growth, enhanced by the EU agri-environmental subsidies, goes jointly with a rising interest in the consumer side. In Catalonia 64% of the population has consumed organically-labelled products at least once, and 25% do it usually (Institut Cerdà, 2007). However, it is still a non-consolidated form of production, as shown by several shortcomings, such as the existence of inappropriate

commercialisation channels (Panella *et al.*, 2009) and remarkable degrees of shifting towards the conventional mode of organic calves and meat (López-i-Gelats *et al.*, 2009). More accurate understanding about the organic beef farming is required to enhance this alternative meat production system. In line with this, the objective of this study is to characterise the typologies of farms that are devoted to organic beef farming in Catalonia.

II – Materials and methods

A total of 37 structured interviews to organic beef farmers, chosen randomly, were conducted in 2008. The surveyed farms comprised 16% of the total organic beef farms in Catalonia. The interview was designed to collect data on herd composition, land size and management, dynamism and continuity of the farm, labour and farmers' motivations for adopting organic farming. A combination of Principal Components Analysis (PCA) and Cluster Analysis was conducted. This is a common method to explore farm characteristics and distinguishing farm typologies (Gaspar *et al.*, 2008; Ruiz *et al.*, 2008; Riedel *et al.*, 2007; Milán *et al.*, 2006). First, PCA was applied to reduce the initial 40 variables obtained from the interviews to a set of new factors. The "eigenvalue-greater-than-1" criterion was employed and 10 factors were preserved, which retained 82% of the total explained variance. Then, a Cluster Analysis was carried out to group farms in different typologies according to their homogeneity. The differences between the groups of farms identified were checked using ANOVA. Significant difference was found in 12 variables (Table 1). All statistical analyses were conducted with the software package SPAD 5.5 (SPAD 5.5 1996).

Table 1. Variables found significant for the description of typologies of organic beef farms in Catalonia

Codes	Description
LUC	Number of livestock units of cattle
NFATCALV	Total of fattened calves
SUPGCSELF	Area devoted to grain cereals for self-consumption (ha)
FODDERBUY	Total amount of purchased fodder (kg)
CONCENTRBUY	Total amount of purchased concentrate (kg)
IDEP	Index of farm dependence is an ordinal variable about the lack of autonomy. It is the sum of several practices (labour, machinery and building hire, non-agricultural sources of income, organic farming subsidy, and chemical input and feedstuff buying). It goes from 0 to 5
IDYN [†]	Index of farm dynamism is an ordinal variable indicating degree of innovativeness. It is the sum of some technologies adopted (>120 hp in mechanisation; irrigation, sowing, fertilising, use of chemical inputs, improved livestock breeds, silage and fattening). It goes from 1 to 6
ICON	Index of farm continuity is an ordinal variable showing the chances to maintain the farming activity, based on a set of attributes (economic centrality of farming, >1 annual work units, >20 livestock units, succession, >50 hp in mechanisation,). It goes from 0 to 5
AGE	Farmer age
HP	Total power (hp)
ORGFARMSAT	Degree of satisfaction with the organic farming subsidies, from 4 being fully disagree and 0 being fully agree
INCO	Index of organic fitness is an ordinal variable indicating to what extent the farm works according to the standards of organic production. It is expressed by the number of the following practices undertaken: organic fattening, use of organic slaughter, organic beef sale, all fodder purchased is organic, and all grain purchased is organic. It goes from 0 to 5

Note: It should also be noted that the variables about farmland do not include the communal alpine land, as a consequence of the difficulty on measuring the exact area employed by every single farm. Anyway, all farms use this resource similarly in summer.

[†]Based on indices developed by Riedel *et al.* (2007).

III – Results and discussion

Three typologies of organic beef farms have been distinguished (Table 2). The first group, with 24% of the farms, is constituted by cereal and more-mechanised calf-rearing farms that are run by young farmers. The second group, with 27% of the farms, is comprised by calf-fattening and highly-motivated farmers to produce organically, who see the continuity of the farming activity guaranteed and are highly dependent on the purchase of both fodder and concentrate. The third farm typology, with 49% of the farms, consists of those farmers less motivated to produce organically that run small and poorly-mechanised calf-rearing operations. Although this latter typology represents half of the total organic beef farms, their continuity is plainly threatened.

Table 2. Characterisation of the typologies of organic beef farms identified in Catalonia

Variables	Farm typology's mean	Overall mean	P-value
Farm typology 1 (n = 9)			
IDIN2 (from 1 to 6)	4.7	3.0	***
SUPGCSELF (ha)	4.8	1.2	***
HP (hp)	176.7	123.9	**
FODDERBUY (kg)	888.9	14598.4	**
AGE (years)	33.0	42.9	**
Farm typology 2 (n = 10)			
FODDERBUY (kg)	42777.8	14598.4	***
LUC (livestock units)	133.3	67.3	***
CONCENTRATEBUY (kg)	32466.7	11594.4	***
NFATCALV (calves)	50.2	21.4	***
IDEP (from 0 to 5)	3.6	2.6	**
ICON (from 0 to 5)	4.0	3.0	**
INCO (from 0 to 5)	3.2	2.2	**
ORGFARMSAT (from 0 to 4)	1.3	2.1	**
Farm typology 3 (n = 18)			
CONCENTRATEBUY (kg)	2405.6	11594.4	**
LUC (livestock units)	34.8	67.3	***
INCO (from 0 to 5)	1.3	2.2	***
HP (hp)	80.9	123.9	***
NFATCALV (calves)	2.0	21.4	***
ICON (from 0 to 5)	2.1	3.0	***
IDYN (from 1 to 6)	1.8	3.0	***

** : $p < 0.01$; *** : $p < 0.001$. See Table 1 for description of variables.

IV – Conclusions

Half of the organic beef farms in Catalonia, as also observed in other regions (Evans, 2009; Hörning *et al.*, 2008), are adopting organic farming only for financial reasons to continue

farming. This situation raises a double question that requires further investigation: first, the subsidies for organic production seems not to be a well-fitted measure to enhance farms with survival problems; and second, a large percentage of the subsidies for organic production are invested in farms that are inadequately integrated in the cycle of organic production, distribution and consumption.

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