

## Pluriactivity and professionalism in buffalo farming system of a High Nature Value farming area in northern Greece

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### Abstract

The relation of pluriactivity and professionalism with the buffalo (*Bubalus bubalis*) farming system was investigated based on statistical analysis of standardized questionnaires and in-depth interviews conducted at the Municipalities of Sintiki and Irakleia, Serres in northern Greece during 2011. In this NATURA 2000 area, 2492 buffaloes (80% of the whole country's buffalo population) are raised. The data was processed by Pearson test ( $p \leq 0.05$ ). In this paper, a distinction between complementary and total pluriactivity is proposed. It was found that buffalo breeders who are not oriented to milk production seem to have enough time to invest in agriculture (-0.540). The implementation of other husbandry -namely goat or sheep breeding simultaneous to buffalo- appears to be compatible with any other activity. Commerce (marketing of buffalo products to end users) tends to be encouraged by the use of agricultural land (for the establishment of temporary pastures and fields that are grazed by buffaloes after crop harvesting during summer) for buffalo breeding (0.555). Agriculture strongly appears to be an alternative occupation (0.789), while commerce seems to be incompatible with professionalism (-0.471). Breeders who feel "professionals" are mainly family employees (0.491) with a long family tradition (0.553). Professionalism does not become weaker in case of small buffalo herds or in case of simultaneous sheep breeding, but only in case of simultaneous breeding of goats (-0.540). The ownership status of agricultural land used for buffalo breeding does not seem to influence professionalism.

**Key words:** Buffalo production system, alternative activities, Natura 2000

### Introduction

Buffaloes (*Bubalus bubalis*) have been an integral part of livestock agriculture in Greece from the beginning of 20<sup>th</sup> century. Due to the mechanisation and intensification of agricultural production and also to the substitution of buffalo milk by milk produced by imported-improved dairy cattle, the number of buffaloes has been dramatically decreased during the last decades. Specifically, from the 70000 animals counted at the end of 50s, today only 3128 heads remain (CLGI 2011). The majority of this population, 2520 heads, is concentrated in the Municipalities of Sintiki and Irakleia, Serres, in northern Greece. Moreover, this area belongs to NATURA 2000 and is categorized in High Nature Value farming areas according to

IRENA-Indicator No. 26. For these reasons the area was selected to be studied.

The buffalo farming system is based on the utilization of rangelands and reflects more or less the sedentary extensive system of small ruminants, which has already been described by Yiakoulaki et al. (2003) and Evangelou et al. (2008). Under this system the animals have a permanent base, usually located near the farmer's village, from where they move every morning to rangelands and return at night. Buffaloes graze in rangelands for 6-7 months but they also utilize alternative forage resources, including temporary pastures of annual winter cereals during early spring and crop residues during summer-early autumn (Tsiobani et al. 2012). In addition, farmers make extensive use of purchased feedstuffs, mainly roughage and concentrates, during the entire period of the year. Buffalo herds are pure and they are permanently herded. They are raised for milk and meat purposes (Georgoudis et al. 1998). Milk is used for the production of cream, cheese, butter and yoghurt while meat and its products (minced meat, burgers, sausages and «kavourmas») reaches the end users at butcher shops, local or not.

Pluriactivity is a term commonly used across Europe and is defined as the phenomenon of farmers to have another gainful activity that can be a diversification of the holding or an activity not related to the farm that can take place on or off the farm (Evans and Ilbery 1993).

Professionalism has been defined as the perception of buffalo breeding as main occupation. This definition of professionalism as a feeling constitutes the most acceptable (or the least vulnerable) approach as any possible socio-technical dimension of such a notion may always be considered as inadequate (Paddock 1986). In general, data concerning pluriactivity and professionalism of livestock farming in Greece are very limited and there is no data about buffalo breeders. Such knowledge is an important tool for land managers and policy makers to promote an integrated sustainable development of the rural areas.

In this paper, the relation of pluriactivity and professionalism with the buffalo farming system was investigated in the Municipalities of Sintiki and Irakleia, Serres, in northern Greece.

## **Materials and methods**

The research was conducted with all breeders at 8 districts of Sintiki's Municipality and 2 districts of Irakleia's Municipality, Serres, in northern Greece during 2011. The climate of the area is characterized by dry-hot summer and cold winter. Mean annual precipitation is 450 mm and mean

annual temperature is 15°C. The dominant woody species are *Fagus sylvatica*, *Acer monspessulanum*, *Quercus coccifera*, *Paliurus spina-christi*, *Carpinus orientalis*, *Phillyrea latifolia*, while the most common herbaceous species are *Chrysopogon gryllus*, *Briza media*, *Bromus arvensis*, *Lathyrus laxiflorus*, *Genista carinalis* and *Lotus angustifolius*.

The study was based on standardized questionnaires and in-depth interviews with the census population (N=17) of buffalo breeders of the area (Bryman 2001). The questions concerned the farms' and farmers' characteristics and the other entrepreneurial activities. The data was processed by Pearson test ( $p \leq 0.05$ ).

As the present research has a more specific focus on buffalo farming system, it is purposeful to define pluriactivity at intra-farm or directly farm-related level. Therefore, pluriactivity has been more specifically operationalized as follows: a) "complementary pluriactivity" refers to buffalo breeding independent of whether it is exercised as main occupation and is defined as the number of the other entrepreneurial activities, such as agriculture, other husbandry –namely goat or sheep breeding simultaneous to buffalo– and commerce of buffalo products to end users, b) "total pluriactivity" is the number of entrepreneurial activities mentioned above plus buffalo breeding as main occupation.

## Results and Discussion

As presented in Table 1, in the case of complementary pluriactivity, the other husbandry seems to be slightly more preferable (0.708) than the other components (agriculture and commerce of buffalo products to end users) which appear to be of similar importance (0.594 and 0.523, respectively). On the contrary, in the case of total pluriactivity, agriculture and other husbandry seem to be of similar importance (0.683 and 0.646), while commerce has no significance (0.280). This is understandable provided that agriculture and other husbandry as well as buffalo breeding as main occupation are markedly time consuming and profitable. Thus, they do not encourage the commerce of buffalo products to end users. The private ownership status of agricultural land, used for the establishment of temporary pastures and fields that are grazed by buffaloes after crop harvesting during summer, tends to enhance the development of commerce of buffalo products (0.555).

Agriculture is mainly considered to be an alternative occupation (0.789) and buffalo breeders who are not oriented to milk production (-0.540) seem to have enough time to invest in agriculture.

**Table 1.** Dimensions of pluriactivity in buffalo farming system in northern Greece

	Exercising agriculture (no=0, yes=1)		Exercising other husbandry (no=0, yes=1)		Exercising commerce (no=0, yes=1)	
	Pearson coefficient	Sign.	Pearson coefficient	Sign.	Pearson coefficient	Sign.
Complementary pluriactivity (cp: fluctuating between 0 to 3) [apart from buffalo breeding, cp is defined as cp = agriculture (no=0, yes=1)+other husbandry (no=0, yes=1) + commerce (no=0, yes=1)]	0.594(*)	0.012	0.708(**)	0.001	0.523(*)	0.031
Total pluriactivity (tp: fluctuating between 1 to 4) [tp= cp + buffalo breeding as main occupation (no=0, yes=1)]	0.683(**)	0.003	0.646(* *)	0.005	0.280	0.277
Using private agricultural land (no=0, yes=1)	-0.040	0.879	0.251	0.332	0.555(*)	0.021
Exercising alternative occupation (no=0, yes=1)	0.789(**)	0.000	0.203	0.436	0.203	0.436
Developing buffalo milk production (no=0, yes=1)	-0.540(*)	0.025	-0.139	0.596	0.451	0.069

\* Correlation is significant at the 0.05 level (2-tailed) \*\* Correlation is significant at the 0.01 level (2-tailed)

In Table 2, the number of buffaloes is irrelevant (0.370 insign.) to the feeling of professionalism for buffalo breeders, though it would be expected to be an important quantitative determinant. Furthermore, the simultaneous sheep breeding does not contradict to the development of feeling of professionalism in buffalo breeding (-0.430 insign.). However, buffalo breeders who simultaneously keep goat flocks, seem to feel less professional in buffalo breeding (-0.540). This finding can be attributed to the higher net income that goats provide to the farmers compared to sheep

(Kitsopanidis et al. 2009). The ownership status of agricultural land (private or rented) used for buffalo breeding does not seem to influence professionalism.

**Table 2.** Determinants of professionalism in buffalo farming system in northern Greece

	Professionalism	
	Pearson coefficient	Significance
Farm characteristics		
Number of buffaloes (from 21 to 467)	0.370	0.144
Number of sheep (from 0 to 480)	-0.430	0.085
Number of goats (from 0 to 20)	-0.540 (*)	0.025
Rented agricultural land (no=0, yes=1)	0.387	0.125
Private agricultural land (no=0, yes=1)	-0.378	0.134
Farmer characteristics		
Number of family employees (from 1 to 2)	0.491 (*)	0.045
Family tradition (Number of breeders' generations fluctuating from 1 to 4)	0.553 (*)	0.021
Personal initiative (no=0, yes=1)	-0.627 (**)	0.007
Other entrepreneurial activities		
Agriculture (no=0, yes=1)	0.190	0.464
Commerce (no=0, yes=1)	-0.471 (*)	0.056

\* Correlation is significant at the 0.05 level (2-tailed) \*\* Correlation is significant at the 0.01 level (2-tailed)

The number of family employees (0.491) as well as the family tradition in buffalo breeding (0.553) seems to strengthen the perception of buffalo breeders as main occupation. On the contrary, those who have started this activity by personal initiative can hardly perceive it as main occupation (-0.627). Thus, the feeling of professionalism is inspired by family rather than developed by personal interest.

Agriculture seems to be compatible with buffalo breeding (0.190 insign.), while buffalo breeders who deal with commerce can not consider themselves (-0.471) as pure breeders.

## Conclusions

In this paper a distinction between total and complementary pluriactivity is proposed depending on including (or not) buffalo breeding as main occupation. Particularly, complementary pluriactivity seems to

encourage the development of commerce, in contrast to total pluriactivity which appears to prevent it. In other words, the strict commitment to buffalo breeding as main occupation is a restriction rather than a basis for a sound entrepreneurial extension and effective diversification of rural economic activities.

Concerning professionalism feeling, it is noticeable that the number of buffaloes is irrelevant to this. Therefore, qualitative parameters seem to be more important than quantitative ones. Detecting these qualitative parameters is a question for future research.

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