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# TRADITIONAL AGRICULTURAL PRACTICES IN SUCEAVA COUNTY, ROMANIA

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**Abstract:** *The present paper focuses on the agricultural practices of the dairy farms from Dornelor Basin, Suceava county, regarding grassland management, livestock feed, livestock disease management, aiming to evaluate the relationship between traditional and ecological practices, based on the expected increase in the near future of the ecological farming in the area. The scientific approach turns to a comparative analysis, based on a structured communication method – Delphi, involving 10 experts/local actors and to a large-scale farm survey applied to 52 dairy farms from the Dornelor Basin area. The results highlight a correlation between experts' opinion regarding the most important practices for defining an ecological farm and the traditional agricultural practices of the dairy farms from the study area, as these can be considered, to a high extend, to be ecological practices.*

**Keywords:** *farm's characteristics, traditional agricultural practices, ecological practices.*

**JEL classification:** Q01, Q57

## INTRODUCTION

Traditional agricultural practices represent an important component of the traditional farming/agricultural landscapes that are becoming more and more important at European level, as part of the efforts towards conservation of biodiversity. In general, these landscapes are present at the level of different regions where farming practices have changed little over the time, holding a high conservation value. (Fischer et al., 2012). At the same time, these landscapes hold an important cultural and historical value, based on the preservation of small-scale structure and typical agrarian landforms (Špulerová et al., 2017). During the last decades, these landscapes have been under constant pressure, due to both intensification of agriculture and abandonment of unprofitable land (Halada et al., 2011); in addition, some mixed farming structures, combining different historically, culturally and regionally characteristics have become rare, and in some European regions have disappeared (Slámová and Belčáková., 2019). The traditional land-use systems/ landscapes remaining are mainly found at higher altitudes/ remote areas, where physical constraints have limited the modernization of agriculture (Lieskovsky et al. 2014, Tryjanowski et al., in Špulerová et al., 2017).

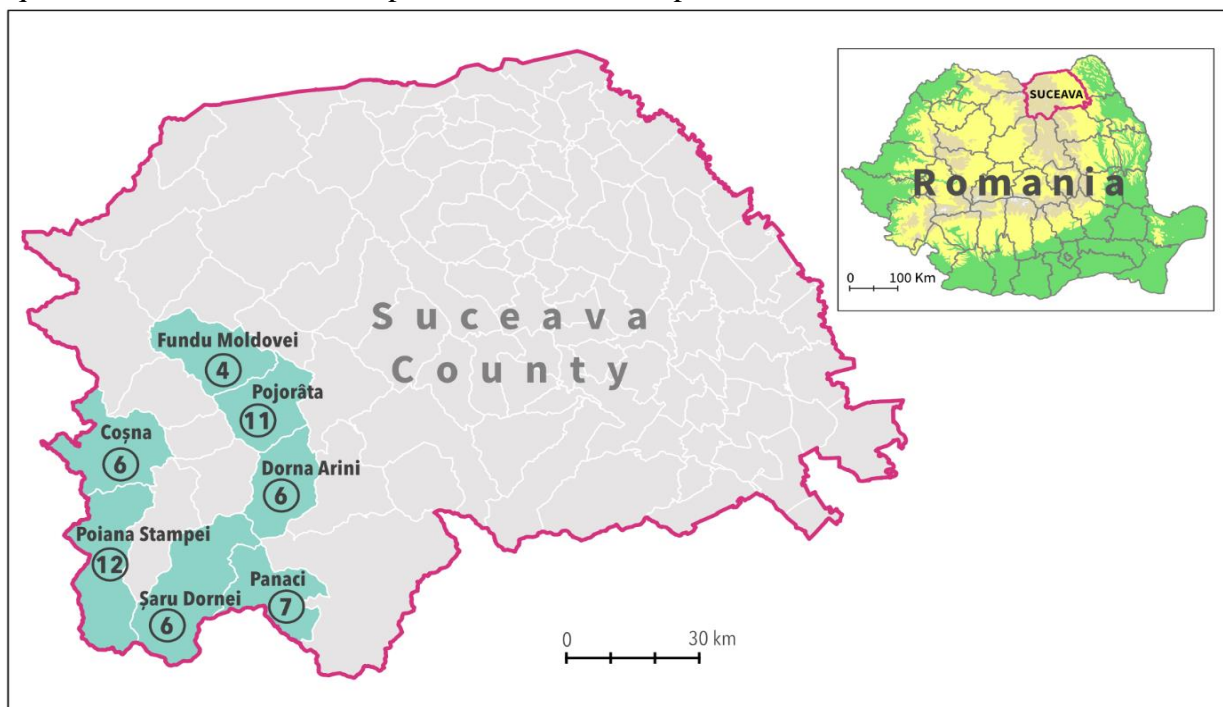
The traditional agricultural practices, as part of these complex systems, are regarded, by some scholars, as having an ecological nature, based on a mix of social and economic characteristics such as mixed livestock, cropland and forestry systems, a high level of labor and a lower level of other inputs (like nutrients, mechanization and pest control chemicals), accumulation and transmission of local knowledge (Berkes et al., 2000). More so, they are considered to be associated with a rich knowledge of all aspects of sustainable food production, as farmers maintain local varieties for pest control, use local knowledge and agricultural traditions that form a strong connection with the environment. Taking a closer look at some of the traditional practices integral to organic farming (like manuring and covering crops, composting, low tillage, biological pest control) clearly highlights

a linkage to traditional farming systems (Sofia et al., 2006). This is also the starting point of our present work, namely to evaluate the connection between the traditional agricultural practices of the dairy farms from Dornelor Basin and the most important ones for defining an ecological farm, based on experts' opinions.

## MATERIALS AND METHODS

The paper turns to a comparative analysis, based on two methodological approaches, combining qualitative and quantitative analyses, aiming to highlight the link between experts' opinion regarding the farming practices that an ecological farm would use as opposed to a conventional one and agricultural practices deployed by dairy farms from the Dornelor Basin. The first one was a Delphi exercise, involving 10 experts from the area (researchers, civil servants, extension officers, farmers, food chain and NGO representatives) that was implemented in three stages: the first, was getting acquainted with the method and supplying information regarding the characteristics of ecological and conventional farms from the area; in this first stage, Delphi questionnaires for round I were sent to the 10 experts; in the second stage, a report containing the anonymized responses of expert was drafted and sent along with the questions from Delphi round II; a second report was drafted and sent along with the Delphi round III (Florian et al., 2021). After the final round was completed, a report was drafted and presented to the experts who participated at this Delphi exercise.

The second approach was based on a large-scale farmer survey, applied to dairy farms from Dornelor Basin area, based on a questionnaire with multiple sections: general characteristics of the farm and farmer, current and future production practices, drivers of practices' adoption as well as contracting / future policies. In total, 52 farms were investigated in the following communes from the Romanian case study area: Fundu Moldovei, Poiana Stampei, Coşna, Dorna Arini, Panaci, Pojorâta and Şaru Dornei. A centralized database was created, containing all the information collected through the questionnaires. The data was processed with the help of SPSS software.



**Figure 1. Romanian case study area (number of questionnaires/commune)**

Source: authors' processing based on farmer survey database

The second section of the questionnaire applied to the dairy farms specifically targeted the current and future production practices, as regards pest and plant disease management, weed management, fertilization and soil management, grassland management, livestock feed and disease management and livestock location. Together with the Delphi exercise, this section represents the main data source for this present comparative analysis. Both methodological approaches (Delphi and the large-scale farmer survey) were elaborated within the H2020 LIFT project – “Low input farming and territories” and were applied in different case study areas at European level.

## RESULTS AND DISSCUSION

The main objective of the present study was to identify the agricultural practices that dairy farms from Dornelor Basin are relying on in their specific activities and to evaluate the possible link with agricultural practices that an ecological farm would use. In this context, firstly, we turn to the Delphi exercise, where 10 experts from the Romanian case study area (Dornelor Basin, Suceava county) were invited to evaluate different aspects referring to ecological farms’ characteristics, compared to those of conventional farms. During the first stage, the experts participating at this exercise were asked to rank 12 agricultural practices that are most important for defining an ecological farm. Experts’ answers led to a strong consensus on the utilization of traditional agricultural practices, of local inputs (mainly organic inputs such as manure), with no chemicals and limited use of mechanical works.

**Table 1. Agricultural practices that are most important for defining an ecological farm  
(From the most to the least important)**

<b>Practices – hierarchy</b>	<b>Mean rank (where 12 is the most important)</b>	<b>% of respondents who have chosen this practice as the most important</b>
Use of organic manure or compost	11.29	80%
Integration of crop and livestock at farm level	10.00	10%
Strip grazing	8.43	
Alternative remedies for livestock disease management	7.43	
Extensive use of cover crops	6.64	
Number of crops	6.00	10%
Low tillage use	5.64	
Integrated Weed Management	5.57	
Precision technologies	5.29	
Integrated Pest Management	5.00	
Manual weeding	4.71	
Machine weeding	2.00	

Source: authors’ processing based on the Delphi exercise

Experts’ opinions on the farming practices that an ecological farm would use, compared to a conventional farm, support the hierarchy of the most important practices for defining the ecological farm, resulting from the processing of results from Delphi Round I.

Thus, there is a general consensus in ranking on the first place the use of organic fertilizers (manure and compost – 80% of respondents consider that this practice is the most important) in the

ecological farming activities in Dornelor Basin; this is followed, depending on the average rank (on a scale from 1 to 12, where 12 is the most important practice) by the integration of crops and livestock at farm level and by strip grazing:

- *” The farming practices that would be suitable on the ecological farm, as opposed to conventional farm, are those that are the closest possible to traditional, manual practices, giving up chemical inputs and using ecological inputs”- participant in Delphi Round I*

- *” Low tillage use, use of organic fertilizers (manure or organic compost), manual weeding” - participant in Delphi Round I*

- *” In ecological farming, livestock raising is indispensable. Cattle are important in terms of production, for grazing and obtaining fertilizers”- participant in Delphi Round I.*

- *” In Dornelor Basin, traditional farming practices are used on livestock farms, where livestock raising, mainly dairy cows, is an occupation inherited from ancestral elders. The ecologically certified farms, few in number, comply with the ecological farming principles. In their activity no chemical fertilizers are used, and animal treatments are performed with drugs accepted in ecological agriculture. ”- participant in Delphi Round I*

Also, a strong agreement is reached by participants with regard to using natural products to replace the use of chemical inputs in agriculture; all participants considered that this process is feasible on the farms in the study area, i.e., Dornelor Basin. This consensus is also extended to the level of types of practices identified by participants, most participants considering that the use of local organic resources for fertilization (manure and compost produced on the farm) is the most convenient ecological practice for farmers in the area:

- *” Composting the crop residues and manure is useful in obtaining a quality fertilizer, which, depending on crop, can satisfy the nutritional needs of plants to a great extent” – participant in Delphi Round I;*

- *” Increasing and maintaining soil fertility through adequate and very rigorous agro-technics, which involves the use of non-mechanical means to maintain the pastures and the application of organic fertilizers (fermented manure, dry manure, manure compost, liquid animal dejections, composted or fermented household waste, peat - domestic waste – participant in Delphi Round I;*

- *” Livestock and poultry manure, composted, solid manure, poultry manure inclusively – participant in Delphi Round I.*

- *” In Dornelor Basin chemical inputs have not been used for many years, as there are no agricultural crops and only manure is applied on natural pastures” – participant in Delphi Round I.*

Experts' opinions from the Dornelor Basin area, regarding the most important agricultural practices for defining an ecological farm, are supported by various researches that highlight the importance of different agricultural practices, like using manure and compost, cover crops, rotation as a requirement for a sustainable agriculture system (Francis and Porter, 2011), but also the positive influence of using organic fertilizers on soil fertility at a biological, chemical and physical level (Gomiero et al., 2011).

With this in mind, we now turn to the second methodological approach, the large-scale farmer survey applied in Dornelor Basin, Suceava County, in order to identify the main agricultural practices of the investigated dairy farms. In total, 52 questionnaires were filled out in 7 communes from the case study area.

**Table 2. Some general characteristics of the farmers and the farms**

<b>Farmers' characteristics</b>	
Average age of farmers – respondents	49.9 years
Average number of years of agricultural experience – respondents	27 years
Education level – respondents (% in total number)	
No schooling	3.9%
Middle or secondary school	21.6%
High school – agricultural	9.8%
High school - non agricultural	23.5%
University – agricultural	9.8%
University – non agricultural	31.4%
<b>Farms' characteristics</b>	
Average Utilized Agricultural Area - ha	12.94
Average permanent grassland area – ha	12.86
Average permanent grassland area with pure pastures (only grazed) - ha	8.79
Average number of dairy cows	6.5
Average number of calves for fattening	3.9

Source: authors' processing based on the farmer survey database

Respondents' characteristics highlight an important agricultural experience of farmers from the case study area, as well as a significant share of higher education and high school levels, around 20% having a background in agricultural area. As regards the agricultural landscape, due to the geographical particularities of the case study area (hilly and mountain region), this is clearly dominated by the presence of permanent grassland area, with various functions: as areas with pure meadows (only cut), pure pastures (only grazed), strip grazing pasture and mixed use.



**Figure 2. Agricultural landscape, Dornelor Basin, Suceava county**

Source: Mihai Alexandru Chițea, 2019

Moving on to the agricultural activities, the second section of the large-scale farmer survey concentrated on the present and future production practices, in our case of dairy farms. Beside the types of practices, the data also refer to the moment when these practices began being used by farmers, the origin of the inputs and the future envisaged as regards the change of the practices in the next 5 years.

**Table 3. Agricultural practices of dairy farms from Dornelor Basin**

<b>Grassland management</b>	
Application of inorganic fertilizers	0% of farms
Application of animal manure	100% of farms
Application of compost	7.7% of farms
Mowing	90.4% of farms
Reseeding	19.2% of farms
<b>Pest and plant disease management</b>	
Chemical products allowed by organic regulations	1.9% of farms
Biological control (beneficial predators/ pheromones/ traps)	3.8% of farms
<b>Livestock feed</b>	
Grazing on pasture	100% of farms
Strip grazing with dedicated pasture area	23.1% of farms
Conserved forage: silage	9.6% of farms
Conserved forage: hay	100% of farms
Grains	63.5% of farms
Beets	7.7% of farms
<b>Livestock disease management</b>	
Use of antibiotics only for treatment	71.2% of farms
Physical measures (separation, aeration)	34.6% of farms
Trait selection	26.9% of farms
<b>Livestock location</b>	
Local rotation around the farm	84.6% of farms
Seasonal movement (stay in summer rangelands, spend grazing on mountainous rangelands)	44.2% of farms

Source: authors' processing based on the farmer survey database

As regards grassland management, all farms from our sample declared that they are applying animal manure for organic fertilization, for the majority of them being something that they have been doing for more than 10 years, relying, mostly, as inputs, on their own farm, but also on other local resources (from neighboring farms and external sources). While 73% of farms declared that they will keep using this practice, 23% are inclined to increase its use in the next 5 years. Some other farms supplement the animal manure with compost, a practice newer to the area, but also based on internal inputs, with a strong plan to increase in the near future (25.5% of farms are interested in starting using this practice). At the same time, none of the farms is using inorganic fertilizers for grassland management.

Other traditional agricultural practices for grassland management are also used by the dairy farms from Dornelor Basin, like mowing and reseeded. Based on the topography of the area (slope areas), most of the work is carried out using manual labor, especially of family members. While this contributes to the preservation of old traditional practices, relying only very limited on mechanized

works, at the same time it leads to an increase work load for family members, many farms having major difficulties in attracting local/regional external work force.

**Table 4. Ecological versus traditional practices – Dornelor Basin case study area**

Experts' opinion regarding the most important practices for defining an ecological farm (hierarchy)	Traditional agricultural practices of dairy farms from the case study area
Use of organic manure or compost	Yes, all farms when it comes to manure; some of them also use compost, with a trend to increase in the future (own production).
Integration of crop and livestock at farm level	Yes, the majority of farms (when it comes to producing their own livestock feed - hay).
Strip grazing	Yes, most of the farms, some of them with dedicated areas.
Alternative remedies for livestock disease management	Yes, like physical measures and trait selection.
Other practices of the dairy farms from the case study area in line with ecological practices	Manual mowing, biological pest control, reseeded (own production), seasonal movement of livestock, relying mostly on locally produced inputs, no use of chemicals, very low level of mechanized works.

Source: authors' processing based on Delphi exercise and farmer survey database

Traditional agricultural practices that match the ones that an ecological farm would use also extend to other aspects like:

- pest and plant disease management – using biological control measures and only, when necessary, products allowed by organic regulations;
- livestock feed - relying mostly on grazing on pastures (with an average of 5,6 month spent outside by the dairy cows), strip grazing and local resources (84% of the farms relying only on their own production of hay, while some others turn also to neighboring farms);
- livestock disease management – using antibiotics prescribed by the veterinary doctor only in the case of a necessary treatment, physical measures – like separation of animals and aeration and trait selection;
- livestock location – using local rotation around the farm and seasonal movement (summer rangelands, grazing on mountainous rangelands) as part of the agricultural tradition of the case study area.

## CONCLUSIONS

The comparative analysis based on the experts' opinion from the Delphi exercise and the results of the large-scale farmer survey (dairy farms) from the Dornelor Basin, Suceava County, clearly highlights a strong overlapping between the agricultural practices that an ecological farm would use and the ones that have already been a tradition in the Romanian case study area, namely the use of locally produced inputs (organic fertilizers, livestock feed, local breeds etc.), manual labor (mostly of family's members), very low level of mechanized works and, maybe even important, of local traditional agricultural knowledge that has been passed from a generation to another that has been linked, organically, with the environment landscape where it has been evolving over time. This type of traditional way of practicing agriculture is now under an intense pressure induced by the



population aging in rural areas, lack of external labor force that can be hired and, least but not last, by the competition of large agrifood companies.

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## REFERENCES

1. Berkes F., Colding J., Folke C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications* 10(5), 1251-1262
2. Fischer J., Hartel T., Kuemmerle T. (2012). Conservation policy in traditional farming landscapes. *Conservation Letters* 5 (2012), 167-175. DOI: 10.1111/j.1755-263X.2012.00227.x
3. Florian V., Chițea M.A., Rusu M., Brumă I.S., Tanasă L. (2021). The future of the ecological farm: ten opinions and evaluations. Results of applying Delphi method. *Scientific Papers -” Agricultural Economy and Rural Development – Realities and perspectives for Romania”*, Volume 12, Issue 2021, 167-174
4. Francis C.A., Porter P. (2011). Ecology in sustainable agriculture practices and systems. *Plant Sciences*, Volume 30, Numbers 1-2, 64-73. DOI: 10.1080/07352689.2011.554353
5. Gomiero T., Pimentel D., Paoletti M.G. (2011). Environmental impact of different agricultural management practices: conventional vs. organic agriculture. *Plant Sciences*, Volume 30, Numbers 1-2, 95 -124. DOI: 10.1080/07352689.2011.554355
6. Halada L., Evans D., Romão C., Petersen J-E. (2011). Which habitats of European importance depend on agricultural practices? *Biodiversity and Conservation* 20, 2365-2378. DOI 10.1007/s10531-011-9989-z
7. Slámová M., Belčáková I. (2019). The role of Small Farm Activities for the Sustainable Management of Agricultural Landscapes: Case Studies from Europe. *Sustainability* 2019, 11, 5966, 1-22. DOI:10.3390/su11215966
8. Sofia P.K., Prasad R., Vijay V.K. (2006). Organic farming – Tradition reinvented. *Indian Journal of Traditional Knowledge* Vol 5(1), 139-142
9. Špulerová J., Bezák P., Dobrovodská M., Lieskovský J., Štefunková D. (2017). Traditional agricultural landscapes in Slovakia: why should we preserve them? *Landscape Research*, 42:8, 891-903, DOI: 10.1080/01426397.2017.1385749