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# BEHAVIOURAL FACTORS AND ECOLOGICAL FARMING. CASES STUDIES

**Violeta FLORIAN[1], Mărioara RUSU[1], Elisabeta ROȘU[1], Mihai CHIȚEA[1], Sebastian BRUMĂ[2], Cristina POCOL[3]**

[1]Institute of Agricultural Economics, 13 Calea13 Septembrie, Bucharest, Romania, Emails: florian_violeta@yahoo.com, rusu.marioara@gmail.com, betty_rosu@yahoo.com, mihai_chitea@yahoo.com
[2]"Gh. Zane" Institute for Economic and Social Research, Romanian Academy, Iasi Branch, T. 2 Codrescu Street, 700481 Iasi, Romania, Email: SebastianBruma1978@gmail.com
[3]University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Calea Manastur, Cluj-Napoca, Romania, Email: pocolcristinabianca@yahoo.com

***Corresponding author***: betty_rosu@yahoo.com

***Abstract***

*The main objective of the paper is to identify and understand how the Romanian farmers relate to ecological farming in terms of ecological practices and ecological products. To achieve this objective, qualitative research methods were used: hybrid forum method and in-depth interviews. The obtained results reveal that in the county Cluj-Napoca, the stakeholders opt for building an operational social system (balanced functioning of the education, production, research, distribution systems within multi-dimensional political programmes/projects). At the same time, the stakeholders from Suceava opt for building an operational social system where the ecological practices are the core of agricultural systems.*

***Key words*****:** *ecological farming, farmers' ecological behaviour, ecological practices, social system operation*

## INTRODUCTION

Behavioural factors largely influence farmers' decisions to adopt or continue to use the ecological farming practices "farmers' decisions to adopt more sustainable practices, such as organic farming, have their peculiarities" [5].
The studies concerned with the proecological behaviour, mainly those focusing on the behavioural factors, stemmed from the need to formulate effective policy measures for ecological farming development, for increasing food production [6, 7, 8].
The European Commission's proposal [8] to create voluntary eco-schemes, together with the existing agri-environment and climate measures, indicates a budgetary shift to more voluntary approaches to incentivise more sustainable practices.
The scientific researches concerned with the importance of behavioural factors identified many determinants of the ecological farming practice adoption; for instance, the name of an agri-environmental measure may influence the choice/adoption of an ecological/sustainable/ bio practice by farmers [13].
The behavioural factors are influenced:
- by "macro" variables - for instance, farmer's personality, risk tolerance "farmers differ in their personal and farm characteristics" and "farmer personality and risk tolerance affect whether they adopt a particular sustainable practice" [11];
- by "micro" variables - for instance, farmers' perception of the benefits and costs of using an ecological practice "farmers' perceptions of the benefits and costs associated with a specific agricultural practice are immediately related to the decision-making in question: some practices may be seen as entailing high benefits and low costs, while others may be perceived as less profitable" [1, 9].
The decision to practice ecological farming is built into a tri-dimensional framework: dispositional factors, social factors and cognitive factors [13].

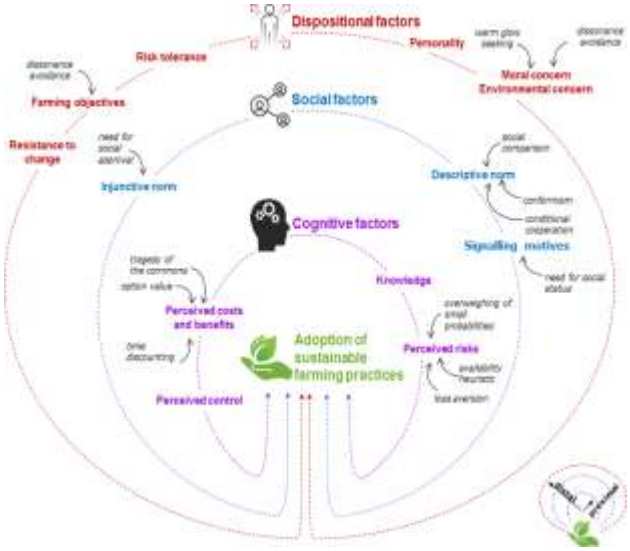


Fig. 1. An integrated framework of behavioural factors affecting farmers' adoption of environmentally sustainable practices
Source: Dessart, F.J. et al, [5], page 422

These three factors or characteristics are:
- personal characteristics defined by internal variables related to a certain person, such as personality, motivations, values, beliefs, preferences and general objectives: "Dispositional factors relate to an individual's general propensity to behave in a certain way" [10].
- the social characteristics refer to farmers' interactions with other people (e.g. other farmers or advisors) and include social norms: "Interpersonal relationships influence farmers' decisions to adopt more sustainable practices. Social factors include social norms and signalling motives" [5].
- the cognitive characteristics include farmers' perception of the benefits, costs and relative risks associated to a certain sustainable practice or if they consider that they are knowledgeable enough to adopt these practices: "The adoption of sustainable practices is influenced by how farmers learn, understand and perceive these practices, particularly the associated difficulties, costs, benefits and risks. These cognitive factors are very specific" [5].

## MATERIALS AND METHODS

To achieve the objective of this paper, two qualitative research methods were used: hybrid forum method and in-depth interviews.

The concept of hybrid forum is a democratic and dynamic way to think and act together when many actors and controversial issues are involved. The hybrid forums can be described as public discussions with the aim of constructing a common project around a defined challenge. This is quite different from the traditional Focus Group. In the latter the groups aim at having a common discussion to have a better knowledge on one given theme; while in the hybrid forum, the actors will "not just express themselves or exchange the ideas, or even making compromises" [3] but they will discover, learn and construct together the ideas. Thus, by definition, the controversies are at the core of the Hybrid Forum, because their existence triggers the process of learning and co-producing something new.
The hybrid forum method was applied in Cluj area: the first part was animated by the presence of ten stakeholders (5 men and 5 women) who were selected so as to ensure a representative of each link in the ecological farming system. The second part was represented by a debate with the participation of 43 stakeholders involved in ecological farming – studies, promotion, production, marketing and consumption.
In-depth interviewing, a qualitative research technique, provides a more complete picture of what happened in ecological farming; for instance, we asked participants about their experiences and expectations related of ecological practices.
In order to collect information, 10 stakeholders from the area of Suceava county were interviewed.

## RESULTS AND DISCUSSIONS

### *Cluj County*

a) Short presentation
Cluj county has an area of 6,674 km$^2$, accounting for 2.8% of Romania's territory. The relief of the county mainly consists of hills, which account for two-thirds of the county's area, the remaining one-third consisting of mountains [4].
The natural environment is favourable for the development and modern farming, yet not fully

used due to the lack of investments in this sector.


Map 1. Cluj County
Source: own representation with GIS application.

In the land fund structure, agricultural land accounts for 65% and forestland 38%. In terms of land use categories, the agricultural land area is divided mainly between arable land (38%) and pastures and hayfields (57%). The main cultivated crops are the following: cereals (maize, wheat, barley and two-row barley), oilseeds (sunflower, rapeseed), potatoes, vegetables (tomatoes, onions, cabbages, etc.) as well as annual and perennial fodders. Cattle, pigs, sheep and goats are raised in this area. Yields are quite low, both in crop production and in livestock production, due to the high dependence of the farming sector on the environmental factors, to the absence of adequate policies, to old-aged labour force, etc.

Table 1. Evolution of the area cultivated under ecological farming system in Cluj county

| | 2015 | 2016 | 217 | 2018 |
|---|---|---|---|---|
| Agricultural land area - ha | 432,835 | 429,567 | 432,835 | 43,835 |
| - cultivated under ecological system - ha | 4,133.9 | 5,858.1 | 6,629.1 | 8,829.5 |
| % | 0.96 | 1.36 | 1.53 | 2.04 |

Source: own calculation based on data provided by Cluj Environmental Protection Agency [4].

The crop structure follows the relief pattern: thus, in the plain and hills, grains are mostly cultivated (maize and wheat), while in the high hills and mountainous area, fodder crops are mainly grown. This county has a good tradition and favourable conditions for raising cattle and sheep.

Cluj County is in the top ten counties with land areas cultivated under ecological system in Romania, steadily increasing in recent years.

b) Behavioural characteristics

The interviewed stakeholders from **Cluj County** were a relevant source of data and information because, by the nature of their activity, they have strong functional relations with the farmers who have dairy farms, sheep farms, mixed crop-livestock, field crop and fruit or vegetable farms. The stakeholders were selected so as to ensure the representativeness of each link in the ecological farming system – from production to promotion, from academic/university research to personalized ecology services for a healthy lifestyle; farmers who produce ecological products and conventional and ecological products; it was also envisaged to ensure the representativeness of ecological associations and rural associations, of traders in ecological products; territorial organization was a criterion in selecting the stakeholders involved in the ecological chain by including representatives of local councils that encourage ecological agriculture and inter-rural organizations interested in land conversion and in the conversion from conventional farming to organic farming.

The data obtained from the discussion of Hybrid Forum type can be summarized as follows:

- ***personal characteristics,*** mainly those related to educational capital are relevant in adopting ecological behaviours, in developing a pro-environmental attitude. Stakeholders used the education concept, in the sense in which the educational capital is the accumulation of knowledge through full training (kindergarten - higher education), amplification of knowledge and high specialization and efficient utilization of knowledge. The inter-generational educational capital, identified in farmers' opinions, is a key element in supporting promotion. The educational capital should exist both at producer and consumer level. During the

Hybrid Forum a "motival tree" "motivational tree" was built, with complete ramifications of the educational process: starting from the need to be aware of the relationship between the ecological product and the environment, stakeholders addressed the need to professionalize the occupation of ecological producer;

- ***social characteristics,*** perceived in terms of operational social system - balanced functioning of education, production, research, distribution systems within multi-dimensional political programmes/projects; the operation of the system is also caused by the absence of clear political objectives in this field.

Another factor is represented by farmers' organization into various types of organizations and associations for ecological producers This factor is perceived as a necessary institutional construction for entering on the market, manly represented by supermarkets.

The determining factor in adopting agro-ecological practices is the examples provided by foreign (Dutch, German) investors to rural communities:

- ***cognitive characteristics*** - evaluation of the perception and knowledge of the environment in different stakeholders and the perception of benefits of agricultural practices by the stakeholders involved in the demand chain – it was found out that the farmers have basic knowledge on the environment and benefits of agricultural practices. Furthermore, they are aware of the physical barriers to obtaining an ecological product: land fragmentation, proximity to plots on which conventional farming is practiced.

***Suceava County***

a) Short presentation

Suceava county's area totals 8,553.5 km$^2$, accounting for 3.6% of the country's area, being the second largest county in size in Romania.

The county has two main relief units: mountain area, accounting for 64.5% and plateau, accounting for 34.6% [2].


Map 2. Suceava County
Source: own representation with GIS application.

The natural environment offers the possibility for the development of a diversified agriculture, yet this potential is not fully used. In the land structure, the agricultural land accounts for 41%, while forestland 53%. In terms of land use categories, the arable land is divided between arable (52%) and pastures and hayfields (47%).

Table 2. Evolution of area cultivated under ecological farming system in Suceava county

| | 2015 | 2016 | 217 | 2018 |
|---|---|---|---|---|
| Agricultural land area - ha | 354,821 | 354,820 | 354,820 | 354,820 |
| - cultivated under ecological system - ha | 14,860 | 7,502 | 7,815 | 10,258 |
| % | 4.2 | 2.1 | 2.2 | 2.9 |

Source: own calculation based on data provided by Suceava Environmental Protection Agency [12].

The agricultural land is mainly farmed by small-sized farms, with 2.49 ha on the average. Suceava county is in the top ten counties with areas cultivated under ecological farming system.

b) Behavioural characteristics

The interviewed stakeholders in **Suceava County** were a relevant source of data and information because, by the nature of their activity, they have strong functional relations with the farmers who have dairy farms, sheep farms, mixed crop-livestock, field crop and fruit or vegetable farms.

From the analysis of respondents' answers, we could notice the following behavioural characteristics that can induce the adoption/development of ecological practices:
- ***social characteristics*** - the organizational status induces the adoption of environment-friendly practices; for instance, the inter-communal organization LAG Bazinul Dornelor, where ecological farms, farms in conversion and conventional farms can be found, alongside with a sustained activity to stimulate the first two types of farms;
- ***cognitive characteristics*** - the existence of a tradition of respect towards the environment, of environment friendly behaviours in the mountain area enhances the ability to use ecological farming methods/systems.

## CONCLUSIONS

"Behavioural factors synonymously with psychological factors, i.e. the cognitive, emotional, personal and social processes or stimuli underlying human behaviour" are relevant in adopting/developing ecological farming practices [2].
The two studies conducted in the rural areas where ecological farming has a significant share, compared to other rural areas, captured the main characteristics that have contributed to getting closer to ecological practices, i.e. developing a proecological behaviour, pragmatic concerns to practice an environment friendly farming system and to healthy farm production.
The social and cognitive characteristics are present in both interviewed groups:
- ***the social characteristics*** for the group from Cluj materialize into the projection of an operational social system - balanced functioning of education, production, research, distribution systems; for the Suceava group, the most important characteristic is of organizational type – the inter-communal organizations are a favourable framework to support the ecological farming practices, from their creation to their development;
- ***the cognitive characteristics*** relate to farmers' perception of the benefits, costs and risks associated to a certain ecological practice; the respondents from the Suceava group focus on the traditional skills required by ecological farming.
For the subjects in Cluj group, the personal characteristics based on education are also important.
The environmental policies are a common point of the opinions and assessments made by the two groups, and essentially the need to adjust the current political act according to the options, expectations and behavioural characteristics specific to the social actors. Which means that "there is still room for decision makers to fully realize the potential of behavioural perspectives for agricultural policy" [5].

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## REFERENCES

[1]Alamian, A., Paradis, G., 2012, Individual and social determinants of multiple chronic disease behavioural risk factors among youth - BMC Public Health 12:224, https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-12-224, Accessed on January 2020
[2]American Psychological Association, 2018, Psychology – APA Dictionary of Psychology, https://dictionary.apa.org/psychology, Accessed on December, 2019.
[3]Callon, M., Lascoumes, P., Barthe, Y., 2009, Hybrid forums, Acting in an Uncertain World: An Essay on Technical Democracy. Minerva, 49(4), 509-511, https://dl.acm.org/doi/book/10.5555/1529949, Accessed on November 2019.
[4]Cluj Environmental Protection Agency, 2018, Report on the situation of environmental factors in Cluj county in the year 2018, http://www.anpm.ro/web/apm-cluj/rapoarte-anuale1, Accessed on February 2020.
[5]Dessart, F.J., Barreiro-Hurlé, J., van Bavel, R., 2019, Behavioural Factors Affecting the Adoption of Sustainable Farming Practices: A Policy-Oriented Review, European Review of Agricultural Economics, Vol. 46, Issue 3, pages 417-471, https://academic.oup.com/erae/article/46/3/417/5499186, Accessed on December 2019.

[6]European Commission, 2017, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. The Future of Food and Farming. Brussels. https://ec.europa.eu/agriculture/sites/agriculture/files/future-of,cap/future_of_food_and_farming_ communication_en.pdf, Accessed on November 2019.
[7]European Commission, 2018a, Communication from the Commission to the European Parliament, the European Council and the Council – A New, Modern Multiannual Financial Framework for a European Union that Delivers Efficiently on its Priorities Post - 2020. Brussels. https://ec.europa.eu/commission/sites/beta-political/files/communication-new-modern-multiannual-financial-framework_en.pdf, Accessed on November 2019.
[8]European Commission, 2018b, Proposal for a Regulation of the European Parliament and of the Council Establishing Rules on Support for Strategic Plans to be Drawn up by Member States under the Common Agricultural Policy (CAP Strategic Plans). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018percent3A392percent3AFIN, Accessed on November 2019.
[9]Flay, B. R., Snyder, F., Petraitis, J., 2009,The theory of triadic influence Emerging Theories in Health Promotion Practice and Research 2:451-510, https://www.positiveaction.net/assets/pdf-files/research-theory/emerging-theories-health-promotion-2009.pdf, Accessed on November 2019
[10]Malle, B. F., 2011, Attribution theories: how people make sense of behaviour. D. Chadee (eds) Theories in Social Psychology. Wiley-Blackwell, 72–95, https://psycnet.apa.org/record/2011-20402-003, Accessed on November 2019.
[11]Sok, J., Hogeveen, H., Elbers, A.R.W., Oude Lansink, A.G.J.M., 2018, Perceived risk and personality traits explaining heterogeneity in Dutch dairy farmers' beliefs about vaccination against Bluetongue, Journal of Risk Research, 21(5): 562–578, http://doi.org/10.1016/j.prevetmed.2016.09.016, Accessed on January 2020
[12] Suceava Environmental Protection Agency, Report on the situation of environmental factors in Suceava county in the year 2018, http://www.anpm.ro/web/apm-suceava/rapoarte-anuale1/, Accessed on February 2020.
[13] Tversky, A., Kahneman, D., 1974, Judgment under uncertainty: heuristics and biases. Science (New York, NY) 185 (4157): 1124–1131, https://www2.psych.ubc.ca/~schaller/Psyc590Readings/TverskyKahneman1974.pdf, Accessed on November 2019.