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ECOLOGICAL FARMING – RURAL REALITIES, SOCIO-ECOLOGICAL ARGUMENTS AND COMMENTS. CLUJ COUNTY CASE STUDY

ABSTRACT

The investigation of the relationship between ecology and sociology, in a sustainable agricultural matrix, provides possible complete answers to the problems generated by the respect of the environment and building a favourable environmental matrix. The interdisciplinary perspective imposes the investigation of the following dimensions in sociological terms: environmental, economic and social processes induced by land use or land use changes, spatial interactions of processes and driving forces in anthropogenic landscapes.

The specific trends of ecological farming are largely influenced by the behavioural factors, by the cultural and social capital of farmers involved in this type of farming activity.

Key words: cultural and social capital, behavioural factors, ecological farming.

JEL Classification: **Z13, D91, Q15.**

1. INTRODUCTION

Ecological farming is a mode of production that supports soil health and the health of ecosystems and humans implicitly. Ecological farming is a term protected and assigned by the EU to Romania for defining this system of agriculture and is similar to the terms "organic farming" or "bio farming" used in other Member States (MADR, available at https://www.madr.ro/agricultura-ecologica.html).

It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than on the use of inputs with adverse effects. Ecological farming combines the best environmental practices to protect biodiversity, to preserve natural resources, to support a high animal welfare standard and hence it has a limited environmental impact.

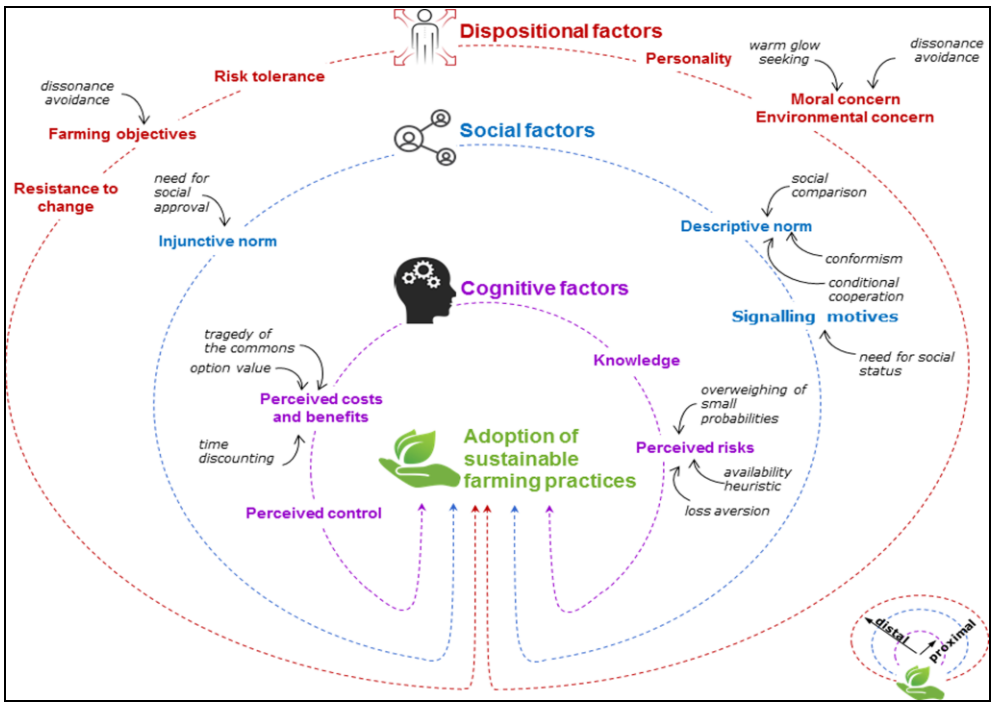
At the same time, ecological farming is a method of production that complies with the preferences of a certain segment of consumers for this type of products.

Ecological farming combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all those involved.

The present study had two goals: the first goal was to create a picture of the state and evolution of ecological agriculture in the EU member states, in Romania and in Cluj county, over a 5-year period. The second goal was to analyse the behavioural factors that influence farmers' decisions to adopt environmentally sustainable practices in general, and in Cluj county in particular.

To reach the first goal, we have made a brief interpretation of the data provided by official sources; for the second goal, we first made an updated overview of the literature on the behavioural factors that influence the adoption of environmentally sustainable farming practices. After that, we tried to analyse the behavioural factors and to highlight the mechanisms that explain how and why behavioural factors affect farmers' decision-making in Cluj county.

The review of specialized literature indicated the decision to practice ecological farming built into a tri-dimensional framework: dispositional factors, social factors and cognitive factors (Tversky, A., Kahneman, D., 1974).



Source: based on Dessart, F.J., Barreiro-Hurlé, J., van Bavel, R., (2019), p. 422

Figure 1. An integrated framework of behavioural factors affecting farmers' adoption of environmentally sustainable practices

The characteristics of the three factors are:

– the dispositional factors are defined by internal variables related to a certain person, such as personality, motivations, values, beliefs, preferences and general objectives;

– the social factors refer to farmers' interactions with other people and include social norms;
– the cognitive factors include farmers' perception of the benefits, costs and relative risks associated to a certain sustainable practice or whether they consider that they have the necessary knowledge and skills to adopt these practices.

The behavioural factors enrich the economic analyses of farmers' decision-making and can lead to more realistic and effective agri-environmental policies.

2. STATE OF KNOWLEDGE

The scientific studies, the formalised discourses in the policy sphere have increasingly focused on the behaviours, aspirations and expectations of farmers who opted for the ecological farming practice: *"....policy reports at both national and international levels, as well as the recent inclusion of behavioural evidence in the background documents of the European Union's Common Agricultural Policy (CAP) reform and in the related impact assessment have acknowledged the relevance of understanding behavioural factors for agricultural policy"* (Dessart, F.J., Barreiro-Hurlé, J., van Bavel, J., 2019, p. 418).

Waiting for an increasingly consistent response, the social and sociological mechanisms that can encourage and develop the use of ecological farming practices began to be identified and implemented: *"Conservation tillage, crop rotation, reduction of fertilisers, pesticides and fungicides, rotational grazing and landscape preservation are examples of such sustainable practices. Precision farming and genetic alterations, on the other hand, fall outside the scope of this paper because yield optimisation is usually farmers' main expected benefit from adopting these practices"* (OECD, 2016; Balafoutis *et al.*, 2017).

The tradition of environment friendly farming practice, the concern for obtaining healthy products, the understanding of environment conservation methods, *"such as the adoption of native vegetation protection measures"*, *"farmers' adoption of sustainable practices"* (Dessart, F.J., Barreiro-Hurlé, J., van Bavel, J., 2019, p.429), build up and stabilize agricultural approaches and impose values different from those of conventional farmers: *"The literature on farmers' behaviour is rather consistent in showing that adopting sustainable practices is negatively correlated with economic objectives, and positively correlated with lifestyle and conservation objectives. This finding may be surprising, considering that some sustainable practices are more profitable than conventional ones (see the section on perceived costs and benefits)"* (Dessart, F.J., Barreiro-Hurlé, J., van Bavel, J., 2019, p. 430).

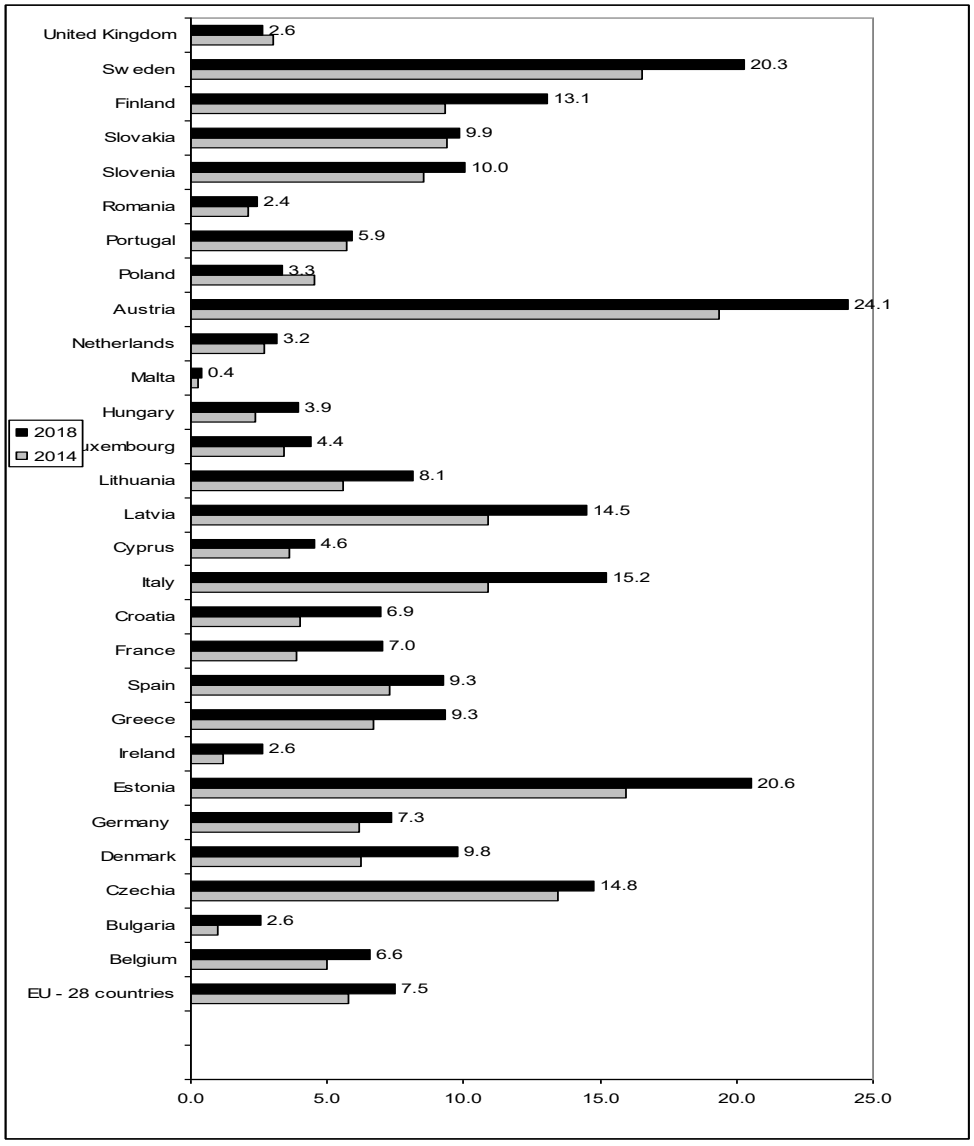
3. MATERIAL AND METHODS

The present study has a double purpose. In the first place we wanted to get a picture of the state and evolution of ecological agriculture in the European Union, in Romania and in Cluj county, in the period 2014-2018, and for this purpose we used the official data provided by the Ministry of Agriculture and Rural Development and by Cluj Environmental Protection Agency, as well as EUROSTAT data. Secondly, we made an analysis of the behavioural factors that influence farmers' decisions to adopt environmentally sustainable practices in general, for which an analysis of literature was carried out, also in Cluj county, for which a qualitative research was made, using the Hybrid Forum Method. The hybrid forum concept 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. Finally 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" (Callon, M., Lascoumes, P., Barthe, Y., 2009) but they will discover, learn and construct together the ideas. 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 to provide 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.

The self-administered questionnaire was used as a sociological tool, built on the perception of the trends of ecological agriculture in Cluj county. This investigation tool consisted of a set of written questions, in a logical and psychological order, which were answered by the respondents in written form, without the intervention of the researchers. 4 stakeholders from Cluj county completed this type of questionnaire.

4. RESULTS AND DISCUSSIONS

The ecological agriculture sector in the EU has fast developed in recent years. According to Eurostat data, in the year 2018 the EU-28 had a total area of 13.4 million hectares under ecological farming, up from 3.0 million in 2014. In the last 5 years, the ecological area in the EU increased by about 600.000 hectares per year. This is quite a big increase, as in 2018 the total ecological area represented 7.5% of total utilised agricultural area in Europe, up from 5.8% in the year 2014 (Fig.2).



Source: EUROSTAT data base, available at org_cropar

Figure 2. Share of ecological area fully converted and under conversion to ecological farming in the EU member states

In the year 2018, the largest areas cultivated under ecological system were in Spain (2.2 million hectares), France (2 million hectares) and Italy (1.9 million hectares), while Romania ranked 10th, with 326.3 thousand hectares under ecological farming.

The countries where the ecological farming has become a way of life are those in which the area cultivated under ecological system in total UAA is growing. In the year 2018, Austria ranked first, where almost one quarter of utilised agricultural area was used for ecological farming, followed by Estonia and Sweden, where more than one-fifth of UAA was under the ecological farming system. In the year 2018, the share of the ecological area in total UAA in 13 member states exceeded the EU average.

According to EUROSTAT data, in the period 2014-2018, the total number of operators in ecological farming increased from 257641 to 295577 in the EU. However, in the same period, in Romania, the number of ecological farmers decreased from 14470 in the year 2014 to 9008 in the year 2018.

In the year 2018, in Romania, the largest areas under ecological farming were cultivated with cereals, industrial crops and those under pastures and hayfields. Throughout the investigated period, the area under cereals in total ecological area prevailed, to reach 35% in the year 2018. The areas under industrial crops ranked 2nd, while the areas under pastures and hayfields ranked 3rd, accounting for 24.6% and 20.5% of total area under ecological farming. (Table 1).

Table 1

Dynamics of areas under ecological farming system in Romania – ha

	2014	2015	2016	2017	2018
Total area under ecological farming	289251.8	245923.9	226309	258470.9	326259.6
Cereals total	102531.5	81439.5	75198.3	84925.51	114427.5
Dry pulses	2314.4	1834.4	2203.8	4994.7	8751.1
Roots and tubers total	627.0	667.6	707.0	665.5	505.7
Industrial crops	54145.2	52583.1	53396.9	72388.3	80193.1
Crops harvested green	13493.5	13636.5	14280.6	20350.8	28253.8
Other arable land crops	29.9	356.2	258.47	88.3	112.8
Fresh vegetables	1928.4	1210.1	1175.3	1458.8	983.1
Permanent crops orchards, vineyards, fruit-bearing shrubs	9438.5	11117.3	12019.8	13165.4	18569.3
Permanent crops pastures and hayfields	95684.8	75853.6	57611.7	50685.7	6689.4
Uncultivated land	9058.7	7225.9	9457.0	9747.9	7572.8

Source: MARD, https://www.madr.ro/agricultura-ecologica/

The area under ecological farming in Cluj county had an oscillating evolution, in the year 2018 being 1.7 times larger than in the year 2014 (Table 2).

In the year 2014, the ecological area in Cluj county accounted for 1.8% of total ecological area nationwide, to reach 2.7% in the year 2018.

In Cluj county, the largest areas under ecological farming were those under pastures and fodder crops, followed by the areas cultivated with cereals.

In the year 2014, the share of areas under pastures and fodder crops in total area under ecological farming system was almost 90%, while in the year 2018 they represented only 77%.

Table 2

Evolution of areas under ecological farming system in Cluj county – ha

	2014	**2015**	**2016**	**2017**	**2018**
Area under ecological farming	5258.6	4133.9	5858.1	6629.1	8829.5
Pastures + fodder crops	4722.3	3348.4	5162.2	4949.6	6825.4
Cereals	200.9	377.2	316.7	657.4	715.9
Vegetables	5.3	10.8	13.0	16.4	10.5
Oil crops	32.47	28.3	19	113.3	49.8
Fruit trees + vineyards	162.6	236.6	189.2	187.7	594.3
Other crops	135.0	132.6	158.0	704.7	633.6

Source: APM Cluj Environmental Protection Agency, Report on the environmental situation in Cluj county in the year 2018, p.193

The second part of the present study consisted in the identification of incentive and support sociological mechanisms for proecological behaviours, for the adoption of ecological practices. The conceptual approach is based on Bourdieu's "*theory of capital",* as it can provide the strong argument of non-economic rewards in farming. "*Bourdieu consequently proposed the existence of capital in three fundamental forms: as economic capital (material property), social capital (networks of social connections and mutual obligations) and cultural capital (prestige).... These concepts of capital have gained recognition over the past decades and are now accepted relatively uncritically in the sociological literature – particularly social capital, the enhancement of which forms the focus of much rural development policy*" (Burton, R., J., F., Kuczera, C., Schwarz, G., 2008).

Bourdieu identified three sources of cultural capital: objective (cultural goods, books, works of art), embodied (language, mannerisms, preferences) and institutionalised (qualifications, education credentials). It should be noted that in our analysis, **cultural capital** is understood as a concept built upon traditions, customs, pragmatic habits, common knowledge rules. The studies conducted in Germany and the UK *"suggest that farming communities develop their own experience-based rules behind agricultural practices"*, and that *"these specific, locally understood practices contribute to the local construction of the mythical good farmer"* (Burton, R., J., F., Kuczera, C., Schwarz, G., 2008).

The discussions in the hybrid forum focused on the need for education in the process of building the pro-ecological behaviour and at the same time on the creation of a high-performance associative model for the users of sustainable farming practices. Stakeholders considered that these desiderata are primary needs for the implementation and development of ecological farming "*... starting from the need of being aware of the relationship between the ecological product and the*

environment, stakeholders addressed the need to professionalize the occupation of ecological producer: "we should start with the children, I mean with a change in the education system, and then with vocational training in this field, but at the most serious level, the most professional level, if we want to be competitive, we must be also competitive in terms of education and training…. To get started from the bottom, from zero, with children, schoolchildren and students, and further on with the farmers, and thus we can better promote the ecological products and our agriculture … (producer of ecological and conventional products). In our analysis, we could notice an acute social need for educational capital, the need for a broad, homogenous educational process that would be the basis of an ecological behaviour, for several social segments.

Cultural capital is also an essential element within farmers' associations: *"By providing qualifications from formalised institutions, institutionalised cultural capital offers individuals a certification of cultural competence, which is consistent and thus directly comparable across a range of operators. It is present in agricultural organisations such as breed societies, which are able to define the qualities of a particular breed and acknowledge farmers through formal certification and awards"* (Holloway, L., 2005; Yarwood, R., Evans, N., 2006). The farmers' organizations are perceived as a necessary institutional construction for entering on the market: *"Lack of ecological or conventional producer organizations ... how can I, alone, struggle on the market if we don't do something we cannot have an ecological market in the supermarket ... to get the supermarket in contact with the producers in the area, we cannot deliver vegetables through the country, 150, 300 vegetable producers can supply the supermarket ...*" (producer of ecological products). This is a partial perception of the need for an organizational life, based on marketing, on stable sales, generated by the complicated relations with the commercial centres.

The two concepts, i.e. cultural capital and organizational capital, appear as a necessity, as social desiderata, which leads to the idea that the way of relating to ecological farming, in sociological terms, is consistent yet dysfunctional; farmers' awareness of sociological problems can be noticed, their knowledge of the necessary elements for the circumvention of negative aspects, yet under the form of vital economic needs of farms, of farming businesses.

The paper's second objective is to provide a structured picture of behavioural factors that influence the adoption of environmentally sustainable farming practices. The behavioural factors are *"synonymous with psychological factors, the cognitive, emotional, personal and social processes or stimuli underlying human behaviour"* (American Psychological Association, 2018c). The data obtained from the discussion of Hybrid Forum type can be summarized as follows:

– Personal characteristics defined by internal variables related to a certain person, such as personality, motivations, values, beliefs, preferences and general objectives: *"The Five Big personality factors currently are considered to represent much of the normal personality domain. They include openness*

to experience, conscientiousness, extraversion, agreeableness and emotional stability" (Gifford, R., Nilsson, A., 2014). In our research, personal characteristics, mainly those related to educational capital were relevant in adopting ecological behaviours, in developing a pro-environmental attitude. Stakeholders used the educational 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 utilisation of knowledge. The inter-generational educational capital, identified in farmers' opinions, is a key in supporting promotion.

– The social characteristics refer to farmers' interactions with other people (e.g. other farmers or advisors) and include social norms; these ***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, mainly represented by supermarkets. *"I mean, working together, this is what we are missing ... the producers are small and the supermarket is very big, too powerful ...* (producer of ecological products).

The determining factor in adopting agro-ecological practices is the example provided by foreign investors to rural communities. *"Interpersonal relationships influence farmers' decisions to adopt more sustainable practices. Social factors include social norms and signalling motives*" (Dessart, F.J., Barreiro-Hurlé, J., van Bavel, J., 2019).

– The cognitive characteristics include farmers' perception of the benefits, costs and relative risks associated to a certain sustainable practice or whether 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 related difficulties, costs, benefits and risks. These cognitive factors are very specific"* (Dessart, F.J., Barreiro-Hurlé, J., van Bavel, J., 2019).

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. It was noticed that there is a strong/significant perception of the material/financial benefits: *"The ecological farming practices will increase in the Nord Vest region due to the much higher price obtained for products than the price of products obtained in the conventional farming system....Another reason why I consider that these practices will be tempting for farmers over time is the subsidies they can get,*

which are significantly bigger compared to those from conventional farming.…I consider that the main beneficiaries of these practices will be the small and medium-sized farmers, the subsistence farmers that operate smaller areas, so that by these practices they can sell their products much more easily at a significantly higher price" (stakeholder).

Furthermore, they are aware of the physical barriers to obtaining ecological products: land fragmentation, proximity to plots on which conventional farming is practiced.

Another characteristic of the investigated persons is the "appetite" for information: *"At present I consider that the main reason why this farming system has developed with difficulty … is the lack of information on these practices. My opinion is that efforts should be made to get farmers aware of the benefits provided by this system as well as of the difficulties they will be facing, to present alternative cropping technologies and provide advisory services over the entire period of land conversion to ecological farming"* (farmer).

The relationship between the ecological products and the natural environment was another theme; the approaches by the academic experts tended to take into consideration the *"stability induced by the ecological products in the system that generates them"* (researcher, member of academic staff). In this respect *"…a clearer link should be established between the ecological products and the environmental issues…the ecological products, promoting ecological products could be better if these aspects related to environmental protection, eventual problems that may appear in the conventional systems versus the ecological or ecologically certified systems, would be better put into value, better promoted or directly, presented to the public or to potential consumers of ecological products*"(professor, with agro-environmental specialization).

5. CONCLUSIONS

Ecological farming is beginning to become a way of life, as this sector has continued its fast development in the recent years, fact supported by figures.

The ecological area in the EU level represented 7.5% of total utilised agricultural area in 2018, up by almost two percentage points compared to 2014. In the last 5 years, the ecological area in the EU increased by about 600.000 hectares per year. In the year 2018, the share of ecological area in total UAA in 13 member states exceeded the EU average, Austria ranking first, next followed by Estonia and Sweden.

In Romania, the area under ecological farming system fluctuated, with 326 thousand hectares in 2018, ranking 10th in the EU-28; the main cultivated crops under ecological farming are cereals, industrial crops, together with the areas under pastures and hayfields.

In Cluj county, the share of area under ecological farming system in total cultivated area increased from 1.8% in 2014 to 2.7% in 2018, the largest areas cultivated under ecological system being those under pastures and fodder crops.

As regards the behavioural analysis, the use of ecological practices does not represent a form of socio-economic resilience for the investigated farmers, being a rational option for change/shift and in some cases in progress, from conventional to ecological farming. In this context, the cultural capital focus on the educational dimension; education is perceived by stakeholders as a need that can be covered by the creation of a comprehensive education system for all the social segments. Social capital is one of the core elements through the stringent need of membership in associations/organizations, essential links in the marketing of ecological products. The main behavioural factors are those of personal nature – educational dimension, of social nature – organizational dimension and cognitive – knowledge and information.

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REFERENCES

1. Balafoutis, A., Beck, B., Fountas, S., Vangeyte, J., van der Wal, T., Soto, I., Gómez-Barbero, M., Barnes, A., Eory, V., (2017), *Precision Agriculture Technologies Positively Contributing to GHG Emissions Mitigation, Farm Productivity and Economics*. Sustainability 9(8): 1339, available at http://doi.org/10.3390/su9081339, accessed on April 2020
2. Burton, R., J., F., Kuczera, C., Schwarz, G., (2008), *Exploring Farmers' Cultural Resistance to Voluntary Agri-environmental Schemes,* Sociologia Ruralis, available at https://onlinelibrary. wiley.com/doi/abs/10.1111/j.1467-9523.2008.00452.x, accessed on April 2020
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(2011), available at https://doi.org/10.1007/s11024-011-9186-y, accessed on March 2020
4. 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*,* Volume 46, Issue 3, July 2019, p. 417–471, available at https://doi.org/ 10.1093/erae/jbz019, accessed on March 2020
5. Gifford, R., Nilsson, A., (2014), *Personal and social factors that influence pro-environmental concern and behaviour: A review*, International Journal of Psychology 49(3):141–57, available at https://onlinelibrary.wiley.com/doi/abs/10.1002/ijop.12034, accessed on March 2020

6. Holloway, L., (2005), *Aesthetics, genetics, and evaluating animal bodies: locating and displacing cattle on show and in figures*. Environment and Planning D: Society and Space 23 (6) pp. 883–902, available at https://journals.sagepub.com/doi/abs/10.1068/d59j, accessed on April 2020
7. Tversky, A., Kahneman, D., (1974), *Judgment under uncertainty: heuristics and biases*. *Science (New York,)* 185 (4157):1124–1131, available at https://www2.psych.ubc.ca/~schaller/Psyc590 Readings/TverskyKahneman1974.pdf, accessed on Aptil 2020
8. Yarwood, R., Evans, N., (2006), *A Lleyn sweep for local sheep? Breed societies and the geographies of Welsh livestock*. Environment and Planning A 38 (7), pp. 1307–1326, available at https://journals.sagepub.com/doi/10.1068/a37336, accessed on March 2020
9. American Psychological Association, (2018c); Psychology – APA Dictionary of Psychology, available at https://dictionary.apa.org/psychology, accessed on April 2020
10. *** Cluj Environmental Protection Agency, 2018, *Report on the situation of environmental factors in Cluj county in the year 2018*, available at http://www.anpm.ro/web/apm-cluj/rapoarte-anuale1
11. *** EUROSTAT data base available at http://ec.europa.eu/eurostat/data/database
12. *** MARD, database available at https://www.madr.ro/agricultura-ecologica/
13. *** OECD, (2016), *Farm Management Practices to Foster Green Growth*. Paris: OECD, available at https://www.oecd-ilibrary.org/farm-management-practices-to-foster-green growth 5js00 qp1k97f.pdf?itemId=%2Fcontent%2Fpublication%2F9789264238657-en&mimeType=pdf, accessed on April 2020