

**ROLE OF LEARNING IN BUILDING RESILIENCE OF SMALL-MIXED FARMING SYSTEM - A ROMANIAN CASE STUDY**

**TUDOR MONICA-MIHAELA\*<sup>1</sup>, GAVRILESCU CAMELIA<sup>1</sup>, URQUHART JULIE<sup>3</sup>,  
BOHATEREȚ VALENTIN-MIHAI<sup>1,2</sup>, BRUMĂ IOAN-SEBASTIAN<sup>1,2</sup>, DOBAY  
KRISZTINA-MELINDA<sup>1,2</sup>, MATEI DANIELA<sup>1,2</sup>, TĂNASĂ LUCIAN<sup>1,2</sup>**

<sup>1</sup>*Institute of Agricultural Economics of the Romanian Academy*

<sup>2</sup>*Social and Economic Institute "Gh. Zane", Iași Branch of the Romanian Academy;*

<sup>3</sup>*Countryside and Community Research Institute, University of Gloucestershire, UK*

\*Corresponding author's e-mail: monik\_sena@yahoo.com

**Abstract:** Paper aim was to identify the factors who enable or hinder adaptive capacity and the strategies that promote learning at the level of small-mixed farms from Nord-Est region in Romania. A qualitative approach was used to better understand the complexity of individual decision-making and the lived experience of farmers as they adapt to the challenges they face at farm level. Specifically, these insights involving a series of 'storytelling' interviews with Nord-Est region' farmers that had different personal learning experiences. The study shows that family members are the most influential on decision-making, followed by the agronomist, researcher and university professors. The influence of local farmers either increases through partnerships or decreases because of conflicts. Being open to new ideas is the main driver for learning that generates change at the farm level, alongside their attitude towards risk. Experimenting with new ideas was an important learning strategy, allowing farmers to learn from their own experience and by implementing change a little at a time. However, a barrier to learning is a lack of confidence in market stability, uncertainty about succession and attachment to a traditional way of farming in the area which is based on semi-subsistence (rather than developing into a market-oriented business).

**Key words:** learning, resilience, adapting to change, information, innovative practices

## INTRODUCTION

Learning is generally defined as a change in knowledge, skills or attitudes that may result in behavior change. Individual and collective learning is integral to adaptive behavior and adaptive capacity in the sense that learning significantly contributes to cope with and adapt to challenges and shocks. In the literature, learning is seen as a key component for resilience building in socio-ecological systems [1], [3], [5], either through learning new facts, experimentation ('learning by doing') [8], sharing knowledge from/with others, or through networks of influence [10] or communities of practice [7]. As such, learning supports adaptive capacity [11].

The main goal of the present paper is to identify which factors enable or hinder adaptive capacity and what strategies promote learning at the level of small-mixed farms from Nord-Est region in Romania. The case study is part of the SURE-Farm project, funded under the European Horizon 2020 programme.

### **Small-mixed farming system in Nord-Est region – an overview -**

The most recent Farm Structural Survey (2016) shows that 73% of the Romanian farms are mixed (have utilized agricultural area and livestock). Of those, the largest share (22%) is located in the Nord-Est region (see the map from Figure 1). In terms of utilized agricultural area, 98% of the farms in Nord-Est region have less than 10 ha and 95% less than 5 ha. The livestock is composed (% in the region's total LLU) of: bovines (42%, mostly dairy cows), poultry (19%), sheep (15%), pigs (12%), and equidae (9%, mainly horses for transport purposes) [15]. A more recent development in the region is the intensification of bee farming.



**Figure 1. Map of Romanian Nord-Est region**

Source: ADR NE, [www.adrnordest.ro](http://www.adrnordest.ro)

If one refers to specialization, FADN 2016 data indicate a total of 79,840 mixed farms - field crops-grazing livestock combined (type 80 in TF8 classification, calculated with SO), of which 34% are located in the Nord-Est region [14].

## MATERIALS AND METHODS

A qualitative approach was used to better understand the complexity of individual decision-making and the experience of farmers, as they adapted to the challenges they faced at farm level. Specifically, these insights involved a series of semi-structured “storytelling” interviews [4] with farmers that had different personal learning experiences in order to understand the contexts and factors that produce changes and motivate actions [9] as insights on farm’s resilience [6]. The interviewed farmers were selected purposively to enable a diverse range of respondent types in terms of age, gender and longevity in farming activity, with different levels of involvement in social/knowledge networks or learning platforms. A total of 14 interviews were conducted between June 2018 and January 2019. The analysis of the data included three coding steps to produce open, axial and generic codes resulting in a codebook [2] that was used for an overall analysis of:

- risk and challenges,
- external factors generating changes,
- triggers of change,
- risk management strategies,
- learning processes and strategies.

Each of above-mentioned faces of adaptive capacity of small-mixed farms from Nord-Est region was analyzed through the lens of learning processes. The results of this analysis are presented below.

## RESEARCH RESULTS

### **Key risks in small mixed farming system in North-Est region, as identified by farmers**

Most interviewed farmers from the Nord-Est region consider that risks represent those processes external to farms that have a negative impact upon farm performance.

The risk that was most frequently signaled out during the interviews in the Nord-Est region is availability of labour, especially skilled labour, which was signaled out by two-thirds of respondents. The main cause of the low availability of labour is related to migration for work, mainly abroad.

In a significant share, the interviewed farmers pointed to environmental risks. More exactly, two-thirds of farmers declare that one of the major risks they have been facing is represented by extreme weather events and other manifestations of climate change that are affecting the traditional crops in the region during the vegetation period. Furthermore, half on the interviewed persons declare that they have been confronted with risks related to pests and diseases on their farm.

Half of the interviewed farmers declare that they have been facing risks related to the small farm size (in terms of land and / or livestock herds). The risk of too a small farm size reduces their chances to integrate into the agri-food chains due to low production and poor bargaining capacity that would allow them to enter and maintain their position on agri-food markets dominated by large companies [12]. In close relation to the above-mentioned risk, lack of cooperation among farmers, especially due to the negative perception of cooperation (stemming mostly from distrust among cooperative members), results in negative effects of small farm size perpetuating over time [12]. Individual solutions seem to be the key for risk management, as long as cooperation is not embraced by farmers.

Bureaucracy is considered a challenge when farmers get into contact with authorities, at any administrative level. The interviewed farmers declared that in many cases bureaucracy determined them to give up completing certain procedures (for instance, the organic re-certification procedure). The multitude of documents and institutions along the procedural chain that farmers need to go through, as well as the waste of time, otherwise needed for carrying out certain activities on the farm, define rigid bureaucratic institutions focusing rather to rules than to operation efficiency.

Each of the participants in the interviews mentioned that they are subject to at least one economic risk. Among the economic risks, the following were mostly frequent:

- low prices (mainly at harvesting time and for the agricultural products that are part of the traditional crop structure in the region – cereal crops);
- lack of small farms' integration in the food chains (as they cannot deliver sufficiently large quantities on continuous basis to retailers);
- high costs.

One-third of the respondent farmers in the Nord-Est region declared that they are confronted with uncertainty about successor, which affects the continuity of their business. One-third of them mentioned facing technological risks determined by the lack of knowledge and experience, which adversely impacts their farm performance.

### **Factors external to the farm influencing decision-making**

The most important external factor that influences decision-making in the interviewed farmers from the Romanian Nord-Est region is the willingness to change their economic-social status by transforming the subsistence or semi-subsistence farm into a market-oriented farm business, thus acquiring a businessman status, owner of own business to be managed according to their own values. Following this path, farmers got re-oriented towards niche products, such as:

- shift from vegetable growing to the production of vegetable seeds;
- shift from field crops growing with extensive technology on relatively small areas to innovative crops with high value added organized on small areas (lavender, Paulownia trees, medicinal herbs, crop eco-products etc.);
- shift from the production and sale of raw agricultural products obtained under extensive system to the integration of crop and livestock production and household farm specialization in processing and short-chain sale of processed or niche products (preserved fruit and vegetables; cheese; meat preparations; home-made pastry products, according to special recipes; quail meat and eggs, etc.);
- farm production orientation to organic production.

The second influence factor is access to the labour at the region level, especially skilled labour. This determined farmers to be more flexible in establishing the farm production structure in order to adapt to the regional labour force deficit. The learning processes were generally focused on production orientation towards a structure that does not require external human effort, i.e. that can be supplied by the household members and / or resizing the farm according to the ability of family members to cover the labour needs.

Having an off-farm job is the third external to farm factor influencing the decision at farm level. Thus, the fact that the farm owner had or still has an off-farm occupational arrangement gives him a relative financial stability and makes the farmer have (at least partially) the financial resources to support the implementation of his innovative ideas, without endangering the continuity of the farm.

Access to technology is the fourth external factor that influences decision at farm level. Access to new technologies is ensured in several ways depending on farmers' ability to access information sources:

- the literature that documents the new techniques and technologies (printed materials – books, periodicals – presenting in detail the innovations in agricultural techniques and technologies);
- fairs and exhibitions presenting the innovations in agricultural technologies where demonstration documentary materials are shown or even new technologies are tested;
- partnerships with the research institutes and stations by which farmers experiment, in practical conditions, the new varieties and cultivars developed by the research centers;
- access to digital materials and on-line consultations with farmer groups growing the same crop by which the new technologies are documented.

Farmers' approach to learning is a mix between economic triggers (low profitability of traditional agricultural system, non-integration of small farms in the food chains, changes in the consumer preferences, willingness to increase the value-added at farm level and the economic performance of farms), farmers' pre-existing off-farm skills (food processing) and their openness to novelty (new technology, new varieties and species etc.).

### **Influence of farmers' attitudes and beliefs to their decision-making**

Openness for novelty is the main driver for searching out new ideas and learning what generate changes at farm level in Nord-Est region. Most investigated farmers are aware that the chance of small farms to enter and maintain their position on the market is closely linked to identifying and fructifying new market niches to create a competitive advantage, i.e. novelty / rarity / uniqueness of their products.

Risk-taking attitude seems to influence the Nord-Est region farmers' willingness to try out new ideas and push them to find out innovations that increase the value-added of their business.

Farmers' willingness for independence, by developing of a business on their own, based on the use of the farm's position rent / location in an area with high agricultural

potential, with an increasing sale market on which uncovered market niches exist, as well as land ownership / access to land (either own or inherited land) – represent another important driver for the interviewed farmers' decision-making.

The interviewees signaled out the reluctance of other farmers in sharing info (seen as selfishness), which some of the farmers who wanted to adopt technological innovations on their farms were facing. It seems that these interviewees could find solutions to surmount this difficulty by experimenting on their farms, learning from their own mistakes and/or through implementing change step by step to reduce the risk of failure.

On the other hand, a general mistrust in a positive evolution of the economic environment, together with attachment to the traditional way of doing agriculture in the area, are more likely linked with the decisions that enhance robustness.

Embracing the ecological way of thinking directs the learning process and drives farmers' decisions through finding and changing the way of operating the farm.

### **Main factors enabling learning**

Old age and uncertainty about farm succession are the main factors that constrain learning processes in Nord-Est region are:

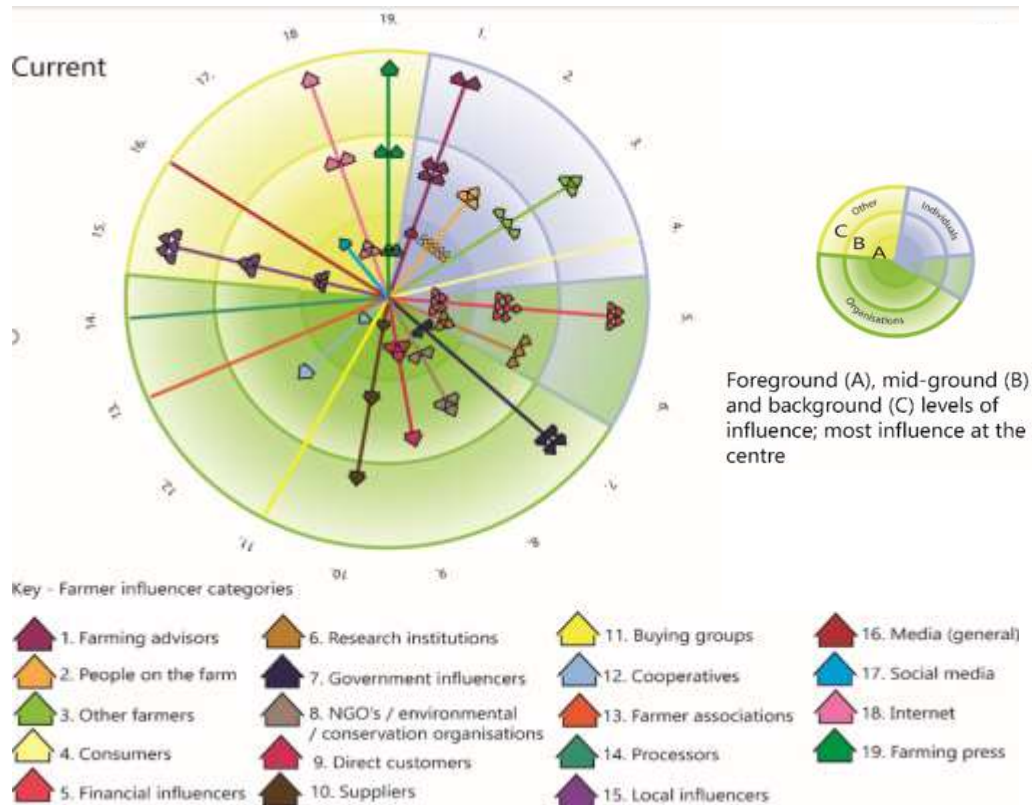
- old age is associated with limited abilities in terms of access to information by using the new communication channels (ICT), obstructing the learning processes as far as the newest knowledge / information is presented under virtual format and is less accessible in classical formats;
- the uncertainty in terms of successor reduces farmers' motivation to develop their business, these following conservation strategies for the business under its current size or even reduce its size up to the level at which the farming business produces sufficient incomes for a decent living for the members of the small family.

The most important factors in enabling learning are the following: the farmers' willingness to change their socio-economic status; their abilities to look for new ideas and information on how to implement these ideas at farm level and having an off-farm job and income.

- the willingness to change their socio-economic status is driven by their need to become economically independent and perform an activity in consonance with their own self-identity and values;
- the ability to look for new ideas that at the same time are possible to implement on their own farm is specific to the young farmers who have recently taken over the farms. These have different views on how to do farming: they are looking for market niches for a much more efficient use of the natural and human resources of farm, they are looking for off-farm funding sources – European funds – and do not fear to experiment the latest technologies;
- the ability to seek out information necessary for their proposed changes (especially, due to their ICT skills) gives farmers a competitive advantage, that of product novelty on the market;
- having an off-farm job and income provide farmers with the financial resources for knowledge acquisition, for initiating new ideas, experiments and invest in them without depriving the farm's current activity.

### **Main influencers on farm decision-making**

Family members are identified as the most influential on decision-making, followed by the agronomist, researcher and university professors (Figure 2). The influence of local farmers either increases through partnerships or decreases because of conflicts. Banks are among the least influential, as most small farms are reluctant to take out loans, while the APIA (Payment and Intervention Agency) is important. Customers are important influencers, including markets, farm shops and individuals.



**Figure 2. Romania mixed farming influence map**

*Source: authors elaboration based on interviews answers*

Specialized TV broadcasts are important sources of information, as are NGOs who help farms and facilitate meetings and fairs. The influence of Local Action Groups and processors has diminished over time, with farmers seeing large processors as bad business partners as they pay low prices for milk. The internet has grown to be a very important source of information.

### **Learning strategies adopted by small mixed farmers for managing risk and adapting to change**

The results of the analysis showed that in terms of learning strategies for managing risk and adapting to change, the interviewed farmers from Nord-Est region in Romania indicated as most important the ability to seek out information and to choose the proper and reliable channels to find out the necessary knowledge for the implementation of changes at farm level.

Thus, two-thirds of them declare that they are trying to get informed on novelties by individual documentation, directly from on-line sources (internet) or from specialized publications (available under electronic or printed format – books, periodicals). A documentation channel with significant impact in farmers' learning process in the Nord-Est region is represented by the specialized TV programmes, which disseminate replicable examples of good practices and exemplary agricultural business cases (many of them innovative). Through individual documentation, farmers are searching / documenting new ideas that they can adopt on their farms; documentation helps them understand the change advantages and risks and make an informed decision.

One-third of the interviewed farmers have proved openness to the new ideas by seeking out novelties to inspire them in technological updating, in risk management and / or change of farm production structure, to increase farm performance. These farmers prove flexibility, being non-locked into the traditional way of operating, specific to the region.

These searched for and adopted new crops, with high value added, suitable for the agro-pedo-climatic conditions of the region, to replace the traditional cereal crops specific to the region's farming system. Other farmers searched for (and adopted) innovative ideas in farm livestock production, adopting species that do not represent a tradition for the region. These farmers' searches generally aim at covering market niches that increase the economic performance of their farms with minimum human and financial effort required by the change process.

In the learning process, the involvement in supportive social networks has had a decisive role for all interviewed farmers.

- the networks with the greatest influence in the transfer of knowledge and information at the level of farmers in the Nord-Est region are based on trust and close social relations (family or friendship relations). Thus, the advice of trusted farming friends is accepted / perceived as valid in the knowledge transfer process by half of the interviewed farmers. One-third of farmers valorize the advice by the experts in the field (with whom they have friendship relationships and thus, trust-based relationships) when they take into consideration the idea of change on the farm. In the decision on change, family support also seems to be very important.
- farmers/workers that acquired experience by working abroad are also important actors in the process of skills and/or knowledge acquisition for half of the interviewed farmers. It seems that the Romanian farmers have a greater trust in transparency and openness in sharing experience with farmers / farmer groups or workers who worked in agriculture in foreign countries. On the other hand, the orientation towards learning from the experience of farmers operating in other countries is also determined by the innovative character for Romania of changes that the farmers from Nord-Est are implementing and consequently by the lack of experience of Romanian farmers or experts in these new fields.

Eight of the fourteen interviewed farmers chose as learning modality experimenting on their own farms by introducing new varieties, cultivars or animal breeds in their production structure (lavender, Paulownia trees, medicinal herbs, quails, goats, rabbits, etc.) or adopting new technologies (organic farming). If experimentation had good results, farmers decided to gradually implement change, little by little, hoping to avoid the risks incurred by of lack of knowledge and experience regarding the new technologies, farm products and new markets.

The previously mentioned precaution, in relation to the lack of expertise in the new fields of activity that farms are adopting, has triggered learning processes through which farmers have accessed training courses and / or acquired knowledge in alternative ways of farming.

The experiences and experiments on the farm represent an important learning source for half of the interviewed farmers. These have equally learnt from their own mistakes / successful experiences. Half of the farmers also prove their ability to reflect on their own farm activity and by this to identify / find out modalities through which they will be able to better manage their business in the future. In many cases, these reflections led to conclusions regarding the necessity to implement major changes in the farm size, in the production structure, in the farming technologies, management and marketing their farm products.

## CONCLUSIONS

The results of the analysis showed that in terms of learning strategies for managing risk and adapting to change, the interviewed farmers from Nord-East region in Romania indicated as most important the ability to search for information and to choose reliable channels to find out the necessary knowledge that would enable them to take the most appropriate decisions regarding changes at farm level. Thus, two-thirds of the respondents said that they seek information from individual documentation, directly from on-line sources (internet) or from specialized publications. A further information source is the specialized TV programmes, which disseminate replicable examples of good practices and successful agricultural innovative business cases. Farmers are searching/documenting new ideas that they can adopt on their farms; it helps them understand the advantages and risks of change and to make an informed decision.

One-third of the interviewed farmers showed openness to new ideas by seeking out new technology, innovations in risk management and/or change of farm production structure, aimed at covering market niches able to increase the economic performance of their farms with minimum human and financial effort required by the change process. Flexibility seems to be the common attribute of these farmers, as they are not locked into the region's traditional farming system.

In the learning process, involvement in supportive social networks had a decisive role. The networks with the greatest influence in transfer of knowledge and information at farmers' level are based on trust and close social relations. One-third of farmers valorise the advice by experts in the field (with whom they have friendship and thus, trust-based relationships) when they take into consideration the idea of change on the farm. In the decision on change, family support also proved to be very important.

Farmers/workers that acquired experience by working abroad are also important actors in the process of skills and/or knowledge acquisition for half of the interviewed farmers, in terms of information on new crops/animals, improved technologies, new management and marketing practices.

Most interviewed farmers experimented in their own farms with new varieties or animal breeds in the production structure or adopting new technologies such as organic farming. By learning from past mistakes and successes, farmers learned that changes need to be gradually implemented, thus being able to avoid any risks resulting from lack of knowledge or experience regarding the new farm products, technologies and new markets. The lack of expertise in the new fields of activity has triggered important learning processes such as attending specialty education or training courses.

The three most important factors identified as enabling farmers' learning across the adaptive capacity cycle were: (1) their willingness to change the socio-economic status (by becoming economically independent and match their activity with their own values and self-identity); (2) their ability to look for new information and ideas as well as ways to implement them at farm level (mostly in the case of young farmers having other views than their parents and are willing to experiment and innovate) [12]. Importantly, alternative source of income (for example, off-farm job) gives farmers the monetary resources for experimentation and implement new ideas. Also, an alternative source of income provides the opportunity to invest in innovative ideas without depriving the farm's current activity.

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