

ASSESSING AGROECOLOGICAL VOCATIONAL TRAINING APPROACH THROUGH THE EYES OF FARMERS

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ABSTRACT

Agroecology (AE) as a broad collection of good farming management practices, recognizes the impacts of agriculture on ecosystems and society. Even though AE does not have a specific certification method, its basic components can be identified at the farm level too. In the context of the tr.AEce project, research was conducted in order to investigate the concept of AE at the farm level. Furthermore, the topics that can be taught in the form of vocational training designed for farmers in connection with AE have also been identified. Accordingly, a 6-module training with 7 events was organized with the aim of testing the developed AE vocational training curriculum. The main target group of the training was conventional farmers who are committed to changing their farming methods and are open to agroecological solutions. The participants had opportunities to express their opinion about the training after each module day, and after completing the whole course. The analysis of the feedback questionnaires seeks the answer of whether the practice-oriented vocational training course that promotes well-established good practices combined with basic theoretical knowledge is considered an effective method to increase farmers' knowledge about AE. The results confirmed that the training helps conventional farmers in the transition towards AE which also contribute to the even more efficient use of EU subsidies.

Keywords: agroecology, vocational training, farmers, practical feedback

JEL codes: Q01, Q13, Q18

INTRODUCTION

Agroecology as a holistic approach

Many studies and research discuss the topic of sustainability and try to find the best alternatives for sustainable development (Lozano, 2022). By recognizing the limits of endless growth, the ideas of harmonic development have become in the limelight. The human society closely fits into the natural environment and if the environmental boundary conditions are damaged, the human society also is endangered (*World Commission on Environment and Development*, 1987). According to *Altieri & Nicholls* (2012) an agricultural strategy that fits within the sustainability criteria, must contain the basic requirements of a viable and durable agricultural system while facing the challenges of the twenty-first century (such as land degradation, excessive input- and

energy consumption, large emissions of greenhouse gases). The question is often raised of what sustainability means meanwhile we are looking for a general approach that can be applied in order to reach sustainable agriculture and food sovereignty.

Agroecology (AE) may provide the answer as it can be defined as an interdisciplinary field and characterized as a science, a set of practices, and a social movement based on ecological and social justice principles (Gliessman, 2013; Altieri, 2018, Wezel et al. 2009; Wezel et al. 2018). FAO (2018) describes agroecology as follows: 'Agroecology is an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. It seeks to optimise the interactions between plants, animals, humans, and the environment while taking into consideration the social aspects that need to be addressed for a sustainable and fair food system.' As a science, AE applies a holistic approach and participatory research, as well as transdisciplinarity that includes different knowledge systems. As a practice, it is based on the sustainable employment of local renewable resources, local farmers' knowledge and priorities, the cautious use of biodiversity to provide ecosystem services and resilience, and solutions that provide multiple benefits (environmental, economic, social) from the local to the global level. As a movement, it defends smallholder and family farming, farmers and rural communities, food sovereignty, local and short food supply chains, diversity of indigenous seeds and breeds, and healthy quality food. (*The European Association of Agroecology*, 2016).

trAEce project – Agroecological Vocational Training for farmers

Experts from 6 institutions in 5 European countries (Austria, Czech Republic, Hungary, Portugal and Romania) worked together to describe a clear, practical approach to agroecology (AE) and to provide training tools for farmers and instructors that aim to assist in integrating agroecological principles into their practices. The first step in the project was for each partner team to develop a country-specific agroecology situation analysis, which identified relevant political discourses, regulations, actors, practices, networks, etc. while documenting a comprehensive view of the level of knowledge of farmers regarding agroecology-based activities. The report also documented current AE-related training courses and learning opportunities that are available at different levels (Bálint et al., 2020). Based on these situation analyses, the AE vocational training program designed for farmers was elaborated and refined by the project team, which incorporated the results of pilot training sessions (see the Materials and Methods). In order not to limit knowledge transfer to one-off training sessions and to more effectively spread knowledge of AE practices, the project team also developed a methodological guide designed for trainers and educators for introducing agroecology to farmers (Hudcová, 2022).

One of the ideas behind the agroecological vocational training designed for farmers is the more efficient use of EU subsidies, as the training would help practitioners in the agroecological transition. Provided incentives and subsidies cannot have the necessary impact required for wide-scale adoption of agroecological practices if they are not accompanied by awareness-shaping training created for farmers. Consequently, practice-oriented vocational training courses that promote

well-established good practices should be considered an effective method to increase farmers' knowledge of AE.

MATERIALS AND METHODS

In the framework of the project a pilot training course was organized. The aim of this pilot training was to test the vocational training program and curriculum developed with international project partners. The main target group of the training was conventional farmers who are committed to changing their farming methods and are open to agroecological solutions.

The training (7 events) took place from 21 March to 25 April 2022 within the framework of six modules:

1. Agroecology – shaping attitudes;
2. Permaculture farm design and planning;
3. Economic strategy and business model;
4. Agroecology in practice (three optional topics: arable crop production, small-scale fruit and vegetable production and grassland management and animal husbandry);
5. Added value and marketing;
6. Social benefits of agroecology.

The theoretical modules were hosted by the Hungarian University of Agriculture and Life Sciences Szent István Campus, Gödöllő, while the practical modules were held at partner farms in Csoroszlya Farm (Szár), Zsámboki Biokert (Zsámbok), Pállagvölgyi Biokert (Kóspallag) and Táncoškert (Polgár).

The application to the training was open for farmers who engage in full-time or part-time agricultural activities, has some level of agricultural experience. More than 70 applications were received and based on their short motivations 15 farmers were selected. It was important to select female participants as well and a big emphasis was also placed on choosing conventional farmers who are ready to change. The participants had several opportunities to express their opinion about the training. On the one hand at the end of each module the participants received a paper-based questionnaire about the module content, the methodology of teaching and the preparedness of the trainer, and on the other hand at the end of the entire training they had the opportunity to express their opinion through a Google Form where they could evaluate the whole training course in general. We received 11 responses to the general questionnaire, which means 73% willingness to respond. In the case of written module questionnaires this ratio was almost 100% as we could control whether the participants completed the forms or not. However, it should be noted that for some modules, the number of responses received is lower than the number of respondents to the general questionnaire due to the lower number of participants (e.g. optional module 4 days).

The questions of the two questionnaires were partly open questions that required short answers or closed questions where Likert Scale from 1 to 6 was used. During the analysis of the responses, an average was calculated from the indicated scores. For the sake of possible comparison, the first seven questions of the module questionnaires were the same. These were followed by specific module-related questions.

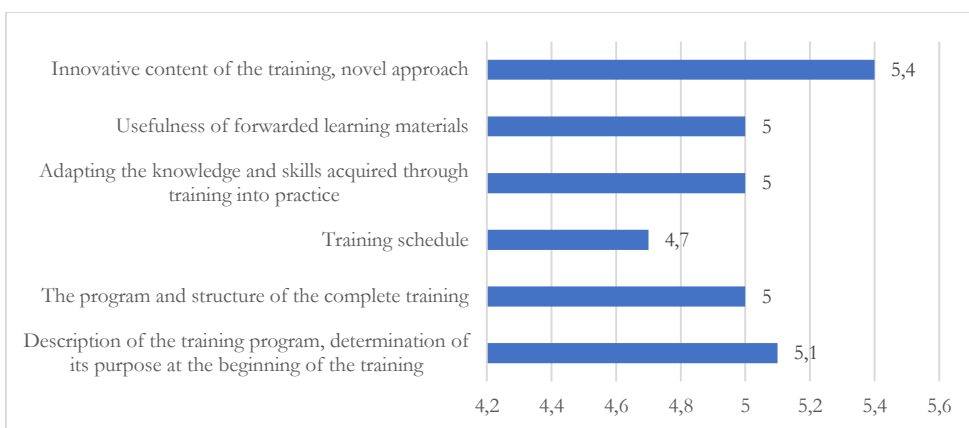
RESULTS AND DISCUSSION

General evaluation

As a first part of the general evaluation sheet, participants were asked to evaluate the description, the structure of the training program, the determination of its purpose at the beginning of the training, the training schedule, the usefulness of the forwarded learning materials, the innovative content of the training and its novel approach and the adaptation of the knowledge and skills acquired through training into practice.

For the evaluation the average scores calculated from the 1 to 6 Likert Scale was used. The results can be seen in *Figure 1*.

Figure 1: The evaluation of the comprehensive viewpoints (measured with a 1-6 Likert scale)



Based on the results it can be stated that the training and its approach was successful as there are not any evaluation under 4.7. The lowest average belongs to the training schedule. It is important to mention that in the module questionnaires one of the most frequent remarks was the lack of time and that the participants wanted to learn more and in more detail about the topics.

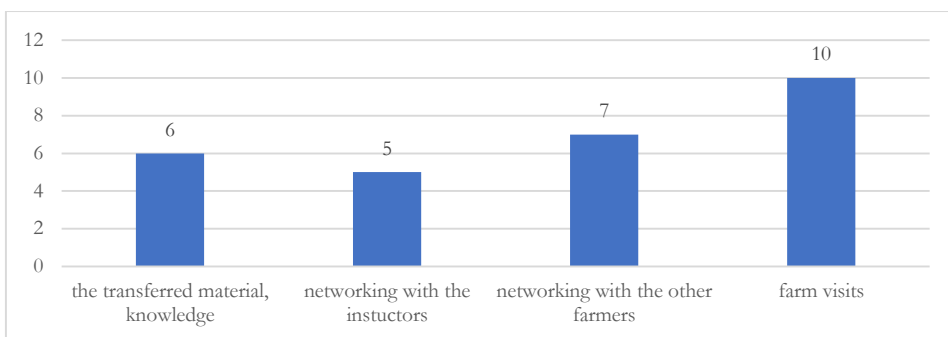
Participants were asked about the topic they would have liked to hear about agroecology during the training. The most relevant answers were:

- regenerative agriculture,
- biodynamic agriculture,
- weed treatment in permaculture,
- fruit production,
- profitability aspects.

This shows us that the participants are open to all alternative agricultural solutions and they think all of them can be part of the agroecological approach.

The next question was related to the most useful thing in the training (multiple answers were possible). *Figure 2* shows the results.

Figure 2. The most useful things of the training (how many times an element was mentioned)



It should be highlighted that almost all of the 11 respondents considered the farm visits useful. An important result of the training is that the practical approach and sharing the personal farm experiences with each other are very important to the farmers.

In the next part of the questionnaire, participants were asked to formulate some criticism about the parts of the training that should be developed or to suggest some changes. The results can be summed up as the following:

- more time for each module to get a deeper insight into the topics,
- more practical experiences and knowledge,
- fruit growing, regenerative and a more holistic approach are missing,
- more focus on the importance of the soil,
- more homogenous training groups with similar farm size or knowledge.

Module questionnaires

As it has already been introduced in the Materials and Method chapter all participants got a paper-based questionnaire at the end of all module days. The first seven questions were identical for all modules.

In the first five questions, respondents had to evaluate some aspects of the training days (the usefulness of the module's content, the time management and preparedness of the lecturer, the method of teaching, and the practical task) on a Likert scale 1 to 6. An average was calculated from the answers. To sum it up in the vast majority of the cases the ranking was between 5 and 6. The few exceptions were: How satisfied were you with the practical part? 4.9 in Module 1. but this was the introductory module with less practical elements, the How well did the lecturer manage to keep to the planned timeframe? 4.9 in Module 4. – crop production and 4.2 in Module 5. – Added Value and Marketing. We have to admit that in these two cases there were unexpected technical problems that caused delays in the program. Module 6 – Part 1 has the lowest ranking with its numbers between 4.8 and 5 for each question. This module day was only an afternoon organized after the half-day long Module 3 and this probably caused the participants to be more tired.

The last two common questions were about what the best part of module day was and what else they would have heard. It is true for all module days that participants liked the practical parts, teamwork and farm visits the best. Most of them would have to hear more about the topics. The other suggestions are summed up in *Table 1*.

Table 1. The suggested topics for the module days

Module 1	Module 2	Module 3	Module 4 crop production	Module 4 market gardening	Module 4 Animal husbandry
agricultural research	market gardening	how to get / raise capital	tools for agroecology	composting	Community Supported Agriculture
comparison of yield averages in organic and conventional farming	economical questions	economic and social effects	manure treatment	plant association	
regenerative agriculture, holistic approach	planning	examples more fitting to small farms	regenerative agriculture	deep mulch	
more practical, measurement data	specific garden practices	economic efficiency	weed control		
		market access, sales, cost efficiency	the conditions for bio / organic production in the crop rotation		
			conclusions of a wheat cultivar experiment		
Module 5	Module 6 Part 1	Module 6 Part 2			
pricing	good practices already operate	tillage			
	practical examples	deep mulch technology			
		economic data, cost/ benefits			

In the next part of the module questionnaires participants had to answer module-related questions about what would they had skipped out from the material and how practical did they find certain methods. In most of the cases we asked them whether they learned anything new during the module day, would they plan to introduce the learned methods and approaches into the practice of their own farm, or have the ecological aspects had been strengthened in them as a result of what you heard during the day.

During the module days, almost everything was new for the participants, they mentioned frequently methodological and technical novelties like permaculture planning considerations, crop rotation, plant association, weed control without pesticides, grow tent, permanent bed system, composting bio power plant, mulching, soil surface covering methods and minimum tillage. They found the economic, marketing, sales, and social aspects important as well, the entire Business Model Canvas method or the approach of the Community Supported Agriculture were considered useful parts of the training.

Finally, participants were asked about their future plans. Based on the knowledge gained during the training they are planning the following:

- buying new lands,
- planning and starting a new farm,
- keep on farming in a regenerative way and trying to build in the permaculture elements,
- composting and the introduction of bio-intensive vegetable production,
- increasing the cultivated area on an “eco-way”,
- starting cultivating on further territories 50 ha already based on the principles of organic farming,
- try to produce crop with strip cultivation,
- mulching,
- pasture design as learned in the training,
- creating a business model.

CONCLUSIONS

Based on the collected feedbacks, agroecological vocational training with a holistic approach is important and necessary for Hungarian farmers. Even if the participants practice conventional farming, all of them are open to new approaches and technologies, if they are also economically convincing for them.

According to our results, the so-called perfect training fits the schedule of seasonal agricultural work during the year, focuses on practical examples, and encourages the exchange of personal farm experiences. Furthermore, the training should provide networking opportunities for both the farmers and the experienced trainers.

The trainers have to find the right balance between theory and practice. Farmers tend to underestimate the significance of theoretical considerations, however, the large number of topic proposals made by the farmers during the feedback session proves that farmers classify all alternative farming methods under the concept of agroecology while they have difficulties identifying its theoretical framework. In the case of permaculture, it became obvious that understanding such a complex approach without a theoretical background is very challenging.

The fact that all of the participants would recommend this practice-oriented training to other farmers and are even willing to pay for the course shows that such training can be a gap-filling initiative in Hungary and sustainable in the long run.

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