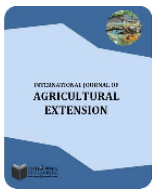

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THE LANDSCAPE OF CREATION AND FACILITATION OF DAIRY SHEEP-FARMERS' DISCUSSION GROUPS IN STABLES IN KARDITSA, GREECE

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A B S T R A C T

This study explores the landscape of the formation and facilitation of dairy sheep farmers' Discussion Groups in Stables (DGiS) in Karditsa Prefecture, Greece, revealing aspects of their specific context and needs. The study concerns an action research project employing grounded inferences and triangulation of multiple data sources to ensure validity. The data were collected during a two-year period through interviews, discussions and 17 DGiS meetings with farmers and local AKIS actors. The study indicates that the DGiS contribute to the exchange of ideas and practices among farmers, while also strengthening their interaction with the local AKIS actors. Moreover, the study highlights the necessity of basic agricultural education and reliable knowledge for improving livestock farming. Furthermore, it points out institutional shortcomings and resistance to change that hinder efficient livestock farming and AKIS actors from playing a constructive role in the creation of a learning environment, especially in view of the implementation of the European framework for cooperation.

Keywords: Sheep-dairy farming, social experiential learning, networking, cooperation, Greece.

INTRODUCTION

Following the accession of Greece into the European Union - EU (then the European Economic Community) in 1981, the administrative burden of the implementation of the Common Agricultural Policy (CAP) was designated to the Greek Extension Service (public service operating within the Ministry of Agriculture – MoA). This resulted in a change in the role of extensionists, as they became preoccupied with bureaucratic-administrative tasks, especially since the early 1990s. Therefore, extensionists became more than ever severely restricted vis-à-vis the provision of advice to Greek farmers; information was provided to those of the farmers who actively sought it, albeit in a rather fragmented, inadequate and inefficient manner (Alexopoulos et al., 2009; Koutsouris, 2014).

Furthermore, the changes in the structure of MoA, which took place in the mid-1990s, did not change the situation. Notably, decentralization, which took the form of the transfer of responsibility for agricultural services from the Ministry to the Prefectures (counties) neither made extension services more flexible and relevant to the needs of farmers nor triggered the establishment of farmer associations/co-operatives, which might take up the responsibility for the financing or delivery of extension services. On the contrary, it made the cooperation between the Ministry and the Prefectural services rather difficult due to conflicting interests of the two administrative levels (Koutsouris 2014). At the same time many cooperatives collapsed, because of the "market- and incentive-distorting government interventions, along with organizational failures ignited by the rent-seeking behavior of cooperative leaders" (Iliopoulos & Valentinov 2012).

In parallel, the Service's educational function was restricted to short-term training (150-300 hours) for those eligible for participation in the EU programmes, i.e. modernisation schemes and the establishment of young farmers (European Community Regulations 797/85 and 2328/91), and continues unchanged to date albeit through the Hellenic Agricultural Organization "ELGO Demeter" (ELGO), also a result of the 1990s changes, operating under the aegis of the Ministry of Rural Development & Food (ex MoA).

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In short, the Greek Extension Service has been in a painful process of bureaucratisation restricting extensionists in office thus preventing them from providing advisory services and contributing to building up farmers' capacities vis-à-vis viable farms and sustainable rural development. This has been verified by a number of studies that attempted to explore the situation in terms of both farmers' perceptions and of the intervention policy and practice of the service (Koutsouris & Papadopoulos 1998; Koutsouris 1999; Gidarakou *et al.,* 2006; Alexopoulos *et al.,* 2009; Koutsouris, 2014; Österle *et al*., 2016).

At the same time, worldwide, there is an emerging view of extension which is no longer that of a unified service but one of 'pluralistic' services (Anderson 2007; Birner *et al*., 2009); the increasingly complex market, social and environmental demands within an increasingly diversified agricultural sector lead towards a more sophisticated and differentiated set of services. Mainline extension services thus give way to a variety of hybrid solutions in an attempt to find the appropriate mix of public and private funding as well as delivery mechanisms to serve diverse target populations. Thus, Birner *et al*. (2009) stress the need to take into account all the actors involved in the advisory activities and their relationships; such pluralistic extension/advisory services hold a central position within or are an integral part of the Agricultural Knowledge and Innovation System - AKIS (Klerkx *et al.,* 2012; Faure *et al.,* 2011).

In the face of such challenges, on both national and international levels, the current work explores the process of creation and functioning of the Discussion Group in Stables (DGiS) initiative addressing farmers involved in sheep husbandry. The main objective is to empirically identify the challenges encountered in the process of facilitating farmers in their decision-making, esp. in terms of their shared understanding of common problems and the taking of concerted action, as well as in establishing linkages between farmers and actors of the micro-AKIS (i.e. the local Agricultural Knowledge and Innovation System). Such an analysis is deemed necessary since in order to develop or deliver a more efficient and targeted service, among other things, an understanding of the needs and interests of the target-group(s) as well as of their environment (esp. micro-AKIS) is required.

Theoretical background: According to Van den Ban & Hawkins (1988), farmers' education can be delivered either by directly showing them the solution to specific problems or by taking them through the process of problem solving. The second way has been selected to be studied in this piece of work addressing the introduction of experiential learning principles in groups of dairy sheep farmers in Greece.

The current paper concerns research aiming at the establishment of Discussion Groups in Stables (DGiS), involving sheep livestock farmers in participatory approaches and experiential learning processes. DGiS draw methods and tools from farmers Discussion Groups (DGs) and Farmer Field Schools (FFSs) in order to promote changes that derive, on the one hand, from the participants' specific conditions of production and, on the other hand, from their need to be integrated within a wider knowledge network and develop interactions that enhance the sustainability of their farm family. Though DGs and FFSs have been developed independently from each other, they share much common ground at a theoretical and practical level as both concern facilitated processes whereby dialogue and reflection take place.

DGs is a participatory, bottom-up approach applying peer-to-peer learning for promoting new technologies and best practices among farmers (Hennessy & Heanue 2012). Adult learning and social learning theories (Bandura, 1977) constitute the theoretical framework of DGs, giving emphasis on interpersonal relationships enabling learning by interacting and affecting behavior. Having started in New Zealand in the 1950's, farmers' DGs are a common practice in Australia, the UK and Ireland. Additionally, in Africa, Asia and Latin America, the Food and Agriculture Organization of the United Nations (FAO) already in the early '80s developed small-scale projects based on strategies implementing problem solving methods, which "promote cooperation between small farmers" involved in "collective, self-help activities" (FAO 1998, Martens 1972).

FFSs are a widespread and well-established methodology which is differentiated from the dominant top-down mode of operation of extension services by facilitating learning rather than teaching and by encouraging local innovation processes rather than the transfer of new technology and know-how (Duveskog, 2013). There is a substantial number of publications indicating the positive impact of FFSs on farmers' decision-making capacity on pesticide management, animal farming, environmental issues, overall resulting

in poverty reduction and farmers' empowerment and well-being (Vaarst *et al.,* 2007; Mancini *et al.,* 2008; Davis *et al.,* 2012; Friis-Hansen & Duveskog 2011; Van den Berg & Jiggins 2007; Duveskong, 2013). In FFSs the interaction among participants is based primarily on discovery-based learning exercises, group experiments and agroecosystem analysis (Davis *et al.,* 2012). FFSs are based on adult learning and experiential, transformative learning theories.

Experiential learning or learning-by-doing is defined as a process whereby learners' experience is transformed into knowledge (Torkington, 1996). It is 'practical in nature' and involves the 'sharing of experiences and resources'; it therefore enhances critical thinking, helps participants make sound decisions, while encouraging collaboration and engagement in common actions (Cranton 1994; Percy, 2005). Moreover, stimulating farmer learning through social experiential learning, i.e. methods whereby knowledge and skills are developed through interaction and the sharing of experiences (Bonesso, 2015), is meaningful insofar as it goes beyond the farm and engages actors - either individuals or organizations - that constitute the farmers' local professional network. The aim is to empower farmers by establishing better understanding and higher-level coordination, while dealing with financial and also environmental and social sustainability issues emerging at farm level, but not limited to it. Thus, learning interventions, though rooted in farms, can only be realized at the social level by helping farmers extend their strategic space (Geerling-Eiff *et al.,* 2013) and create conditions conducive to future cooperation and synergies.

Furthermore, this approach accords with the systemic view of innovation emerging from extended networks as a result of interactive and evolving processes among actors (Smits & Kuhlmann 2004), which produce multiple changes at a technical, financial, organizational and social level (Lamprinopoulou *et al.,* 2012; Klerkx *et al.*, 2012). This concept also applies to the European Innovation Partnership (EIP) approach aiming at the establishment of Operational Groups in order to bridge the gap between the actors of the Agricultural Innovation System (Österle *et al.*, 2016) and generate innovations by combining diverse sources of knowledge. Within such a framework, knowledge, as the outcome of learning processes, trigger the development of tailor-made solutions addressing specific needs.

The research area: The Prefecture of Karditsa is a half mountainous-half plain area located in Central Greece. Its primary sector is organized around small and medium-sized farms (Table 1). The cultivation of cotton covers 45.5% of the cultivated areas, with wheat, corn, tobacco and vegetables complementing its primary plant production profile. The contribution of stock farming is low with an average of 70 sheep per sheep-farm holding.

Table 1. Agricultural holdings and utilized agricultural land in Karditsa (2013).

	Number of Agricultural Holdings	Utilized Agricultural Land (ha)	Holdings (%) Prefectural level	Utilized Agricultural Land (%) Prefectural level
Crop holdings	8980	58600	70,4	70,2
Livestock holdings	792	1200	6,2	1,4
Mixed crop/ livestock holdings	2983	23700	23,4	28,4
			Holdings % Country level	UAL % Country level
Total in Karditsa Prefecture	12755	83500	1,8	2,5

Source: Hellenic Statistical Authority, own calculations

METHODOLOGY

The research is set in context of action-research, which is formed in conjunction of action, research and participation. Action-research is realized in subsequent learning circles with each of them including strategic planning, implementation of plan, observation and (self) assessment of the outcome, which finally guides the planning of the following learning circle (Cohen, 2008).

Action-research aims at the "increasing ability of the involved community or organization members to control their own destinies more effectively and to keep improving their capacity to do so within a more sustainable and just environment" (Greenwood & Levin 2007). It rejects the dichotomy between theory and action and insists on the accomplishment of justified opinions and knowledge contributing to understanding

societal challenges and changing conditions. Sources of knowledge are practical considerations that can be tested through active participation in subsequent actions. Consequently, action-research allows for the exploration of persistent problems, within their context, by establishing equal and democratic relationships among the researchers, who are the "outsiders" aiming at facilitating the process and contributing to both problem solving and the scientific field, and the "insiders" who are actually the owners of the problem. Essential elements of this reciprocal learning process are the involved parties that jointly define the problematic situation (Greenwood & Levin 2007), and create room for the establishment of communication channels, where participants feel able to traverse without fearing the pitfalls of the learning process. Such spaces – "communication arenas" according to Greenwood & Levin (2007)-facilitate the learning process by providing opportunities for reflection and allowing the co-creation of knowledge.

Following an action research process implied that research was developed in two main phases (Greenwood & Levin 2007). The first one concerned the definition of a major problem which, in turn, would stimulate the learning process; increasing farm profitability was the main question that emerged through discussions with actors during the period before the formation of the group. The second phase concerned the opening up of a "process of reflection" which produced common experiences and understanding among participants (DGiS farmers and other actors participating in the meetings) as they re-oriented themselves towards identifying solutions to the problem(s). Thus, communication arenas extended beyond the space of interactions developed between the facilitator-researcher and the participated farmers to include all interested actors involved in the local AKIS system.

In this framework the facilitator- researcher had a triple role: Throughout the intervention she linked farmers and other AKIS actors playing the role of a knowledge broker (Meyer, 2010; Kilelu *et al.,* 2013). As a moderator, during the meetings she facilitated the free flow of information and encouraged participation (Bolliger & Zellweger 2007) based on the principles of dialogue (Isaacs, 1999), while on parallel she tried to motivate participants to undertake the DGiS's (autonomous) function. Finally, from a researcher's point of view she monitored the dynamics developed during the negotiation and learning processes, thus potentially contributing to rising awareness among policy makers of the involved actors' needs and wishes (Leeuwis & Van den Ban, 2004).

Data Collection: Action-research draws techniques and methods from the social sciences' tool-box in order to create learning spaces and learning processes and reinforce conceptual development resulting from taking action. This paper is based on data gathered by the first author/facilitator during the 'negotiations' with national and local actors, in order to establish a first contact with farmers, as well as with farmers during their 'recruitment' in DGiS and the group building processes. Additionally, data were collected during DGiS meetings, starting in September 2015, and informal conversations with each of the farmers participating in the DGiS. Overall the data covers a period extending from March 2015 up to May 2017. All discussions during the DGiS meetings were recorded with a digital voice recorder, transcribed and analysed (exploratory analysis; Sarantakos, 2005). On parallel, extensive notes were kept during and after the negotiation process and informal conversations with farmers and other actors; these data were analyzed in categories concerning the phases of the intervention, the actors involved and the participating farmers' needs.

Data validity in action-research is a long-debated topic. Greenwood & Levin (2007) distinguish between internal and external credibility, measuring the first one according to workability, i.e. to what extent action-research helps participants in problem solving and/or empowers them. In the research presented here, we tried to overcome action-research limitations concerning with external validity by employing grounded inferences based on observation and triangulation of multiple data sources to ensure that the research is valid and rigorous.

RESULTS

Initiating the creation of DGiS: Contacting and recruiting livestock farmers who would volunteer to form a group, took quite some time. The first attempt to communicate the intervention took place in July 2014 and targeted farmers trained in the framework of the 'Young Farmers' Program, in collaboration with ELGO. The most significant outcome of that meeting came from a young farmer who, although not being interested himself in participating, declared that 'my uncle would be very interested in participating in such visits'

exchanges among farmers'. This resulted in contacting an opinion leader who played a decisive role in the creation of DGiS.

From March to August 2015 more intensive efforts were made and a number of organizations active in the area - apart from ELGO - were contacted. These were a local dairy farmers' cooperative, a local dairy farmers club, the Center for Genetic Improvement of Livestock in Karditsa (CGIK), the local Development Agency of Karditsa (AN.KA. S.A.)1 as well as the University of Thessaly (UTh), which have been involved in projects supporting local livestock farming and thus have access to livestock farmers. The request to these organizations was to bring the researcher/facilitator in contact with farmers they were collaborating with, but at that stage only one of them responded and arranged a meeting with a small group of farmers. The meeting was held with the presence of five farmers who, after getting informed, agreed to participate and – as one of them said – 'help' the researcher/ facilitator. More contacts with individual farmers and farmers' representatives were carried out and a meeting was agreed; however, only few farmers turned up and thus no progress was made at that time.

Following, in August 2015, an information meeting was re-organized after all the concerned organizations agreed to communicate the date of the event to the farmers they collaborated with. During the meeting, it was explained to farmers that the group to be formed relies on the principles of dialogue and respect towards all participants. The formation of the group aims to serve their goal of keeping their farms sustainable and profitable, thus they should feel free to set specific targets and to this end form subgroup. The means towards such an aim derives from their collective knowledge and practices as well as the knowledge that external actors can bring to the group. Thirteen farmers participated in the meeting, at the end of which eleven of them agreed on the formation and initiation of a DGiS. Half of the farmers who formed the group were accessed through the 'Young Farmers' Program, while the rest concern two teams of friends and relatives - one connected with the Centre for Genetic Improvement of Livestock and the other with the abovementioned local opinion leader who actively supported this effort.

Furthermore, from the initiation of this experiment the researcher-facilitator contacted several departments of the Ministry of Rural Development and Food as well as relevant laboratories of the Agricultural University of Athens (AUA) to gain access to knowledge on certain technical and regulatory matters. In certain cases, these efforts bore fruit; there has thus been a constant flow of information and collaboration since then. In other cases, though, respondents stated that they could only work with clear-cut cases related to their specific subject-matter and they were not able or willing to orient the researcher. Moreover, in one case help was denied, on the grounds that the freelancer scientists of the sector make their living out of this kind of information/advice and that farmers should ask them for solutions. Overall, these discussions resulted in gaining a broader view of the opinions that other related professionals have about livestock farmers and their professional conditions.

It is worth noting that at the initiation of the project almost all organizations/experts/academics felt it was necessary to draw the researcher's attention to farmers' low education levels to which the limited understanding of problems and rough manners are attributed.

The participating farmers and local actors: The farmers who participate in the DGiS run farms that differ significantly between them regarding the structure of the farming system, i.e. the herd size, breed, daily management routines and goals of the farmer. They are sheep breeders, coming mainly from families without professional livestock farming background. Nevertheless, their parental families used to breed a small number of sheep for covering family needs for meat and dairy products.

A total of 33 farmers, aged from 23 to 55 years, participated at least in one meeting with a core of nine of them participating either in almost all the meetings from the initiation of the group (five farmers) or in more than half of them (four farmers). Five of them employ immigrants, while the rest run their farms either alone or with the help of their family. All the farmers participated in at least one meeting run on their own farms in the plain area of the Prefecture; none of them has had agricultural education or training in livestock farming. Four of them are members of the local

[1] The Development Agency of Karditsa aims at rural development by encouraging and coordinating local initiatives and projects and providing technical support to local authorities and businesses. Its operation is based on multidisciplinary project teams and building networks and cooperation with educational and research institutes (Koutsouris 1999).

cooperative (two of them are also members of the Board), while 3 others (from the core group) became members during the period of the DGiS's meetings.

After the formation of the group a number of local actors working with livestock farmers expressed interest to participate in the meetings. During the discussions, some of them preferred only to be observers, while others tried to impose their agenda. Yet, others contributed considerably; they shared their experiences with farmers, clarified certain points in the discussions by either questioning or providing information on their field of expertise. Among them, two senior staff members of one of CGIK, private sector veterinarians that collaborate with the farmers of the DGiS participated in most meetings; the personnel, the president and another member of the Board of the local cooperative also participated in some meetings. Moreover, the two members of the cooperative Board, being farmers themselves, hosted one DGiS meeting each. However, it had not been possible to attract more coop farmers despite the fact that in several occasions they had suggested organizing a meeting to inform the coop members about the benefits of DGiS at a convenient time.

In general, by observing and familiarizing themselves with the group processes, non-farmers were expected to become more willing to contribute their knowledge and network. Nevertheless, as one participant said, 'they were more interested in ideas for building their own groups and helping the farmers they already collaborated with'. Indeed, the project-team based in the UTh, which participated in the first meeting of the DGiS, managed to expand its network of farmers keeping local sheep breeds.

Concerning interactions among the abovementioned local AKIS actors, AN.KA. S.A. and the UTh have a collaboration with a sheep-farmers' club, which turned into a cooperative, and local cheese dairy. The collaboration started in the framework of a European project with the involvement of the AUA as well. The project was finished but the collaboration continues aiming at the creation of high quality, high added value dairy products and their promotion in the world market.

The meetings- Exchange of experiences: The meetings took place approximately once per month, mainly in the participants' farms – with a different farmer hosting the group each time. Other group activities concern visits to the establishments of ELGO Demeter, the Center for Genetic Improvement and a local cooperative for discussing issues relevant to their mission and participation in an in-class lecture-and-discussion.

The general design was that each on-the-farm meeting took approximately 2 hours and consisted of two parts: it started with a short introduction of the agenda by the facilitator; then the host farmer showed other participants around (the herd, the stable, the milking parlor, pastures etc.); and the process continued with discussion among participants. During the on-farm guided tour, visitors could ask questions and hosts provided short clarifications. Participants had the freedom to elaborate on their observations and explanations and to provide suggestions to the host during the discussion. The implementation of this plan was not without difficulties in the first few meetings, which were less structured and (some) participants were interrupting each other/ spoke before others concluded.

During the discussions, much attention was given to allow all farmers' opinions to be freely expressed and clearly heard. For this reason, the facilitator encouraged group members to express their opinion either by addressing open questions to all members (such as if they wish to add a comment, if someone has a different opinion, etc.) or by addressing specific members who she knew they had certain experience and knowledge on the topic discussed. The facilitator kept the time, put notes in a flipchart, thus creating a rough map of the discussion, summarized the main points and kept records of the meetings.

It is worth mentioning that, in practice, the meetings rarely finished when farmers depart from the visited farms; discussions continued with most participants in local taverns. There, the conversation was punctuated with examples and situations which are described in more detail. It is noted that none of non-farmer actors who had occasionally participated in the meetings followed the group in after-farm-visits get-togethers.

During the period considered, two reflection meetings took place as well. They aimed at summarizing past meetings in order to encourage farmers to reflect upon their needs, thoughts and feelings and thus provide the facilitator with their insights for further improvements of the DGiS. In these meetings, as well as in discussions with farmers who were not present but participated regularly in DGiS, the main evaluation questions concerned the degree of their satisfaction and benefit as

well as changes they would like to see in next meetings and, in particular, the facilitation process. Farmers agreed that participation in DGiS was beneficial, because they learned about stable equipment functionality and practices in real conditions and took ideas that put into practice in their farms and helped them save money and time. They were very keen to and satisfied from visiting farms and exchanging opinions with their colleagues, especially in the cases of modern holdings using technologically advanced practices.

A crucial question that emerged among the core farmers, however, concerned the possibility to abandon the group's openness and become a closed group as this would enhance group functionality and trust, allowing for benchmarking and more efficient utilization of other members' ideas and suggestions on the basis of more concrete farm elements. Nevertheless, farmers agreed that exchanging experiences is of paramount importance and thus they welcome newcomers; moreover, they asked for external scientific input, i.e. bringing them in contact with knowledgeable AKIS actors, especially academics. Moreover, the idea of organizing excursions and visits in other areas was brought forward. Concerning the facilitation process, farmers noted continuous improvement.

Main themes being discussed: The main themes being discussed in the meetings are presented in Table 2. During the on-farm visits technical issues related to stable facilities and equipment and best practices concerning nutrition and the reproductive cycle were discussed. In the four in-doors meetings that took place in the establishments of local AKIS actors discussions mainly concerned farm strategies (such as herd genetic improvement and PDO products) and policy instruments, legislation and available financial tools (modernization schemes for the improvement of stable facilities, cooperation schemes, etc.) that potentially improve farmers' professionalism and farming conditions.

All themes discussed in the meetings were suggested by the host farmer and/ or the group members. Before the meeting a conversation between the facilitator and the host farmer was held on the topic(s) the farmer would prefer to be discussed. When the farmer did not express any preference the themes emerged and were specified in accordance with the farm conditions and the phase of the productive circle of the specific flock. Afterwards, all members were informed about the agenda (i.e. before the meeting) and had the opportunity to suggest specific, high priority issues of their concern. Moreover, during the meetings unexpected issues emerged, which were either discussed promptly or addressed at a next meeting.

In the after-farm get-togethers issues that had been coming up in discussions at farms were highlighted with experiences and elements from farmers' personal stories. Apart from the technical aspects, the most intensely discussed issues concerned:

Policy issues that form the European and the national regulatory framework in livestock and policies implementation efficiency. The rationale of direct payments (subsidies) and certain policies, such as on Biodiversity and Protected Destination of Origin products, do not seem, according to the farmers, to be justified; farmers perceived them not as efforts to protect the rural environment and small farmers' income but as attempts of imposing additional restrictions. In addition, delays in the implementation of certain European and national policies provoked uncertainty and prolonged farmers' difficulties. At national level, the fact that many farmers were in debt and/or operating under severe liquidity restrictions rather eliminated their capacity to take advantage of programs/projects, as for example modernization schemes; finally, and the harsh impact of the taxation policy on farm viability was underscored.

Farmers' interaction with public services, especially those related to authorizing and licensing stable facilities and modernization schemes. Cases were reported about public servants who unduly had delayed farmers' accession to programs or licensing stable facilities.

Over-priced services and cases of misleading behavior from private sector suppliers and freelancers. Farmers in many occasions brought up the high costs of feed and veterinary services as well as of consultancy services related to access to EU programmes and, in general, of private sector services provided by suppliers and freelancers. Moreover, it was mentioned that some suppliers promote non-standardized products – i.e. of unknown composition, especially during the herd reproduction season - promising outstanding results in herd health and productivity; during the discussion it came up that a considerable number of the farmers corresponded positively to such promises.

The connection with universities and especially with the Faculty of Veterinary Medicine based in Karditsa. Farmers complained that universities are not approachable and, especially at local level, wished the Faculty of Veterinary Medicine to get involved in the dissemination of knowledge and good practices. The farmers craved reliable scientific knowledge and believed that those who have the knowledge should intervene and advice policy makers on proper solutions.

The supply of certified live animals and especially the locally bred ones for herd reproduction. The supply of certified, locally bred live animals was a much-discussed issue during meetings, given that the locally bred reproduction animals cannot meet the demand.

Table 2. Participation and main topics discussed in DGiS.

Meeting	Number of Farmers	Number of Participants	Main topics discussed
Information meeting August 2015	11	15	Provision of information and decision making on the DGiS formation
Meeting 1, Sept. 2015	11	17	General discussion on prominent farm issues- Getting acquainted with each other
Meeting 2, Oct. 2015	9	11	Livestock facilities - holdings hygiene. Questions on Modernization Plans, Financing
Meeting 3, Nov. 2015	9	9	Sheep balanced diets
Meeting 4, Dec. 2015	16	19	Sheep precision farming - Breeds. Visit to an intensive production farm
Meeting 5, Jan. 2016	13	17	Farm productivity, milk prices - Visit to the establishments of a dairy-livestock cooperative
Meeting 6, Feb. 2016	17	19	Breeds and Protected Designation of Origin. Visit to the CGIL
Meeting 7, Mar. 2016	12	13	Lamb breeding, weaning. Farm data records
Meeting 8 May 2016	8	8	Mastitis - Entertainment farming, agri-tourism
Meeting 9, Jun. 2016	7	9	Herd preparation for reproduction; artificial insemination
Meeting 10, Jul. 2016	10	10	Oestrus synchronization - Method demonstration
Meeting 11, Jul. 2016	13	13	Reflection meeting. Milk prices, milk quality control
Meeting 12, Sept., 2016	9	9	Modernization Plans- cooperative schemes -Visit and discussion at the facilities of ELGO Demeter.
Meeting 13, Oct. 2016	10	11	New stable facilities - feed supplementation to grazing herds, sheep body score
Meeting 14, Dec. 2016	14	19	Stable expansion-reconstruction, milking parlors-feeding equipment.
Meeting 15, Jan. 2017	8	10	Reflection meeting
Meeting 16, Feb. 2017	8	25	Livestock Nutrition, in-doors lecture and discussion, ELGO Demeter facilities
Meeting 17, Mar. 2017	13	16	Reproduction management – Feed cost

The milk prices, in combination with the need for credible cooperatives to intervene between milk producers and cheese dairies. Farmers' worries about decreasing milk prices were discussed a lot, in several meetings. It was stressed that some cheese dairies either do not provide farmers with guaranteed prices or arbitrarily change the agreed prices. All participants acknowledged the positive impact of the cooperative in maintaining a decent milk price level for local breeders; nevertheless, many of them argued that they do not trust cooperatives.

To sum up, a comment by participants in the last group meeting underlined the importance of the issues discussed in the meetings for farmers' learning process: "our concerns on all important livestock issues (herd nutrition, reproduction, management) remain open, even for farmers who run livestock holdings for several years, who are still not able to reach a conclusion on a number of basic practices … to support further decision making".

DISCUSSION

This paper focuses on the processes of the formation of a discussion group and the creation of a learning environment within it. The researcher-facilitator of the DGiS was the driving force of this effort. Starting from the local actors and individual farmers, and utilizing their professional networks, she encouraged the formation of the group and thereafter tried to stimulate exchanges within their broader network acting as facilitator of the group discussions and as an (additional) link reinforcing existing and encouraging new links with local AKIS actors.

The main difficulty at the initiation of this endeavor had to do with attracting a critical mass of 6-8 farmers that would ensure participation, group cohesion and productivity (Wheelan, 2009) as well as a certain degree of viability for the newly-formed group. Despite the fact that most of the farmers and all the AKIS actors expressed interest in contributing to the formation of the DGiS, most farmers appeared unwilling to give high priority to the formation of the group and thus to agree on a date for an initial meeting. On the part of certain local actors this can be attributed either to a lack of genuine interest at that time, their reluctance to share their access (and influence) to farmers or their lack of access to them.

Concerning farmers' participation, as it came up from the reflection meetings and the discussions following farm visits, three main reasons weighted in their decision to join: a) the opportunity to visit other farms and have a look on the other farmers' everyday reality and practice, b) the opportunity to share their concerns with their colleagues, and last but not least, c) the opportunity to keep in touch with the scientific community and gain access to scientific knowledge as a sound basis to build their decision making. The attitude of the core group farmers towards participation and their comments regarding its benefits were certainly encouraging. However, their choice to keep meetings open to any farmer signified that although they recognize the DGiS benefits they are unwilling to fully embrace the initiative and commit themselves to participate in a series of commonly scheduled meetings; keeping meetings open left room to participate or not, depending on their availability at time.

The contribution of the AKIS actors to this initiative varies. Some public services and departments of the AUA contributed to the DGiS with information and knowledge. Contribution was denied in one case, due to sectoral interests. Some local AKIS actors developed interactions with the group and especially one of them contributed substantially in its functioning. The interest of others, who initially seemed to be attracted by the opportunity to learn new methods of contacting and working with farmers, quickly wore off.

Concerning the benefits gained by the farmers who regularly participated in the DGiS, the exchange of ideas and practices and, as a result, the implementation of new practices in their own farms is an apparent attainment. Nevertheless, there are indications that benefits extend beyond these, apparent ones.

First, there is an increasing ability of farmers in clearly expressing their needs and requesting the discussion of specific issues during the meetings. Farmers' discussions often concerned worries and complains for milk and input prices, which nevertheless are issues which they cannot individually influence. However, during the farm visits their interest turned into searching for concrete solutions and they stayed focused on alternatives that help them decrease their production cost, which leads to financially more viable farm holdings.

Second, they increasingly appreciate the importance of building their aspirations for profitable farming upon a sound knowledge base that will allow them to act in a flexible and reasonable way. Participating farmers have great respect for scientific knowledge. Nevertheless,

they are not able to utilize it as most of them do not have reliable access to it; on the other hand when they have access to it they claim that they do not understand it or do not know how to apply it. This points to the lack of communication channels with research institutes/universities, the lack of the public extension system and the failure of the educational system to meet farmers' needs.

Farmers' helplessness to successfully implement new knowledge highlights the fragmentation of the current micro-AKIS system comprising actors that are disconnected from farmers as well as from each other. The Faculty of Veterinary Medicine, the CGIK, the local ELGO service and AN.KA.SA do not develop common activities addressing local livestock farmers. The local livestock cooperative is preoccupied, on the one hand, with milk and input prices and, on the other hand, with the increase of its membership and thus its negotiating capacity. Inevitably, given the lack of a public extension system which would provide farmers with reliable and neutral advice, farmers turn to the private sector vets, agronomists and suppliers to provide them with both supplies and advice. Consequently, farmers have to deal with a torrent of fragmented information and try to operate in a demanding and technologically advanced field and produce valuable products and services from a financial, social and environmental point of view without substantial support. This finally leads their efforts into dubious results and put at risk the viability of their holdings (Hadjigeorgiou *et al.,* 1998; Gaki *et al.,* 2015).

Overall the interactions among the AKIS actors are weak and depend on the personal relationships of their representatives, who most times do not perceive collaboration as a task originating from their institutional role. Most representatives of AKIS, although often refer to the necessity for livestock farmers to undertake meaningful collective action, they themselves avoid taking initiatives for collaboration at the AKIS level. This can be attributed to bureaucratic inertia, the lack of reflection, resistance towards learning and the maintenance of the status quo as well as to the 'convenient' prejudice according to which the responsibility for improvements lies with farmers and/or policy makers. Above all, it can be attributed to the absence of a strategy stipulating interconnections among AKIS actors and providing them with a framework for collaboration.

Third, although it cannot be attributed to the DGiS but rather to the critical financial situation that farmers encountered, during the research period an attempt for collective action took place and members of the group were actively involved in it. As a result, many discussions took place and, finally, some members decided to join the existing local cooperative. It has to be noted that farmers, due to the wide diversity of their holdings are reluctant to join heterogeneous associations and prefer to join in processes through which groups with common characteristics, vision and interests may emerge. The experience of DGiSs may show the way towards the establishment of collective processes with the involvement of all AKIS actors, which may lead to Operational Groups (EIP-AGRI) and the co-generation and spreading of innovations.

CONCLUSION AND RECOMMENDATION

To conclude, DGiS helped participating farmers to exchange ideas and practices, while they enhanced their networks and their interactions within the (local) AKIS actors. Moreover, their participation helped them to start realizing their knowledge gaps, to delineate their problematic situations and articulate their demand for the provision of more specific, practice-oriented knowledge. The study indicates the necessity to provide livestock farmers with basic agricultural education and a continuing flow of reliable knowledge in order to be able to improve their everyday farming practices. Furthermore, it underlines institutional shortcomings and resistance to learning and change that hinder farmers from efficient livestock farming and AKIS actors from playing a constructive role in the creation of a learning environment that contributes to the sustainability of the sheep livestock sector.

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