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SUPPORTING VIABLE RURAL COMMUNITIES

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OFFERED PAPERS FOR PARALLEL SESSIONS

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Educational needs of Greek women engaged in agritourism on marketing quality products free of damages due to insect and other causes for their business' wealth: GIS usage in providing information to extension agents

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Abstract

The paper presents findings from a research carried out within the framework of a project co-funded by the European Social Fund and National Resources – EPEAEK II – ARCHIMIDIS and is undertaken by a research team consisted of scholars of ‘Alexandriou’ Technological Educational Institute of Thessaloniki and other Greek Institutions. Target population is the women all over Greece involved in agritourism either running agribusiness as individuals or as members of women cooperatives. The instrument in gaining information was a questionnaire administered to the sample and 199 valid questionnaires were used for data analysis. One main objective of this study was to identify educational needs of the target population for running wealth business offering quality products free of damages due to insect and other causes to visitors. It was attempted to verify statistical differences between groups of the target population such as the women forming private business in agritourism vs. women members of cooperatives in agritourism. Findings, either with traditional statistical ways and/or with the use of Geographic Information System, are presented to the extension and other change agents as well as to authorities engaged in promoting agritourism. Useful recommendations are provided to all interested in training the target population and/or promoting the spirit of agritourism in rural Greece.

Key words

Agricultural Extension, educational needs, agritourism, cooperatives, GIS, insects in stored food

Introduction

In many regions across the globe, farmers are recognizing the need and desire to diversify their farm products and supplement their agricultural incomes. With an agricultural economy that has been subsidised, for the last 30 years, in many areas of Europe, Greek farmers have tremendous opportunities to diversify their list of product and service offerings with agricultural tourism. Agricultural tourism increases the potential for higher margin, on-farm sales of value-adding products and services, further diversifying the product line of the farm operation. Agritourism or agricultural tourism is defined "*the act of visiting a working farm or any agricultural, horticultural, or agribusiness operation for the purpose of enjoyment, education, or active involvement in the activities of the farm or operation*" (Lobo, R. 2000).

With changing priorities for the European Union, it is clear that higher portions of funding for agriculture must be born by smaller units of government-if they are going to be provided at all. This commentary argues that Extension conducted at the local level can keep the organization relevant and vital in this new era of devolution. This can be true if extension service of each country is reoriented and its orientation would be most profitable if researchers working in rural areas studying supplementary sources of income for rural people provide information to them. Agritourism is also a case and in this paper effort is put to

introduce how rural development can be accelerated if change agents are informed, for future action, about women occupied in agritourism either as members of cooperative or as individual businesswomen. Women in rural areas acting either as individual or as members of cooperatives have contributed a lot in agritourism promotion. Women cooperatives have been studied in Greece (Tsartas and Thanopoulou 1994, Koutsou 2002, Koutsou et al. 2003) regarding their contribution to rural development in general and specifically for agritourism. But, educational needs, either felt or real, for the women engaged in agritourism are in question and need relevant answers.

Among modern ways of providing information to the change agents, it is introduced and recommended the Geographic Information Systems (GIS) which, as well known, is an organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information. A GIS is a complete computer system that links information about where things are located with information about what particular data represents. Unlike a paper-map where "what you see is what you get", a GIS-map can combine many layers of information (Cropper, 2003) valuable to those interested about the topic GIS is dealing with.

Furthermore, a great number of harmful causes such as parasites and mainly insects attack many products the target population is dealing with while are stored to be merchandised. The knowledge of the target population on how to use health practices and to control, if needed, mainly with alternative methods securing products free of chemicals is laid (Papadopoulou and Buchelos 2002).

The project aims to present the objectives of the research and the methodology applied having as an ultimate goal to help technology transfer experts providing rural people with basic information on how to use tourism as an additional product offering on the farm. This, as a practical tool, can help farmers decide whether or not to enhance their incomes with tourism activities.

This paper presents some of the findings giving emphasis to certain educational needs the target population has and provides alternative ways (i.e. GIS) in informing change agents about existing problems.

Purpose and objectives

Among specific objectives of this study were:

- To research the attitudes of the respondents in producing local/traditional and/or biological products
- To research the quality and mainly the safekeeping of such products damaged from insects and other harmful causes and whether they are stored in proper warehouse conditions for keeping them healthy and in the best possible quality to satisfying the buying visitors.
- To assess the educational needs of the respondents in order to make proposals for proper educational material.
- To present, using Geographic Information Systems (GIS), the data collected that will be available for any change agent or educational organization.
- To study how selected variables are associated with certain demographic characteristics of the target population.

Methodology

Target population and sampling. Target population is the women all over Greece involved in agritourism and running agribusiness either as individuals or as members of

women cooperatives. Condition is that those having individual business were supported through the European Union program 'LEADER'. Effort was put to collect information from all falling into above population. Finally, the questionnaire devised was administered to 60% of this population.

Instrumentation. The instrument for collecting the data was a questionnaire developed by the researchers acting as a panel of experts, using related literature and previous research as a basis. The questionnaire was divided into three parts. In Part I, respondents are asked to provide background information and relevant economics of their enterprise. Part II consists of various questions dealing with products and services offered, their quality and storing, protection of insects and molds, packaging, promotion, pricing and marketing. Part III contains questions relevant to employment, personnel education and training, and to future plans of the businesswomen and/or the cooperative members. Panel of experts reviewed the instrument and revisions were made according to their suggestions. It was pilot tested for content validity.

Data collection. The questionnaire was administered during 2005-06. Students of Farm Management Department were used as interviewers after they had been trained accordingly. Research team members had also personally undergone this interviewing attempting to have their own view of the situation.

Data priorities. The research team gave priority in identifying the perceived educational needs of the target population and when possible, the real educational needs. The last was done in an indirect way by avoiding straight questions in an effort to avoid the respondents to feel that they are interrogated.

Findings

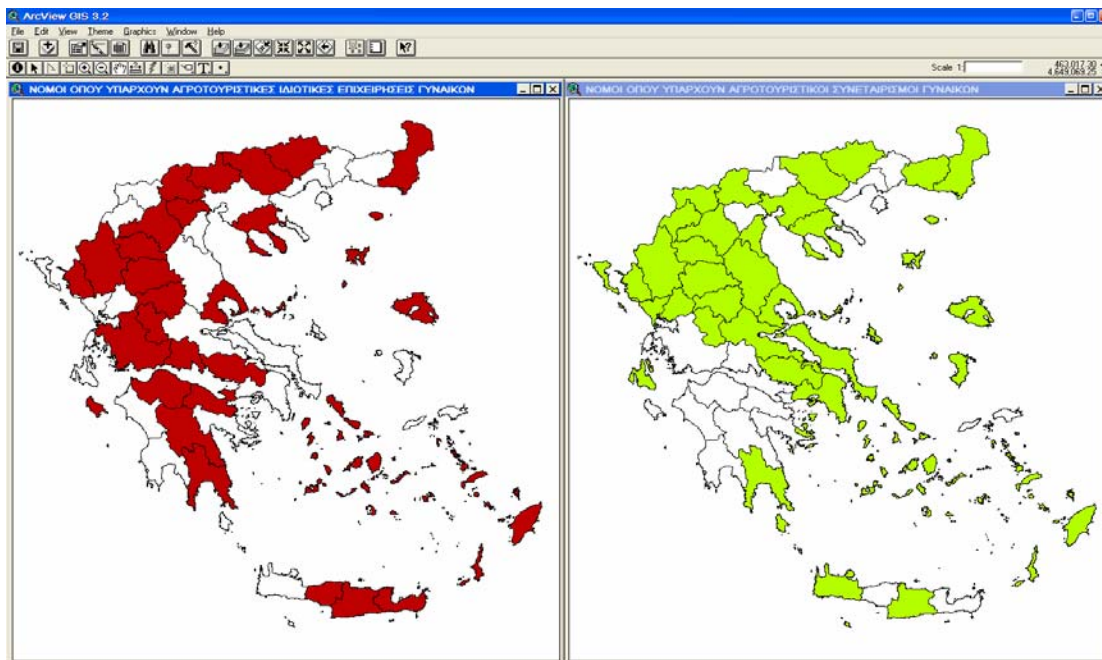
The target population consisted of 226 businesswomen running individual business and of 103 women agritourism cooperatives. Finally, 199 valuable questionnaires provided the data reported herewith. GIS chart 1 shows where in Greece individual businesswomen and women cooperatives dealing with agritourism are located. As shown in this chart, in several areas of Greece there is no any activity in agritourism undertaken by women neither as cooperative members nor as individual businesswomen.

The 57% of the coop presidents are aged (over 45 years old) and only 10% are less than 35 years old. In contrast, private business owners are younger in age (66,6% are younger than 45 years old). Coop presidents' education is 38,6% of elementary, only 31,9% have completed lyceum and 11,1% higher education. Private businesswomen have 20,8% elementary education, 14,2% gymnasium, 30,8% Lyceum and 27,5% higher education. This and other information, in relevant GIS charts, are available to change agents and can be used in adjusting accordingly the educational activities planed.

Note. More GIS charts, unable to be shown in this paper due to limitations (see guide of authors regarding colour photos), will be presented during the authors' presentation at the conference. The GIS charts in black colour included in these proceedings were limited since GIS cannot really be presented without the use of colours.

In an effort to identify the existence of statistical difference between the two groups (businesswomen vs. women members in cooperatives) regarding the education (Elementary, Gymnasium, Lyceum, Higher) of their leaders, Chi-Square and exact tests provided that the education of the people in charge of the two groups differ statistically ($\chi^2=10,790$, $df=3$, $p=0,012$). Using the Adjusted Standardised Residuals (ASR) it was observed the tendency of those leading the cooperatives to have elementary education and those in charge in private business to have more education than the elementary.

The women cooperatives were established mostly (63, 9%) during the '90s which is the decade EU programs 'LEADER' were fostered. Similarly 71,7% of the women of private business establishment were established at the same time (table 1).



GIS chart 1. Businesswomen (left) and women cooperatives (write) in agritourism

Table 1. Year of cooperative and private business establishment

Year of establishment	Cooperative		Private business		All data	
	f	%	f	%	f	%
Up to 1990	10	13,9	13	10,2	23	11,6
1991=2000	46	63,9	91	71,7	137	68,8
2001 to 2004	16	22,2	23	18,1	39	19,6
Total	72	100,0	127	100,0	199	100,0

Table 2, shows the number of partners/members for both groups (coops and private) during their establishment and the year 2005. There is the tendency for the private business to remain almost the same in numbers of partners, while the cooperatives have the tendency, as expected, to have at a later time fewer members than during their establishment.

Respondents were asked to report about their activities in the beginning of their agritourism business and during the research time. In order to identify statistical differences among the two groups (coops and private business) the chi square and exact test provided the following: There is statistical difference ($p < 0,05$) among the two groups of respondents regarding their activities in the beginning of their enterprises. Using the ASR, it was found the tendency of the cooperatives to start activities dealing with desserts and marmalades, drinks, pastries, various delicatessen, herbs, catering, weavings. In contrast, there is the tendency for the private enterprises to start business in providing rooms to let. Same test showed no statistical difference regarding activities in pottery and restaurant business. Further analysis of the data proved that today the same tendencies remain.

Sources for receiving new ideas.

In an attempt to identify the sources the women use for receiving new ideas to be innovated, a relevant question was addressed and as shown in table 3 the local agents, including the extension agents, share a low portion in innovating, on the matter, the target population. GIS charts devised show, at a glance, areas where seminars or the local agent had contributed more.

Table 2. Membership drop out during their establishment and the year 2005

Number of members/partners	Private Business				Cooperatives			
	When started		In 2005		When started		In 2005	
	f	%	f	%	f	%	f	%
1	89	70,6	89	70,6				
2	14	11,1	19	15,1				
3	10	7,9	7	5,6				
4 to 7	13	10,4	11	8,7				
Total	126	100,00	126	100,00				
5-10					10	13,88	25	34,72
11-20					25	34,72	29	40,28
21-30					21	29,17	7	9,72
31-50					12	16,67	7	9,72
51-140 (51-118 now)					4	5,56	4	5,56
Total					72	100,00	72	100,00

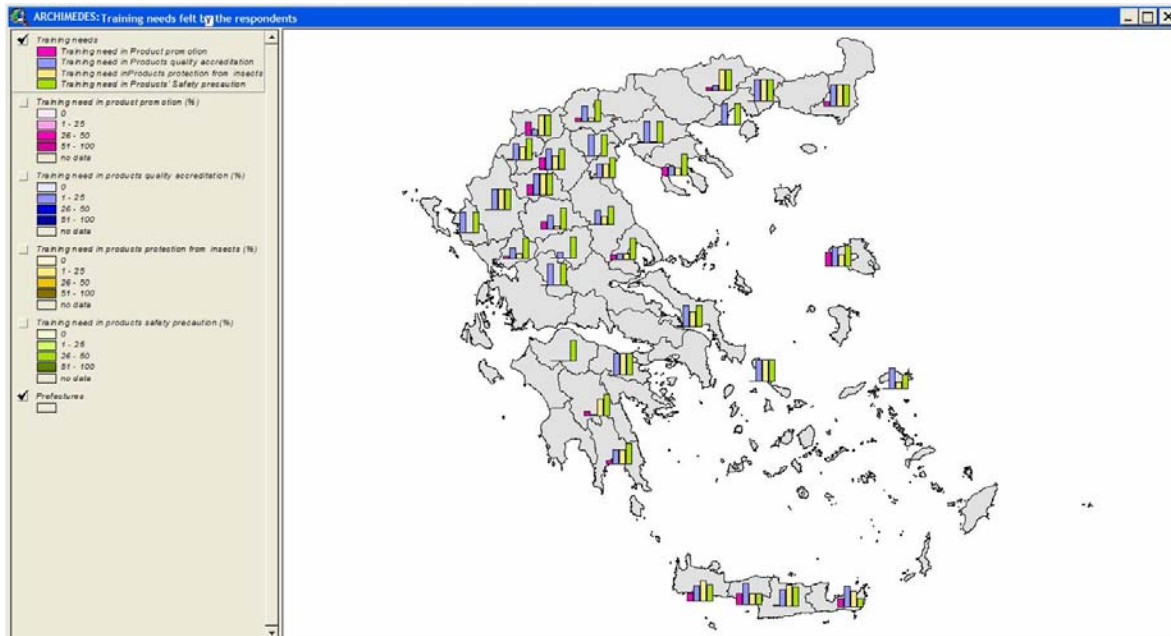
Table 3. Where the idea of establishing business came from?

Answer	The idea of the business establishment came from:							
	Seminars		Member		Local agency		Inheritance	
	f	%	f	%	f	%	f	%
NO	153	77,3	163	82,3	153	77,3	89,4	89,9
YES	45	22,7	35	17,7	45	22,7	10,1	10,1
Total	198	100,0	198	100,0	198	100,0	99,5	100,0

In identifying if statistical difference exists among the two groups of respondents, regarding the origin of the first push to start their agribusiness, chi square and exact test were employed. It was found (using ASR) that the respondents of cooperatives, have the tendency to say that the initiatives to start business were coming from seminars ($\chi^2=23,109$, $df=1$, $p=0,000$), and from local agent ($\chi^2=9,269$, $df=1$, $p=0,003$), whereas initiatives deriving from a member proved to be similar for both cooperatives and private business. In contrast, there is statistically difference, as expected, regarding the inheritance as an initiative source. Respondents from private business are among the two groups having the tendency to report inheritance as a valuable initiative ($\chi^2=9,457$, $df=1$, $p=0,002$). Last, when respondents were asked if there is any other source of initiatives not mentioned in the questionnaire, their answers were statistically different between private business' and cooperatives' respondents. The second have the tendency to report no other important initiative source, while those from business claim the existence of other initiatives as well ($\chi^2=17,325$, $df=1$, $p=0,000$).

Training needs.

The researchers paid a lot of efforts in identifying training needs of the respondents (either felt or real). Again, relevant GIS maps were devised in an effort to become handy for the authorities and to change agents. Such GIS maps include composite information with more relevant training needs. These combined maps (GIS chart 2) may help those programming training to combine several topics of common interest for training, or single information on one topic (e.g. safety precautions).



GIS chart 2. Locations where respondents feel the need to be trained on product promotion, quality accreditation, protection from insects and safety precautions.

- **Product quality and safety.**

Quality and safety are important issues in all business and so are for agritourism. Several questions were addressed to the respondents on the matter and some of the findings are reported herewith in an effort to present the issue, its importance and how GIS could help change agents in orienting their contribution regarding quality and safety to those in need. Thus, when respondents of cooperatives were asked about the precautions they take in preserving correctly their products, few (16,5%) provided specific and more or less correct answers while a high percentage (83,5%) of them did not answered at all.

- **Protection from insects.**

Insects and other causes deteriorate the production in field and when it is stored raw or processed for agritourism purposes. Pastry is one of such products many of the respondents (30,7%) deal with.

Studying the answers of those dealing with pastries regarding controlling insects in their premises, 50,8% do not take any control measures and from those taking such measures only 8,2% of them are aware of the kind of insecticide used. Again, the information is available to the extension agents and to all interested in GIS charts.

Respondents provided the information that when they face insect problems in their raw material or in pastries ask advice from a wide range of people. Some of them ask nobody (18,8%). It is obvious (table 4) that many of those asked lack of relevant

training on this area. Thus, a problem exists and the change agents etc. have to orient target population towards the proper sources of the information needed. Even more, high percentage (45,8%) of respondents do not know if there is any official agency to provide advice if their products are damaged from insects and other causes.

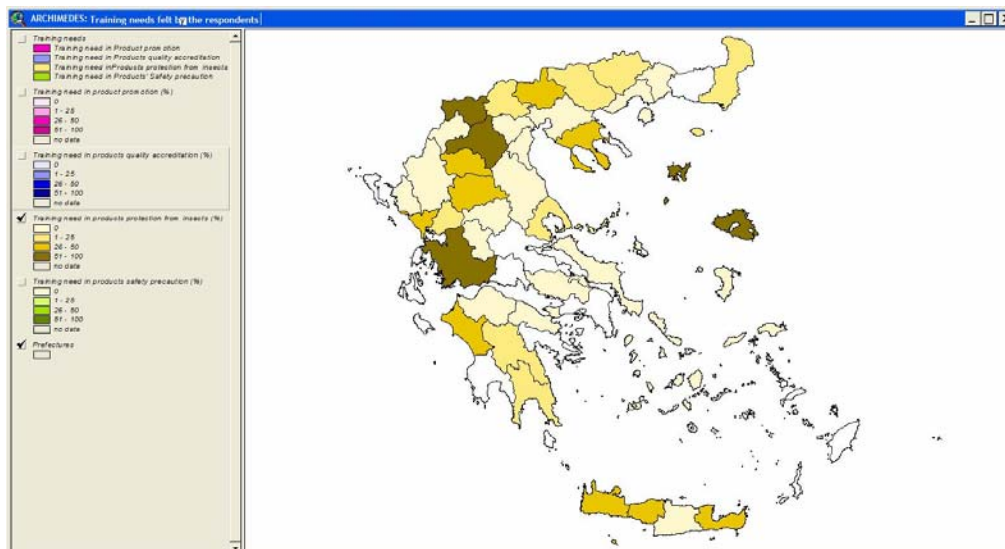
Regarding the need to be trained on how the raw material and pastry can be protected from insects, 60,8% of the respondents have felt this need. GIS chart 3 provides the locations of respondents who are interested to be trained on the matter.

Table 4. Information providers when insect problems are identified in pastry or raw material

Information providers	Frequency	Percent
Food specialists	4	25,0
Private agriculturists	4	25,0
Extension agents	1	6,3
Raw material providers	1	6,3
Insect control companies	1	6,3
Public health service	1	6,3
Colleagues	1	6,3
None	3	18,8
Total	16	100,0

Hazard Analysis Critical Control Points.

Hazard Analysis Critical Control Points (HACCP) is obligatory by the Greek and European law. Relevant question provided that only 2,2% of the enterprises (privet and coops) apply HACCP. Although some explanations provided by the respondents justify that such enterprises are excluded of applying HACCP, the need to inform the target population about HACCP and of other hygiene codes is more than necessary. In fact, 68,5% of the respondents feel the need to be trained for food quality accreditation and relevant GIS chart, showing the areas where change agents should first try to apply such training, are available as well as other GIS charts can help them to search why other areas lacking of such interest. Further analysis of the data (Chi Square and exact tests) showed no statistical difference among the two groups (coops vs. private) in their responses on the matter ($\chi^2=0,102$, $df=1$, $p=0,126$).



GIS chart 3. Location of respondents with felt training needs in protecting pastry products from insects.

Similarly, the respondents are interested in product safety precautions (relevant GIS chart is available) while other GIS chart shows areas where there the need for such training, although the problems exist, is not felt. Change agents and relevant authorities may be helped a lot of such information.

Other educational needs.

The project aimed to gather all relevant to agritourism educational needs of the target population. This includes the areas of advertisement, marketing of goods and services, use of mass media, fair participation, low cost investment, biological products etc.

The complete research report deals with all identified educational needs and a list of topics recommended to be evaluated in planning and training of the target population is included. GIS helps in presenting all problems and recommended solutions in an effort to facilitate a more up to date approach of the problem.

Recommendations

Agritourism and the role of Agricultural Extension. Extension has an impressive history of providing combinations of educational programming and applied research that have had important impacts on the lives of people throughout the world. Its traditional operation is out of date. Agricultural Extension should take in to account how to help in fostering an educational outreach program on agricultural tourism in the country. It is well known that many agri-tourism activities are going strong in rural Europe for decades. But, there is a need to widen participation and especially in Greece by having Extension serving as a catalyst for developing the institutional framework to enhance the spread of agritourism across the country. In particular, Agricultural Extension must have interest in seeing how family farmers can benefit from agritourism.

The Ministry of Agricultural Development must facilitate the creation of a state wide Agricultural Tourism Working Group authorities who must meet periodically to define an education and research agenda that can expedite the development of agritourism in the whole country. The extension agents should play very important role in this. For this, Extension must develop a number of partnerships with the Local Development Agencies in each Prefecture to support pilot projects in different parts and with a wide diversification regarding the kind of products and services to be offered which must match with the special

opportunities and dynamics of each area. Each area must create a core of key people taking the lead in organizing steering committees; developing plans; including visions, goals and objectives; and designing an educational program that can empower family farms and rural communities to meet a growing consumer demand for the rural and agricultural experience.

Agencies collaboration. It is highly recommend having strategic plans for agritourism education, and coordination of collaborative efforts of tourism, agriculture, business and government participants. Among the objectives set should be included efforts to limit the widespread use of chemicals and powerful mechanical equipment that make problematic to bring unfamiliar visitors or tourists onto many farm-work environments. For this, it is recommended to provide information on how insects and other causes deteriorate the production in field and when it is stored as processed for agritourism purposes. Available research can help in identifying and controlling insects with the minimum use of pesticides (Papadopoulou 2001).

Educational Institutes. After all, an effective and dynamic agri-tourism program could significantly enhance agricultural sales in the area, particularly for small operations. Such a program would also create additional jobs in the County to provide these tour services. The researchers of the Technological Education Institute of Thessaloniki, School of Agricultural Technology hope to add a milestone in it.

The need of GIS. Modern information systems are needed in Extension. One of the most powerful tools in organizing information sources is GIS. A GIS is a complete computer system that links information about where things are located with useful information. It was shown in this paper how educational needs and other data can be put into the same information source and become available to anyone interested. It is important that the Extension service as well as other technology transfer agencies occupied in promoting agritourism facilitate the training of their staff accordingly. Furthermore, GIS is useful in analysis and manipulation of information in order to provide future trends and needs. Also, communication with other agencies and services will be very easy and productive.

Educational needs. Some of the findings of this research are reported herewith in an attempt to be underlined for those responsible to take action (change agencies and agents):

1. Different tendencies regarding their activities and their educational needs exist between women members of agritourism cooperatives and women occupied in private business in agritourism. In many cases other approaches should be used in contacting people of the above categories or other topics should be introduced. A careful study of the findings previously mentioned is recommended.
2. The people in charge of the two categories of the target population differ statistically and it might be needed a different approach in contacting and training them.
3. Marketing and advertisement of goods and services by both categories is not an outcome of any training but it is based on their experience. Although several governmental, municipal and other agencies facilitate their advertisement at no cost they do not take advantage of it while in other cases this is not enough. A close look of this problem and educational help to them on the matter is recommended.
4. Quality problems may arise due to insufficient knowledge on how to preserve or proceed for their products' accreditation. Sophisticated techniques such as Hazard Analysis Critical Control Points (HACCP) although is obligatory by the Greek and European law is not applied. A close look of the problem is recommended in order to identify where action should take place and where this ignorance of the problem is not harmful.
5. Similar is the problem of protecting susceptible products from insects, molds ad other harmful causes and storing them properly.

6. Although that 88% of the sample had increased their capital compared to the initial one (Aggelopoulos et al. 2006), 79,4% of them have not grasped the existing opportunities to apply for subsidized funds available from European Union. This fact enforces the authors to recommend the change agents to provide the target population with the necessary information about the existing opportunities for low cost capital investment and how to apply to the authorities for getting such funds and increase their business efficiency and productivity.
7. Biological products are a new topic to most of the target population. For this, the change agents, in our case, need to consider the necessity for relevant training of the target population. This is reinforced by the fact that none of the respondents' products is certified as biological and 68,5% of them are interested in such training.
8. Since it was found a tendency the women cooperatives to have fewer members after some years of their establishment, it is recommended that the authorities put effort in providing to the women aiming to become members more information about the work needed and the benefits expected as a result to their coop participation. Diminishing the participation dropping out is necessary in avoiding the disappointment discouraging other, especially young women, to join the coops. Relevant GIS charts show at a glance areas where this problem is more alike.
9. As it was shown, in several areas of Greece there is no any activity in agritourism undertaken by women neither as cooperative members nor as individual businesswomen. It is recommended that the responsible in promoting agritourism agencies as well as those enhancing rural development must give initiatives to the rural people in that perspective.

The final and most important recommendation in this paper is to remember that the agritourism or agricultural tourism is defined as *"the act of visiting a working farm or any agricultural, horticultural, or agribusiness operation for the purpose of enjoyment, education, or active involvement in the activities of the farm or operation"*. Thus, more effort is to be put in the last part of the definition. Greece is lacking of this direction. It is not important to repeat tourism in small scale, what it counts is to increase the *'active involvement in the activities of the farm or operation'* of the visitors. This way the agritourism becomes a mutual understanding of various people coming sometimes from far away. This is a positive direction of the inevitable globalization.

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